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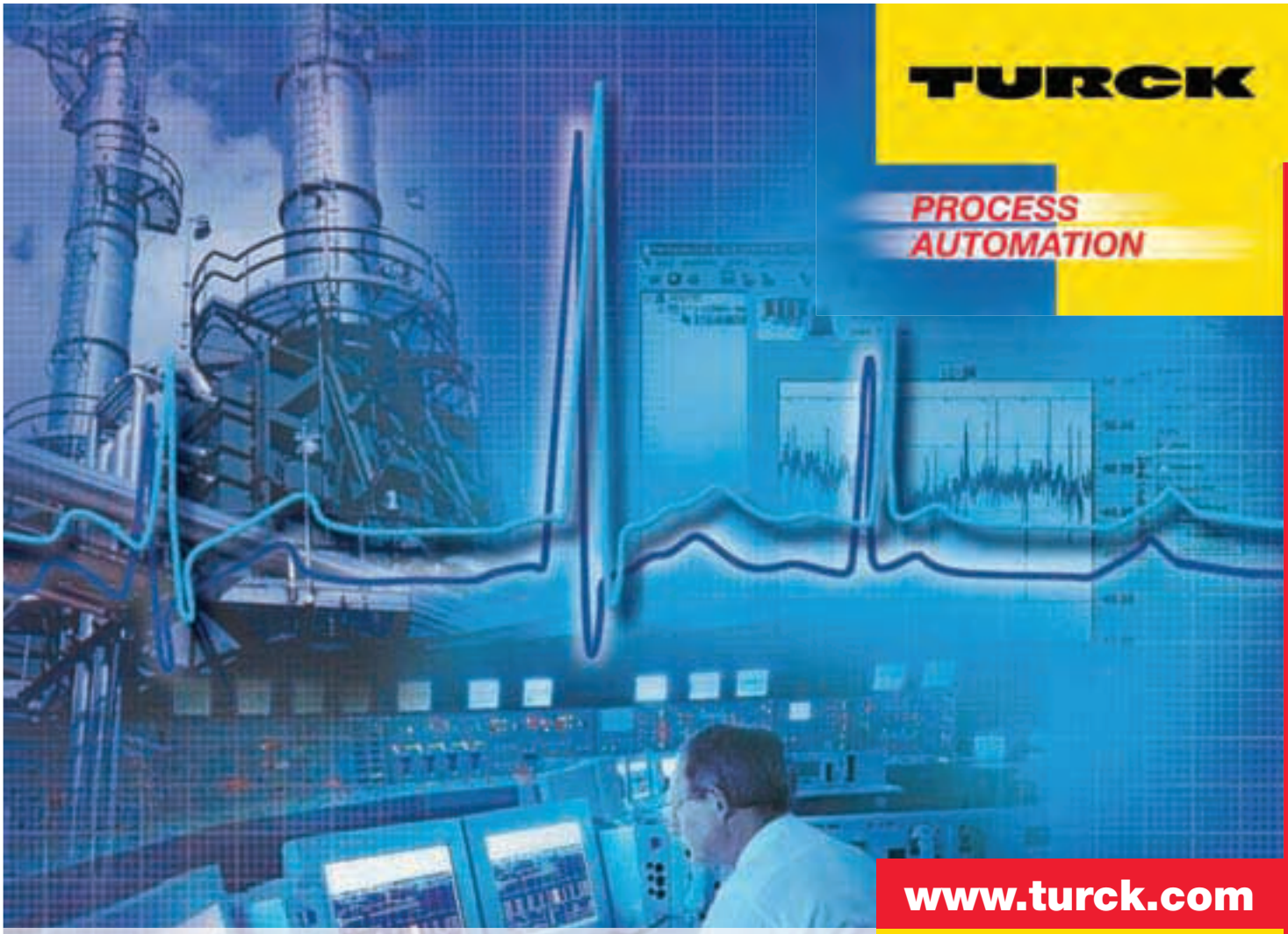

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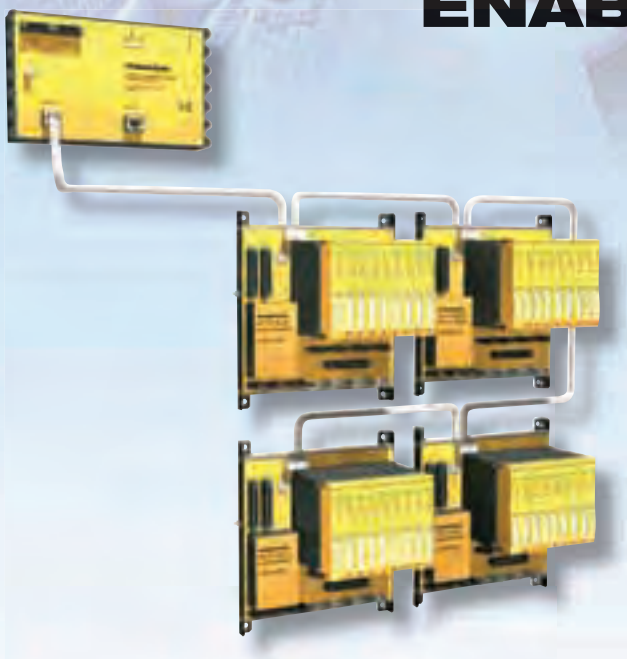

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Process Automation – Quick Selection Guide

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excom ®

excom Gateways

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Interface Modules

TURCK's IM series of Isolating Intrinsically Safe Barriers is designed to be a simple and safe way to solve the problems associated with the installation of equipment that is used in potentially explosive atmospheres. **TURCK's** IM series utilizes the intrinsically safe concept that is universally accepted, easy to apply and the safest way to install electronic measuring, monitoring and control equipment in potentially explosive atmospheres.
The IM series uses state of the art circuitry and the latest technology to produce an unsurpassed product that provides the best explosion protection interfaces on the market.

The IM series of Intrinsically Safe Interface Devices is application specific: Each device is designed to work in a specific application, be it analog input, analog output, discrete input, discrete output or others. The series was designed to handle the vast majority of applications where instrumentation and control in potentially explosive atmospheres is typically installed. A small number of interface devices will cover a large number of applications. This is a huge benefit, as limiting the number of different types of interfaces can significantly reduce the number of spares. Reducing the number of model variations of those spares makes replacement or expansion much easier, while also consolidating stock and making inventory easier to manage.

Intrinsic safety has come of age with the introduction of the IM series of Intrinsically Safe Isolating Barriers, making IS applications in potentially explosive atmospheres safe, simple and economically attractive.

Choosing an appropriate IM series Isolator is made simple with the help of this guide. The interface devices outlined within this guide allow you to make the appropriate selection for the corresponding field devices or connections with ease.

IM Series Cabinet

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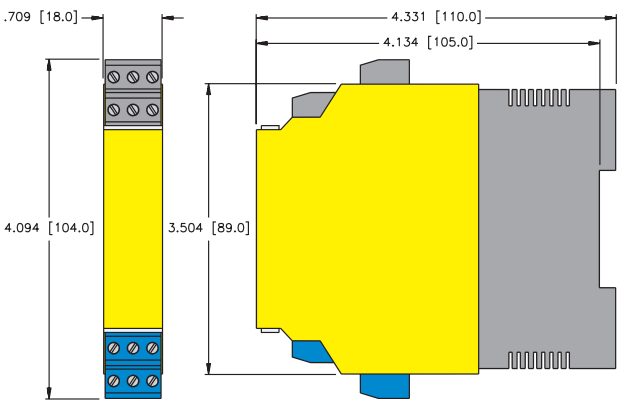
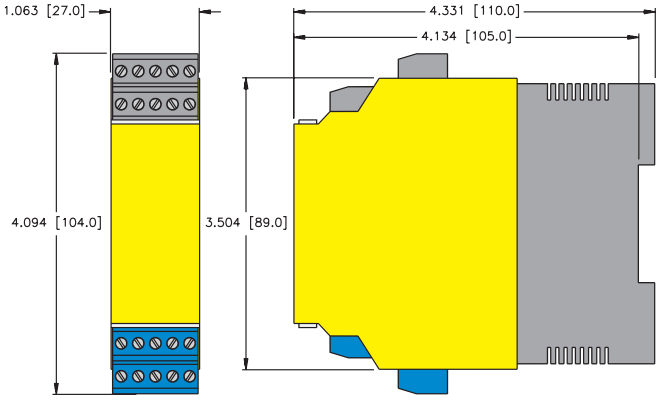
Generic Specifications for IM Series

Housing. . . . . 18 mm, Single or Multi-Channel, 12-Pin Connector Connector Configuration
27 mm, Multi-Channel, 20-Pin Connector Connector Configuration



18 mm Housing Size



27 mm Housing Size

Material. . . . . Polycarbonate/ABS Flammability Class V-0 UL94
Protection Level. . . . . IP 20
Operating Temperature . . . -25 to +60°C (-13 to +140°F)
Storage Temperature . . . . . -40 to +80°C (-40 to +176°F)
Mounting . . . . . 35 mm Top Hat Rail

Units are Class I, Division 2 groups A, B, C or D hazardous area mountable in an appropriate enclosure.
Units may be mounted side by side without spacing requirements.

interface modul

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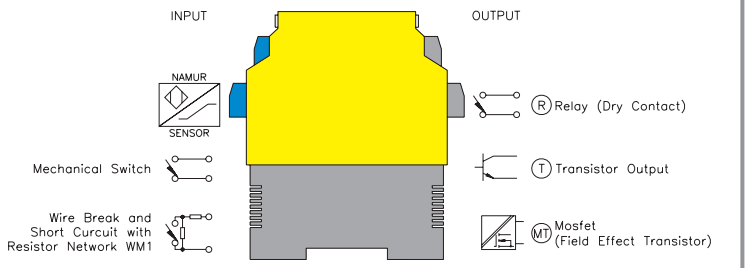
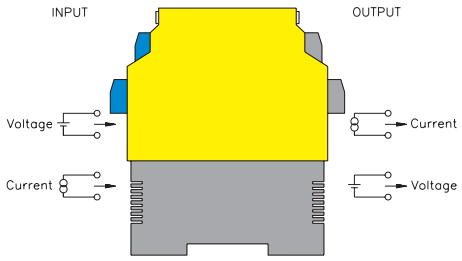
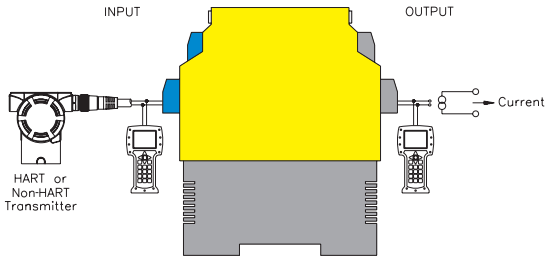
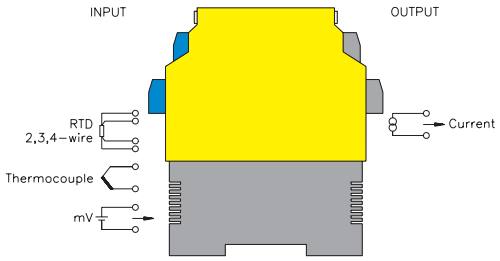
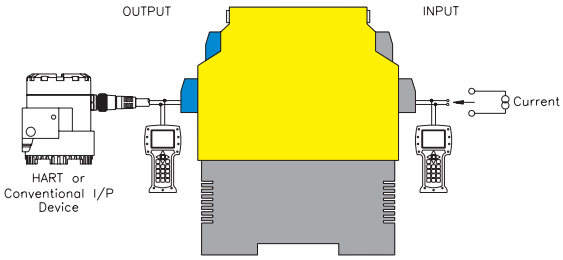
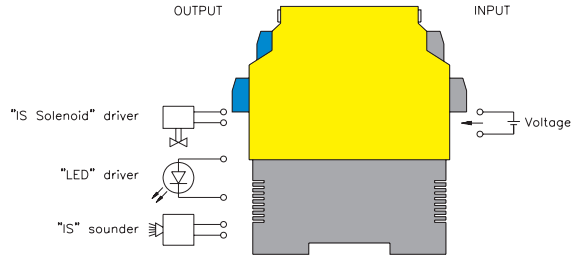
Selection Guide

Function	IM Series	Part Number	Pages
	**Isolation Switch Relays**	IM1-121Ex-R IM1-121-Ex-T IM1-22Ex-R IM1-22Ex-T IM1-22Ex-MT IM1-12Ex-R IM1-12Ex-T IM1-12Ex-MT IM1-451Ex-R IM1-451Ex-T	**B5 - B30**
	**Analog Data Transmitters**	IM31-11Ex-I IM31-11Ex-U IM31-12Ex-I IM31-22Ex-I IM31-22Ex-U	**B31 - B43**
	**Analog Input Repeaters/Supplies**	IM33-11Ex-Hi/24 VDC IM33-12Ex-Hi/24 VDC IM33-22Ex-Hi/24 VDC	**B45 - B52**
	**Temperature Converters**	IM34-11Ex-I IM34-12Ex-Ri IM34-11Ex-Ci IM34-12Ex-CRi	**B53 - B70**
	**Analog Output Isolators**	IM35-11Ex-Hi/24 VDC IM35-22Ex-Hi/24 VDC	**B71 - B76**
	**Solenoid Driver/Discrete Output Isolators**	IM72-11Ex/L IM72-22Ex/L	**B77 - B83**

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Isolation Switch Relays

For Use with NAMUR Proximity Sensors and Mechanical Switches

TURCK offers a wide range of isolating switch relays. These devices can serve various applications ranging from a single dry contact switch input with a complimentary dry contact switch output, to four NAMUR proximity inputs and four transistor outputs, while also providing open and short-circuit protection in addition to alarm functionality.

Isolation switch relays may be used in general purpose applications, and most are certified for use in hazardous (explosive atmospheres) areas by various approvals bodies. These devices carry U.S., Canadian and European approvals that may be required in order to cover projects being engineered for use in locations throughout the world. The devices share many common attributes, such as housings and removable terminal connectors. Most are also available with the universal voltage (20-250 VAC/20-125 VDC) required to power the unit. All units have the option for short-circuit and open-circuit (wire-break) protection: a simple series of switches that can be manually configured by the user if the function is to be implemented. A resistor network (WM1 shown in Figure 1) is required to incorporate these functions when using a mechanical (dry contact) switch for the hazardous area inputs.

The IM series of isolation switch relays is designed to handle the vast majority of applications where mechanical switches or NAMUR proximity sensors are used. Short-circuit and open-circuit (wire-break) functions are available for most devices. This function can be implemented by appropriately configuring the switches located on the top of the units. NAMUR proximity switches have no special requirements in order to incorporate this function, simply set the switches to the appropriate positions.

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Dry contact (mechanical switches) however, require the use of a resistor network in order for the additional functions to operate properly. The incorporation of a ready made resistor network module (WM1 see Figure 1) is recommended.

This section highlights the devices and provides a simple approach for installing the various models available. Examples of common applications are provided along with simple connection diagrams that allow any user to easily and safely install these devices.

Typical and specific functions for each individual device are highlighted in the "Features" portion of the specification pages. A handy pin-out reference chart is also provided for each device. Input and output common configurations for use with NAMUR proximity sensors and dry contact mechanical switches, are also highlighted in this section.

Common Input Configuration for Proximity Sensors

NAMUR 2-wire proximity sensors are specifically designed to work with **TURCK** isolation switch relays. No entity calculations are required, as all NAMUR proximity sensors and associated apparatus with NAMUR inputs (**TURCK** isolation switch relays) are designed to be 100% compatible without the requirement to calculate entity parameters. These calculations are accounted for in the design of both the field devices (proximity sensors) and the interfaces (barriers). All NAMUR proximity sensors are compatible with NAMUR interface devices in all classified areas.

The 2-wire configuration is standardized so the blue wire is always negative and the brown wire is always positive. Reversing these connections will not damage the device, however it will not function.

Connection diagrams for individual devices are shown in the product specification description pages.

Common Input Configurations for Dry Contact Mechanical Switches

Simple switch inputs are easily accommodated by the NAMUR input interface units. Switches are not required to be approved as intrinsically safe devices. Simple switches are defined as "simple apparatus" by the national electrical code as: (NEC 504-2)
A device that will neither generate nor store more than 1.2 V, 0.1 A, 25 mW, or 20 µ.

Using a simple switch does require the use of a resistor network (WM1) if the short-circuit and open-circuit (wire-break) functions are not used. These functions are not required and can be disabled by simply switching the function "OFF" using the configuration switches on the top of the units.

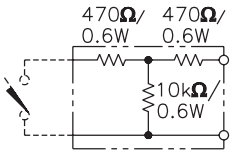

Figure 1

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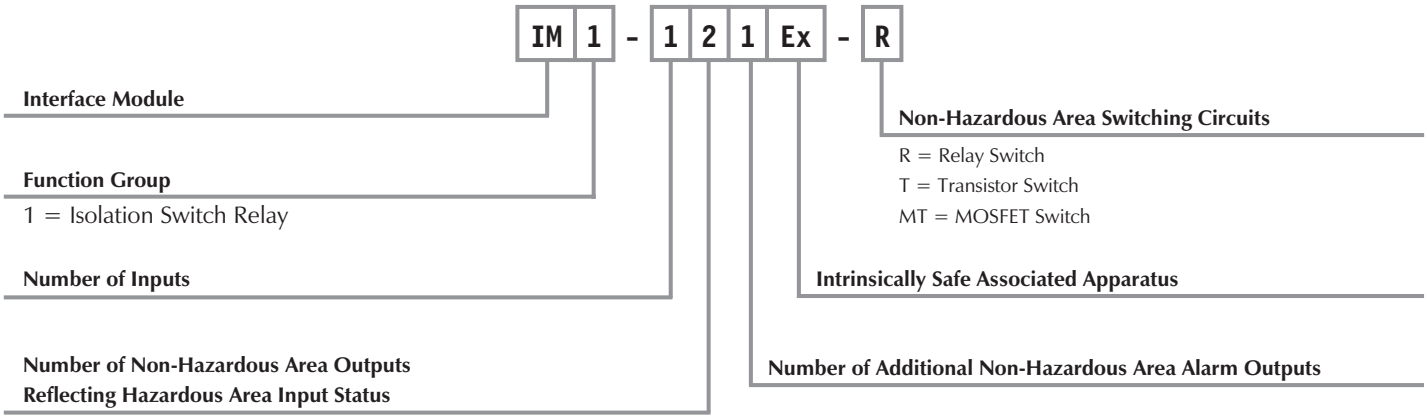
Isolation Switch Relays — Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.



Extension Examples:

IM1-121Ex-R
Isolation Switch Relay
Interface Module
Single Input
Two Non-Hazardous Area Relay Switches
One Non-Hazardous Area Alarm Switch
Intrinsically Safe Associated Apparatus
Relay Switch

IM1-22Ex-MT
Isolation Switch Relay
Interface Module
Two Inputs
Two Non-Hazardous Area Relay Switches
Intrinsically Safe Associated Apparatus
MOSFET Switch

IM1-451Ex-T
Isolation Switch Relay
Interface Module
Four Inputs
Five Non-Hazardous Area Relay Switches
One Non-Hazardous Area Alarm Switch
Intrinsically Safe Associated Apparatus
Transistor Switch

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All IM1-xxx Modules are Equipped With:

Intrinsically Safe Field Terminals

This feature allows the use of any certified NAMUR sensor or dry contact mechanical switch (simple apparatus) to be used in any area classification without risk of explosion.

Universal Input Voltage

This feature allows any power supply with an output of 20-250 VAC or 20-125 VDC to be used to power the units. This provides extreme flexibility in the source power required to operate the units.

Removable "Keyed" Terminals

This feature allows easy wiring. The keyed connectors assure safe and accurate installation. Terminals can be removed and wired without physically making the connections in tight quarters. Cable harnesses that incorporate these connectors can actually be wired outside cabinets, and assembly is completed by plugging in the terminals to the corresponding barrier. A bus power configuration is also available. That allows several barrier's power connections to be bussed in a daisy-chain configuration, further reducing installation time and wiring. Replacement of units when necessary is also simplified.

Short-circuit and Open-circuit Detection

This feature allows monitoring of field circuits for wire faults. The function is selectable and can be disabled if not required or desired. NAMUR sensors need no accessory to provide the function. Dry contact mechanical switches require a resistor network to properly function. The WM1 resistor network module will provide this function, or a network of discrete resistors can be added by the user. Utilization of a common non-hazardous area alarm circuit signifies a fault in the hazardous area wiring.

N.O./N.C. Configuration

This feature allows the input function to be selected as a normally open or normally closed output. Each channel can be separately configured depending on module type.

Galvanic Isolation

This feature provides isolation between inputs, outputs and the power supply. In some cases, individual outputs are also isolated from each other.

Switching Status and Power Indication LEDs

This feature provides a visual indication for the switching status of each channel. The green LED indicates that the unit is powered. The dual color LEDs indicate switching (yellow) and fault status (red). A fault status on an input disables the corresponding output relay.

Housing Sizes

The size depends on the number of channels. All 4-channel devices utilize the wider 27 mm housing, while the 1 and 2-channel devices are housed in the 18 mm style. Both are the same height, and can be mounted on a DIN-rail or flush mounted on a panel.

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Hazardous (Classified) Area

The hazardous area terminals of the IM series switch input isolators are suitable for use with mechanical switch or NAMUR inputs in ALL area classifications.

Shown here is the common input configuration for a NAMUR proximity sensor. The wires are color coded and blue is always the (-) terminal and brown is always the (+) terminal.

Open-circuit (wire-break) and short-circuit can be configured by the switch settings on the top of the unit, if the unit is equipped with this function. No special conditions are required to incorporate the function when using NAMUR proximity sensors.

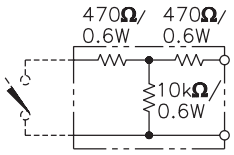
Division 2/Zone 2 or Non-Hazardous Areas

IM units are certified to be mounted in a Division 2/Zone 2 area. Units must be housed in an appropriate enclosure suitable for the environment in which they will be installed.

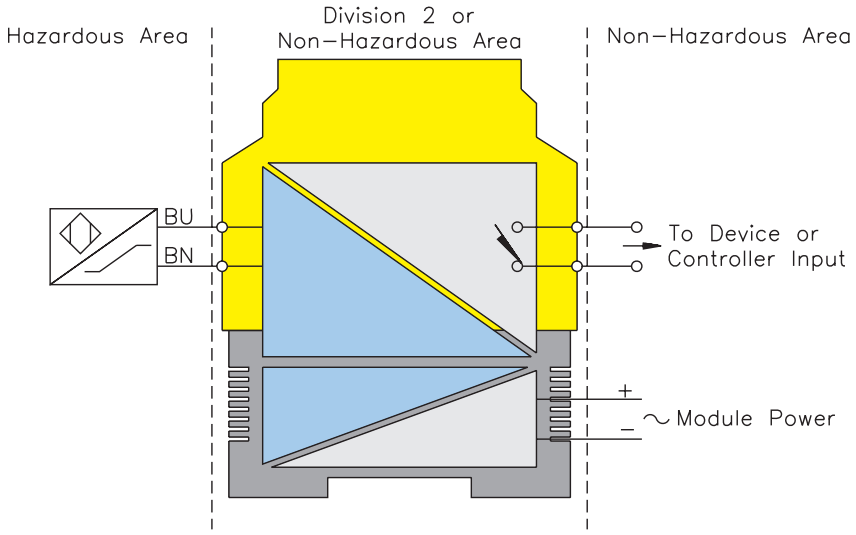
Explosion-proof or purged enclosures are not required for use in this area classification with the **TURCK** IM series.

Non-Hazardous (Non-Classified) Area

Non-hazardous area terminals are designed to be connected to apparatus in a non-classified area.
The equipment may consist of alarm circuits, PLC or DCS controllers or other similar types of equipment.



WM1 Configuration



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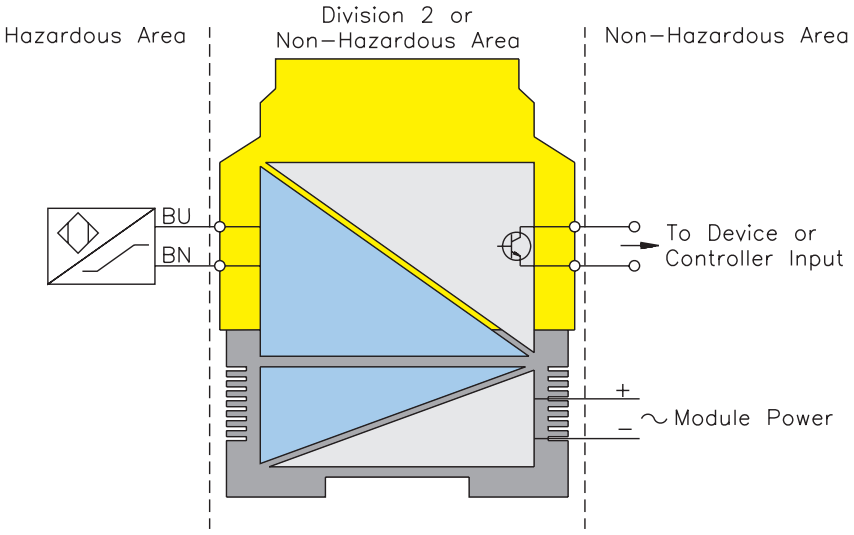

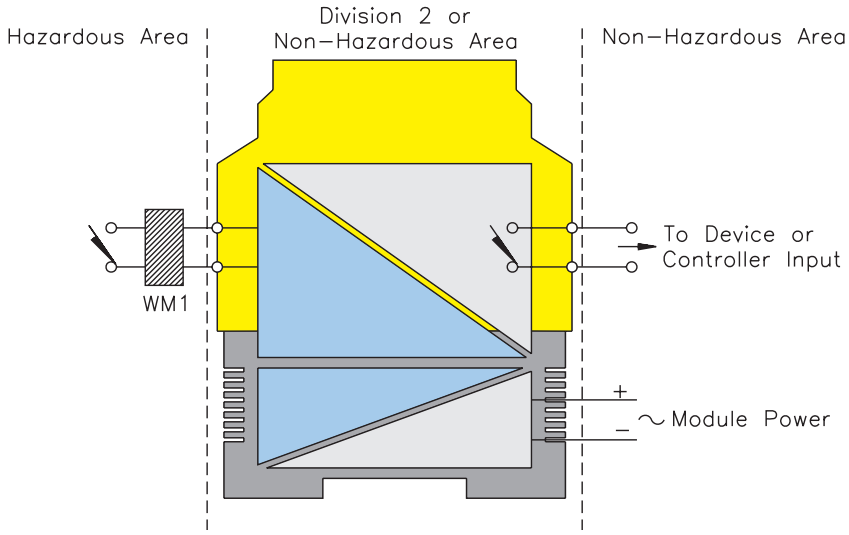

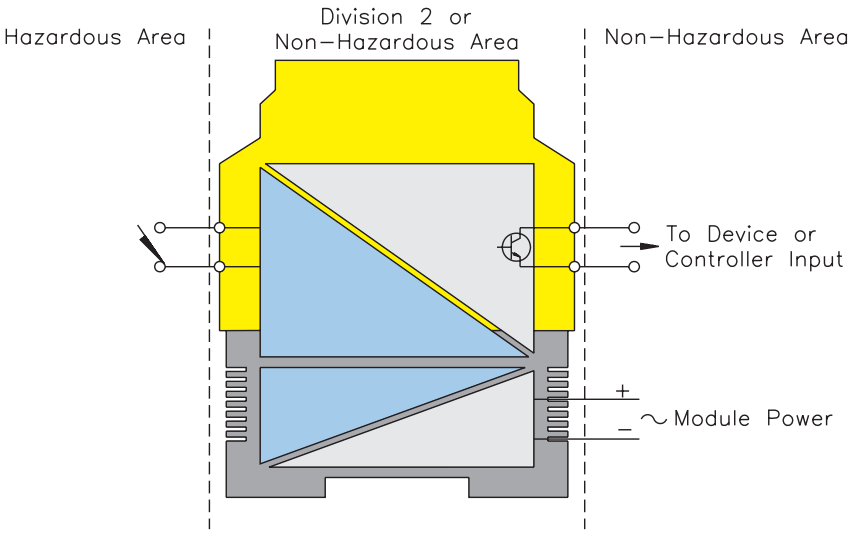

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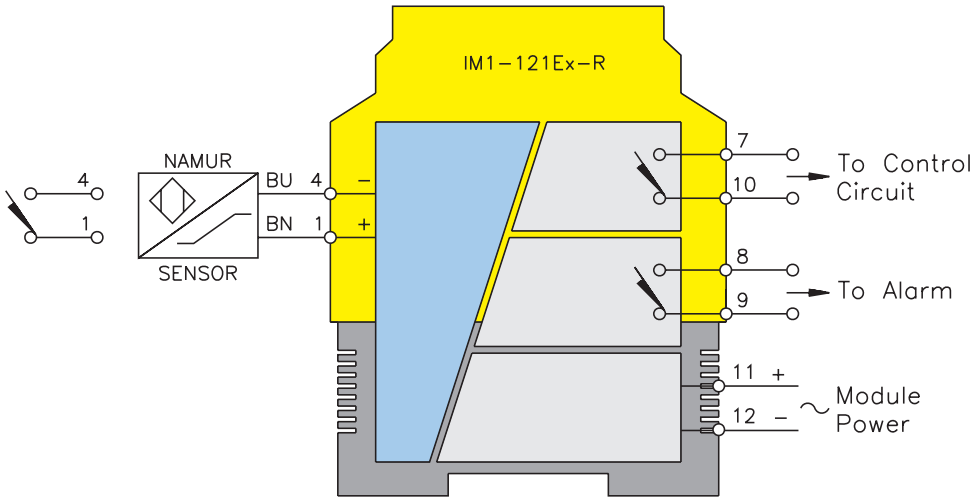
IM1-121Ex-R — Isolation Switch Relays



Functional Description:

This 1 channel intrinsically safe interface device is designed to accommodate 1 switch or NAMUR proximity sensor input from a hazardous area and repeat the change of state of the field circuits to a control system located in a non-hazardous area.

The non-hazardous area output is a SPST switch reflecting the corresponding input change of state from the field circuit.

The device also incorporates a separate SPST Non-Hazardous area alarm switch for monitoring open or short-circuits in the hazardous area.

Features:

- 1 channel input for NAMUR sensors or mechanical switches
- Monitoring of field wiring for open or short-circuit (if required)
- Configuration switches on top of unit for easy access
- 2 non-hazardous area switch outputs, 1 for alarm function
- Selectable N.O./N.C. outputs

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

Inputs	(8.2 V, 8.2 mA)
Switching Threshold	1.55 mA
Hysteresis	Typical 0.2 mA
Open-circuit Threshold	≤0.1 mA
Short-circuit Threshold	≥6.0 mA

Outputs: Non-Hazardous Area

2 Relays, 1 N.O. Contact Each

Voltage	≥250 VAC/120 VDC
Current	≥2 A per channel
Capacity	≥500 VA/60 W per channel
Switch Frequency	≥10 Hz
Contacts	Silver-Alloy + Au (3 micro μ)

For entity parameters see control drawings on pages B86 - B91.

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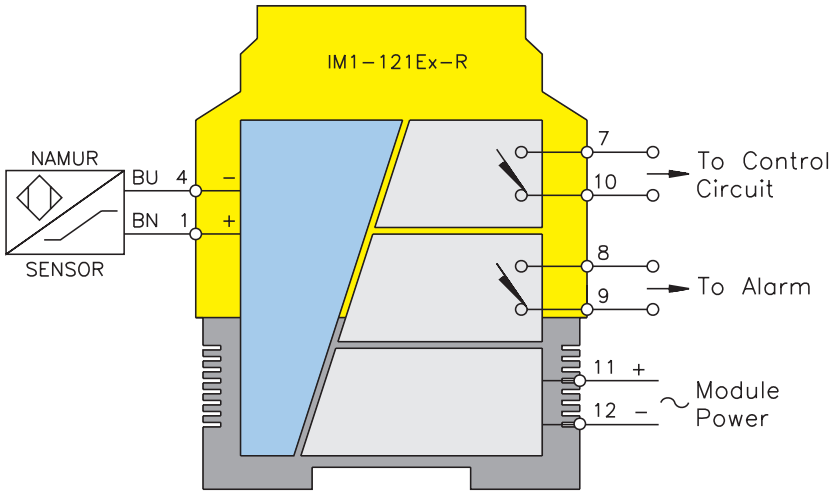
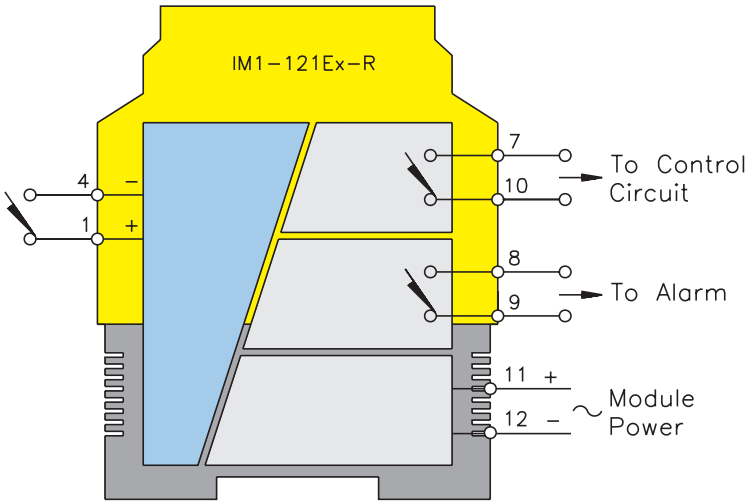
Isolation Switch Relays — IM1-121Ex-R

Pin #	Terminal Function
1	(+) to Field Device
2	No Connection
3	No Connection
4	(-) to Field Device
5	No Connection
6	No Connection
7	Non-Hazardous Area Switch #1
8	Non-Hazardous Area Switch #2 Alarm
9	Non-Hazardous Area Switch #2 Alarm
10	Non-Hazardous Area Switch #1
11	Module Power (+) or AC
12	Module Power (-) or AC





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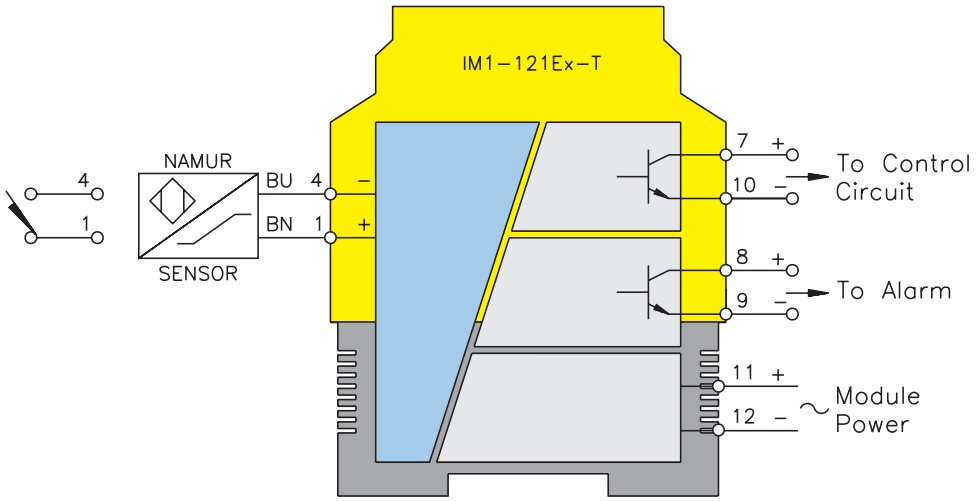
IM1-121Ex-T — Isolation Switch Relays



Functional Description:

This 1 channel intrinsically safe interface device is designed to accommodate 1 switch or NAMUR proximity sensor input from a hazardous area and repeat the change of state of the field circuits to a control system located in a non-hazardous area.

The non-hazardous area output is an open collector transistor reflecting the corresponding input change of state from the field circuit when properly configured.

An alarm output is also incorporated.

Features:

- 1 channel input for NAMUR sensors or mechanical switches
- Monitoring of field wiring for open or short-circuit (if required)
- Configuration switches on top of unit for easy access
- 2 isolated short-circuit protected non-hazardous area open collector transistor outputs, 1 for alarm function
- Selectable N.O./N.C. outputs

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

Inputs	(8.2 V, 8.2 mA)
Switching Threshold	1.55 mA
Hysteresis	Typical 0.2 mA
Open-circuit Threshold	≤0.1 mA
Short-circuit Threshold	≥6.0 mA

Outputs: Non-Hazardous Area

2 Transistors, Potential Free Short-Circuit Protected

Switching Voltage	≤30 VDC
Switch Current	≤50 mA per channel
Switch Frequency	≤5 kHz
Voltage Drop	≤1.3 V

For entity parameters see control drawings on pages B86 - B91.

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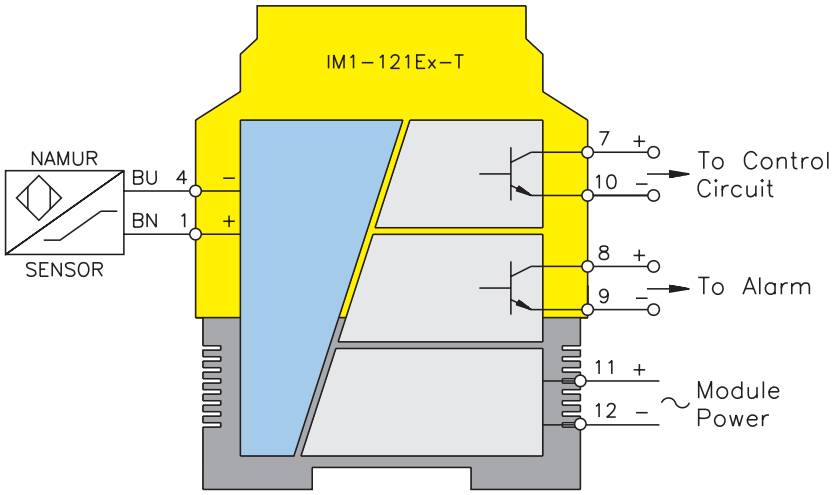
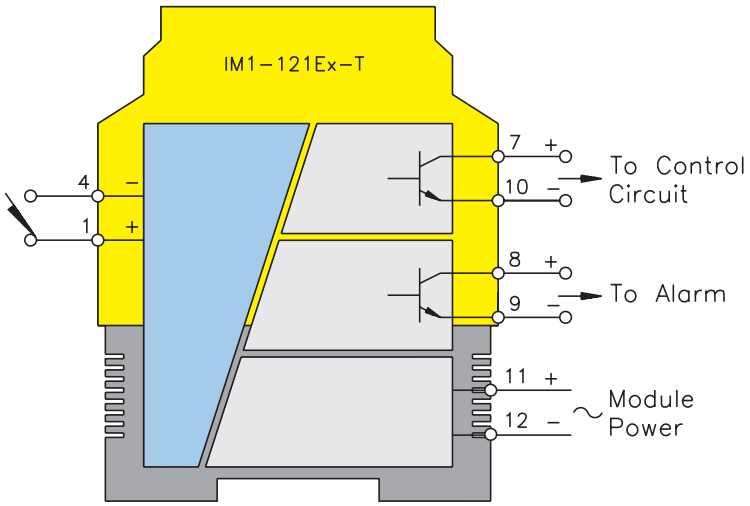
Isolation Switch Relays — IM1-121Ex-T

Pin #	Terminal Function
1	(+) to Field Device
2	No Connection
3	No Connection
4	(-) to Field Device
5	No Connection
6	No Connection
7	Non-Hazardous Area Transistor (+)
8	Non-Hazardous Area Trans Alarm (+)
9	Non-Hazardous Area Trans Alarm (-)
10	Non-Hazardous Area Transistor (-)
11	Module Power (+) or AC
12	Module Power (-) or AC





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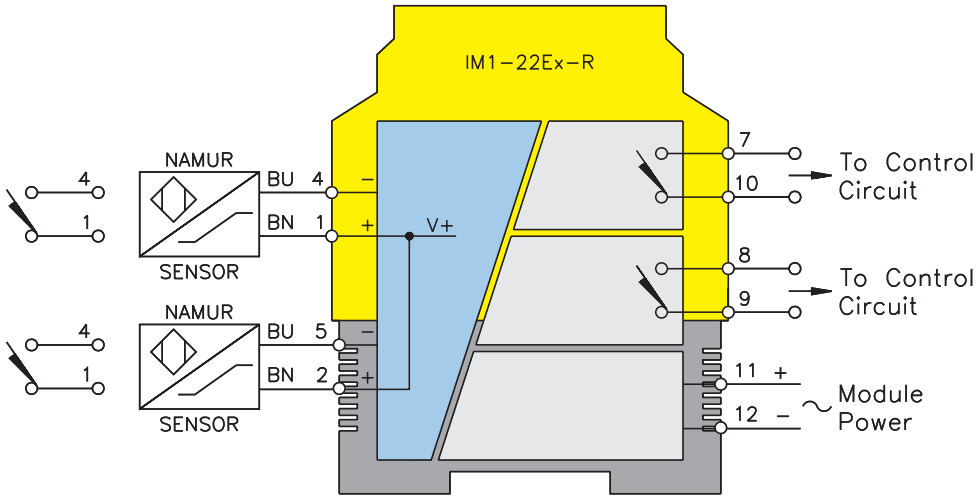
IM1-22Ex-R — Isolation Switch Relays



Functional Description:

This 2 channel intrinsically safe interface device is designed to accommodate two switches or NAMUR proximity sensor inputs from a hazardous area and repeat the change of state of the field circuits to a control system located in a non-hazardous area.

The non-hazardous area outputs are two separate SPST switches reflecting the corresponding change of state from each individual input of the field circuit.

Features:

- 2 channel input for NAMUR sensors or mechanical switches
- Monitoring of field wiring for open or short-circuit (if required)
- Configuration switches on top of unit for easy access
- 2 SPST non-hazardous area outputs; 1 for each channel
- Selectable N.O./N.C. outputs

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

Inputs	(8.2 V, 8.2 mA)
Switching Threshold	1.55 mA
Hysteresis	Typical 0.2 mA
Open-circuit Threshold	≤0.1 mA
Short-circuit Threshold	≥6.0 mA

Outputs: Non-Hazardous Area

2 Relays, 1 N.O. Contact Each

Voltage	≥250 VAC/120 VDC
Current	≥2 A per channel
Capacity	≥500 VA / 60 W per channel
Switch Frequency	≥10 Hz
Contacts	Silver-Alloy + Au (3 micro μ)

For entity parameters see control drawings on pages B86 - B91.

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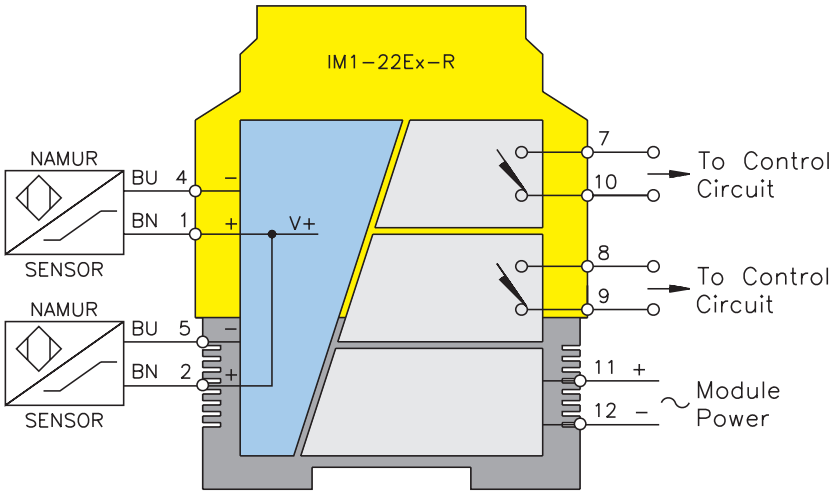
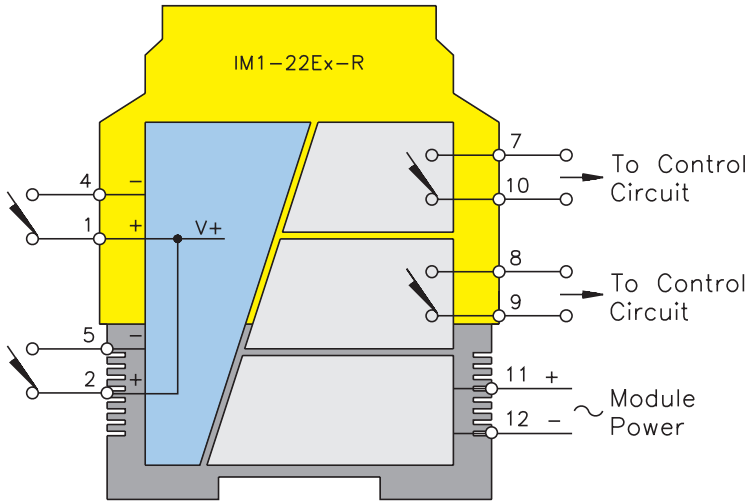
Isolation Switch Relays — IM1-22Ex-R

Pin #	Terminal Function
1	(+) to Field Device #1
2	(+) to Field Device #2
3	No Connection
4	(-) to Field Device #1
5	(-) to Field Device #2
6	No Connection
7	Non-Hazardous Area Switch #1
8	Non-Hazardous Area Switch #2
9	Non-Hazardous Area Switch #2
10	Non-Hazardous Area Switch #1
11	Module Power (+) or AC
12	Module Power (-) or AC





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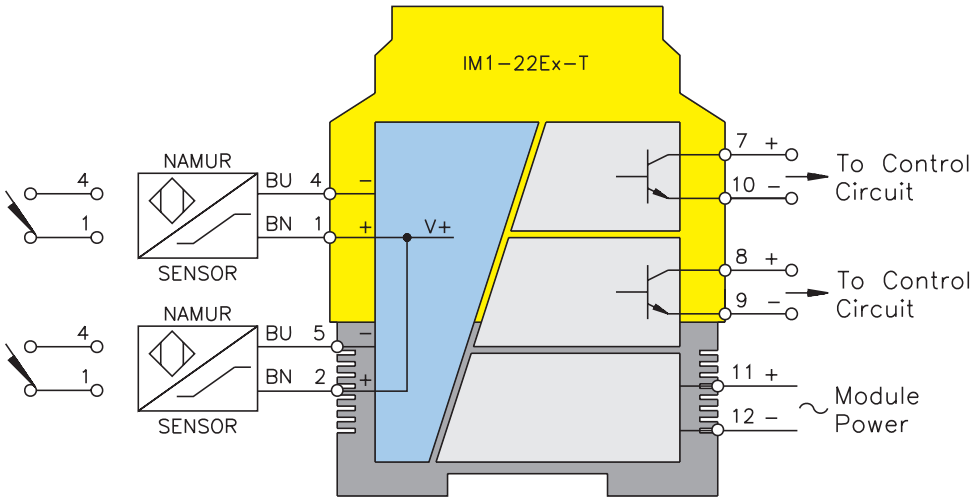
IM1-22Ex-T — Isolation Switch Relays



Functional Description:

This 2 channel intrinsically safe interface device is designed to accommodate two switches or NAMUR proximity sensors input from a hazardous area and repeat the change of state of the field circuits to a control system located in a non-hazardous area.

The non-hazardous area outputs are two separate open collector transistors reflecting the corresponding change of state from each individual input of the field circuit when properly configured.

Features:

- 2 channel input for NAMUR sensors or mechanical switches
- Monitoring of field wiring for open or short-circuit (if required)
- Configuration switches on top of unit for easy access
- 2 isolated short-circuit protected open collector transistor non-hazardous area outputs; 1 for each channel
- Selectable N.O./N.C. outputs

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

Inputs	(8.2 V, 8.2 mA)
Switching Threshold	1.55 mA
Hysteresis	Typical 0.2 mA
Open-circuit Threshold	≤0.1 mA
Short-circuit Threshold	≥6.0 mA

Outputs: Non-Hazardous Area

2 Transistors, Potential Free Short-Circuit Protected

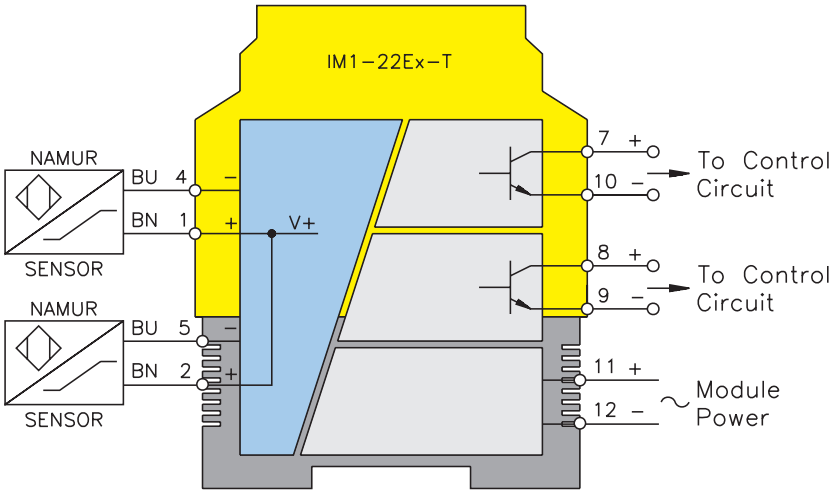
Switching Voltage	≤30 VDC
Switch Current	≤50 mA per channel
Switch Frequency	≤5 kHz
Voltage Drop	≤1.3 V

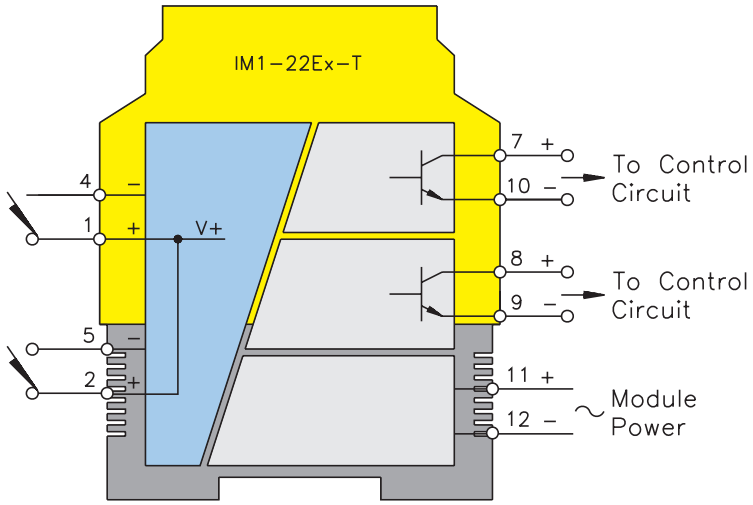
For entity parameters see control drawings on pages B86 - B91.

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Isolation Switch Relays — IM1-22Ex-T

Pin #	Terminal Function
1	(+) to Field Device #1
2	(+) to Field Device #2
3	No Connection
4	(-) to Field Device #1
5	(-) to Field Device #2
6	No Connection
7	Non-Hazardous Area Transistor #1 (+)
8	Non-Hazardous Area Transistor #2 (+)
9	Non-Hazardous Area Transistor #2 (-)
10	Non-Hazardous Area Transistor #1 (-)
11	Module Power (+) or AC
12	Module Power (-) or AC





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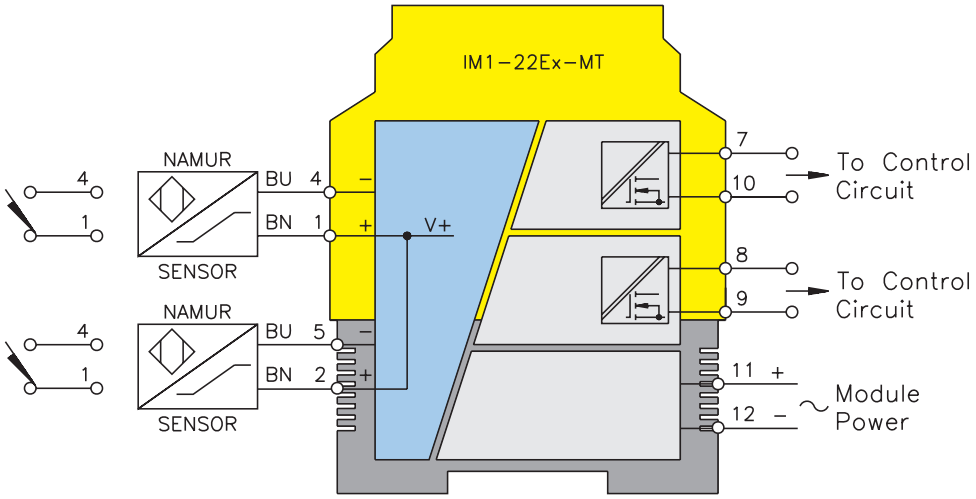
IM1-22Ex-MT — Isolation Switch Relays



Functional Description:

This 2 channel intrinsically safe interface device is designed to accommodate two switches or NAMUR proximity sensors input from a hazardous area and repeat the change of state of the field circuits to a control system located in a non-hazardous area.

The non-hazardous area outputs are two separate MOSFET transistors reflecting the corresponding change of state from each individual input of the field circuit when properly configured.

Features:

- 2 channel input for NAMUR sensors or mechanical switches
- Monitoring of field wiring for open or short-circuit (if required)
- Configuration switches on top of unit for easy access
- 2 isolated non-hazardous area unipolar MOSFET outputs allow switching voltages up to 250 VAC at a maximum frequency of 1 kHz, 1 for each channel
- Selectable N.O./N.C. outputs

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

Inputs	(8.2 V, 8.2 mA)
Switching Threshold	1.55 mA
Hysteresis	Typical 0.2 mA
Open Circuit Threshold	≤0.1 mA
Short Circuit Threshold	≥6.0 mA

Outputs: Non-Hazardous Area

2 MOSFET, Potential Free

Switching Voltage	≥250 VAC/120 VDC
Switch Current	≤90 mA per channel
Switch Capacity	22.5 VA/10.8 W per channel
Switch Capacity	≤1 kHz

For entity parameters see control drawings on pages B86 - B91.

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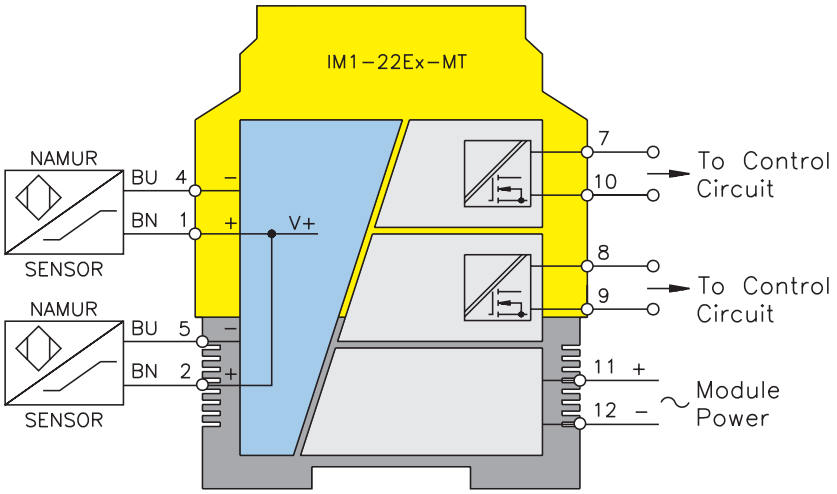
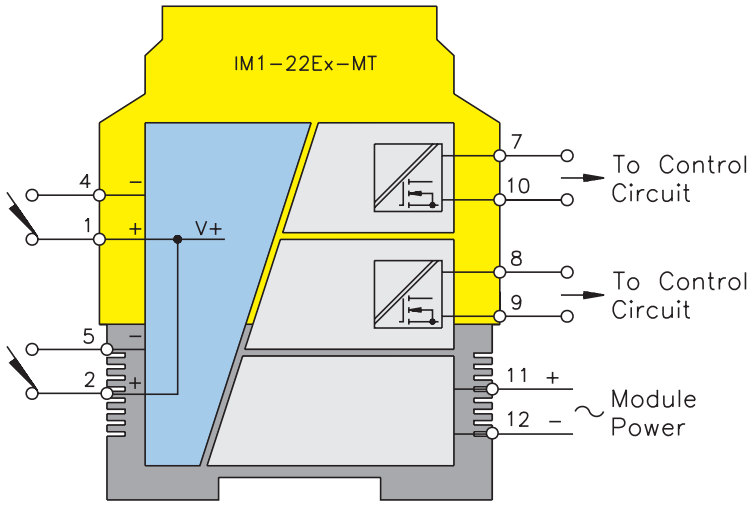
Isolation Switch Relays — IM1-22Ex-MT

Pin #	Terminal Function
1	(+) to Field Device
2	(+) to Field Device
3	No Connection
4	(-) to Field Device
5	(-) to Field Device
6	No Connection
7	Non-Hazardous Area MOSFET #1 D
8	Non-Hazardous Area MOSFET #2 D
9	Non-Hazardous Area MOSFET #2 S
10	Non-Hazardous Area MOSFET #1 S
11	Module Power (+) or AC
12	Module Power (-) or AC





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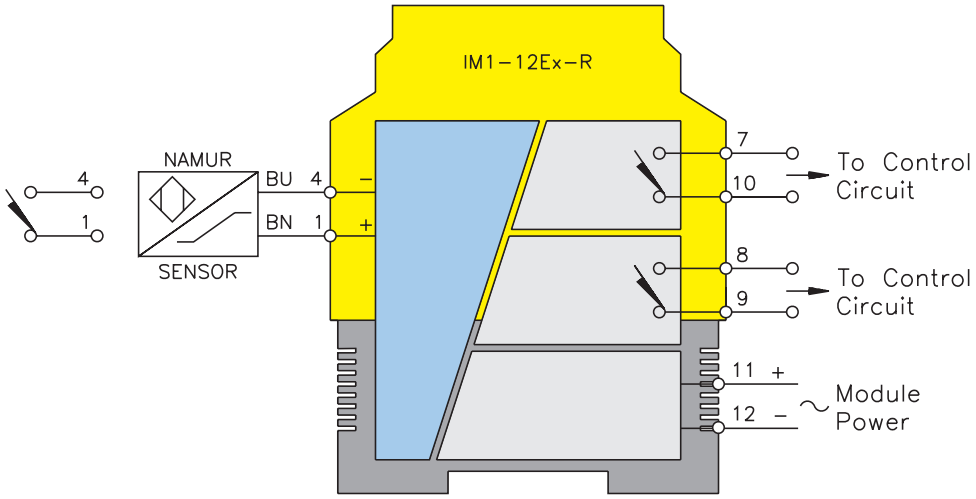
IM1-12Ex-R — Isolation Switch Relays



Functional Description:

This 1 channel intrinsically safe interface device is designed to accommodate 1 switch or NAMUR proximity sensor input from a hazardous area and repeat the change of state of the field circuits to a control system located in a non-hazardous area.

The non-hazardous area outputs are two separate SPST switches reflecting the corresponding input change of state from the field circuit.

Features:

- 1 channel input for NAMUR sensors or mechanical switches
- Monitoring of field wiring for open or short-circuit (if required)
- Configuration switches on top of unit for easy access
- 2 non-hazardous area switch outputs; 1 for alarm function
- Selectable N.O./N.C. outputs

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

Inputs	(8.2 V, 8.2 mA)
Switching Threshold	1.55 mA
Hysteresis	Typical 0.2 mA
Open-circuit Threshold	≤0.1 mA
Short-circuit Threshold	≥6.0 mA

Outputs: Non-Hazardous Area

2 Relays, 1 N.O. Contact Each

Voltage	≥250 VAC/120 VDC
Current	≥2 A per channel
Capacity	≥500 VA /60 W per channel
Switch Frequency	≥10 Hz
Contacts	Silver-Alloy + Au (3 micro μ)

For entity parameters see control drawings on pages B86 - B91.

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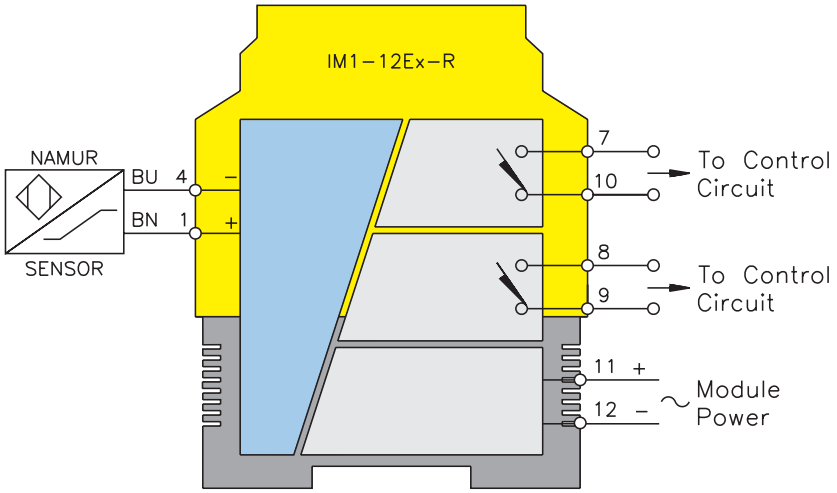
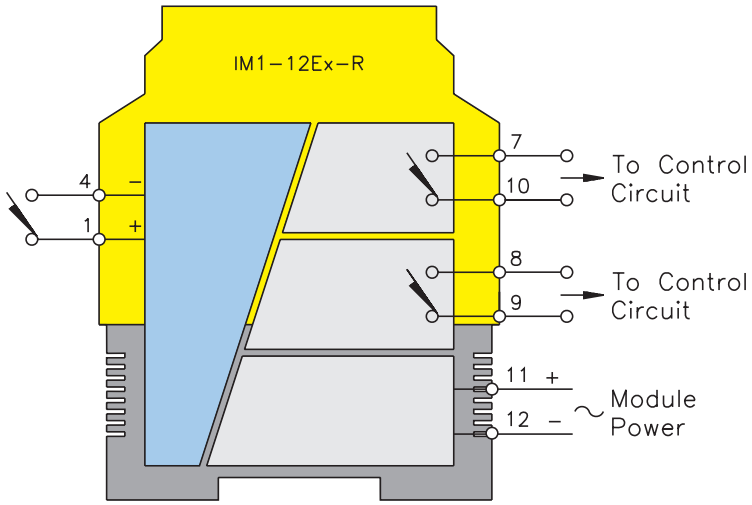
Isolation Switch Relays — IM1-12Ex-R

Pin #	Terminal Function
1	(+) to Field Device
2	No Connection
3	No Connection
4	(-) to Field Device
5	No Connection
6	No Connection
7	Non-Hazardous Area Switch #1
8	Non-Hazardous Area Switch #2
9	Non-Hazardous Area Switch #2
10	Non-Hazardous Area Switch #1
11	Module Power (+) or AC
12	Module Power (-) or AC





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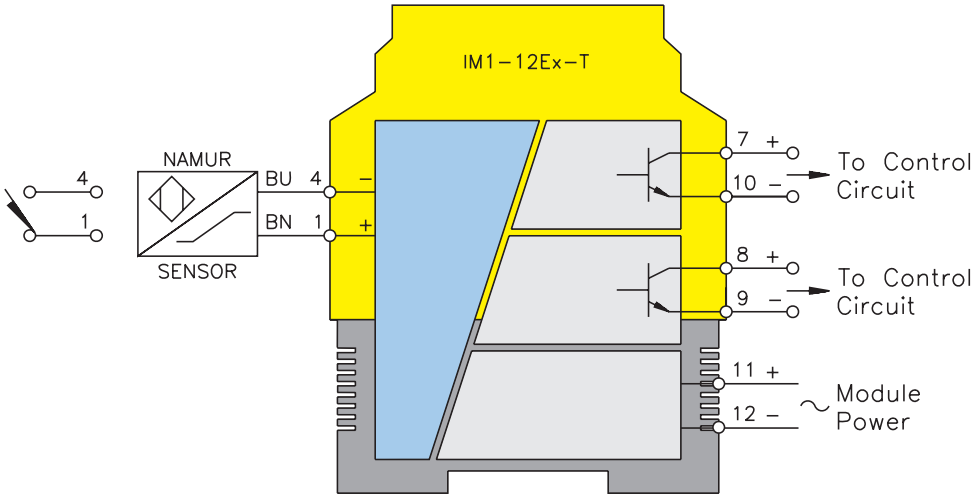
IM1-12Ex-T — Isolation Switch Relays



Functional Description:

This 1 channel intrinsically safe interface device is designed to accommodate 1 switch or NAMUR proximity sensor input from a hazardous area and repeat the change of state of the field circuits to a control system located in a non-hazardous area.

The non-hazardous area outputs are two separate open collector transistors reflecting the corresponding input change of state from the field circuit when properly configured.

Features:

- 1 channel input for NAMUR sensors or mechanical switches
- Monitoring of field wiring for open or short-circuit (if required)
- Configuration switches on top of unit for easy access
- 2 isolated short-circuit protected non-hazardous area open collector transistor outputs; 1 for Alarm function
- Selectable N.O./N.C. outputs

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

Inputs	(8.2 V, 8.2 mA)
Switching Threshold	1.55 mA
Hysteresis	Typical 0.2 mA
Open-circuit Threshold	≤0.1 mA
Short-circuit Threshold	≥6.0 mA

Outputs: Non-Hazardous Area

2 Transistors, Potential Free Short-Circuit Protected

Switching Voltage	≤30 VDC
Switch Current	≤50 mA per channel
Switch Frequency	≤5 Hz
Voltage Drop	≤1.3 V

For entity parameters see control drawings on pages B86 - B91.

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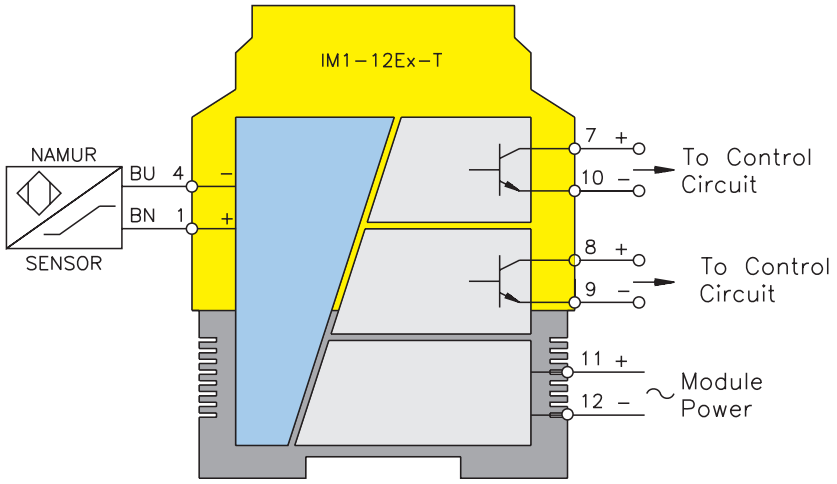
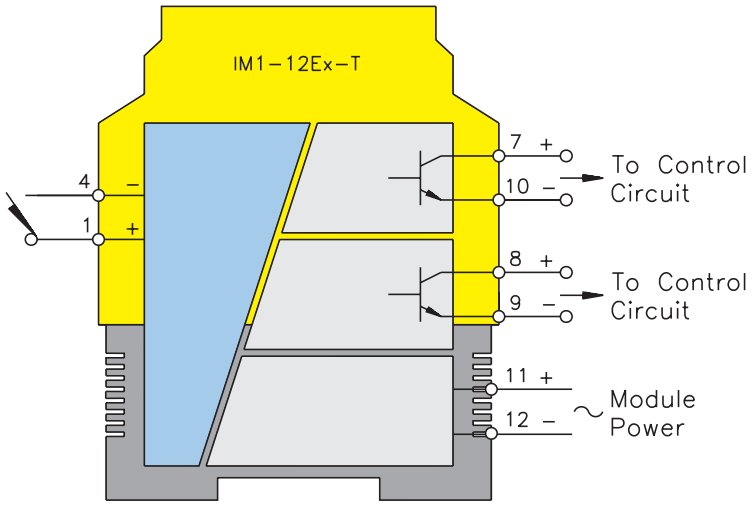
Isolation Switch Relays — IM1-12Ex-T

Pin #	Terminal Function
1	(+) to Field Device
2	No Connection
3	No Connection
4	(-) to Field Device
5	No Connection
6	No Connection
7	Non-Hazardous Area Transistor #1
8	Non-Hazardous Area Transistor #2
9	Non-Hazardous Area Transistor #2
10	Non-Hazardous Area Transistor #1
11	Module Power (+) or AC
12	Module Power (-) or AC





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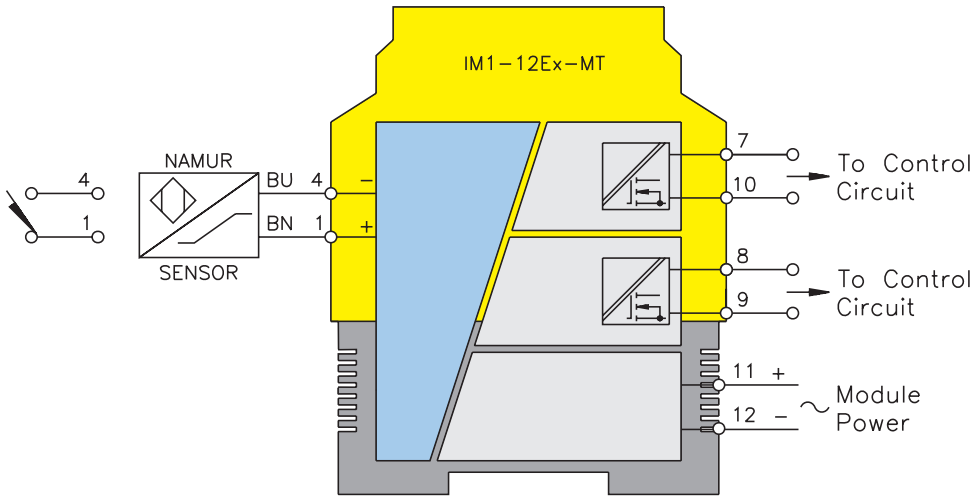
IM1-12Ex-MT — Isolation Switch Relays



Functional Description:

This 1 channel intrinsically safe interface device is designed to accommodate 1 switch or NAMUR proximity sensor input from a hazardous area and repeat the change of state of the field circuits to a control system located in a non-hazardous area.

The non-hazardous area outputs are two separate MOSFET Transistors reflecting the corresponding input change of state from the field circuit when properly configured.

Features:

- 1 channel input for NAMUR sensors or mechanical switches
- Monitoring of field wiring for open or short-circuit (if required)
- Configuration switches on top of unit for easy access
- 2 isolated non-hazardous area unipolar MOSFET outputs allow switching voltages up to 250 VAC at a maximum frequency of 1 kHz
- Selectable N.O./N.C. outputs

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

Inputs	(8.2 V, 8.2 mA)
Switching Threshold	1.55 mA
Hysteresis	Typical 0.2 mA
Open-circuit Threshold	≤0.1 mA
Short-circuit Threshold	≥6.0 mA

Outputs: Non-Hazardous Area

2 MOSFET, Potential Free

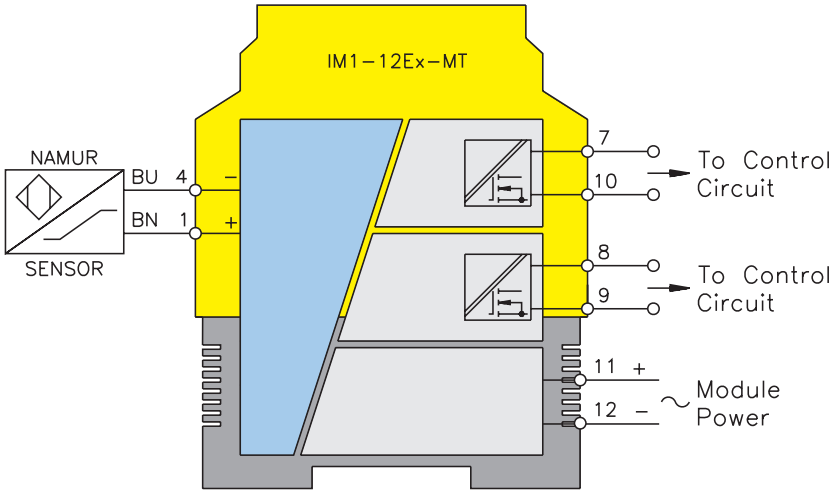
Switch Current	≤90 mA per channel
Switch Capacity	22.5 VA/10.8 W per channel
Switch Capacity	≤1 kHz

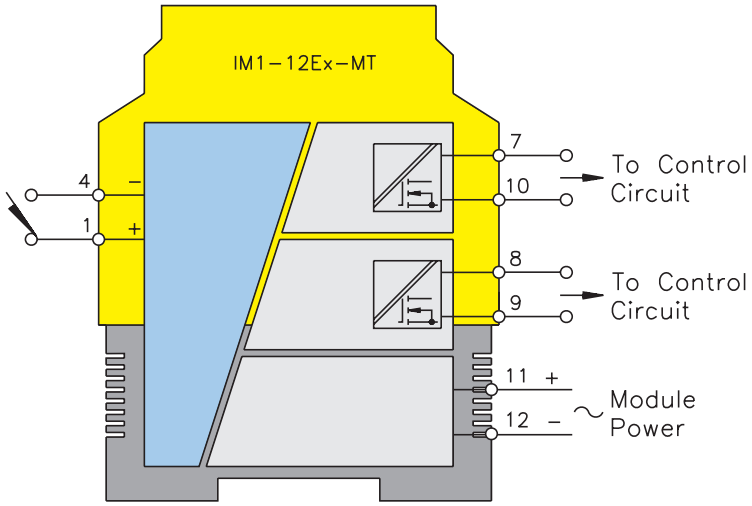
For entity parameters see control drawings on pages B86 - B91.

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Isolation Switch Relays — IM1-12Ex-MT

Pin #	Terminal Function
1	(+) to Field Device
2	No Connection
3	No Connection
4	(-) to Field Device
5	No Connection
6	No Connection
7	Non-Hazardous Area MOSFET #1 D
8	Non-Hazardous Area MOSFET #2 D Alarm
9	Non-Hazardous Area MOSFET #2 S Alarm
10	Non-Hazardous Area MOSFET #1 S
11	Module Power (+) or AC
12	Module Power (-) or AC





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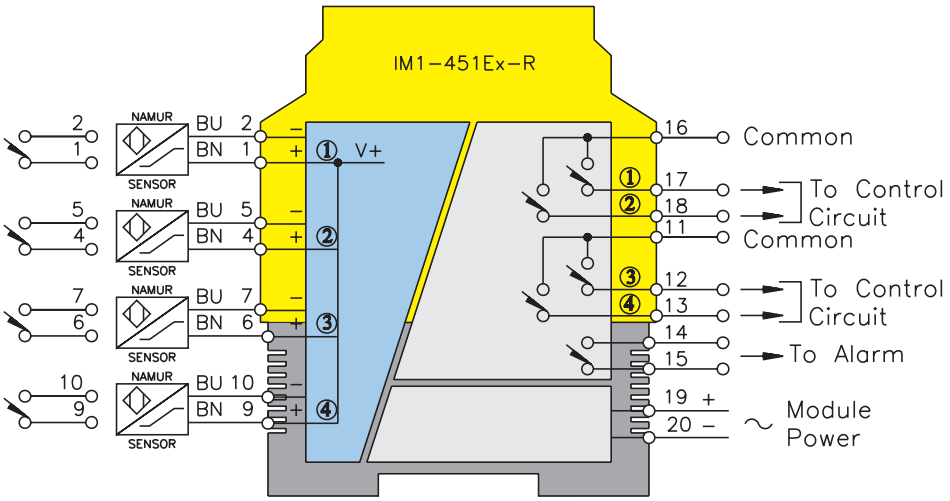
IM1-451Ex-R — Isolation Switch Relays



Functional Description:

This 4 channel intrinsically safe interface device is designed to accommodate four switches or NAMUR proximity sensor inputs or any combination of the two from a hazardous area and repeat the change of state of the field circuits to a control system located in a non-hazardous area.

The non-hazardous area outputs are four separate SPST switches reflecting the corresponding change of state from each individual input of the field circuit, to its appropriate corresponding output.

A common alarm switch for all four channels is also incorporated.

Features:

- 4 channel input for NAMUR sensors or mechanical switches
- Monitoring of field wiring for open or short-circuit (if required)
- Configuration switches on top of unit for easy access
- 4 SPST non-hazardous area outputs; 1 for each channel and 1 common alarm
- Selectable N.O./N.C. outputs

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

Inputs	(8.2 V, 8.2 mA)
Switching Threshold	1.55 mA
Hysteresis	Typical 0.2 mA
Open-circuit Threshold	≤0.1 mA
Short-circuit Threshold	≥6.0 mA

Outputs: Non-Hazardous Area

5 Relays, 1 N.O. Contact Each

Switching Voltage	≤250 VAC/120 VDC
Switch Current	≤3 A per channel
Switch Capacity	≤750 VAC per channel
Switch Frequency	≤10 kHz
Contacts	Silver-Alloy + Au (3 micro μ)

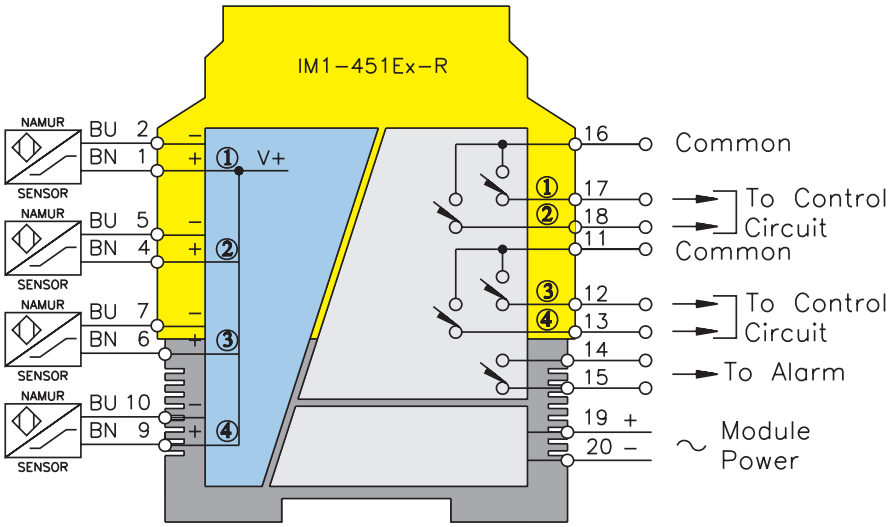
For entity parameters see control drawings on pages B86 - B91.

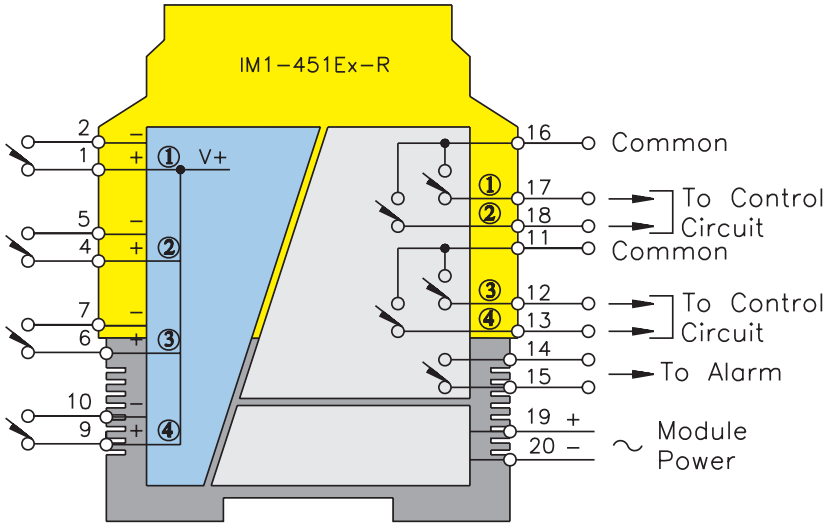
Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Isolation Switch Relays — IM1-451Ex-R

Pin #	Terminal Function
1	(+) to Field Device #1
2	(-) to Field Device #1
3	No Connection
4	(+) to Field Device #2
5	(-) to Field Device #2
6	(+) to Field Device #3
7	(-) to Field Device #3
8	No Connection
9	(+) to Field Device #4
10	(-) to Field Device #4

Pin #	Terminal Function
11	Non-Hazardous Area Sw 3 & 4 common
12	Non-Hazardous Area Switch #3 (-)
13	Non-Hazardous Area Switch #4 (-)
14	Non-Hazardous Area Switch Alarm
15	Non-Hazardous Area Switch Alarm
16	Non-Hazardous Area Sw 1 & 2 common
17	Non-Hazardous Area Switch #1 (-)
18	Non-Hazardous Area Switch #2 (-)
19	Module Power (+) or AC
20	Module Power (-) or AC





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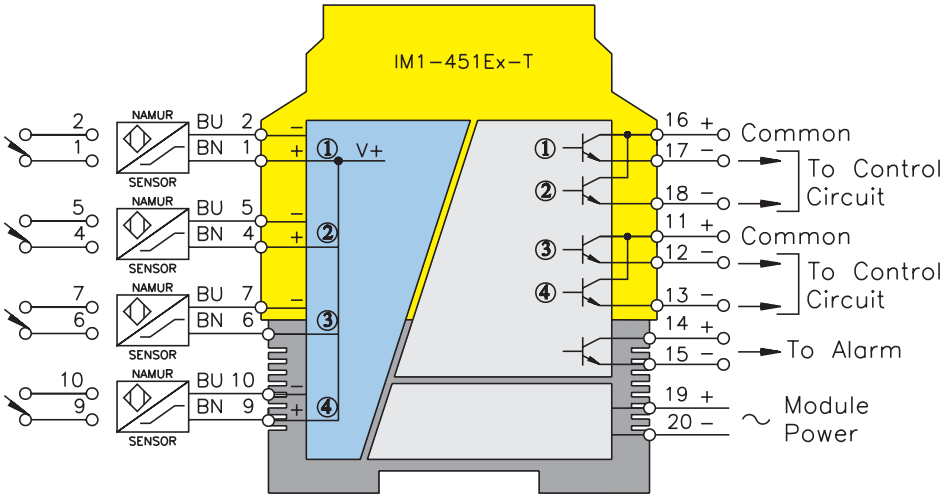
IM1-451Ex-T — Isolation Switch Relays



Functional Description:

This 4 channel intrinsically safe interface device is designed to accommodate four switches or NAMUR proximity sensor inputs or any combination of the two from a hazardous area and repeat the change of state of the field circuits to a control system located in a non-hazardous area.

The non-hazardous area outputs are four open collector transistors reflecting the corresponding change of state from each individual input of the field circuit, to its appropriate corresponding output when appropriately configured.

A common alarm transistor for all four channels is also incorporated.

Features:

- 4 channel input for NAMUR sensors or mechanical switches
- Monitoring of field wiring for open or short-circuit (if required)
- Configuration switches on top of unit for easy access
- 4 short-circuit protected open collector transistor non-hazardous area outputs; 1 for each channel and 1 alarm
- Selectable N.O./N.C. outputs

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

Inputs	(8.2 V, 8.2 mA)
Switching Threshold	1.55 mA
Hysteresis	Typical 0.2 mA
Open-circuit Threshold	≤0.1 mA
Short-circuit Threshold	≥6.0 mA

Outputs: Non-Hazardous Area

5 Transistors, Potential Free Short-Circuit Protected

Switching Voltage	≤30 VDC
Switch Current	≤50 mA per channel
Switch Frequency	≤3 kHz
Voltage Drop	≤2.5 V

For entity parameters see control drawings on pages B86 - B91.

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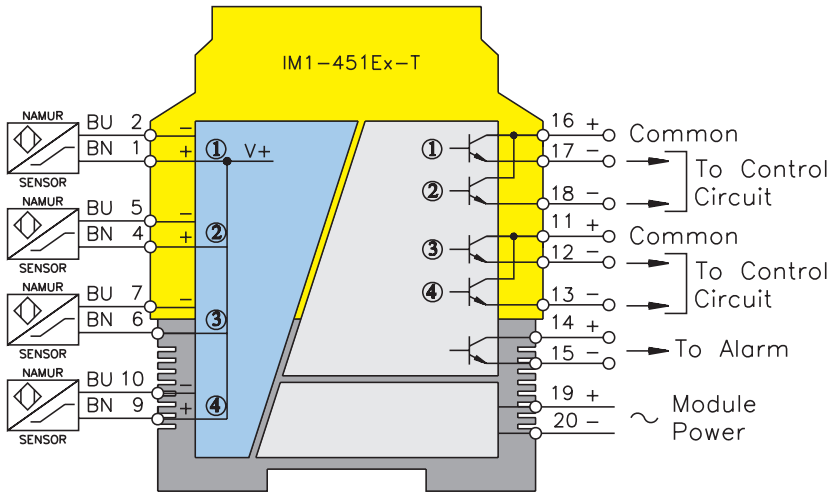
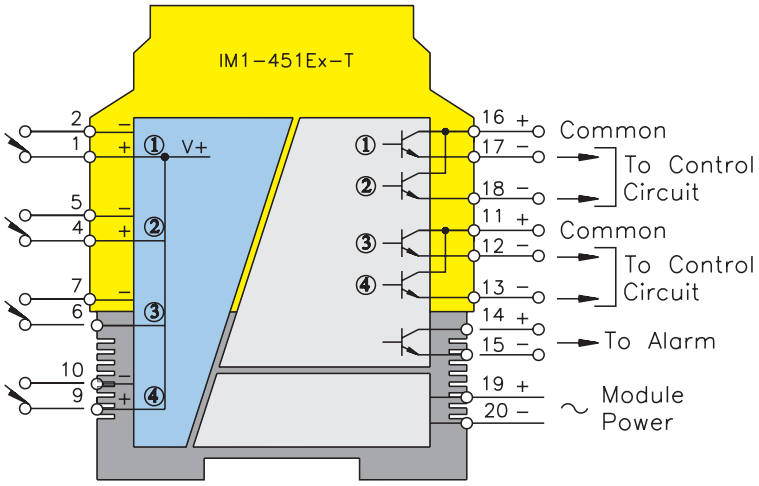
Isolation Switch Relays — IM1-451Ex-T

Pin #	Terminal Function
1	(+) to Field Device #1
2	(-) to Field Device #1
3	No Connection
4	(+) to Field Device #2
5	(-) to Field Device #2
6	(+) to Field Device #3
7	(-) to Field Device #3
8	No Connection
9	(+) to Field Device #4
10	(-) to Field Device #4

Pin #	Terminal Function
11	(+) Non-Hazardous Area Trans 3 & 4
12	Non-Hazardous Area Transistor #3 (-)
13	Non-Hazardous Area Transistor #4 (-)
14	Non-Hazardous Area Trans Alarm (+)
15	Non-Hazardous Area Trans Alarm (-)
16	(+) Non-Hazardous Area Trans 1 & 2
17	Non-Hazardous Area Transistor #1 (-)
18	Non-Hazardous Area Transistor #2 (-)
19	Module Power (+) or AC
20	Module Power (-) or AC





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Analog Data Transmitters

Analog data transmitters are a selection of devices that allow the transmission of hazardous area analog signals to a non-hazardous area as a direct one-to-one, or with a slight variation that is sometimes desired for specific applications.

The Analog Isolating Transmitters can transfer 4-20 mA, 0-20 mA, 0-10 V or 2-10 V signals from a hazardous area and repeat the signal in the non-hazardous area either as a current or a voltage signal; 2 current signals or a 2 channel one-to-one combination, depending on the module.

These devices offer a much requested and much desired mix of inputs and outputs that are sometimes difficult to achieve with conventional intrinsically safe interface devices. Flexibility is a key feature of these devices, with the option to convert from voltage to current or from current to voltage where required. The multi-channel device also provides a compact high-density solution for applications where space is an issue.

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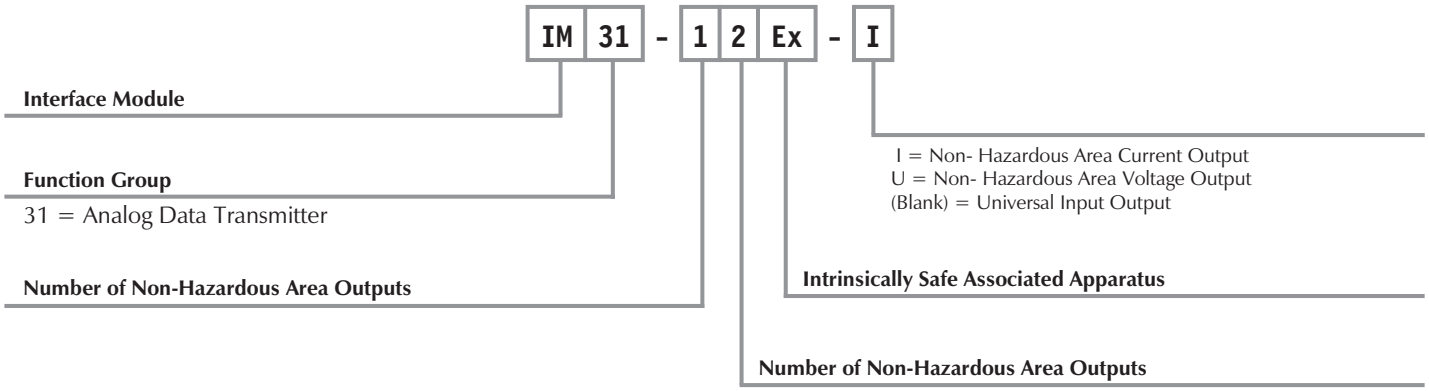
Analog Data Transmitters — Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.



Extension Examples:

IM31-12Ex-I
Interface Module
Analog Data Transmitter
Single Channel Input
2 Non-Hazardous Area Current Outputs
Intrinsically Safe Associated Apparatus
Non-Hazardous Area Current Output

IM31-11Ex-U
Interface Module
Analog Data Transmitter
Single Channel Input
1 Non-Hazardous Area Current Outputs
Intrinsically Safe Associated Apparatus
Non-Hazardous Area Voltage Output

IM31-22Ex-U
Interface Module
Analog Data Transmitter
2 Channel Input
2 Non-Hazardous Area Current Outputs
Intrinsically Safe Associated Apparatus
Non-Hazardous Area Current Output

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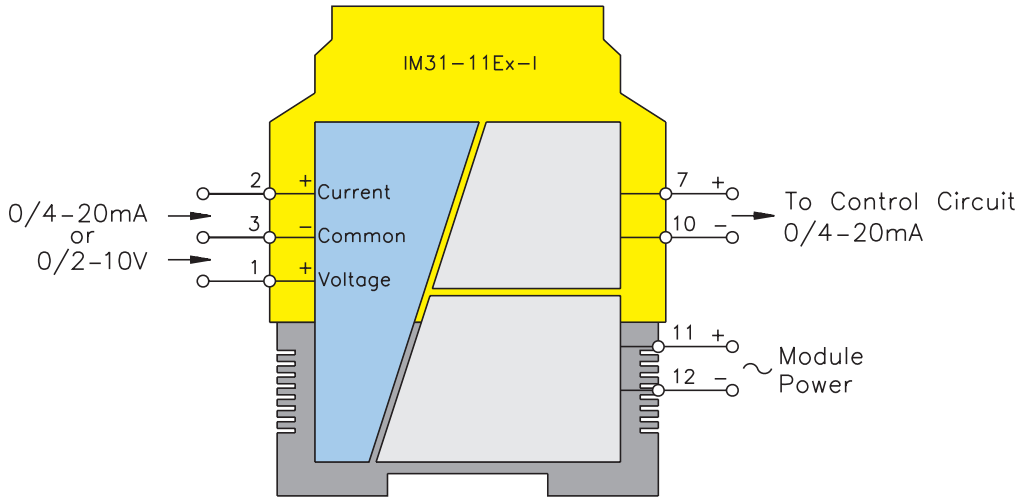
IM31-11Ex-I — Analog Data Transmitters



Functional Description:

This 1 channel intrinsically safe interface will receive either a 0/4-20 mA or 0/2-10 V signal from a hazardous area and repeat the signal in the non-hazardous area as either a 0-20 mA or 4-20 mA signal reflecting the hazardous area input. It will drive a non-hazardous area load of up to 500 Ω.

In switch position "1:1" the hazardous area inputs are reflected one-to-one in the non-hazardous area. In position "LZ" a dead-zero signal (0-10 V or 0-20 mA) input is reflected as a live-zero signal (4-20 mA) output.

Features:

- 1 channel analog data transfer/converter
- Choice of input signal voltage or current
- Choice of output signal voltage or current
- Short-circuit protected output

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

Inputs . . . . . 0-10 V (≤20 V)
Input Resistance . . . . . 50 K Ω
Current . . . . . 0-20 mA (≤40 mA)
Input Resistance . . . . . 50 Ω

Outputs: Non-Hazardous Area

0/4-20 mA

Load . . . . . ≤500 Ω

For entity parameters see control drawings on pages B86 - B91.

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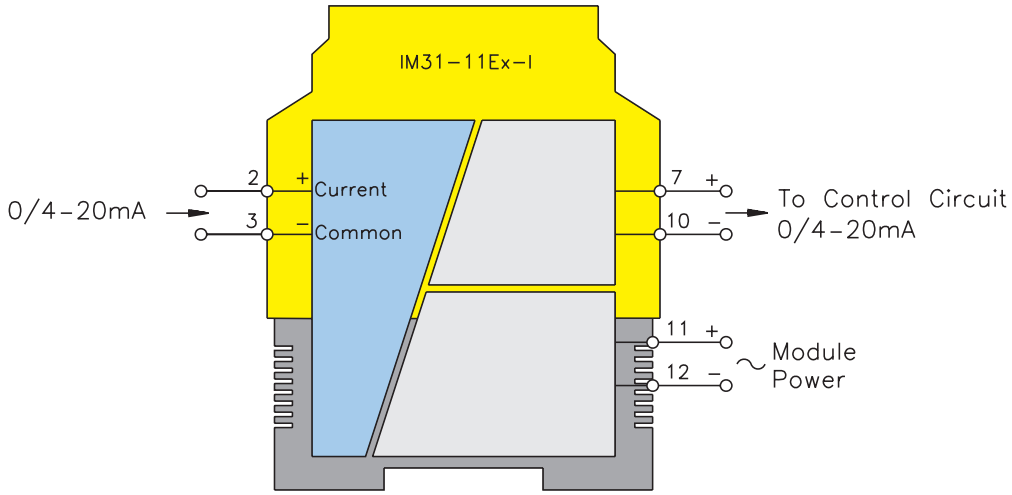
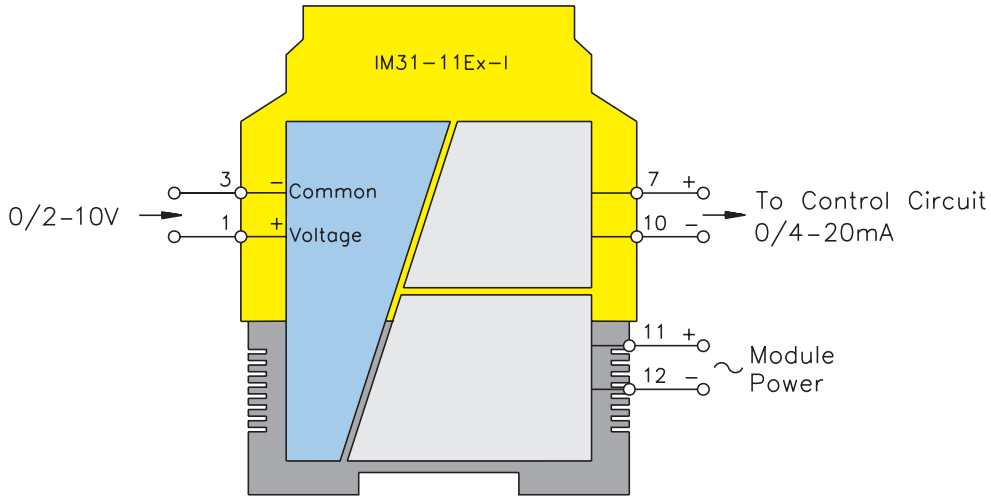
Analog Data Transmitters — IM31-11Ex-I

Pin #	Terminal Function
1	(+) 0/2-10 V Field Input
2	(+) 0/4-20 mA Field Input
3	(-) 0/2-10 V Field Input
3	(-) 0/4-20 mA Field Input
4	No Connection
5	No Connection
6	No Connection
7	(+) 0/4-20 mA Non-Hazardous Area Output
8	No Connection
9	No Connection
10	(-) 0/4-20 mA Non-Hazardous Area Output
11	Module Power (+) or AC
12	Module Power (-) or AC





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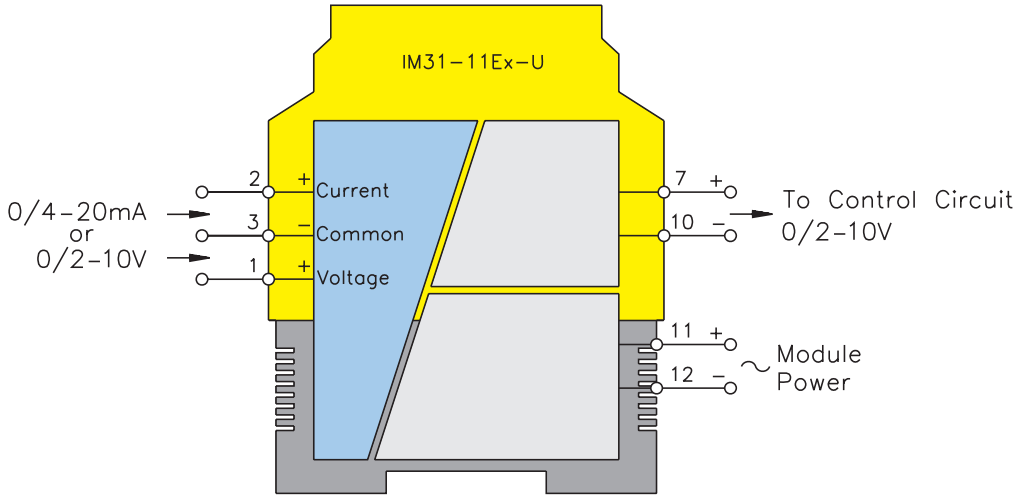
IM31-11Ex-U — Analog Data Transmitters



Functional Description:

This 1 channel intrinsically safe interface will receive either a 0/4-20 mA or 0/2-10 V signal from a hazardous area and repeat the signal in the non-hazardous area as a 0-10 V signal reflecting the hazardous area input. It will drive a non-hazardous area load of up to 500 Ω.

In switch position "1:1" the hazardous area inputs are reflected one-to-one in the non-hazardous area. In position "LZ" a dead-zero signal (0/2-10 V or 0/4-20 mA) input is reflected as a live-zero signal (0/2-10 V) output.

Features:

- 1 channel analog data transfer/converter
- Choice of input signal voltage or current
- 0/2-10 V output signal
- Short-circuit protected output

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

Inputs	0/2-10 V (≤20 V)
Input Resistance	50 K Ω
Current	0-20 mA (≤40 mA)
Input Resistance	50 Ω

Outputs: Non-Hazardous Area

0/2-10 V

Load	≤500 Ω

For entity parameters see control drawings on pages B86 - B91.

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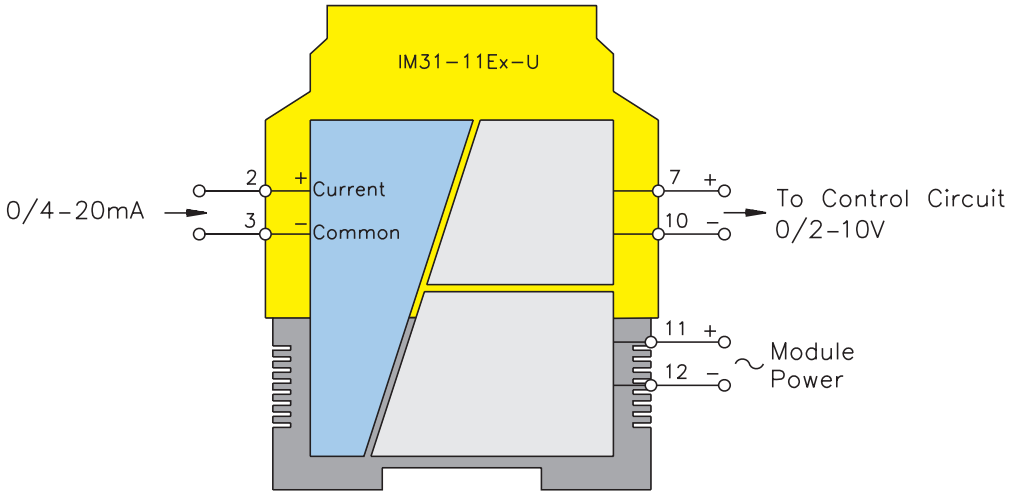
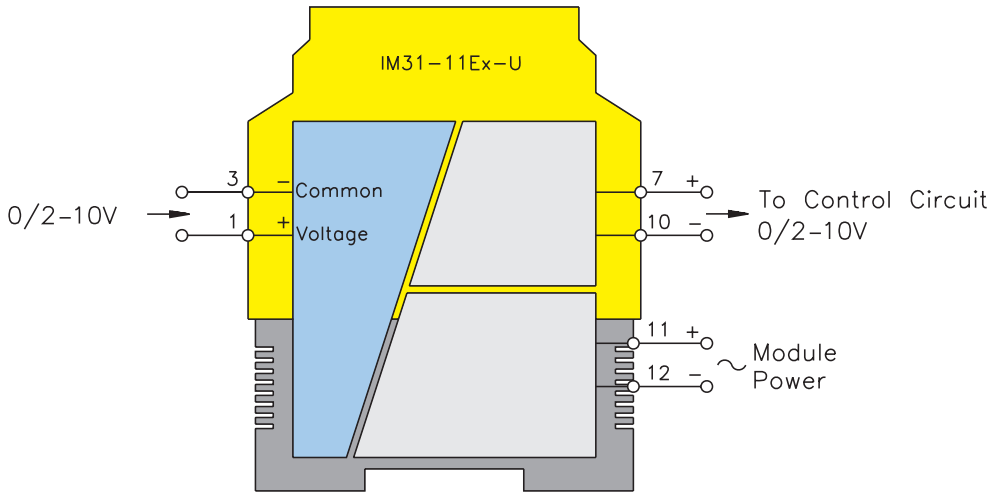
Analog Data Transmitters IM31-11Ex-U

Pin #	Terminal Function
1	(+) 0/2-10 V Field Input
2	(+) 0/4-20 mA Field Input
3	(-) 0/2-10 V Field Input
3	(-) 0/4-20 mA Field Input
4	No Connection
5	No Connection
6	No Connection
7	(+) 0/2-10 V Non-Hazardous Area Output
8	No Connection
9	No Connection
10	(-) 0/2-10 V Non-Hazardous Area Output
11	Module Power (+) or AC
12	Module Power (-) or AC





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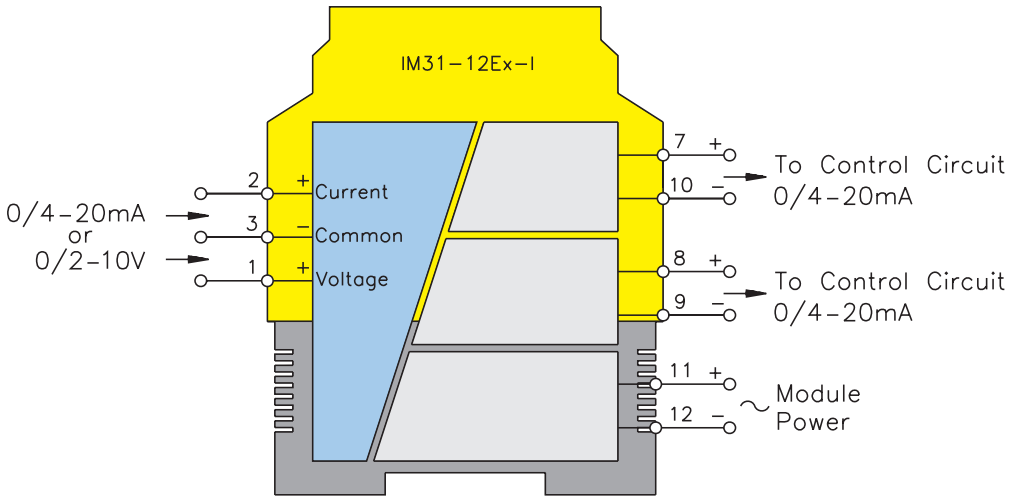
IM31-12Ex-I — Analog Data Transmitters



Functional Description:

This 1 channel intrinsically safe interface will receive either a 0/4-20 mA or 0/2-10 V signal from a hazardous area and repeat the signal in the non-hazardous area as 2 separate 0-20 mA or 4-20 mA signals reflecting the hazardous area input. It will drive 2 separate non-hazardous area loads of up to 500 Ω each.

In switch position "1:1" the hazardous area inputs are reflected one-to-one in the non-hazardous area. In position "LZ" a dead-zero signal (0-10 V or 0-20 mA) input is reflected as 2 separate live-zero signal (4-20 mA) outputs.

Features:

- 1 channel analog data transfer/converter
- Choice of input signal voltage or current
- Two, 0/4-20 mA current output signals
- Short-circuit protected outputs

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

Inputs . . . . . 0-10 V (≤20 V)
Input Resistance . . . . . 50 K Ω
Current . . . . . 0-20 mA (≤40 mA)
Input Resistance . . . . . 50 Ω

Outputs: Non-Hazardous Area

0/4-20 mA

Load . . . . . ≤500 Ω

For entity parameters see control drawings on pages B86 - B91.

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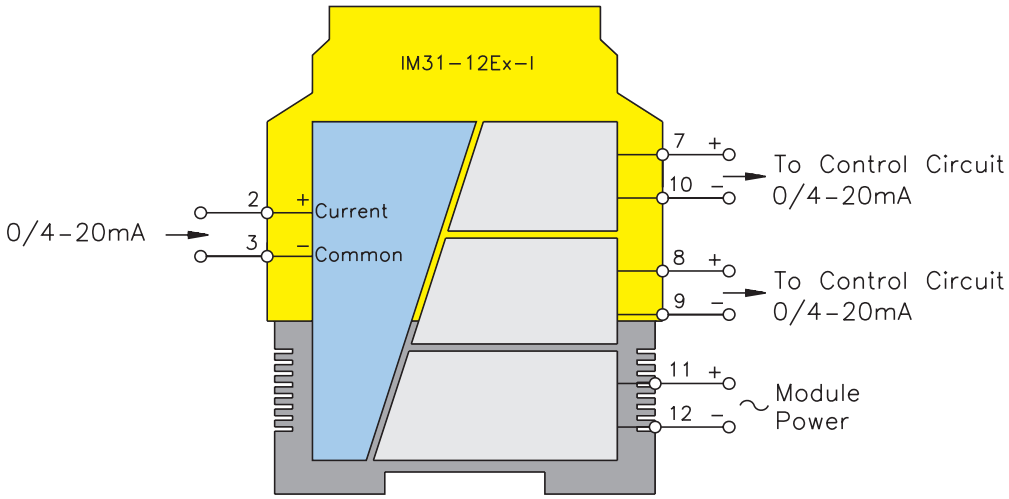
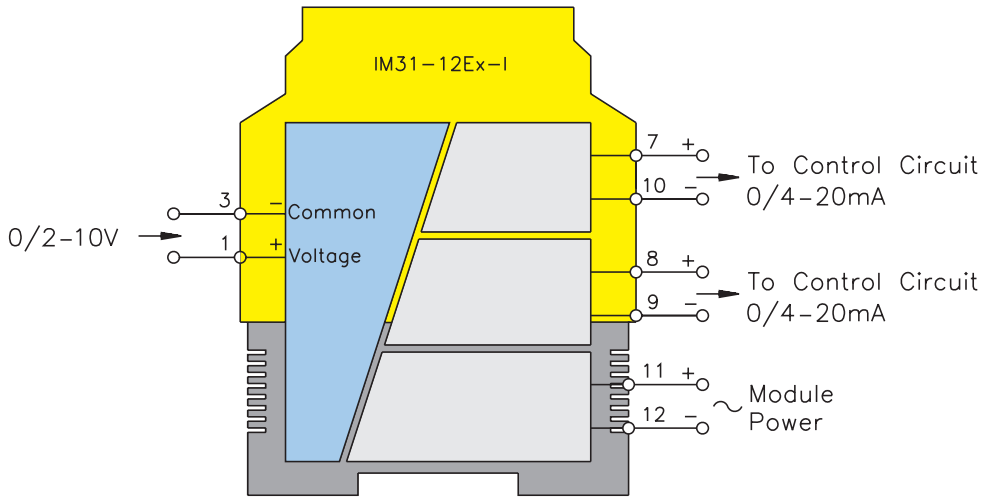
Analog Data Transmitters — IM31-12Ex-I

Pin #	Terminal Function
1	(+) 0/2-10 V Field Input
2	(+) 0/4-20 mA Field Input
3	(-) 0/2-10 V Field Input
3	(-) 0/4-20 mA Field Input
4	No Connection
5	No Connection
6	No Connection
7	(+) 0/4-20 mA Non-Hazardous Area Output #1
8	(+) 0/4-20 mA Non-Hazardous Area Output #2
9	(-) 0/4-20 mA Non-Hazardous Area Output #2
10	(-) 0/4-20 mA Non-Hazardous Area Output #1
11	Module Power (+) or AC
12	Module Power (-) or AC





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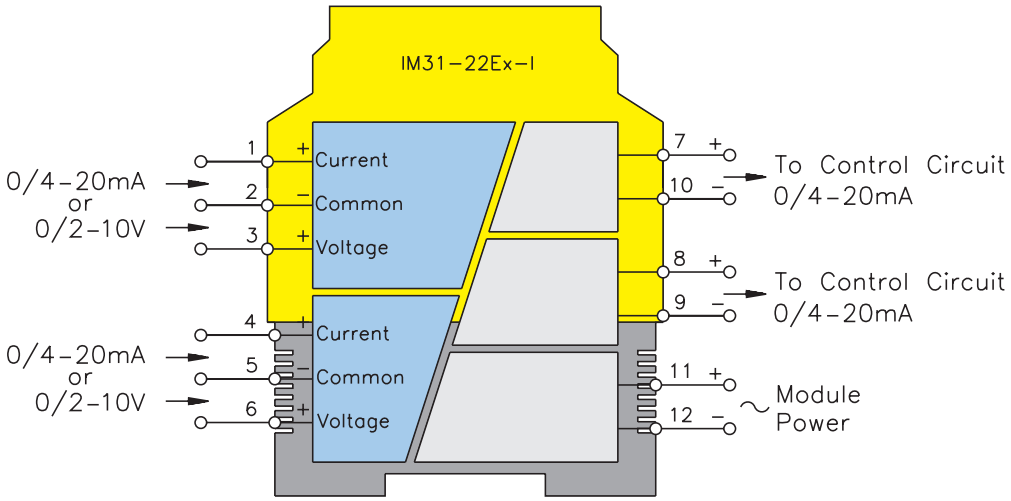
IM31-22Ex-I — Analog Data Transmitters



Functional Description:

This 2 channel intrinsically safe interface will receive either a 0/4-20 mA or 0/2-10 V signal from 2 separate hazardous area signals and repeat the signal in the non-hazardous area as either a 0-20 mA or 4-20 mA signal reflecting its corresponding hazardous area input. It will drive a non-hazardous area load of up to 500 Ω for each for each channel.

In switch position "1:1" the hazardous area inputs are reflected one-to-one in the non-hazardous area. In position "LZ" a dead-zero signal (0-10 V or 0-20 mA) input is reflected as a live-zero signal (4-20 mA) output, 1 for each separate channel.

Features:

- 2 channel analog data transfer/converter
- Choice of input signals voltage, current or combination
- 0/4-20 mA outputs, 1 per input
- Short-circuit protected outputs

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

Inputs	0-10 V (≤20 V)
Input Resistance	50 K Ω
Current	0-20 mA (≤40 mA)
Input Resistance	50 Ω

Outputs: Non-Hazardous Area

0/4-20 mA

Load	≤500 Ω

For entity parameters see control drawings on pages B86 - B91.

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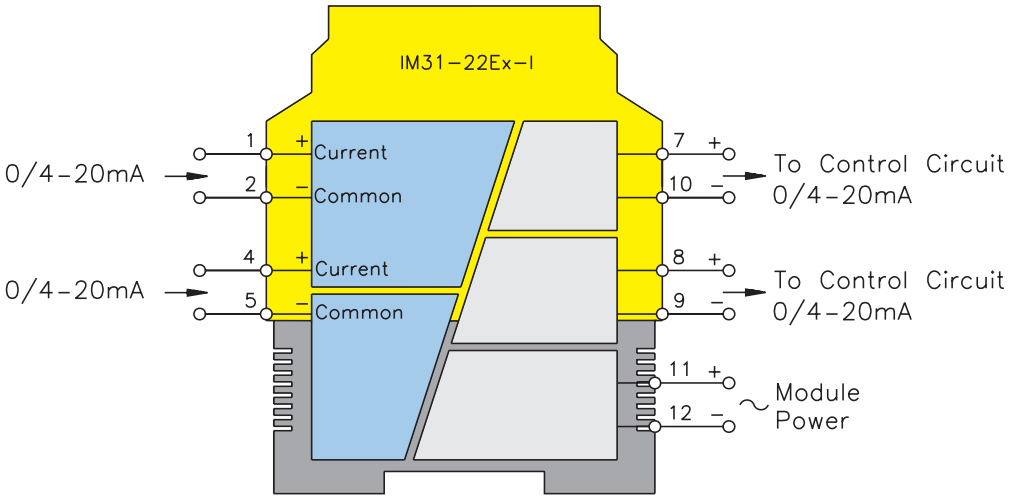
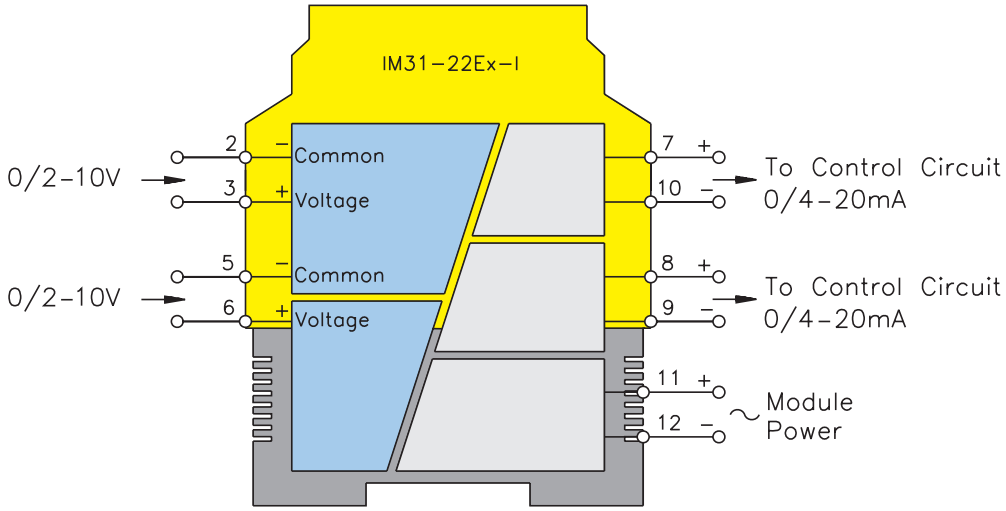
Analog Data Transmitters IM31-22Ex-I

Pin #	Terminal Function
1	(+) 0/2-10 V Field Input
2	(-) 0/4-20 mA Field Input
2	(-) 0/2-10 V Field Input
3	(+) 0/2-10 V Field Input
4	(+) 0/4-20 mA Field Input
5	(-) 0/4-20 mA Field Input
5	(-) 0/2-10 V Field Input
6	(+) 0/2-10 V Field Input
7	(-) 0/4-20 mA Non-Hazardous Area Output
8	(+) 0/4-20 mA Non-Hazardous Area Output
9	(-) 0/4-20 mA Non-Hazardous Area Output
10	(+) 0/4-20 mA Non-Hazardous Area Output
11	Module Power (+) or AC
12	Module Power (-) or AC





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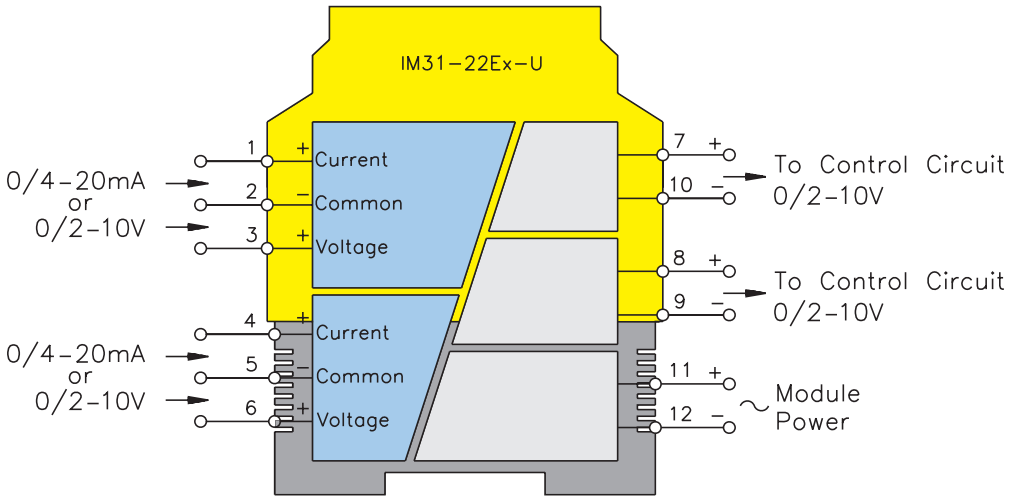
IM31-22Ex-U — Analog Data Transmitters



Functional Description:

This 2 channel intrinsically safe interface will receive either a 0/4-20 mA or 0/2-10 V signal from 2 separate hazardous area signals and repeat the signal in the non-hazardous area, as either a 0-10 V or 2-10 V signal reflecting its corresponding hazardous area input. It will drive a non-hazardous area load of up to 500 Ω for each for each channel.

In switch position "1:1" the hazardous area inputs are reflected one-to-one in the non-hazardous area. In position "LZ" a dead-zero signal (0-10 V or 0-20 mA) input is reflected as a live-zero signal (2-10 V) output, 1 for each separate channel.

Features:

- 2 channel analog data transfer/converter
- Choice of input signals voltage, current or combination
- 0/2-10 V outputs, 1 per input
- Short-circuit protected outputs

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

Inputs . . . . . 0/2-10 V (≤20 V)
Input Resistance . . . . . 50 K Ω
Current . . . . . 0-20 mA (≤40 mA)
Input Resistance . . . . . 50 Ω

Outputs: Non-Hazardous Area

0/2-10 V

Load . . . . . ≤500 Ω

For entity parameters see control drawings on pages B86 - B91.

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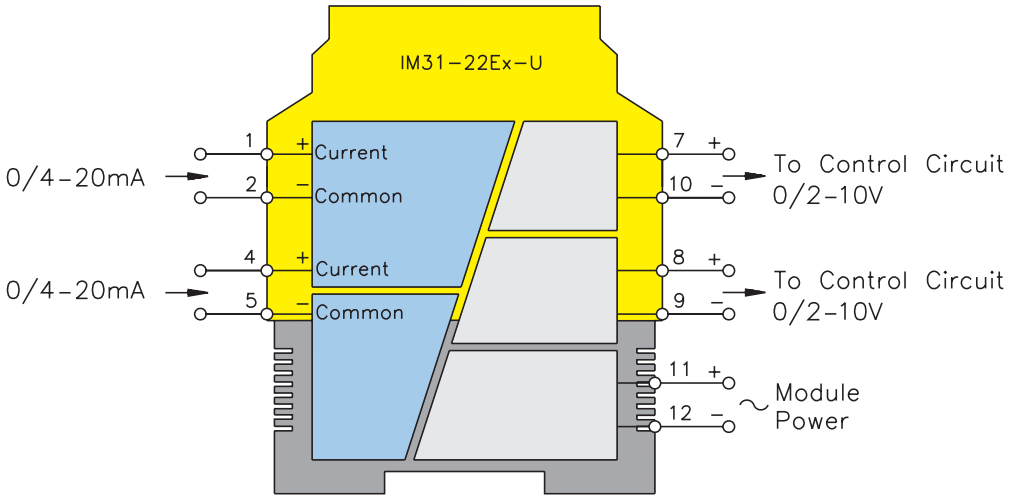
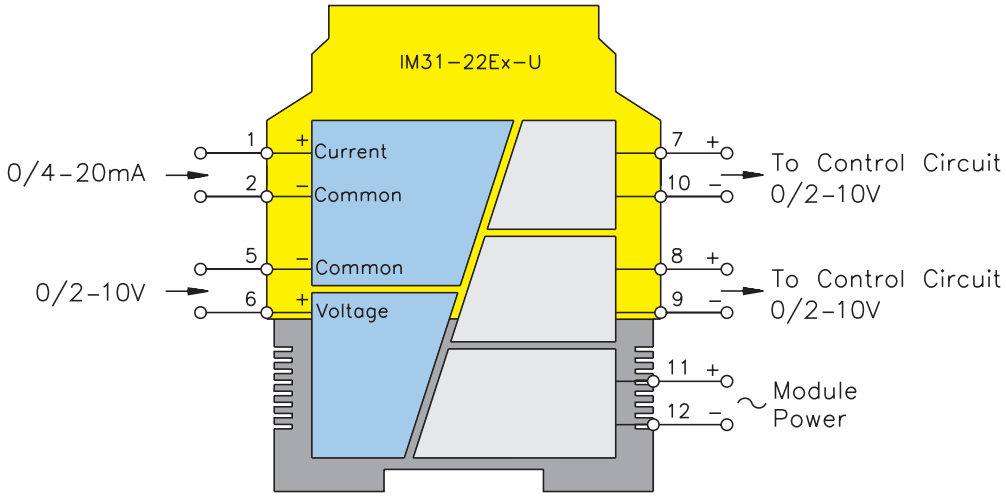
Analog Data Transmitters IM31-22Ex-U

Pin #	Terminal Function
1	(+) 0/2-10 V Field Input
2	(-) 0/4-20 mA Field Input
2	(-) 0/2-10 V Field Input
3	(+) 0/2-10 V Field Input
4	(+) 0/4-20 mA Field Input
5	(-) 0/4-20 mA Field Input
5	(-) 0/2-10 V Field Input
6	(+) 0/2-10 V Field Input
7	(-) 0/2-10 V Non-Hazardous Area Output
8	(+) 0/2-10 V Non-Hazardous Area Output
9	(-) 0/2-10 V Non-Hazardous Area Output
10	(+) 0/2-10 V Non-Hazardous Area Output
11	Module Power (+) or AC
12	Module Power (-) or AC





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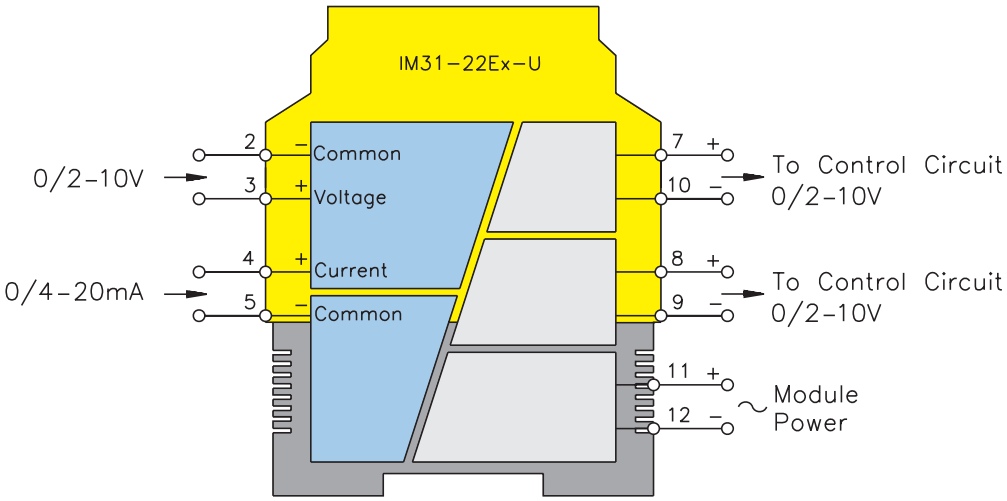
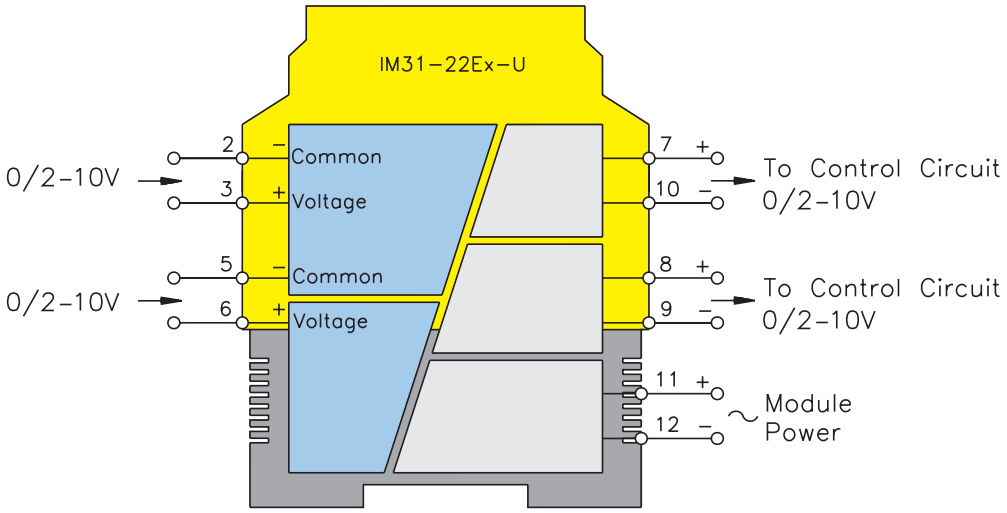
IM31-22Ex-U — Analog Data Transmitters

Pin #	Terminal Function
1	(+) 0/2-10 V Field Input
2	(-) 0/4-20 mA Field Input
2	(-) 0/2-10 V Field Input
3	(+) 0/2-10 V Field Input
4	(+) 0/4-20 mA Field Input
5	(-) 0/4-20 mA Field Input
5	(-) 0/2-10 V Field Input
6	(+) 0/2-10 V Field Input
7	(-) 0/2-10 V Non-Hazardous Area Output
8	(+) 0/2-10 V Non-Hazardous Area Output
9	(-) 0/2-10 V Non-Hazardous Area Output
10	(+) 0/2-10 V Non-Hazardous Area Output
11	Module Power (+) or AC
12	Module Power (-) or AC





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Analog Input Repeaters/Supplies

The analog input repeaters/supplies interfaces in this section are designed to work with the vast majority of analog input field devices. Field devices can range from a simple 2-wire 4-20 mA transmitter to a 3-wire HART smart device requiring the interface to provide operating power and a bi-directional path for the digital HART information along with the 4-20 mA control signal. The analog input units will also accept a source signal from a separately powered field device, or other source generated by an "IS" device in a hazardous area. The unit can also be used to receive a source "IS" signal from a 0/4-20 mA driver with "IS" outputs in another non-hazardous area. The "IS" driver/"IS" receiver combination render the cable connections intrinsically safe thus allowing the driver/reciever cable to be used with other "IS" signals in multi-core cables or in an "IS" cable tray.

The analog input units versatility allows easy selection for most transmitter applications, thus reducing stock and inventory further simplifying the selection process. The control system can also be configured to provide alarm functions for certain states indicating the short or open-circuit conditions for the units.

Ease of installation is inherent when applying these devices.

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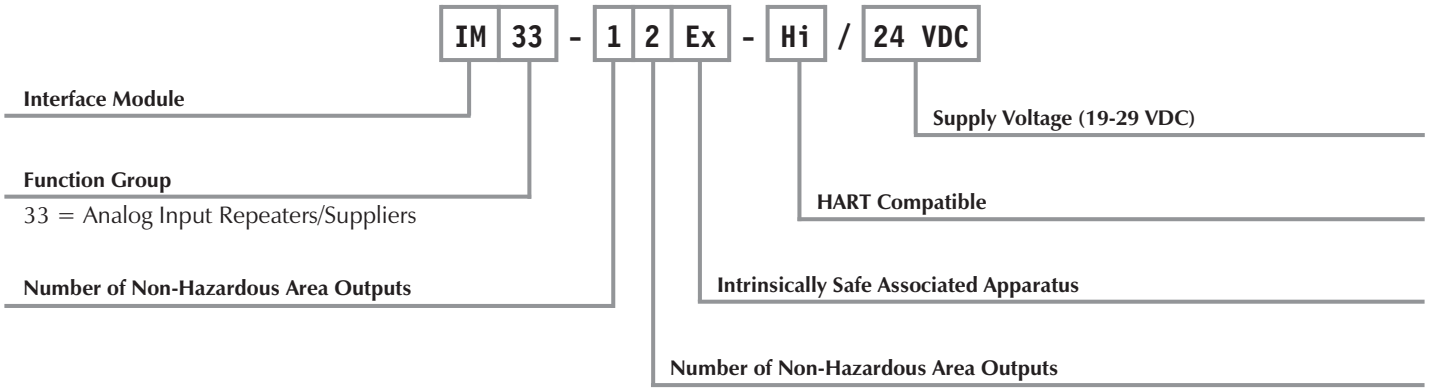
Analog Input Repeaters/Supplies — Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.



Extension Examples:

IM33-12Ex-Hi/24 VDC
Interface Module
Analog Input Repeaters/Supplies
Single Channel Input
Two Non-Hazardous Area Current Outputs
Intrinsically Safe Associated Apparatus
HART Compatible
24 VDC Supply Voltage

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IM33-11Ex-Hi/24 VDC — Analog Input Repeaters/Supplies

Pin #	Terminal Function
1	(+) 2-wire or 3-wire Field Power
2	(+) 2-wire or 3-wire Field Power
3	(-) Field Power for 2,3 Wire Device
4	N/C
5	N/C
6	N/C
7	(+) 4/20 mA Non-Hazardous Area Output
8	N/C
9	N/C
10	(-) 4/20 mA Non-Hazardous Area Output
11	Module Power (+) or AC
12	Module Power (-) or AC

Functional Description:

This 1 channel intrinsically safe interface will power a 2 or 3-wire HART transmitter or a separately powered field device. It will retransmit the 0-20 mA or 4-20 mA signal from a hazardous area, and repeat the signal in the non-hazardous area as a 0-20 mA or 4-20 mA signal reflecting the hazardous area input. The device will also accept a source 0-20 mA or 4-20 mA signal from a separately powered field device and repeat this signal in the non-hazardous area. It will drive a non-hazardous area load of up to 500 Ω.

Due to the "1:1" transmission characteristic, open circuit or short circuit conditions can be indicated by a 0 mA or 22.5 mA reading indicating the condition for alarm implementation.

HART or conventional transmitters can be accommodated by this device with bi-directional communications of digital information with HART field devices.

Features:

- 1 channel HART or "IS" compatible Analog Input
- 2, 3 or 4-wire configurations for sinking or sourcing field devices
- Constant field voltage
- Short-circuit protected field circuit
- Over/under current indication of 0 or 22.5 mA
- SIL 2 rated

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (19-29 VDC)

Input Resistance . . . . . 250 Ω

Operating Characteristics:
Voltage. . . . . 17 V @ 20 mA
Current . . . . . 0-22 mA
Short-circuit Current (short-term) 60 mA (for 50 ms)

Outputs: Non-Hazardous Area

0/4-20 mA

Load . . . . . ≤500 Ω
Open-circuit Indication . . 0 mA
Closed-circuit Indication . . ≥22.5 mA

For entity parameters see control drawings on pages B86 - B91.

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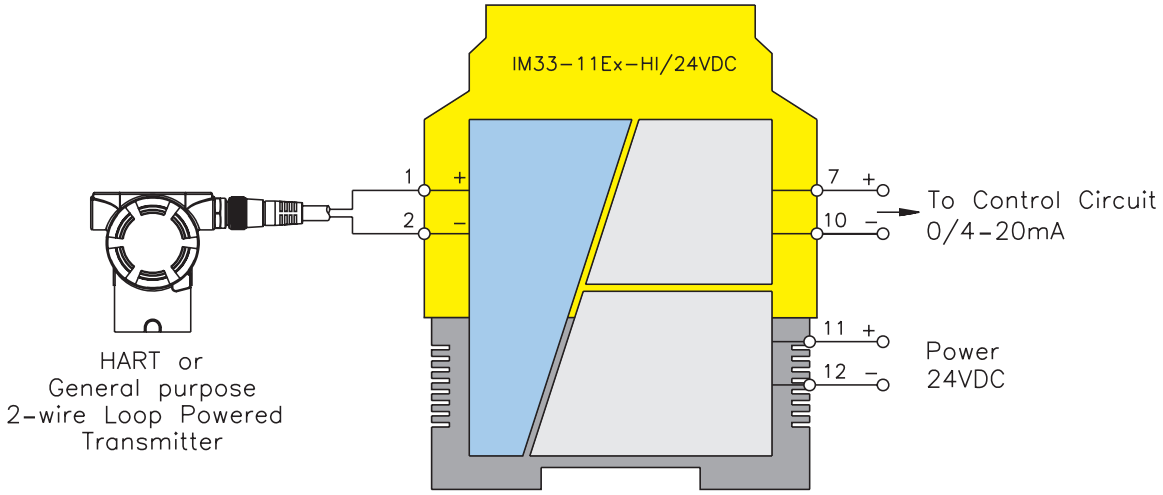
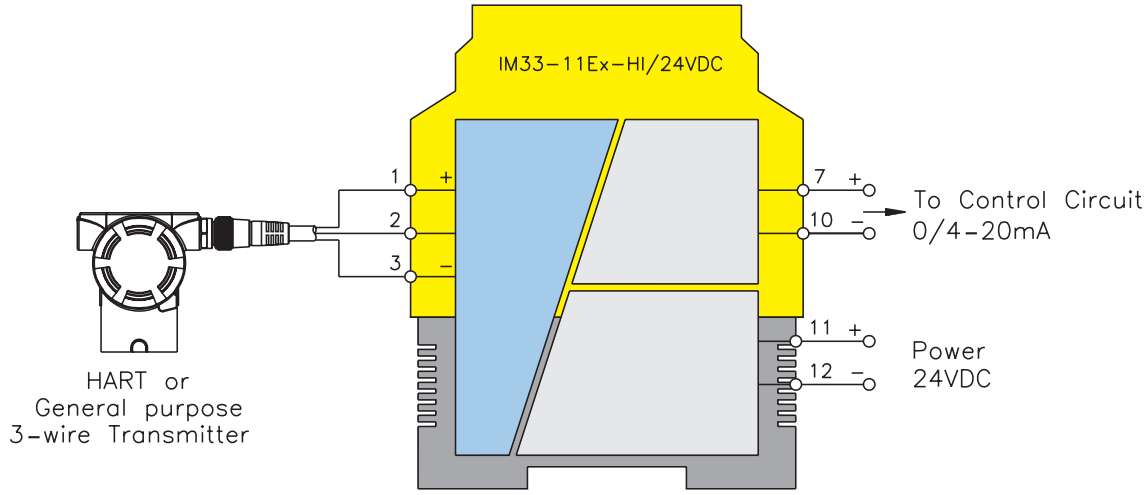
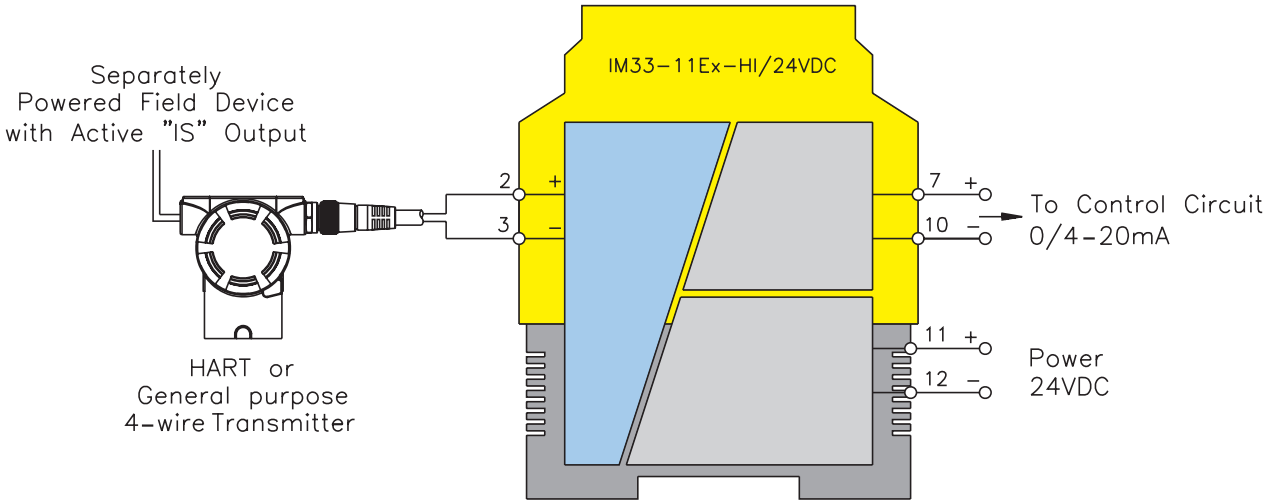
Analog Input Repeaters/Supplies — IM33-11Ex-Hi/24 VDC







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IM33-12Ex-Hi/24 VDC — Analog Input Repeaters/Supplies

Pin #	Terminal Function
1	(+) 2-wire or 3-wire Field Power
2	4/20 mA Input from Field Device
3	(-) Field Power for 2, 3-wire Device
4	N/C
5	N/C
6	N/C
7	(+) 4/20 mA Non-Hazardous Area Output
8	(+) 4/20 mA Non-Hazardous Area Output
9	(-) 4/20 mA Non-Hazardous Area Output
10	(-) 4/20 mA Non-Hazardous Area Output
11	Module Power (+) or AC
12	Module Power (-) or AC

Functional Description:

This 1 channel intrinsically safe interface will power a 2 or 3-wire HART transmitter or a separately powered field device and retransmit the 0-20 mA or 4-20 mA from a hazardous area and repeat the signal in the non-hazardous area as two 0-20 mA or 4-20 mA signals reflecting the hazardous area input. The device will also accept a source 0-20 mA or 4-20 mA signal from a separately powered field device and repeat this signal as two non-hazardous area signal. It will drive two separate non-hazardous area loads of up to 500 Ω each.

Due to the "1:1" transmission characteristic, open-circuit or short-circuit conditions can be indicated by a 0 mA or 22.5 mA reading indicating the condition for alarm implementation.

Features:

- 1 channel HART or "IS" compatible analog inputs
- 2, 3, or 4-wire configurations for sinking or sourcing field devices in any combination
- 2 independent 0/4-20 mA outputs reflecting a single hazardous area input
- Constant field voltage
- Short-circuit protected field circuits
- Over/under current indication of 0 or 22.5 mA
- SIL 2 rated

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (19-29 VDC)

Input Resistance . . . . . 250 Ω

Operating Characteristics:
Voltage. . . . . 17 V @ 20 mA
Current . . . . . 0-22 mA
Short-circuit Current (short-term) 60 mA (for 50 ms)

Outputs: Non-Hazardous Area

0/4-20 mA

Load . . . . . ≤500 Ω
Open-circuit Indication . . 0 mA
Closed-circuit Indication . . ≥22.5 mA

For entity parameters see control drawings on pages B86 - B91.

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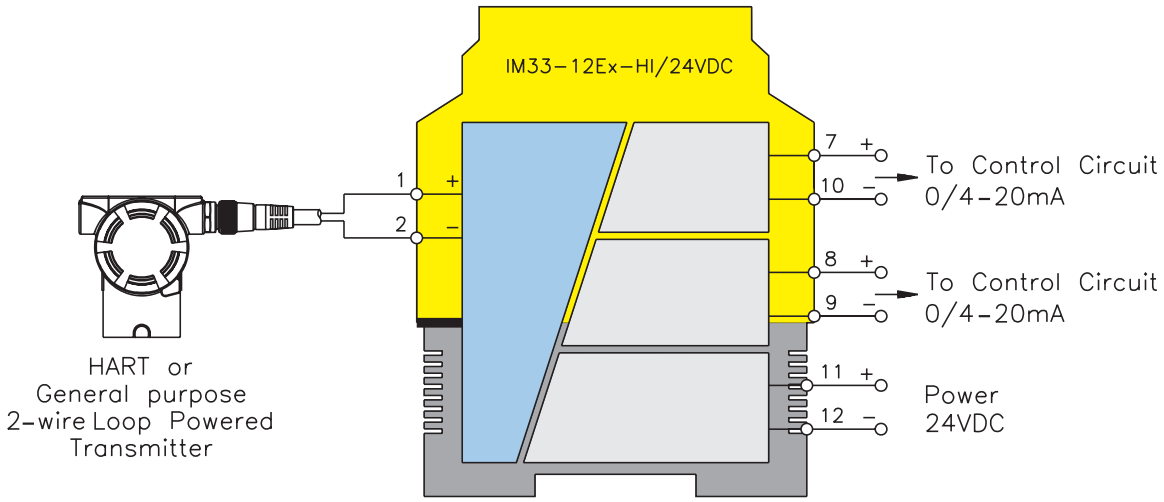
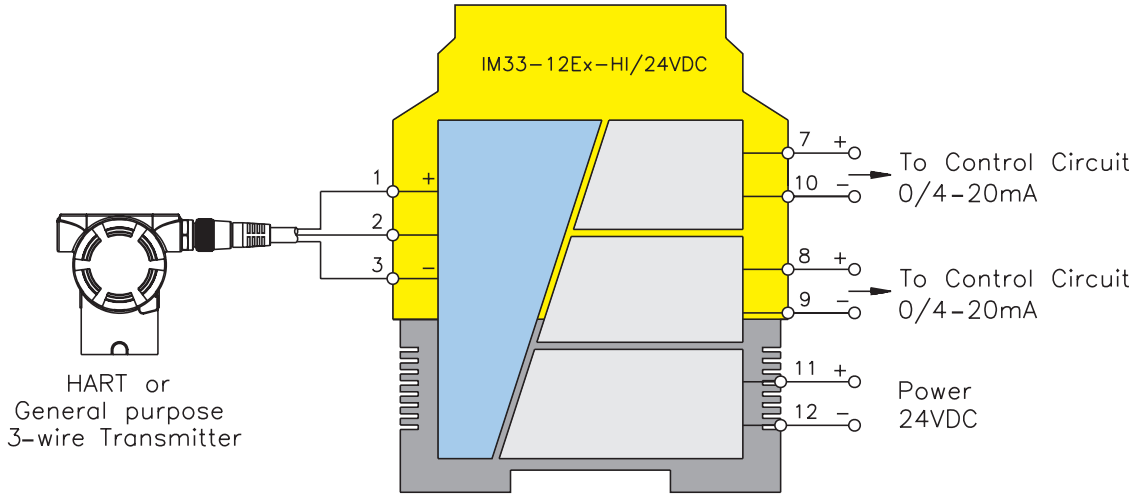
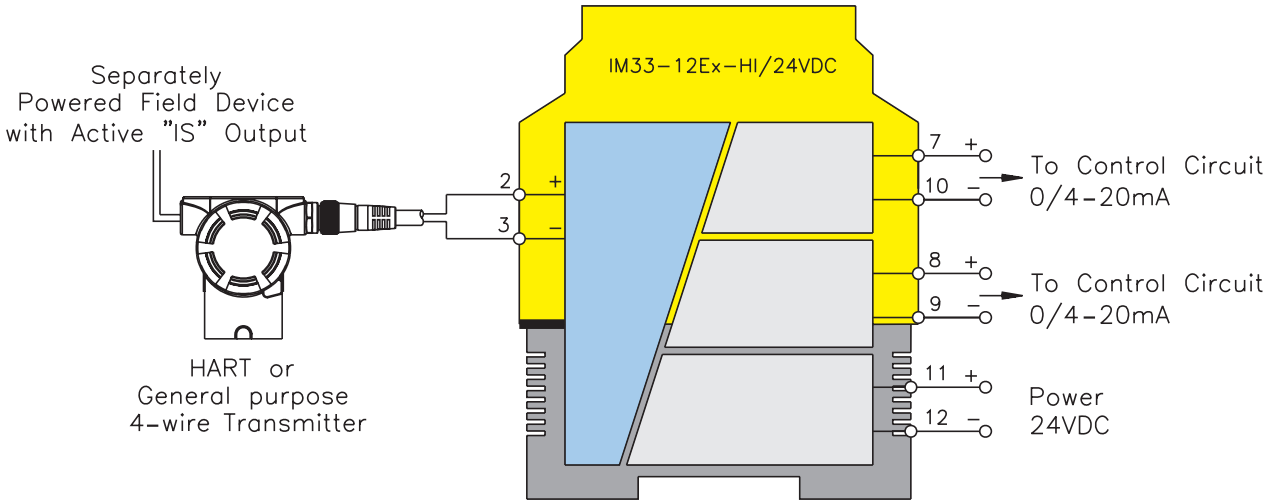
Analog Input Repeaters/Supplies — IM33-12Ex-Hi/24 VDC







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IM33-22Ex-Hi/24 VDC — Analog Input Repeaters/Supplies

Pin #	Terminal Function
1	(+) 2-wire or 3-wire Field Power
2	4/20 mA Input from Field Device
3	(-) Field Power for 2, 3-wire Device
4	(+) 2-wire or 3-wire Field Power
5	4/20 mA Input from Field Device
6	(-) Field Power for 2,3-wire Device
7	(+) 4/20 mA Non-Hazardous Area Output
8	(+) 4/20 mA Non-Hazardous Area Output
9	(-) 4/20 mA Non-Hazardous Area Output
10	(-) 4/20 mA Non-Hazardous Area Output
11	Module Power (+) or AC
12	Module Power (-) or AC

Functional Description:

This 2 channel intrinsically safe interface will power two separate 2 or 3-wire HART Transmitters or separately powered field devices or any combination of these devices and retransmit the 0-20 mA or 4-20 mA from a hazardous area and repeat the signal in the non-hazardous area as two separate 0-20 mA or 4-20 mA signals reflecting the hazardous area input. The device will also accept two separate source 0-20 mA or 4-20 mA signals from separately powered field devices and repeat these signals as two non-hazardous area signals. It will drive two separate non hazardous-area loads of up to 500 Ω each.

Due to the "1:1" transmission characteristic, open circuit or short-circuit conditions can be indicated by a 0 mA or 22.5 mA reading indicating the condition for alarm implementation.

HART or conventional "IS" transmitters can be accommodated by this device with bi-directional communications of digital information with HART field devices.

Features:

- 2 independent channel HART or "IS" compatible analog Inputs
- 2, 3, or 4-wire configurations for sinking or sourcing field devices in any combination
- Constant field voltage for each channel
- Short-circuit protected field circuits
- Over/under current indication of 0 or 22.5 mA
- SIL 2 rated

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (19-29 VDC)

Input Resistance . . . . . 250 Ω

Operating Characteristics:
Voltage. . . . . 17 V @ 20 mA
Current . . . . . 0-22 mA
Short-circuit Current (short-term) 60 mA (for 50 ms)

For entity parameters see control drawings on pages B86 - B91.

Outputs: Non-Hazardous Area

0/4-20 mA

Load . . . . . ≤500 Ω
Open-circuit Indication . . 0 mA
Closed-circuit Indication . . ≥22.5 mA

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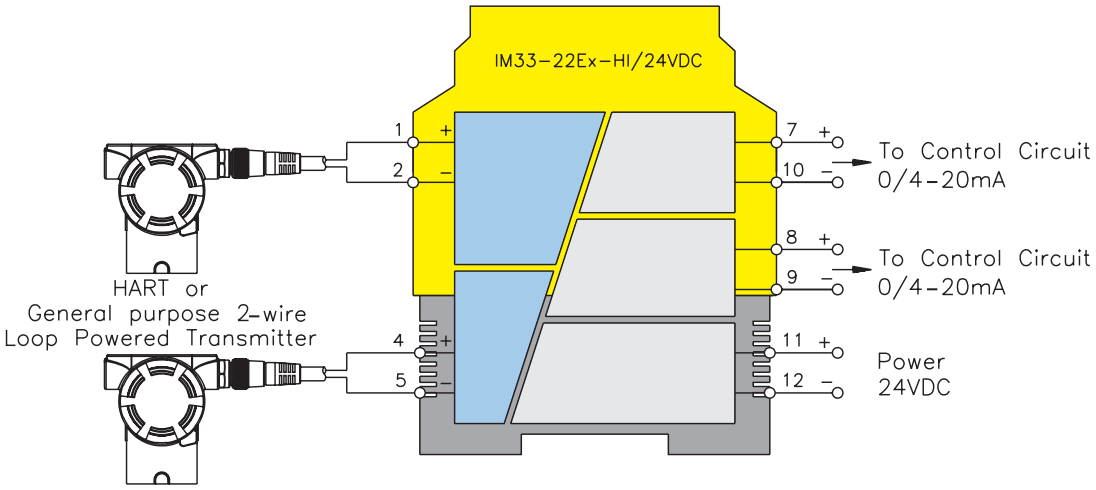
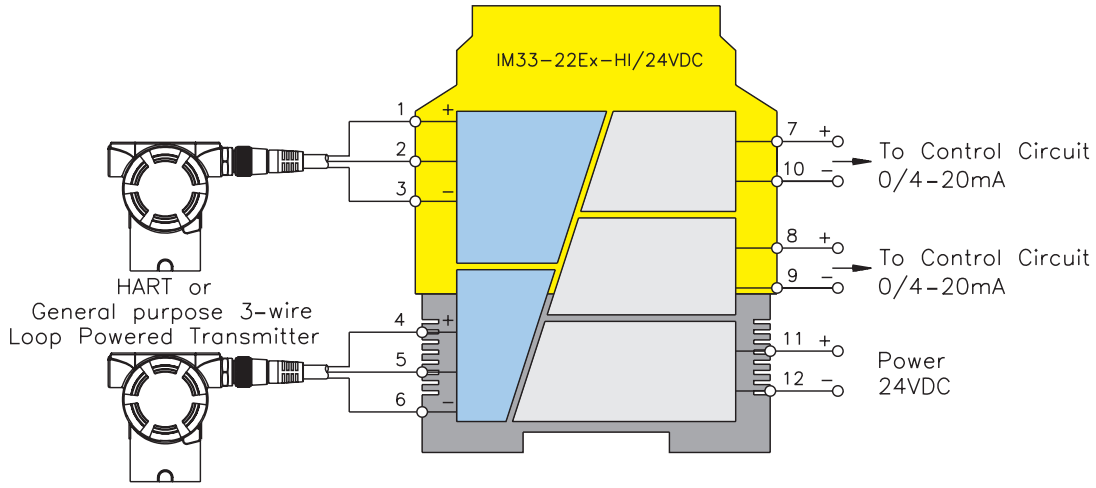
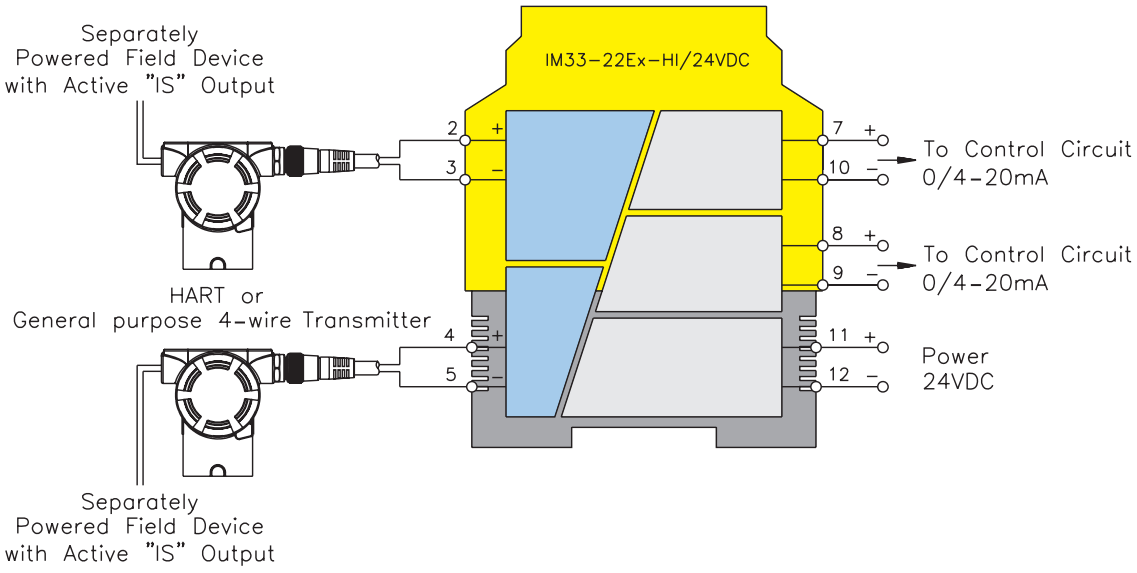
Analog Input Repeaters/Supplies — IM33-22Ex-Hi/24 VDC







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Temperature Converters

Temperature measurement is a very common application, even in hazardous areas. The IM34 temperature converting device provides advanced diagnostics, versatility and convenience in an easy-to-use device.

The IM34 will convert a 2, 3 or 4-wire RTD, mV signal, or T/C in a hazardous area, to an analog 0/4-20 mA signal in a non-hazardous area. This pushbutton or software (FDT/DTM, free shareware) configurable unit is simple to use and saves time and money on installations.

This diverse unit allows several different input types to be configured and used with common 0/4-20 mA analog input control cards. Elimination of separate RTD, T/C and mV input cards may consolidate inventory, as well as allow the use of off-the-shelf "Simple Apparatus" components in even the most explosive atmospheres; further reducing costs for installation and maintenance.

Temperature measurement in hazardous areas has never been easier, or as safe, than this.

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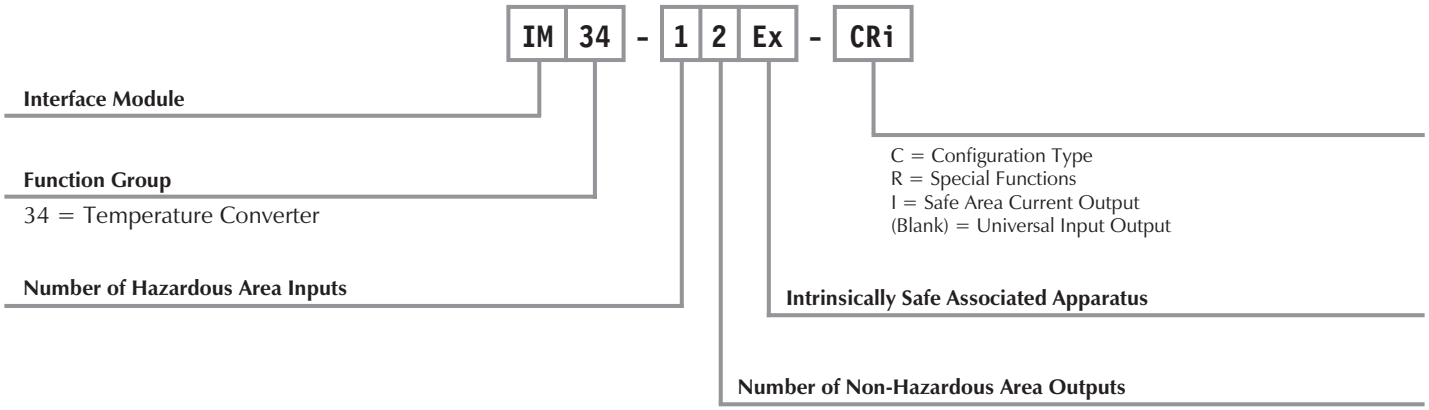
Temperature Converters — Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.



Extension Examples:

IM34-12Ex-CRi
Interface Module
Temperature Converter
Single Channel Input
Two Non-Hazardous Area Current Outputs
Intrinsically Safe Associated Apparatus
Computer or Remote Configuration
Alarm Contacts
Non-Hazardous Current Output
Universal Voltage Input

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IM34-11Ex-I — Temperature Converters

Functional Description:

This single channel device is designed to provide an analog 0/4-20 mA signal to a control system that is converted from an RTD, T/C, or mV signal in a hazardous area.

The measuring range and device functions are set via rotary switches or slide switches on the side of the device.

Features:

- 1 channel temperature input
- Accepts 2, 3, or 4-wire RTD's, T/C's or mV
- Switch configurable by user
- Temperature range adjustable
- Over/under current indication of 0 or 22 mA
- Internal or external CJC configurable

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

2, 3 or 4-wire 100 Ω Ni or Pt RTD's

Range -200°K to +800°K (Pt100), -60°K to +250°K (Ni100)

T/C's B, E, J, K, N, R, S, T

Low Voltage -160 mV to +160 mV

Resistor current approx. 200 microamps

Outputs: Non-Hazardous Area

0/4-20 mA (Load 600 Ω max)

Relay: 250 VAC/120 VDC, 2A
500 VA/60 W 10Hz

For entity parameters see control drawings on pages B86 - B91.

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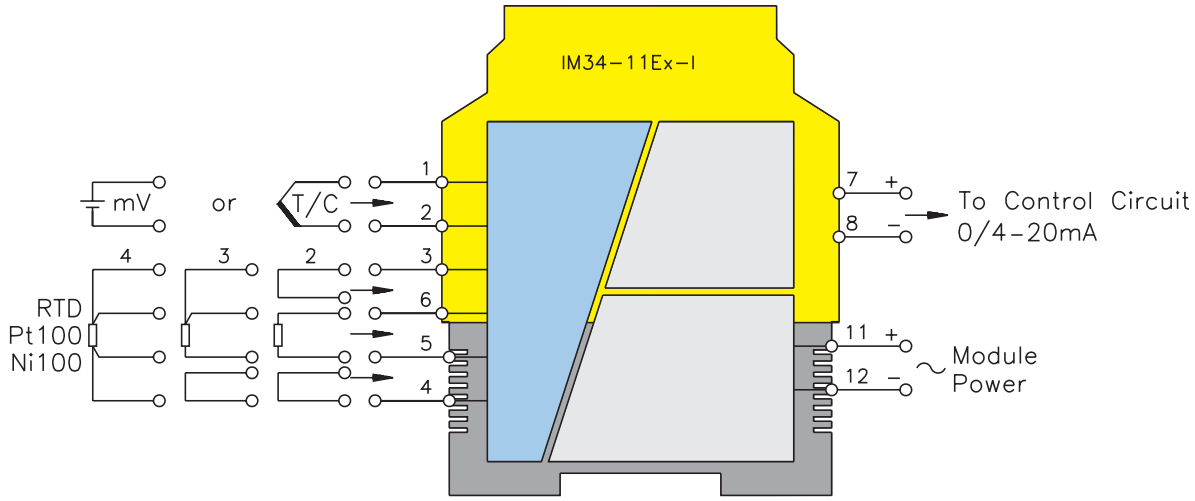
Temperature Converters — IM34-11Ex-I

Pin #	Terminal Function
1	(+) T/C or mV Input
2	(-) T/C or mV Input
3	3 or 4-wire RTD Connection
4	4-wire RTD Connection
5	2, 3 or 4-wire RTD Connection
6	2, 3 or 4-wire RTD Connection
7	(+) 0/4-20 mA Output
8	(-) 0/4-20 mA Output
9	No Connection
10	No Connection
11	Module Power (+) or AC
12	Module Power (-) or AC



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IM34-12Ex-Ri — Temperature Converters

Functional Description:

This single channel device is designed to provide an analog 0/4-20 mA signal to a control system that is converted from an RTD, T/C, or mV signal in a hazardous area.

This device has the added function of a relay output that can be used for under/over range conditions or to monitor a limit value.

The measuring range and device functions are set via rotary switches or slide switches on the side of the device.

Features:

- 1 channel temperature input
- Accepts 2, 3, or 4-wire RTD's, T/C's or mV
- Switch configurable by user
- Temperature range adjustable
- Configurable limit value relay output
- Over/under current indication of 0 or 22 mA
- Internal or external CJC configurable

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

2, 3 or 4-wire 100 Ω Ni or Pt RTD's

Range -200°K to +800°K (Pt100), -60°K to +250°K (Ni100)

T/C's B, E, J, K, N, R, S, T

Low Voltage -160 mV to +160 mV

Resistor current approx. 200 microamps

Outputs: Non-Hazardous Area

0/4-20 mA (Load 600 Ω max)

Relay: 250 VAC/120 VDC, 2A
500 VA/60 W 10Hz

For entity parameters see control drawings on pages B86 - B91.

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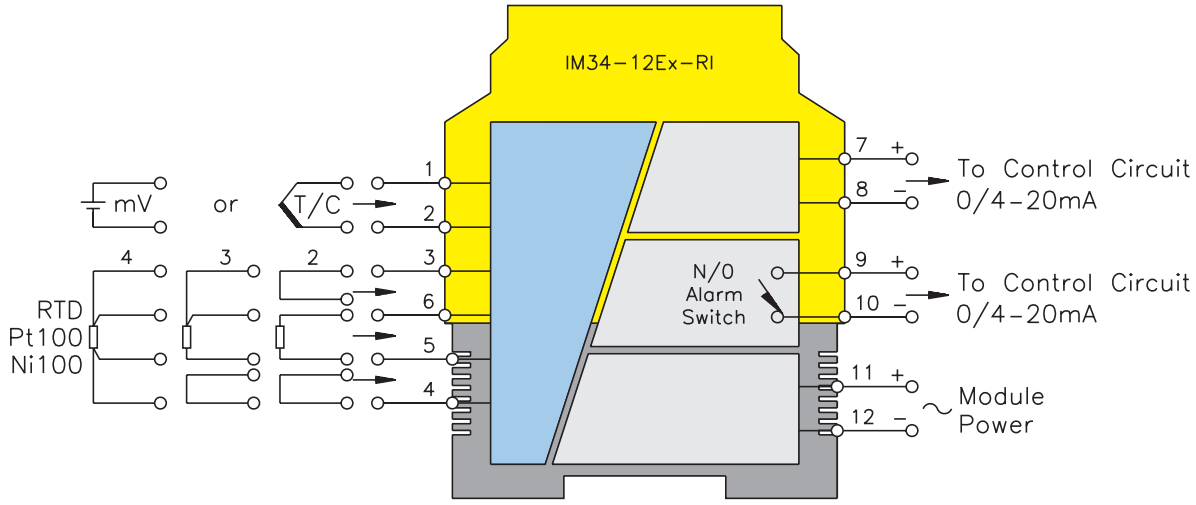
Temperature Converters — IM34-12Ex-Ri

Pin #	Terminal Function
1	(+) T/C or mV Input
2	(-) T/C or mV Input
3	3 or 4-wire RTD Connection
4	4-wire RTD Connection
5	2, 3 or 4-wire RTD Connection
6	2, 3 or 4-wire RTD Connection
7	(+) 0/4-20 mA Output
8	(-) 0/4-20 mA Output
9	Alarm Contact
10	Alarm Contact
11	Module Power (+) or AC
12	Module Power (-) or AC



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IM34-11Ex-Ci — Temperature Converters

Functional Description:

This single channel device is designed to provide an analog 0/4-20 mA signal to a control system that is converted from an RTD, T/C or mV signal in a hazardous area.

This device is software configurable using the PACT*ware* software tool and a configuration cable that allows configuration to be achieved through your laptop or PC.

Features:

- 1 channel temperature input
- Accepts 2, 3 or 4-wire RTD's, T/C's or mV
- Software configurable by user via PC using PACTware with software tool "Device Type Manager" (DTM)
- Temperature range adjustable
- Over/under current indication of 0 or 22 mA
- Internal or external CJC configurable

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

2, 3 or 4-wire 100 Ω Ni or Pt RTD's

Range -200°K to +800°K (Pt100), -60°K to +250°K (Ni100)

T/C's B, E, J, K, N, R, S, T

Low Voltage -160 mV to +160 mV

Resistor current approx. 200 microamps

Outputs: Non-Hazardous Area

0/4-20 mA (Load 600 Ω max)

For entity parameters see control drawings on pages B86 - B91.

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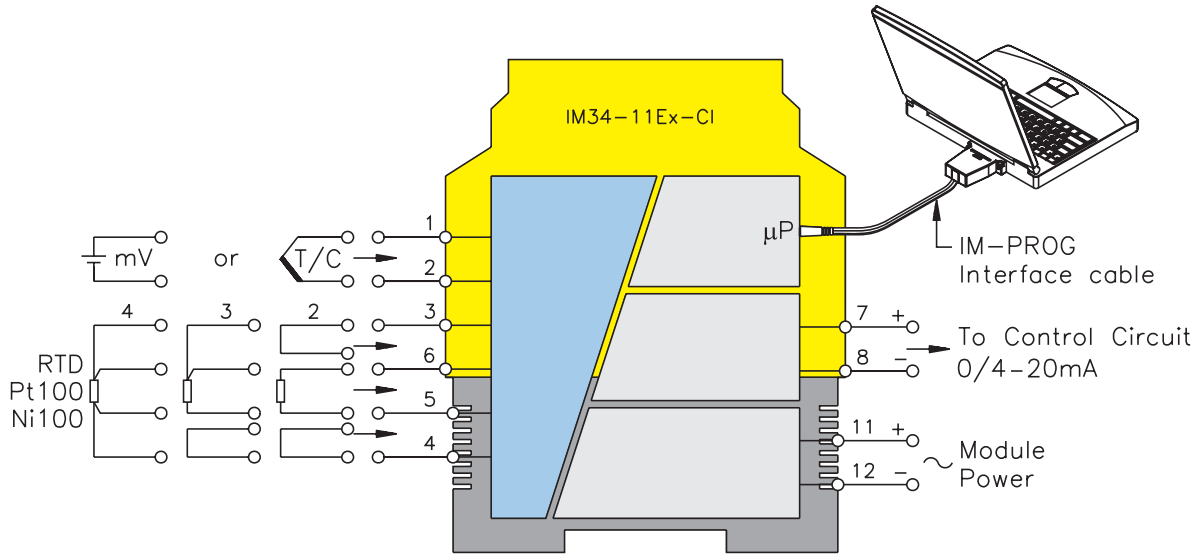
Temperature Converters IM34-11Ex-Ci

Pin #	Terminal Function
1	(+) T/C or mV Input
2	(-) T/C or mV Input
3	3 or 4-wire RTD Connection
4	4-wire RTD Connection
5	2, 3 or 4-wire RTD Connection
6	2, 3 or 4-wire RTD Connection
7	(+) 0/4-20 mA Output
8	(-) 0/4-20 mA Output
9	No Connection
10	No Connection
11	Module Power (+) or AC
12	Module Power (-) or AC
Prog Port	Top of Unit to PC



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IM34-12Ex-CRi — Temperature Converters

Functional Description:

This single channel device is designed to provide an analog 0/4-20 mA signal to a control system that is converted from an RTD, T/C or mV signal in a hazardous area.

This device is software configurable using the PACT*ware* software tool and a configuration cable that allows configuration to be achieved through your laptop or PC.

This device has the added function of a relay output that can be used for under/over range conditions or to monitor a limit value.

Features:

- 1 channel temperature input
- Accepts 2, 3 or 4-wire RTD's, T/C's or mV
- Software configurable by user via PC using PACTware with software tool "Device Type Manager" (DTM)
- Temperature range adjustable
- Configurable limit value relay output
- Over/under current indication of 0 or 22 mA
- Internal or external CJC configurable

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage - (20-250 VAC or 20-125 VDC)

2, 3 or 4-wire 100 Ω Ni or Pt RTD's

Range -200°K to +800°K (Pt100), -60°K to +250°K (Ni100)

T/C's B, E, J, K, N, R, S, T

Low Voltage -160 mV to +160 mV

Resistor current approx. 200 microamps

Outputs: Non-Hazardous Area

0/4-20 mA (Load 600 Ω max)

Relay: 250 VAC/120 VDC, 2A
500 VA/60 W 10Hz

For entity parameters see control drawings on pages B86 - B91.

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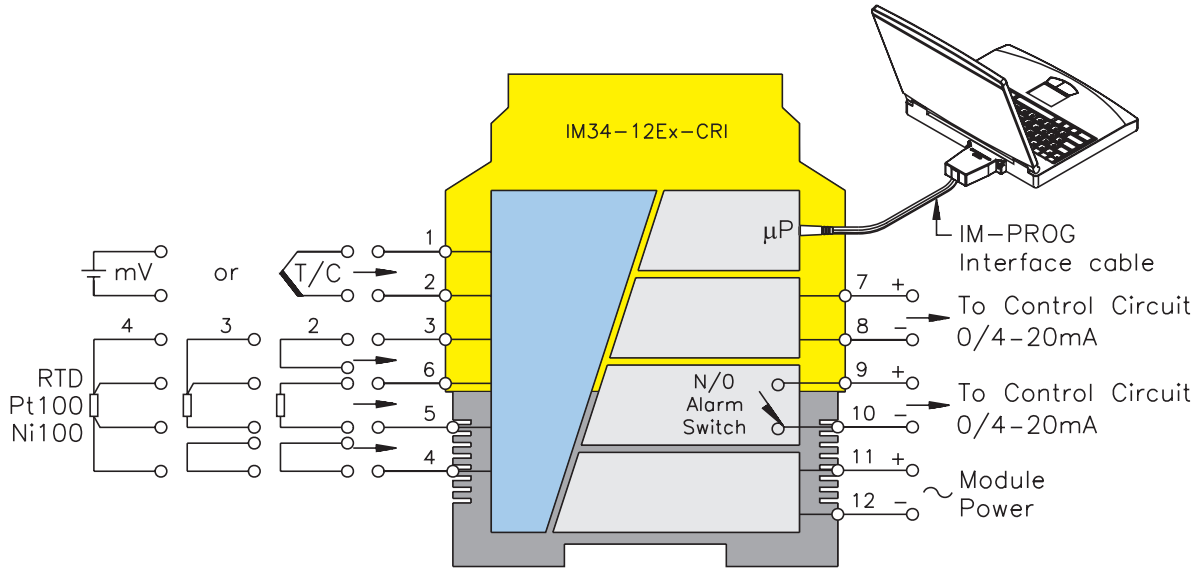
Temperature Converters — IM34-12Ex-CRi

Pin #	Terminal Function
1	(+) T/C or mV Input
2	(-) T/C or mV Input
3	3 or 4-wire RTD Connection
4	4-Wire RTD Connection
5	2, 3 or 4-wire RTD Connection
6	2, 3 or 4-wire RTD Connection
7	(+) 0/4-20 mA Output
8	(-) 0/4-20 mA Output
9	Alarm Contact
10	Alarm Contact
11	Module Power (+) or AC
12	Module Power (-) or AC
Prog Port	Top of Unit to PC



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Temperature Converters

IM34-11Ex-I

IM34-12Ex-Ri

Short Description

- Inputs for Ni100 or Pt100 acc. to IEC 751, thermoelements acc. to IEC 584 and for low voltages (mV range)
- Intrinsically safe input circuit [EEx ia] IIC
- Area of application acc. to ATEX: II (1) GD
- Wire-break monitoring
- Short-circuit monitoring of Pt100 or Ni100 components
- Galvanic isolation between input and output circuits and supply
- Analogue current output 0/4-20 mA
- Limit value relay (IM34-12Ex-Ri only)
- Temperature linear conversion
- Device configuration on side of housing
- Housing with coded and removable terminal blocks

Terminal Configuration

Intrinsically safe inputs at terminals 1-6

1, 2	Thermoelement and mV input
3-6	Ni100 or Pt100 input
7, 8	Analogue current output
9,10	Limit value relay (IM34-12Ex-Ri only)
11,12	Supply voltage connection
	20-250 VAC/20-125 VDC, ≤3 W

Connection via flat screw terminals with self-lifting pressure plates, connection profile ≤1 x 2.5 mm², 2 x 1.5 mm² or 2 x 1.0 mm² with wire sleeves.

LED Indications

Pwr	green power on (1)
ϟ	red error (2)
1	yellow relay energized (3) (IM34-12Ex-Ri only)

Attention: Status indications, see table on page B64.

Adjustments

The device settings are accomplished with 4 rotary switches and 10 slide switches (IM34-12Ex-Ri:7 rotary switches and 13 slide switches) located on the right side of the housing.

- **High Temperature Value T_H:** the upper temperature range value according to an output current of 20 mA is set with the two rotary switches (1, 2). Rotary switch 2 serves to set temperature values in increments of a hundred degrees celsius. Switch 1 serves to set the temperature in steps of ten degrees. Thus, the temperature values can be set in steps of 10 K. (Example for switch position: 53 ⇒ 530°C). If the slide switch S6 is in position 1, the temperature range is automatically increased by a 1000°C to 1000-1990°C. Add a 1000°C to the temperature value adjusted with rotary switches 1 and 2. (Examples for switch position: 53 ⇒ 1530°C; 00 ⇒ 1000°C).
- **Low Temperature Value T_L :** the two rotary switches (3, 4) serve to set the temperature which accords to an output current of 0 or 4 mA (determined by slide switch S8). If slide switch S5 is in position 1, rotary switch number 4 is used to adjust the temperature in hundreds, while switch 3 adjusts the tens place. Adjustment takes place in a temperature range of 0 to +990°C in increments of 10 K (e.g. rotary switch setting 23 accords to a temperature of 230°C). If slide switch S5 is in position 0, rotary switch 4 adjusts the negative tens places and rotary switch 3 adjusts the ones. Adjustments are possible in a temperature range of -100 to -1°C in increments of 1 K. (Examples for rotary switch position: 23 ⇒ -23°C; 00 ⇒ -100 °C).
- **Switching Threshold for Relay**
  (IM34-12Ex-Ri only)
  Rotary switch 5 = hundred degree values
  Rotary switch 6 = ten degree values
  Rotary switch 7 = one degree values
  S11 and S12 = 1: add 1000°C to the adjusted value. S11 = 0: the adjusted value is negative. The output mode is adjusted with S13.

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IM34-11Ex-I

IM34-12Ex-Ri

Switch Position				Functions of slide switches S1-S4: The 4 switches serve to select the following functions:
S1	S2	S3	S4	
0	0	0	0	Thermoelement Type B (IEC 584)
0	0	0	1	Type E
0	0	1	0	Type J
0	0	1	1	Type K
0	1	0	0	Type N
0	1	0	1	Type R
0	1	1	0	Type S
0	1	1	1	Type T (IEC 584)
1	0	0	0	Type L (DIN 43710)
1	0	1	0	Voltage input: the input for thermoelements can be used for linear conversion of low voltages from -100 to +160 mV. In this case the rotary switches are used to adjust mV values while the slides switches operate with different range indications: S5 = 0: -100 to -1 mV or S5 = 1: 0 to +99 mV for the lower range; S6 = 0: 0 to +99 mV or S6 = 1: +100 to +160 mV for the upper range;
1	1	0	0	Pt100 or Ni100 components with 4-wire connection;
1	1	0	1	Pt100 or Ni100 components with 3-wire connection, observe bridge;
1	1	1	0	Pt100 or Ni100 components with 2-wire connection, observe bridge;
1	1	1	1	Line compensation: when using 2-wire connections, the line length resistance must be adjusted. Line compensation is also necessary when using thermo-elements with an external cold junction. For this it is necessary to short-circuit the measuring point and to select the code for line compensation as shown on the left. The Pwr and the ϟ LED flash alternately. Successful line compensation is indicated by mutual flashing of both LEDs. Please select a different function and remove the short-circuit.

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Temperature Converters

IM34-11Ex-I

IM34-12Ex-Ri

Functions of slide switches **S5-S10** (IM34-12Ex-Ri: **S5-S13**):
The following functions can be selected with the switches:

- **S5** Lower range selection: selection of temperature range of low temp. valueTL
  S5 = 0: -100 to -1°C
  S5 = 1: 0 to +990°C
- **S6** Upper range selection: selection of temperature range of high temp. value T_H:
  S6 = 0: 0 to +990°C
  S6 = 1: +1000 to +1990°C
- **S7** output current during an error condition:
  If an input circuit error is detected, the output current is as follows
  S7 = 0: 0 mA
  S7 = 1: >22 mA
- **S8** output current range:
  S8 = 0: 0-20 mA
  S8 = 1: 4-20 mA
- **S9** Reference point compensation: when using thermoelements, reference point compensation is carried out as follows:
  - **externally** via 2-wire Ni100 or Pt100 in S9 = 0 or
  - **internally**: S9 = 1

  With **internal** reference point compensation, care must be taken that heat is conducted away from the housing. Heat accumulation can corrupt measuring data.
- **S10** resistor type: indication of the connected resistor type:
  S10 = 0: Pt100
  S10 = 1: Ni100

  With a voltage input or in case of thermoelement operation, the type of resistor does not have to be adjusted.

Referring to IM34-12Ex-Ri only:

- **S11, S12 and S13** Selection of switching threshold for limit value relay:
  S11 = 0: -100 to -1°C
  S11 = 1: >0°C

  Only if S11 = 1
  S12 = 0: 0 to +999°C
  S12 = 1: +1000 to +1990°C
  S13 Output performance of relay:
  S13 = 0: relay energized, if measuring value > switching threshold
  S13 = 1: relay energized, if measuring value < switching threshold

Mounting and Installation

The connected apparatus (Ni100/Pt100, thermoelements) must meet the requirements for use in explosion hazardous areas (EN60079-14). The device is suited for snap-on clamps for hat rail mounting (EN 50022) or for screw panel mounting. Devices **of the same type** may be mounted directly next to each other. It must be ensured that heat is conducted away from the device. Mounting and installation must be carried out in accordance with the applicable regulations. The removable terminal blocks are coded and may only be plugged into the designated sockets. The coding system may not be altered or damaged. The device must be protected against dust, dirt, moisture and other environmental influences as well as against strong electro-magnetic emissions. It should also be protected against the risks of mechanical damaging, unauthorized access and incidental contact. All installations must be carried out observing the regulations of EMC protection.

General information on use of devices with "IS" circuits

This device is equipped with circuits featuring protection type "intrinsic safety" for explosion protection per EN 50020 at terminals 1-6 which are marked in blue. The intrinsically safe circuits are approved by the authorised bodies for use in those countries to which the approval applies.

For **correct usage** in explosion hazardous areas it is required to **observe and follow** the **national regulations and directives strictly**. Following please find some guidelines referring to the framework directive of the European Union 94/9/EC (ATEX 100a).

This device is classified as an associated apparatus which is equipped with intrinsically safe and non-intrinsically safe circuits. Therefore it may not be installed in explosion hazardous areas. It is permitted to connect intrinsically safe equipment to the intrinsically safe connections of this device, provided the equipment complies with the regulations applying to use in the respective zone of the explosion hazardous area. When interconnecting devices within

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IM34-11Ex-I

IM34-12Ex-Ri

such an assembly it is required to keep and provide a proof of intrinsic safety (EN 60079-14). Once that intrinsically safe circuits have been connected to the non-intrinsically safe circuit, it is not permitted to use the device subsequently as intrinsically safe equipment.

The governing regulations cover installation of intrinsically safe circuits, mounting to external connections, cable characteristics and cable installation. Cables and terminals with intrinsically safe circuits must be marked and separated from non-intrinsically safe circuits or feature appropriate isolation (EN 60079-14). It is required to observe the specified clearances between the intrinsically safe connections of this device and the earthed components and connections of other devices. The approval expires if the device is repaired, modified or opened by a person other than the manufacturer or an expert, unless the device specific instruction manual explicitly permits such interventions.

Visible damages of the device's housing (e. g. black-brown discoloration due to heat accumulation, perforation or deformation) indicate a serious error and the device must be turned off immediately. When using associated apparatus it is required to check the connected intrinsically safe equipment too. This inspection may only be carried out by an expert or the manufacturer. Operation of the device must conform to the data printed on the side of the housing.

Prior to initial set-up or after every alteration of the interconnection assembly it must be assured that the relevant regulations, directives and framework regulations are observed, that operation is error-free and that all safety regulations are fulfilled. Mounting and connection of the device should only be carried out by qualified and trained staff familiar with the relevant national and international regulations of explosion protection.

The **most important data from the EC type examination certificate** are listed overleaf. All valid national and international approvals covering **TURCK** devices can be downloaded from our website www.turck.com. Further information can be provided on request.

Short Description

- Inputs for Ni100 or Pt100 acc. to IEC 751, thermo-elements acc. to IEC 584 and for low voltages (mV range)
- Intrinsically safe input circuit EEx ia
- Area of application acc. to ATEX: II (1) GD
- Wire-break monitoring
- Short-circuit monitoring only of Pt100 or Ni100 components
- Galvanic isolation between input and output circuits and supply
- Analogue current output 0/4-20 mA
- Voltage proof up to 4 kV (IM34-11Ex-Ci/K51 only)
- Fast temperature measurement from a temperature gradient of 200 ìV/s (IM34-11Ex-Ci/K60 only)
- Limit value relay (IM34-12Ex-CRi only)
- Temperature linear conversion
- Parameterization via PC via programming adapter IM-PROG (to be ordered additionally – ident-no.: 6890422)
- Housing with coded and removable terminal blocks
- Simulation of outputs

Terminal Configuration

Intrinsically safe inputs at terminals 1–6

1, 2	thermoelement and mV input
3 – 6	Ni100 or Pt100 input
7, 8	analog current output (0/4-20 mA)
9, 10	Limit value relay (IM34-12Ex-CRi only)
11,12	supply voltage connection 20-250 VAC/20-125 VDC, <3 W

Connection via lifting cages with captive screws, connection profile:
≤1 x 2.5 mm², 2 x 1.5 mm² or 2 x 1 mm² with wire sleeves

LED Indications

Pwr	green power on
ϟ	red error
1	yellow relay energized (IM34-12Ex-CRi only)

Attention: Status Indications, see table on page 67.

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Temperature Converters

IM34-11Ex-I

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Status Indications

LED Pwr	LED ϟ	Only IM34-12Ex-CRi	Description
The values agree with the switch-on phase in % 0=0%, 10=10%, 50=50%, 100=100%		Output of error current, moreover relay is de-energized.	
100	0	–	Operation
100	10	•	Input error
10	100	•	Software error
0	100	•	Hardware error
100	50	•	Measuring span too short
100	50	–	Thermoelements/Measuring range/Switching threshold outside the operating range of the RTD or thermo-element
50	50	•	Line compensation (LEDs flashing alternatingly)
50	50	•	Line compensation finished
100	50	•	Line compensation not correct
50	0	–	Current output and limit value relay in simultaneous operation

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IM34-11Ex-I

IM34-12Ex-Ri

Parameterization and Adjustments

The IM34… is parameterized and adjusted via the Device Type Manager (see also "PACT*ware*™ and devices DTM software installation"). The **TURCK** adapter IM-PROG is needed to establish the connection between the device and your PC.

For this it is necessary to connect the 3.5 mm connector to the measuring amplifier (PCConnect) and the RS232 connector to the serial interface of your PC. The following settings are available as an entry or numerical setting via the DTM:

- **Mode**
  Selection of the connection element: Pt/Ni100, thermo-element, mV input and selection of line compensation. The following settings depend on the selections made in the "Mode" menu:

  – Thermo-element
  Type selection: E, J, K, N, R, S, T, L, B

  – Connection Mode of Temperature Resistor
  2, 3 or 4-wire connection technology

  – Measuring Range
  The measuring range is composed of the lower and upper temperature value. After selecting the connecting type, the measuring range is indicated in the lower section of the DTM. These indications accord to the adjusted analogue output signal of 0/4-20 mA. The lower temperature depends on the type of thermoelement/temperature resistor and accords to an output signal of 0/4 mA. The upper limit temperature also depends on the type of thermo-element/temperature resistor. The adjusted upper limit temperature accords to an analogue output signal of 20 mA.

  – Output Signal
  The selection comprises 0-20 mA, 4-20 mA signals. The adjusted values correspond to the adjusted lower and upper limit temperatures.

  – Line Compensation
  In case of 2-wire connections, the resistor can be adapted to the connection cable. For this it is necessary to short the measuring point.

  The LEDs Pwr and ϟ flash alternately. If they start flashing mutually line compensation has been carried out. Continue by selecting another function and removing the short-circuit. If the LED ϟ continues to flash, line compensation has not been accomplished successfully. Line compensation must also be carried out if thermo-elements with external cold junction are used.

  – Error Current
  Either 0 mA or >22 mA

  – Switching Threshold (IM34-12Ex-CRi only)
  Entry of a temperature value or a low voltage value at which the limit value relay is activated.

Mounting and Installation

The connected apparatus (Ni100/Pt100, thermo-elements) must meet the requirements for use in explosion hazardous areas (EN 60079-14). The device is suited for snap-on clamps for hat rail mounting (EN 50022) or for screw panel mounting. Devices **of the same type** may be mounted directly next to each other. It must be ensured that heat is conducted away from the device. Mounting and installation must be carried out in accordance with the applicable regulations. The operator is responsible for compliance with the regulations. The removable terminal blocks are coded and may only be plugged into the designated sockets. The coding system may not be altered or damaged. The device must be protected against dust, dirt, moisture and other environmental influences as well as against strong electromagnetic emissions. It should also be protected against the risks of mechanical damaging, unauthorized access and incidental contact. All installations must be carried out observing the regulations of EMC protection.

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Temperature Converters

IM34-11Ex-I

IM34-12Ex-Ri

Important information on use of devices with "IS" circuits

This device is equipped with circuits featuring protection type intrinsic safety for explosion protection per EN 50020 at terminals 1– 6 which are marked in blue. The intrinsically safe circuits are approved by the authorised bodies for use in those countries to which the approval applies.

For **correct usage** in explosion hazardous areas please **observe and follow** the **national regulations and directives strictly**. Following please find some guidelines referring to the frame-work directive of the European Union 94/9/EC (ATEX 100a).

This device is classified as an associated apparatus which is equipped with intrinsically safe and nonintrinsically safe circuits. Therefore it may only be installed in the non-explosion hazardous area in dry clean and well monitored locations. It is permitted to connect intrinsically safe equipment to the intrinsically safe connections of this device.

All electrical equipment must comply with the regulations applying to use in the respective zone of the explosion hazardous area. If the intrinsically safe circuits lead into explosion hazardous areas subject to dust hazards, i.e. zone 20 or 21, it must be ensured that the devices which are to be connected to these circuits, meet the requirements of category 1D or 2D and feature an according approval.

When interconnecting devices within such an assembly it is required to keep and provide a proof of intrinsic safety (EN 60079-14). Once that intrinsically safe circuits have been connected to the non-intrinsically safe circuit, it is not permitted to use the device subsequently as intrinsically safe equipment. The governing regulations cover installation of intrinsically safe circuits, mounting to external connections, cable characteristics and cable installation. Cables and terminals with intrinsically safe circuits must be marked and separated from nonintrinsically safe circuits or feature appropriate isolation (EN 60079-14). Please observe the specified clearances between the intrinsically safe connections of this device and the earthed components and connections of other devices.

The approval expires if the device is repaired, modified or opened by a person other than the manufacturer or an expert, unless the device-specific instruction manual explicitly permits such interventions.

Visible damages of the device's housing (e. g. black brown discoloration due to heat accumulation, perforation or deformation) indicate a serious error and the device must be turned off immediately. When using associated apparatus it is required to check the connected intrinsically safe equipment too. This inspection may only be carried out by an expert or the manufacturer.

Operation of the device must conform to the data printed on the side of the housing. Prior to initial set-up or after every alteration of the interconnection assembly it must be assured that the relevant regulations, directives and framework conditions are observed, that operation is error-free and that all safety regulations are fulfilled. Mounting and connection of the device may only be carried out by qualified and trained staff familiar with the relevant national and international regulations of explosion protection.

The **most important data from the EC type examination certificate** are listed overleaf. All valid national and international approvals covering **TURCK** devices are obtainable via the Internet (www.turck.com). Further information on explosion protection is available on request.

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PACT*ware*™ and Devices DTM Software Installation

You will require the following software components on your computer for the installation of PACT*ware*:

- **PACT*ware* software for parameterizing of interface modules and *excom*®**
- **DTM**

These software components are available on the Internet at www.turck.com as a free-of-charge download.

- Select the homepage: www.turck-usa.com → Download → Software → Various Software

Your PC then requests the name of a directory at which it should save the files on the hard drive of your computer. The files are self-extracting archives, ZIP files, which extract independently when accessed.

- Simply double click on the ZIP archive to extract the files.
- You commence extraction of the file when you click on "Extract".

The "TURCK_FILES" directory is created on the current drive (e.g. C:\). Extract both file archives: (PACT*ware* and DTM) before you commence with the actual software installation.

1. Installation of PACT*ware*

Now start the installation of PACT*ware* on your computer.

- Start Windows Explorer and change over to the "TURCK_FILES\PACTware...SetupTurck\PACT*ware*" directory.
- Start the "setup.exe" file located there.

Follow the self-explanatory instructions displayed by the installation program and complete the installation.

2. Installation of the HART® Communication Driver

After the installation of PACT*ware* has been successfully completed, the HART communication driver must now be installed.

Start the "setup.exe" file located at "TURCK_FILES\...Dtms\Hart"

Follow the self-explanatory instructions displayed by the installation program and complete the installation.

3. Installing of the Devices DTM

After the installation of the HART communication driver been successfully completed, the devices DTM must be installed. A directory has been created to reflect the DTM which you have downloaded. The name commences with the first 4 or 5 letters of the device type which you have selected.

- Start for example "setup.exe" in the "TURCK_FILES\IM34...Setup...\" directory in order to install the devices DTM for the IM34.

Configuration of PACT*ware*

Please restart your PC after installation in order to update the Windows registry. Then open PACT*ware* and carry out configuration:

Make the following entries:

– User: "Administrator“
– Password: "manager“
Prior to parameterizing a device, a project has to be created. For this, please select the device catalogue from the "View“ menu or the < F3 > key. A new window with the name "Device catalogue" will open. This window contains all available "Device Type Managers - DTMs". Should a required DTM not be listed, please click on the button "Re-initialize the device catalogue"

- First add the HART protocol driver from the company Codewrights GmbH
- Then add the DTMs from **TURCK**

Parameter entries for HART protocol driver parameters:

(Open the window by a double click):
– Communication-Interface:
"HART Multiplexer“

– Select serial interface

– Baud rate: "9600“

⚠ Possible error sources:

– RS232 port not addressable or being used by another application, Remedy: use different port or exit the application causing problems

– RS232 line too long (max. line length approx. 10 m), Remedy: shorten line

After successful installation and configuration it is now possible to communicate with the IM34....

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Analog Output Isolators

Analog output isolators are for use with conventional 0/4-20 mA or HART smart "IS" devices and are available in 1 and 2 channel versions. These devices are designed to provide a convenient way to transfer 0/4-20 mA signals, generated in a non-hazardous area, to a hazardous area intrinsically safe device, such as a valve positioner or I/P device.

HART capabilities allow bi-directional communications for HART devices if this function is being utilized. The same devices are also applicable for non-HART smart devices.

One device can be used for all applications of this type, which makes applying these devices simple. Stocking spares only requires one type of unit adding to the convenience.

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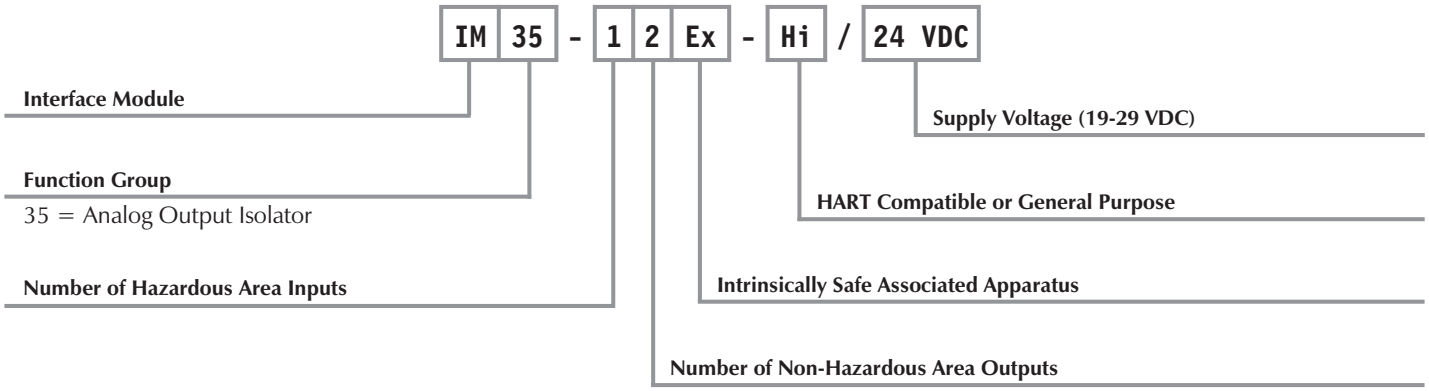
Analog Input Repeaters/Supplies — Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.



Extension Examples:

IM35-11Ex-Hi/24 VDC
Interface Module
Analog Output Isolator
Single Channel Input
One Non-Hazardous Area Current Output
Intrinsically Safe Associated Apparatus
HART Compatible
24 VDC Supply Voltage

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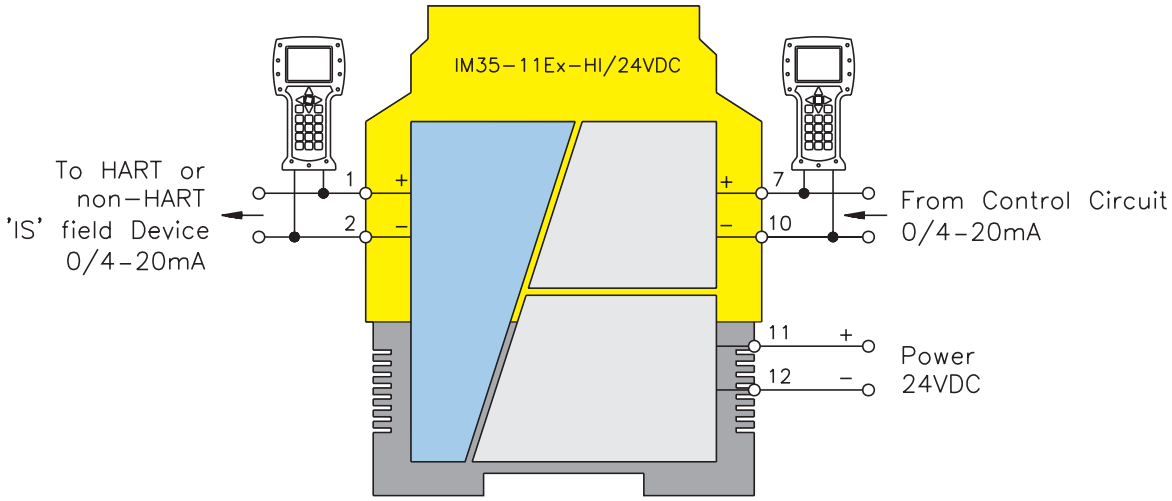
IM35-11Ex-Hi/24 VDC — Analog Output Isolators



Functional Description:

This single channel device will allow a controller in a non-hazardous area to provide a 1:1 transfer of a 0/4-20 mA signal to a device in a hazardous area. Valve controllers or I/P devices that are intrinsically safe, as well as signals that are "IS" originating from another non-hazardous area, may be accommodated. Bi-directional HART communications capability is also incorporated.

Features:

- 1 channel 0/4-20 mA current driver
- HART or non-HART compatible
- Allows bi-directional HART communications
- Facilities for non-hazardous area HART monitoring
- Linearity of less than 0.1%
- Temperature drift less than 0.01% /K

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage (19-29 VDC)
0-20 mA
24 mA can be transferred max load of 430 Ω
Input Resistance 110 Ω

Outputs: Non-Hazardous Area

0/4-20 mA (Load 600 Ω max.)
Relay: 250 VAC/120 VDC, 2A
500 VA/60 W 10Hz

For entity parameters see control drawings on pages B86 - B91.

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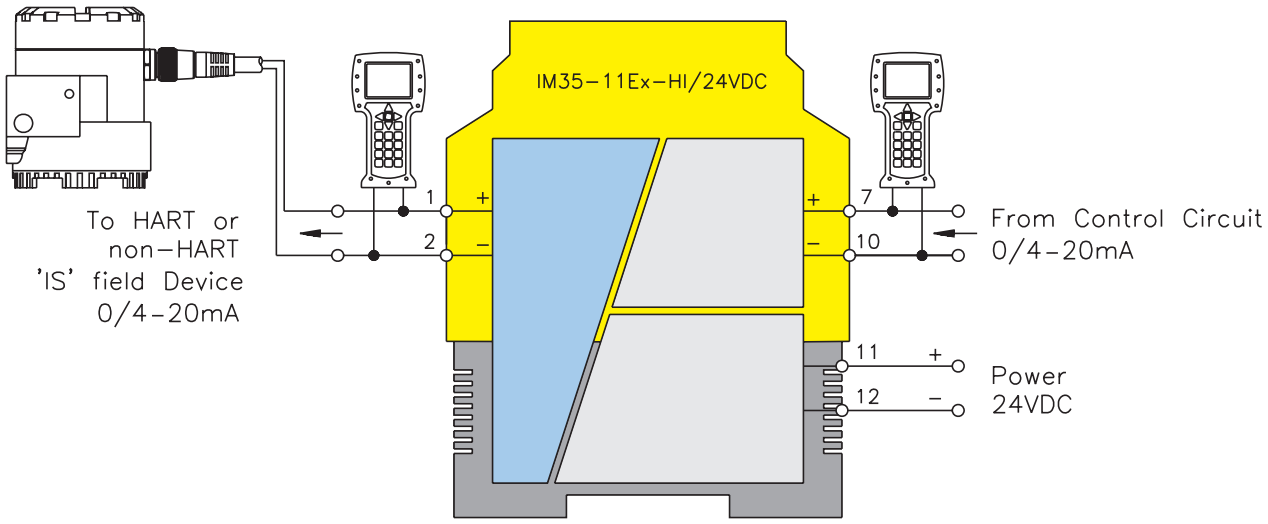
Analog Output Isolators — IM35-11Ex-Hi/24 VDC

Pin #	Terminal Function
1	(+) 0/4-20 mA Field Output
2	(-) 0/4-20 mA Field Output
3	No Connection
4	No Connection
5	No Connection
6	No Connection
7	(+) 0/4-20 mA Non-Hazardous Area Input
8	No Connection
9	No Connection
10	(-) 0/4-20 mA Non-Hazardous Area Input
11	Module Power (+)
12	Module Power (-)



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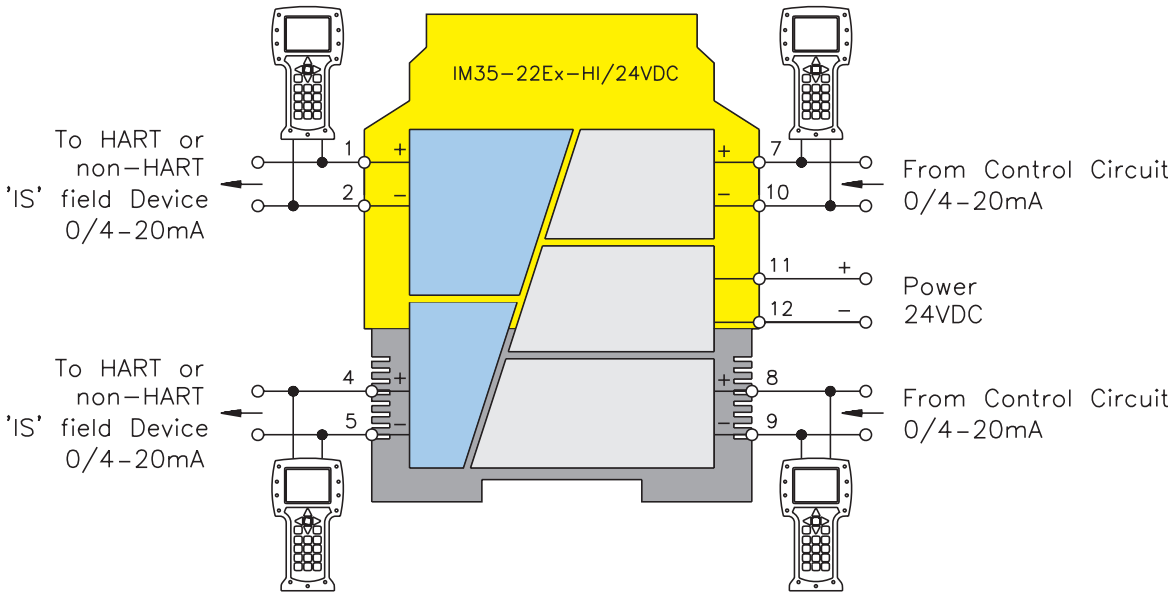
IM35-22Ex-Hi/24 VDC — Analog Output Isolators



Functional Description:

This dual channel device will allow a controller in a non-hazardous area to provide a 1:1 transfer of 2 separate 0/4-20 mA signals to two separate devices in the hazardous area. Valve controllers or I/P devices that are intrinsically safe, as well as signals that are "IS" originating from another non-hazardous area, or any combination of these signals, may be accommodated. Bi-directional HART communications capability is also incorporated for both channels.

Features:

- 2 channel 0/4-20 mA current driver
- HART or non-HART compatible
- Allows bi-directional HART communications
- Facilities for non-hazardous area HART monitoring
- Linearity of less than 0.1%
- Temperature drift less than 0.01% /K

Electrical Parameters:

Inputs: Hazardous Area

Supply Voltage (19-29 VDC)

0-20 mA
24 mA can be transferred max load of 430 Ω
Input Resistance 110 Ω

Outputs: Non-Hazardous Area

0/4-20 mA(Load 600 Ω max)

24 mA with a max load of 430 Ω
Load is 600 Ω max

For entity parameters see control drawings on pages B86 - B91.

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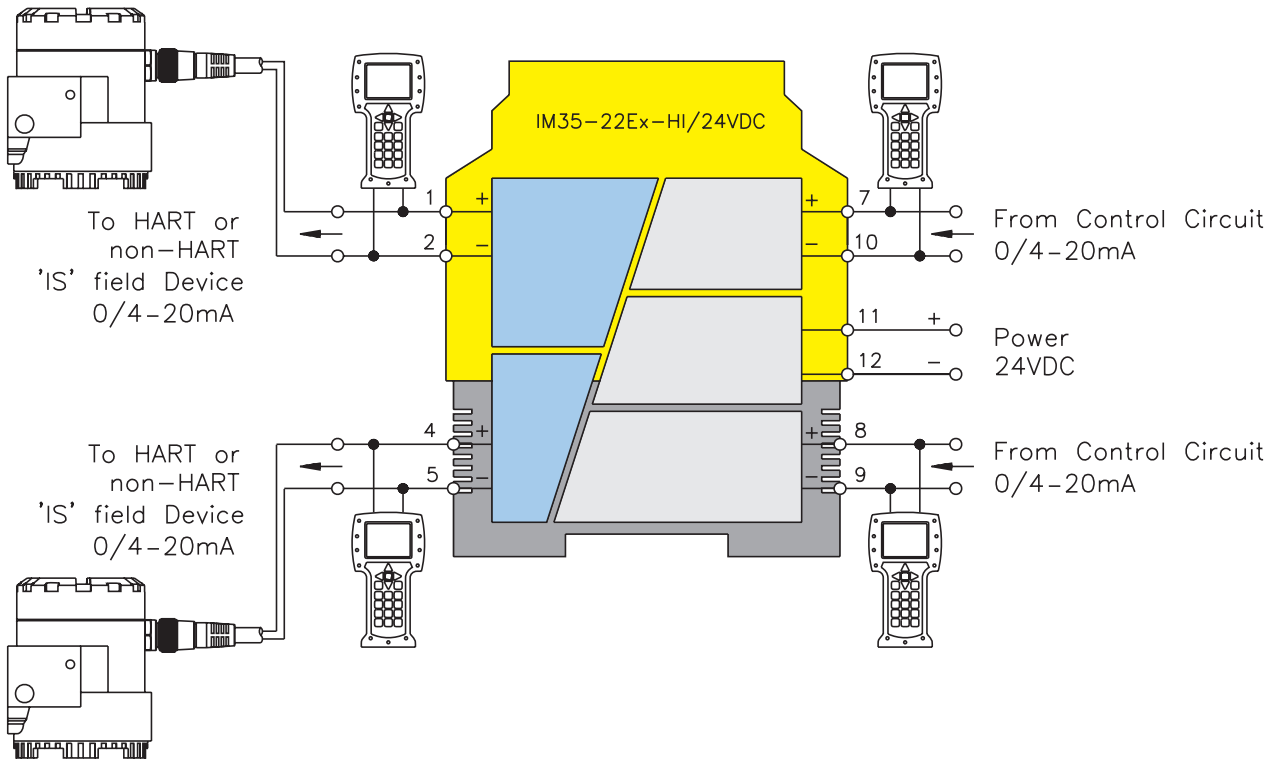
Analog Output Isolators — IM35-22Ex-Hi/24 VDC

Pin #	Terminal Function
1	(+) 0/4-20 mA Field Output
2	(-) 0/4-20 mA Field Output
3	No Connection
4	(+) 0/4-20 mA Field Output
5	(-) 0/4-20 mA Field Output
6	No Connection
7	(+) 0/4-20 mA Non-Hazardous Area Input
8	(+) 0/4-20 mA Non-Hazardous Area Input
9	(-) 0/4-20 mA Non-Hazardous Area Input
10	(-) 0/4-20 mA Non-Hazardous Area Input
11	Module Power (+)
12	Module Power (-)



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Solenoid Driver/Discrete Output Isolators

These loop powered "IS" interface devices provide power for "IS" solenoids in a hazardous area to be actuated from a controller in the non-hazardous area.

The IM72 solenoid drivers are uniquely designed devices that allow them to drive the vast majority of "IS" solenoids available in today's marketplace with a single type of interface device. Gone are the days when a wide variety of isolators were needed to drive specific solenoids with specific requirements. A single device will now allow you to use a single model for most applications, eliminating the need to do complicated and tedious calculations.

The design of these 1 and 2 channel devices make it extremely simple to choose the appropriate interface. Either choose a 1 channel or 2 channel interface, that's all there is to it. Stock can be significantly reduced, and installation and maintenance made easier. With a single unit for most applications, the IM72 makes choosing the appropriate interface as easy as it gets.

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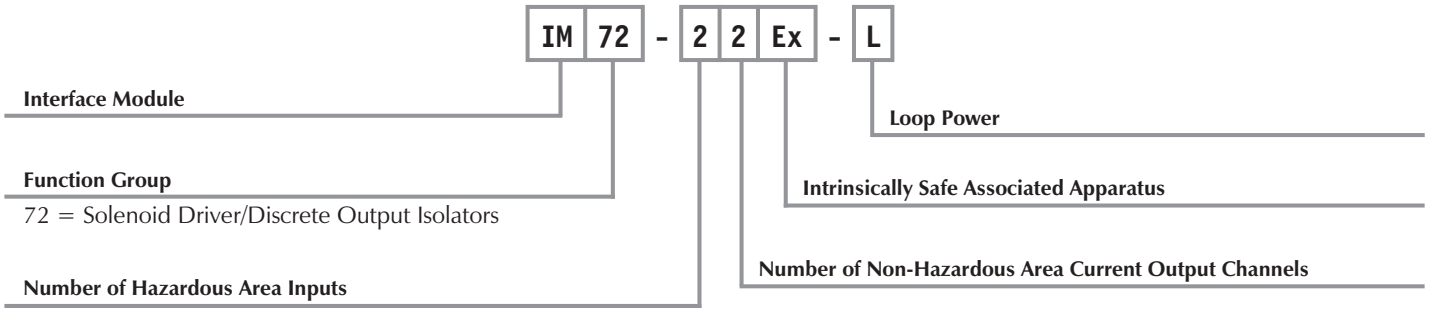
Solenoid Driver/Discrete Output Isolators — Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.



Extension Examples:

IM72-22Ex/L
Interface Module
Solenoid Driver/Discrete Output Isolators
Two Input Channels
Two Non-Hazardous Area Current Outputs
Intrinsically Safe Associated Apparatus
Looped Power

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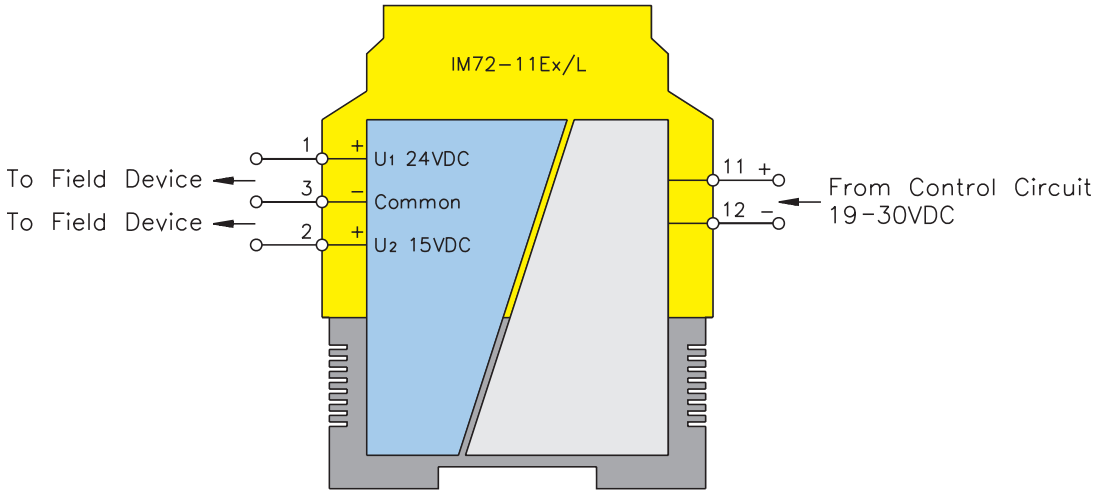
IM72-11Ex/L — Solenoid Driver/Discrete Output Isolators



Functional Description:

This single channel device is designed to drive the vast majority of intrinsically safe solenoids available, as well as "IS" displays and other field devices that may require a separate "IS" power source. The unique design allows different configurations to be implemented depending on the specific field device being used.

Loop power is applied from a non-hazardous area source directly to the non-hazardous area inputs eliminating the requirement for additional power supply connections.

Features:

- 1 channel solenoid driver or "IS" supply
- Loop powered
- 2 output levels
- Switching frequency up to 500 Hz

Electrical Parameters:

Inputs: Hazardous Area

Supply (Loop Power)

Signal "OFF" . . . . . <5 V

Signal "ON" . . . . . 19-30 VDC

Switch-on delay . . . . . <400 µ

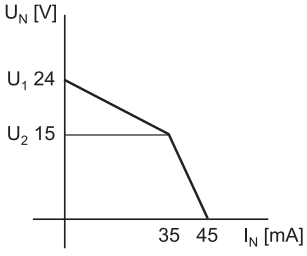
Outputs: Non-Hazardous Area

In accordance with Output Curve:

U1=24 V (Pins 1 & 3)
U2=15 V (Pins 2 &3)

I1= 45 mA (Pins 1 &3)
I2=45 mA (Pins 2 & 3)

Switching Frequency . . . . <500 Hz



For entity parameters see control drawings on pages B86 - B91.

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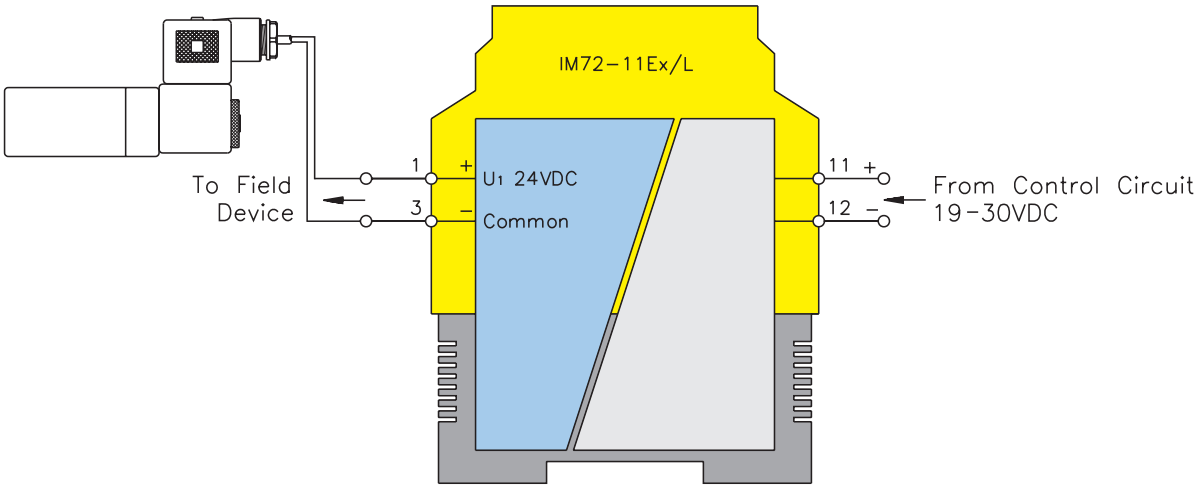
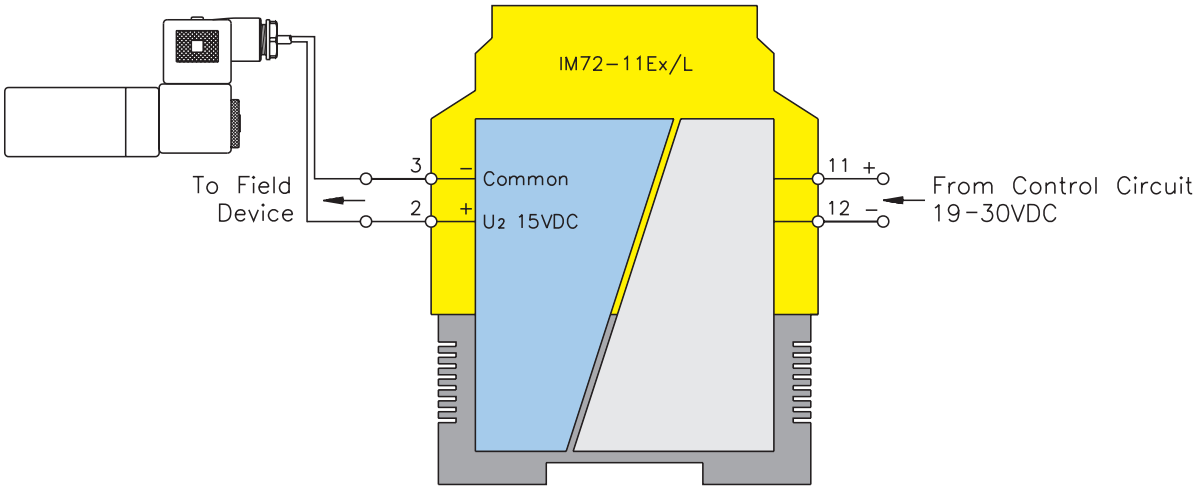
Solenoid Driver/Discrete Output Isolators IM72-11Ex/L

Pin #	Terminal Function
1	U1 Field Output
2	U2 Field Output
3	Common Field Output
4	No Connection
5	No Connection
6	No Connection
7	No Connection
8	No Connection
9	No Connection
10	No Connection
11	(+) Non-Hazardous Area Input
12	(-) Non-Hazardous Area Input





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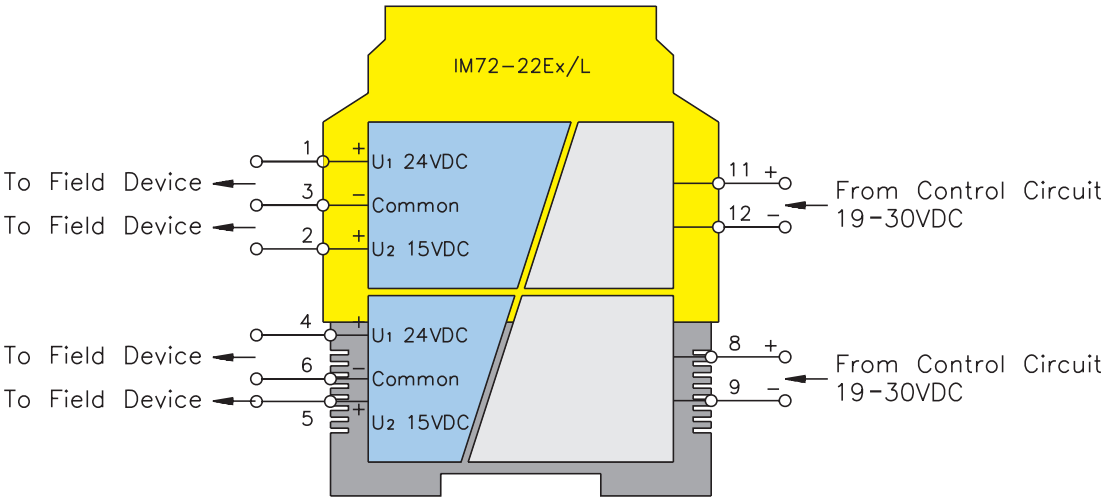
IM72-22Ex/L — Solenoid Driver/Discrete Output Isolators



Functional Description:

This dual channel device is designed to drive 2 separate intrinsically safe solenoids, "IS" displays or other field devices that may require a separate "IS" power source, or any combination of these devices. The unique design allows different configurations to be implemented depending on the specific field device or devices being applied.

Loop power is applied from a non-hazardous area source directly to the non-hazardous area inputs of each channel eliminating the requirement for additional power supply connections.

Features:

- 2 channel solenoid driver or "IS" supply
- 2 isolated loop powered circuits
- 2 output levels per channel
- Switching frequency up to 500 Hz

Electrical Parameters:

Inputs: Hazardous Area

Supply (Loop Power)

Signal "OFF" . . . . . <5 V

Signal "ON" . . . . . 19-30 VDC

Switch-on delay . . . . . <400 μ

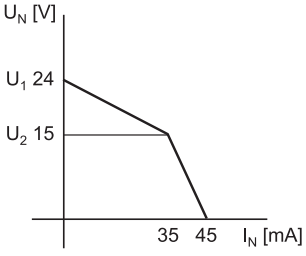
Outputs: Non-Hazardous Area

In accordance with Output Curve:

U1=24 V (Pins 1 & 3, 4 & 6)
U2=15 V (Pins 2 & 3, 5 & 6)

I1= 45 mA (Pins 1 & 3, 4 & 6)
I2=45 mA (Pins 2 & 3, 5 & 6)

Switching Frequency . . . . <500 Hz



For entity parameters see control drawings on pages B86 - B91.

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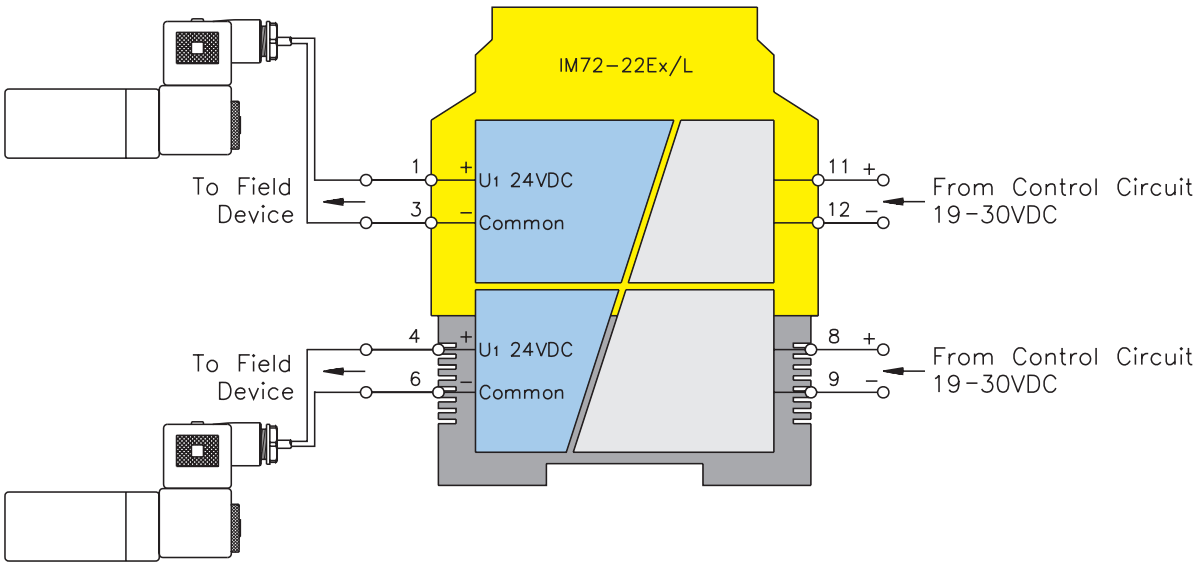
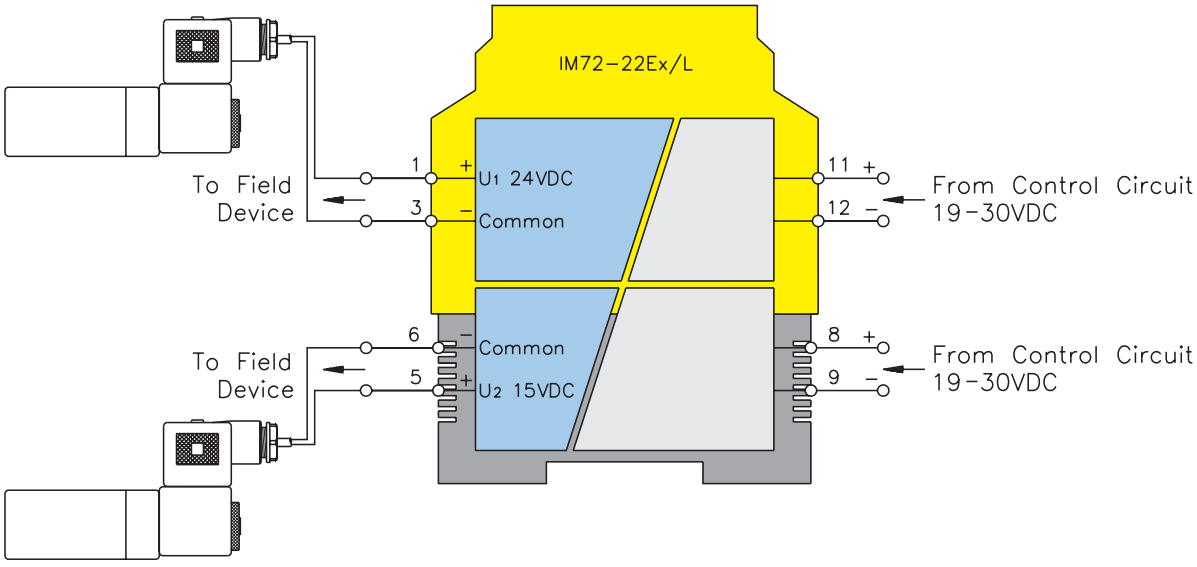
Solenoid Driver/Discrete Output Isolators — IM72-22Ex/L

Pin #	Terminal Function
1	U1 Field Output
2	U2 Field Output
3	Common Field Output
4	U1 Field Output
5	U2 Field Output
6	Common Field Output
7	No Connection
8	(+) Non-Hazardous Area Input
9	(-) Non-Hazardous Area Input
10	No Connection
11	(+) Non-Hazardous Area Input
12	(-) Non-Hazardous Area Input





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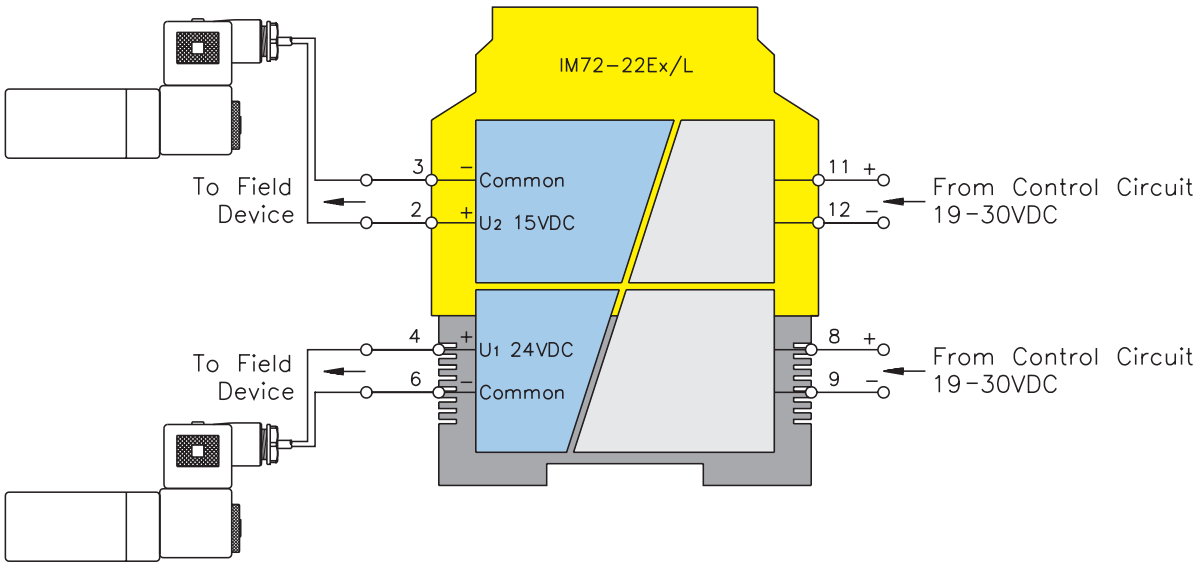
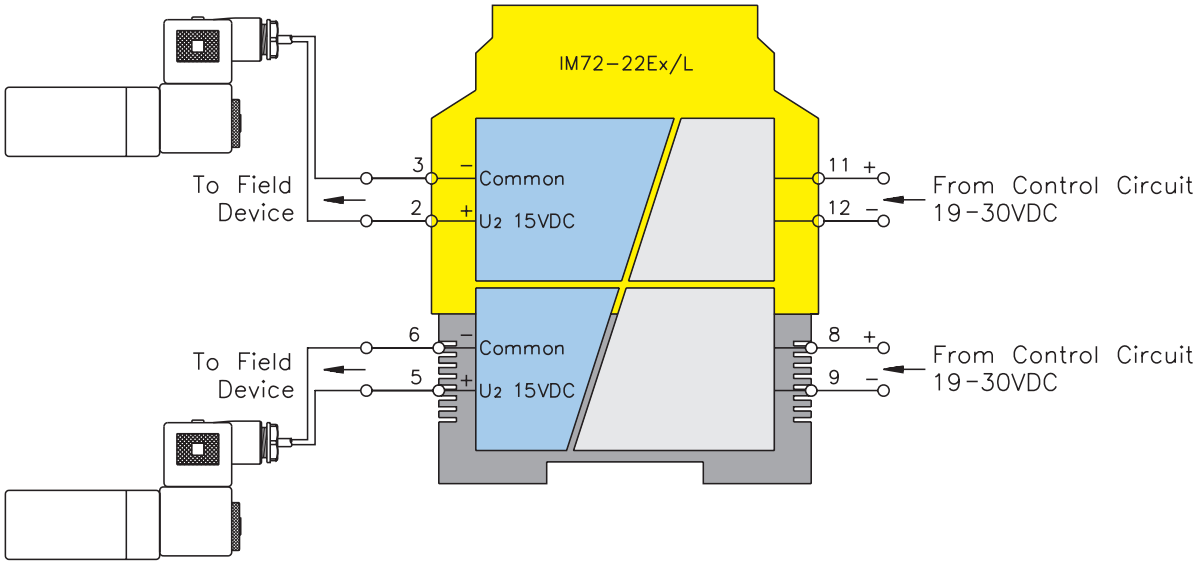
IM72-22Ex/L — Solenoid Driver/Discrete Output Isolators

Pin #	Terminal Function
1	U1 Field Output
2	U2 Field Output
3	Common Field Output
4	U1 Field Output
5	U2 Field Output
6	Common Field Output
7	No Connection
8	(+) Non-Hazardous Area Input
9	(-) Non-Hazardous Area Input
10	No Connection
11	(+) Non-Hazardous Area Input
12	(-) Non-Hazardous Area Input





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Notes:

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Approvals

Part Number	IECEx Approval Number http://domino.iec.ch/IECEx/IECExWeb.nsf	ATEX Approval Number www.turck.com/IMATEX
IM1-121EX-R	IECEx TUN 06.0006X	PTB 00 ATEX 2033
IM1-121EX-T	IECEx TUN 06.0006X	PTB 00 ATEX 2033
IM1-12EX-MT	IECEx TUN 06.0006X	PTB 00 ATEX 2033
IM1-12EX-R	IECEx TUN 06.0006X	PTB 00 ATEX 2033
IM1-12EX-T	IECEx TUN 06.0006X	PTB 00 ATEX 2033
IM1-22EX-MT	IECEx TUN 06.0006X	PTB 00 ATEX 2033
IM1-22EX-R	IECEx TUN 06.0006X	PTB 00 ATEX 2033
IM1-22EX-T	IECEx TUN 06.0006X	PTB 00 ATEX 2033
IM1-451EX-R	IECEx TUN 06.0007X	PTB 00 ATEX 2033
IM1-451EX-T	IECEx TUN 06.0007X	PTB 00 ATEX 2033
IM12-22EX-R	IECEx TUN 06.0006X	PTB 00 ATEX 2033
IM31-11EX-I	IECEx TUN 06.0006X	TÜV 04 ATEX 2679
IM31-11EX-U	IECEx TUN 06.0006X	TÜV 04 ATEX 2679
IM31-12EX-I	IECEx TUN 06.0006X	TÜV 04 ATEX 2679
IM31-22EX-I	IECEx TUN 06.0006X	TÜV 04 ATEX 2679
IM31-22EX-U	IECEx TUN 06.0006X	TÜV 04 ATEX 2679
IM33-11EX-HI/24VDC	IECEx TUN 06.0001X	TÜV 00 ATEX 1595
IM33-12EX-HI/24VDC	IECEx TUN 06.0001X	TÜV 00 ATEX 1595
IM33-22EX-HI/24VDC	IECEx TUN 06.0001X	TÜV 00 ATEX 1595
IM34-11EX-CI	IECEx TUN 06.0010X	TÜV 02 ATEX 1898
IM34-11EX-I	IECEx TUN 06.0010X	TÜV 02 ATEX 1898
IM34-12EX-CRI	IECEx TUN 06.0010X	TÜV 02 ATEX 1898
IM34-12EX-RI	IECEx TUN 06.0010X	TÜV 02 ATEX 1898
IM34-14EX-CDRI	IECEx TUN 05.0014X	TÜV 02 ATEX 1898
IM35-11EX-HI/24VDC	IECEx TUN 06.0012X	TÜV 03 ATEX 2311
IM35-22EX-HI/24VDC	IECEx TUN 06.0012X	TÜV 03 ATEX 2311
IM72-11EX/L	IECEx TUN 05.0011X	TÜV 05 ATEX 2846
IM72-22EX/L	IECEx TUN 05.0011X	TÜV 05 ATEX 2846

Note:
UL Approvals are pending on all of the models listed here.
FM Approval Control Drawings are included on pages B86 - B91 in this guide.

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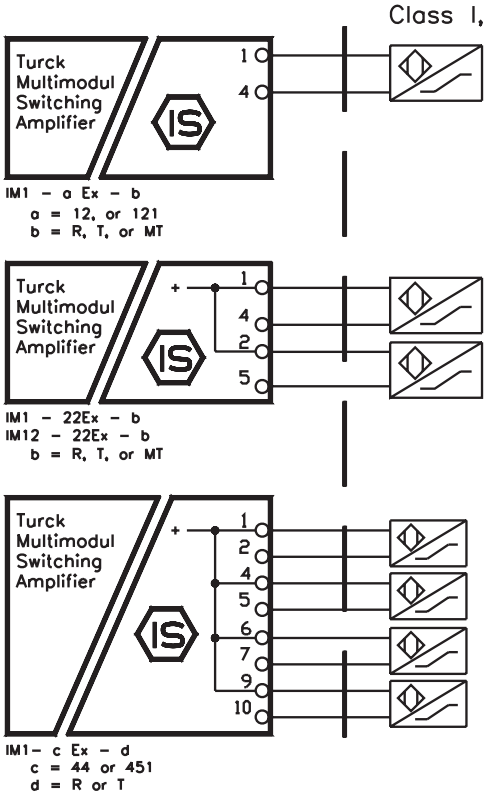
FM Approved Isolator Barriers

Discrete Input Devices with Intrinsically Safe Field Circuits

NON-HAZARDOUS LOCATION, OR
Class I, Division 2, Groups A,B,C or D

HAZARDOUS (CLASSIFIED) LOCATION
Class I, Div. 1, Group A, B, C or D;
Class II, Div. 1, Group E, F or G;
Class III, Div. 1; or
Class I, Zone 0, 1 or 2, Group IIC, IIB or IIA



Entity Parameters: Class I, Division 1; Class II, Division 1; Class III, Division 1
Circuit Characteristic: Linear

Model	Terminals	V_{oc} (V)	I_{sc} (mA)	P_o (mW)	C_o(uF) AB/CE/DFG	L_o (mH) AB/CE/DFG
IM1-12Ex-.	1-4	9.6	11	27	3.6/26.0/210	250/922/1H
IM1-121Ex-.						
IM1-22Ex-.	1-4, 2-5	9.6	11	27	3.6/26.0/210	250/922/1H
IM12-22Ex-.						
IM1-44Ex-.	1-2, 4-5, 6-7, 9-10	11.5	12.8	37	1.6/11.2/46.0	222/781/1H
IM1-451Ex-.						

Model	Terminals	V_t (V)	I_t (mA)	P_o (mW)	C_o(uF) AB/CE/DFG	L_o (mH) AB/CE/DFG
IM1-22Ex-.	1-2-4-5	9.6	22	54	3.6/26.0/210	67/246/579
IM12-22Ex-.						
IM1-44Ex-.	1-2-4-5-6-7-9-10	11.5	51	147	1.6/11.2/46.0	12.5/49.0/108
IM1-451Ex-.						

Entity Parameters: Class I, Zone 0, 1, or 2
Circuit Characteristic: Linear

Model	Terminals	U_o (V)	I_o (mA)	P_o (mW)	C_o(uF) IIC/IIB/IIA	L_o (mH) IIC/IIB/IIA
IM1-12Ex-.	1-4	9.6	11	26	3.76/11.3/30.1	282/981/1H
IM1-121Ex-.						
IM1-22Ex-.	1-4, 2-5	9.6	11	26	3.76/11.3/30.1	282/981/1H
IM12-22Ex-.						
IM1-22Ex-.	1-2-4-5	9.6	22	54	3.6/26.0/210	67/246/579
IM12-22Ex-.						
IM1-44Ex-.	1-2, 4-5, 6-7, 9-10	11.5	12.8	37	1.6/11.2/46.0	222/781/1H
IM1-451Ex-.						
IM1-44Ex-.	1-2-4-5-6-7-9-10	11.5	51	147	1.6/11.2/46.0	12.5/49.0/108
IM1-451Ex-.						

Notes:

1. The symbol designates third party approved with correct entity parameters meeting the relations shown in Table 1.
   - For US jurisdictions – Any FM approved intrinsically safe apparatus with Entity Concept parameters, or any simple apparatus.
   - For Canadian jurisdictions – Any Canadian certified intrinsically safe apparatus with Entity Concept parameters, or any simple apparatus.

   The Entity concept allows interconnection of intrinsically safe apparatus and associatedbpparatus not specifically examined in such combination as a system when the conditions above are met.

   $V_{max} \geq V_{oc}$ or V_t $\quad I_{max} \geq I_{sc}$ or I_t $\quad U_i \geq U_o$ $\quad I_i \geq I_o$ $\quad P_i \geq P_o$
   $C_i + C_{cable} \leq C_a$ $\quad L_i + L_{cable} \leq L_a$ $\quad C_i + C_{cable} \leq C_o$ $\quad L_i + L_{cable} \leq L_o$

   A simple apparatus is defined as an electrical component or combination of components of simple construction with well-defined electrical parameters that does not generate more than 1.5V, 100mA, and 25mW, or a passive component that does not dissipate more than 1.3W and is compatable with the intrinsic safety of the circuit in which it is used.

2. When the field device is a contact closure, the connection should be made as shown below for proper performance.

   IM1 models with line monitoring enabled R1 should be 1kΩ to 2.2kΩ
   R2 should be 10kΩ to 22kΩ IM12 models

4. Wiring methods must be in accordance with:
   - For US jurisdictions – the National Electrical Code, ANSI/NFPA 70, Article 504 (for Division installations) or Article 505 (for Zone applications), and ANSI/ISA RP12.06.01.
   - For Canadian jurisdictions – the Canadian Electrical Code, CSA 22.1, Appendix F.

5. Associated apparatus must not be connected to any device that uses or generates in excess of 250Vrms.

6. If the electrical parameters of the cable are unknown, the following values may be used:
   Capacitance – 60pF/foot,
   Inductance – 0.2μH/foot

Drawing No.: IS-1.101	TURCK 3000 Campus Drive Plymouth, MN 55441 Phone: (763) 553-7300
Title: Control Drawing for IM1-..Ex-. and IM12-..Ex-. Isolator Barriers with I/S (Entity) Field Circuits	
Scale: NONE	Sheet 1 of 1

Rev	Description	Drft	Date
A	Release	BVL	11/16/05

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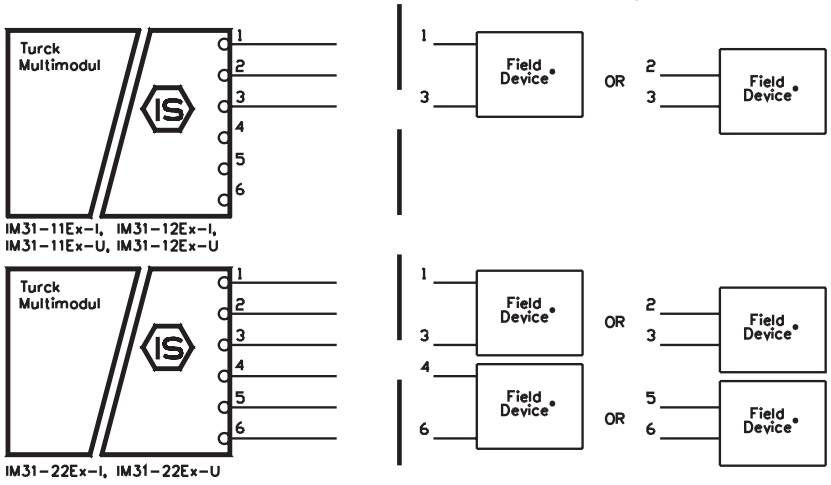
FM Approved Isolator Barriers

Discrete Output Devices with Intrinsically Safe Field Circuits

NON–HAZARDOUS LOCATION, OR
Class I, Division 2, Groups A,B,C,D

HAZARDOUS (CLASSIFIED) LOCATION
Class I, Div. 1, Group A,B,C or D; Class II, Div. 1, Group E,F or G; Class III, Div. 1
or
Class I, Zone 0, Group IIC, IIB, or IIA



- The field device may be:
  - Any FM approved intrinsically safe apparatus with compatible Entity Concept parameters (see Note 1), or
  - Any Simple Apparatus (see Note 2).

Entity Parameters: Class I, Division 1; Class II, Division 1; Class III, Division 1
Output characteristic: Linear

Model	Terminals	V_{OC} (V)	I_{sc} (mA)	P_o (mW)	C_a(uF) AB/CE/DFG	L_a (H) ABCDEFG
IM31–1.EX–.	1–2–3	7.2	1	0.3	13.5/240/240	1
IM31–22EX–.	1–2–3 4–5–6	7.2	1	0.3	13.5/240/240	1

Entity Parameters: Class I, Zone 0, 1, or 2
Output characteristic: Linear

Model	Terminals	U_o (V)	I_o (mA)	P_o (mA)	C_a(uF) IIC/IIB, IIA	L_a (mH) IIC, IIB, IIA
IM31–1.EX–.	1–2–3	7.2	1	0.3	13.5/240	1
IM31–22EX–.	1–2–3 4–5–6	7.2	1	0.3	13.5/240/240	1

Notes:

1. The entity concept allows interconnection of intrinsically safe apparatus and associated apparatus not specifically examined in combination as a system when the conditions below are met.

   $V_{max} \geq V_{oc}$ or V_t $\quad I_{max} \geq I_{sc}$ or I_t $\quad U_i \geq U_o$ $\quad I_i \geq I_o$ $\quad P_i \geq P_o$
   $C_i + C_{cable} \leq C_a$ $\quad L_i + L_{cable} \leq L_a$ $\quad C_i + C_{cable} \leq C_o$ $\quad L_i + L_{cable} \leq L_o$

2. A simple apparatus is defined as an electrical component or combination of components of simple construction with well–defined electrical parameters that does not generate more than 1.5V, 100mA, and 25mW, or a passive component that does not dissipate more than 1.3W and is compatable with the intrinsic safety of the circuit in which it is used.
3. Wiring methods must be in accordance with:
   For US jurisdictions – the National Electrical Code, ANSI/NFPA 70, Article 504 (for Division 1 or 2 installations) or Article 505 (for Zone 0, 1 or 2 applications), and ANSI/ISA RP12.06.01.
   For Canadian jurisdictions – the Canadian Electrical Code, CSA 22.1, for Division 1 or 2 or Zone 1 or 2 installations.
4. Associated apparatus must not be connected to any device that uses or generates in excess of 250Vrms unless it has been determined that the voltage is adequately isolated from the associated apparatus.
5. If the electrical parameters of the cable are unknown, the following default values may be used:
   Capacitance – 60pF/foot
   Inductance – 0.2uH/foot
6. WARNING: Substitution of components may impair intrinsic safety. AVERTISSEMENT: La substitution de composants peut compromettre la securite intrinseque.

Rev	Description	Drft	Date
A	Release	BVL	6/29/06

Drawing No.: IS-1.114	TURCK 3000 Campus Drive Plymouth, MN 55441 Phone: (763) 553-7300
Title: Control Drawing for IM31-..Ex0-. with I/S (Entity) Field Circuits	
Scale: NONE	Sheet 1 of 1

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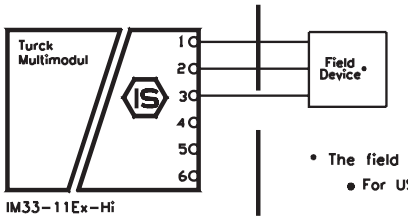
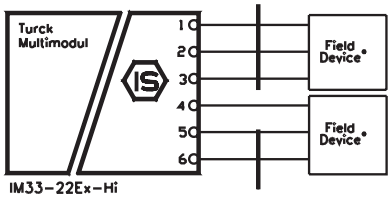
FM Approved Isolator Barriers

Analog Input Devices with Intrinsically Safe Field Circuits

NON-HAZARDOUS LOCATION, OR Class I, Division 2, Groups A,B,C,D	HAZARDOUS (CLASSIFIED) LOCATION Class I, Div. 1, Groups A,B,C,D; Class II, Div. 1, Groups E,F,G; Class III, Div. 1 or Class I, Group IIC, IIB, or IIA, Zone per Note 3



IM33-11Ex-Hi
IM33-12Ex-Hi



IM33-22Ex-Hi

- The field device may be:
  - For US jurisdictions – Any FM approved intrinsically safe apparatus with compatible Entity Concept parameters 1, or any simple apparatus 2.
  - For Canadian jurisdictions – Any Canadian certified intrinsically safe apparatus with compatible Entity Concept parameters 1, or any simple apparatus 2.

Entity Parameters: Class I, Division 1; Class II, Division 1; Class III, Division 1

Model	Terminals	V_{oc} (V)	I_{sc} (mA)	P_o (mW)	Output Characteristic	C_o(uF) AB/CE/DFG	L_o(mH) AB/CE/DFG
IM33-11Ex-... IM33-12Ex-...	1-2-3	21.2	89	472	Linear	0.18/01.24/4.68	4.5/17.3/35.9
IM33-22Ex-...	1-2-3, 4-5-6	21.2	89	472	Linear	0.18/01.24/4.68	4.5/17.3/35.9

Entity Parameters: Class I, Zone 0, 1, or 2

Model	Terminals	U_o (V)	I_o (mA)	P_o (mW)	Output Characteristic	C_o(uF) IIC/IIB/IIA	L_o(mH) IIC/IIB/IIA
IM33-11Ex-... IM33-12Ex-...	1-2-3	21.2	89	472	Linear	0.18/01.24/4.68	4.5/17.3/35.9
IM33-22Ex-...	1-2-3, 4-5-6	21.2	89	472	Linear	0.18/01.24/4.68	4.5/17.3/35.9

Notes:

1. The entity concept allows interconnection of intrinsically safe apparatus and associated apparatus not specifically examined in combination as a system when the conditions below are met.

$V_{max} \geq V_{oc}$ or V_t $\quad I_{max} \geq I_{sc}$ or I_t $\quad U_i \geq U_o$ $\quad I_i \geq I_o$ $\quad P_i \geq P_o$

$C_i + C_{cable} \leq C_a$ $\quad L_i + L_{cable} \leq L_a$ $\quad C_i + C_{cable} \leq C_o$ $\quad L_i + L_{cable} \leq L_o$

2. A simple apparatus is defined as an electrical component or combination of components of simple construction with well-defined electrical parameters that does not generate more than 1.5V, 100mA, and 25mW, or a passive component that does not dissipate more than 1.3W and is compatable with the intrinsic safety of the circuit in which it is used.
3. Wiring methods must be in accordance with:
   For US jurisdictions – the National Electrical Code, ANSI/NFPA 70, Article 504 (for Division 1 or 2 installations) or Article 505 (for Zone 0, 1 or 2 applications), and ANSI/ISA RP12.06.01.
   For Canadian jurisdictions – the Canadian Electrical Code, CSA 22.1, for Division 1 or 2 or Zone 1 or 2 installations.
4. Associated apparatus must not be connected to any device that uses or generates in excess of 250Vrms unless it has been determined that the voltage is adequately isolated from the associated apparatus.
5. If the electrical parameters of the cable are unknown, the following default values may be used:
   Capacitance – 60pF/foot
   Inductance – 0.2uH/foot
6. WARNING: Substitution of components may impair intrinsic safety. AVERTISSEMENT: La substitution de composants peut compromettre la securite intrinseque.

Drawing No.: IS-1.102	TURCK 3000 Campus Drive Plymouth, MN 55441 Phone: (763) 553-7300
Title: Control Drawing for IM33-..Ex-., with I/S (Entity) Field Circuits	
Scale: NONE	Sheet 1 of 1

Rev	Description	Drft	Date
A	Release	BVL	11/22/05

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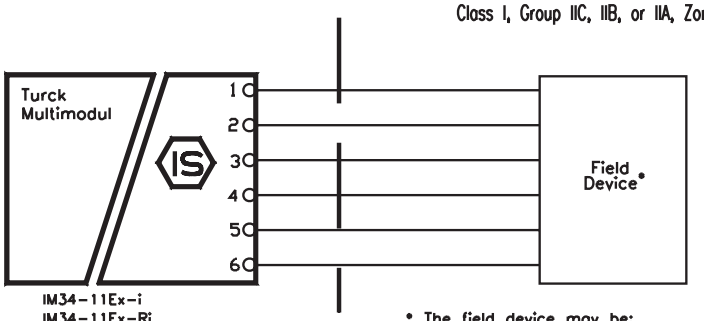
FM Approved Isolated Amplifiers

Temperature Transmitters with Intrinsically Safe Field Circuits

NON–HAZARDOUS LOCATION, OR
Class I, Division 2, Groups A,B,C,D

HAZARDOUS (CLASSIFIED) LOCATION
Class I, Div. 1, Groups A,B,C,D; Class II, Div. 1, Groups E,F,G; Class III, Div. 1
or
Class I, Group IIC, IIB, or IIA, Zone per Note 3



IM34–11Ex–i
IM34–11Ex–Ri
IM34–12Ex–Ci
IM34–12Ex–CRi

* The field device may be:
- For US jurisdictions – Any FM approved intrinsically safe apparatus with compatible Entity Concept parameters 1, or any simple apparatus 2.
- For Canadian jurisdictions – Any Canadian certified intrinsically safe apparatus with compatible Entity Concept parameters 1, or any simple apparatus 2.

Entity Parameters: Class I, Division 1; Class II, Division 1; Class III, Division 1

Model	Terminals	V_t (V)	I_t (mA)	P_o (mW)	Output Characteristic	C_a(uF) AB/CDEFG	L_a(mH) AB/CDEFG
IM34–11Ex0–i	1-2-3-4-5-6	5	7.6	9.5	Linear	100/1000	500/1H
IM34–12Ex0–Ri	1-2-3-4-5-6						
IM34–11Ex0–Ci	1-2-3-4-5-6						
IM34–12Ex0–CRi	1-2-3-4-5-6						

Entity Parameters: Class I, Zone 0, 1, or 2

Model	Terminals	U_o (V)	I_o (mA)	P_o (mW)	Output Characteristic	C_o(uF) IIC/IIB/IIA	L_o(mH) IIC/IIB/IIA
IM34–11Ex0–i	1-2-3-4-5-6	5	7.6	9.5	Linear	100/1000/1000	500/1H/1H
IM34–12Ex0–Ri	1-2-3-4-5-6						
IM34–11Ex0–Ci	1-2-3-4-5-6						
IM34–12Ex0–CRi	1-2-3-4-5-6						

Notes:

1. The entity concept allows interconnection of intrinsically safe apparatus and associated apparatus not specifically examined in combination as a system when the conditions below are met.

$V_{max} \geq V_{oc}$ or V_t $\quad I_{max} \geq I_{sc}$ or I_t $\quad U_i \geq U_o$ $\quad I_i \geq I_o$ $\quad P_i \geq P_o$
$C_i + C_{cable} \leq C_a$ $\quad L_i + L_{cable} \leq L_a$ $\quad C_i + C_{cable} \leq C_o$ $\quad L_i + L_{cable} \leq L_o$

2. A simple apparatus is defined as an electrical component or combination of components of simple construction with well–defined electrical parameters that does not generate more than 1.5V, 100mA, and 25mW, or a passive component that does not dissipate more than 1.3W and is compatable with the intrinsic safety of the circuit in which it is used.

3. Wiring methods must be in accordance with:
For US jurisdictions – the National Electrical Code, ANSI/NFPA 70, Article 504 (for Division 1 or 2 installations) or Article 505 (for Zone 0, 1 or 2 applications), and ANSI/ISA RP12.06.01.

For Canadian jurisdictions – the Canadian Electrical Code, CSA 22.1, for Division 1 or 2 or Zone 1 or 2 installations.

4. Associated apparatus must not be connected to any device that uses or generates in excess of 250Vrms unless it has been determined that the voltage is adequately isolated from the associated apparatus.

5. If the electrical parameters of the cable are unknown, the following default values may be used:
Capacitance – 60pF/foot
Inductance – 0.2µH/foot

6. WARNING: Substitution of components may impair intrinsic safety. AVERTISSEMENT: La substitution de composants peut compromettre la securite intrinseque.

Drawing No.: IS-1.106	TURCK 3000 Campus Drive Plymouth, MN 55441 Phone: (763) 553-7300
Title: Control Drawing for IM34-11Ex-., with I/S (Entity) Field Circuits	
Scale: NONE	Sheet 1 of 1

Rev	Description	Drft	Date
A	Release	BVL	11/22/05

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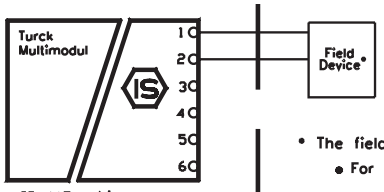
FM Approved Isolator Barriers

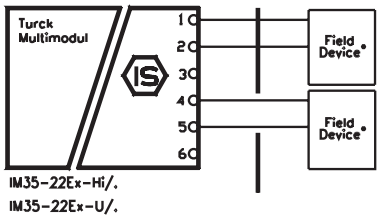
Analog Output Devices with Intrinsically Safe Field Circuits

NON-HAZARDOUS LOCATION, OR
Class I, Division 2, Groups A,B,C,D

HAZARDOUS (CLASSIFIED) LOCATION
Class I, Div. 1, Groups A,B,C,D; Class II, Div. 1, Groups E,F,G; Class III, Div. 1
or
Class I, Group IIC, IIB, or IIA, Zone per Note 3



- The field device may be:
  - For US jurisdictions – Any FM approved intrinsically safe apparatus with compatible Entity Concept parameters 1, or any simple apparatus 2.
  - For Canadian jurisdictions – Any Canadian certified intrinsically safe apparatus with compatible Entity Concept parameters 1, or any simple apparatus 2.



Entity Parameters: Class I, Division 1; Class II, Division 1; Class III, Division 1

Model	Terminals	V_{oc} (V)	I_{sc} (mA)	P_o (mW)	Output Characteristic	R_i (Ohms)	C_o(uF) AB/CDEFG	L_o(mH) AB/CDEFG
IM35-11Ex-Hi/.	1-2	15.9	60	500	Trapezoidal	527	0.15/0.3	1/25
IM35-22Ex-Hi/.	1-2, 4-5	15.9	60	500	Trapezoidal	527	0.15/0.3	1/25
IM35-22Ex-U/.	1-2, 4-5	15.9	60	500	Trapezoidal	527	0.15/0.3	1/25

Entity Parameters: Class I, Zone 0, 1, or 2

Model	Terminals	U_o (V)	I_o (mA)	P_o (mW)	Output Characteristic	R_i (Ohms)	C_o(uF) IIC/IIB/IIA	L_o(mH) IIC/IIB/IIA
IM35-11Ex-Hi/.	1-2	15.9	60	500	Trapezoidal	527	0.15/0.3/0.3	1/25/25
IM35-22Ex-Hi/.	1-2, 4-5	15.9	60	500	Trapezoidal	527	0.15/0.3/0.3	1/25/25
IM35-22Ex-U/.	1-2, 4-5	15.9	60	500	Trapezoidal	527	0.15/0.3/0.3	1/25/25

Notes:

1. The entity concept allows interconnection of intrinsically safe apparatus and associated apparatus not specifically examined in combination as a system when the conditions below are met.
   $V_{max} \geq V_{oc}$ or V_t $\quad I_{max} \geq I_{sc}$ or I_t $\quad U_i \geq U_o$ $\quad I_i \geq I_o$ $\quad P_i \geq P_o$
   $C_i + C_{cable} \leq C_a$ $\quad L_i + L_{cable} \leq L_a$ $\quad C_i + C_{cable} \leq C_o$ $\quad L_i + L_{cable} \leq L_o$
2. A simple apparatus is defined as an electrical component or combination of components of simple construction with well-defined electrical parameters that does not generate more than 1.5V, 100mA, and 25mW, or a passive component that does not dissipate more than 1.3W and is compatable with the intrinsic safety of the circuit in which it is used.
3. Wiring methods must be in accordance with:
   For US jurisdictions – the National Electrical Code, ANSI/NFPA 70, Article 504 (for Division 1 or 2 installations) or Article 505 (for Zone 0, 1 or 2 applications), and ANSI/ISA RP12.06.01.
   For Canadian jurisdictions – the Canadian Electrical Code, CSA 22.1, for Division 1 or 2 or Zone 1 or 2 installations.
4. Associated apparatus must not be connected to any device that uses or generates in excess of 250Vrms unless it has been determined that the voltage is adequately isolated from the associated apparatus.
5. If the electrical parameters of the cable are unknown, the following default values may be used:
   Capacitance – 60pF/foot
   Inductance – 0.2uH/foot
6. WARNING: Substitution of components may impair intrinsic safety. AVERTISSEMENT: La substitution de composants peut compromettre la securite intrinseque.

Drawing No.: IS-1.105	TURCK 3000 Campus Drive Plymouth, MN 55441 Phone: (763) 553-7300
Title: Control Drawing for IM35-..Ex-Hi and IM35-..Ex-U with I/S (Entity) Field Circuits	
Scale: NONE	Sheet 1 of 1

Rev	Description	Drft	Date
A	Release	BVL	11/22/05

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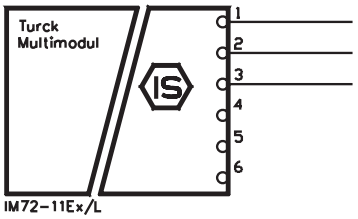
Discrete Output Devices with Intrinsically Safe Field Circuits

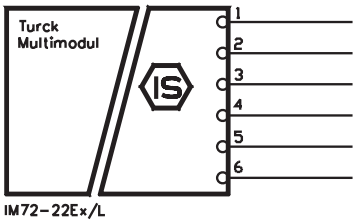
FM C US APPROVED

NON-HAZARDOUS LOCATION, OR
Class I, Division 2, Groups A,B,C,D

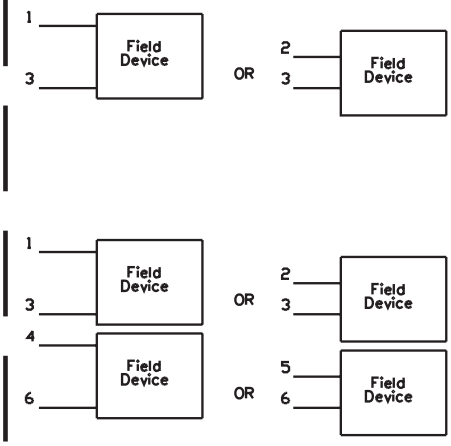
HAZARDOUS (CLASSIFIED) LOCATION
Class I, Div. 1, Group A,B,C or D; Class II, Div. 1, Group E,F or G; Class III, Div. 1
or
Class I, Zone 0, Group IIC, IIB, or IIA



IM72-11Ex/L



IM72-22Ex/L



- The field device may be:
  - Any FM approved intrinsically safe apparatus with compatible Entity Concept parameters (see Note 1), or
  - Any Simple Apparatus (see Note 2).

Entity Parameters: Class I, Division 1; Class II, Division 1; Class III, Division 1
Output characteristic: Trapezoidal (R_i = 297 Ohms)

Model	Terminals	V_{oc} (V)	I_{sc} (mA)	P_o (mW)	C_a(uF) AB/CDEFG	L_a (mH) AB/CDEFG
IM72-11EX/L	1-3	27	95.3	674	0.03/0.15	2/5
IM72-11EX/L	2-3	17.5	95.3	674	0.10/0.30	1/10
IM72-22EX/L	1-3, 4-6	27	95.3	674	0.03/0.15	2/5
IM72-22EX/L	2-3, 5-6	17.5	95.3	674	0.10/0.30	1/10

Entity Parameters: Class I, Zone 0, 1, or 2
Output characteristic: Trapezoidal (R_i = 297 Ohms)

Model	Terminals	U_o (V)	I_o (mA)	P_o (mW)	C_a(uF) IIC/IIB,IIA	L_a (mH) IIC/IIB,IIA
IM72-11EX/L	1-3	27	95.3	674	0.03/0.15	2/5
IM72-11EX/L	2-3	17.5	95.3	674	0.10/0.30	1/10
IM72-22EX/L	1-3, 4-6	27	95.3	674	0.03/0.15	2/5
IM72-22EX/L	2-3, 5-6	17.5	95.3	674	0.10/0.30	1/10

Notes:

1. The entity concept allows interconnection of intrinsically safe apparatus and associated apparatus not specifically examined in combination as a system when the conditions below are met.

$V_{max} \geq V_{oc}$ or V_t $\quad I_{max} \geq I_{sc}$ or I_t $\quad U_i \geq U_o$ $\quad I_i \geq I_o$ $\quad P_i \geq P_o$

$C_i + C_{cable} \leq C_a$ $\quad L_i + L_{cable} \leq L_a$ $\quad C_i + C_{cable} \leq C_o$ $\quad L_i + L_{cable} \leq L_o$

2. A simple apparatus is defined as an electrical component or combination of components of simple construction with well-defined electrical parameters that does not generate more than 1.5V, 100mA, and 25mW, or a passive component that does not dissipate more than 1.3W and is compatable with the intrinsic safety of the circuit in which it is used.
3. Wiring methods must be in accordance with:
   For US jurisdictions – the National Electrical Code, ANSI/NFPA 70, Article 504 (for Division 1 or 2 installations) or Article 505 (for Zone 0, 1 or 2 applications), and ANSI/ISA RP12.06.01.
   For Canadian jurisdictions – the Canadian Electrical Code, CSA 22.1, for Division 1 or 2 or Zone 1 or 2 installations.
4. Associated apparatus must not be connected to any device that uses or generates in excess of 250Vrms unless it has been determined that the voltage is adequately isolated from the associated apparatus.
5. If the electrical parameters of the cable are unknown, the following default values may be used:
   Capacitance – 60pF/foot
   Inductance – 0.2uH/foot
6. WARNING: Substitution of components may impair intrinsic safety. AVERTISSEMENT: La substitution de composants peut compromettre la securite intrinseque.

Rev	Description	Drft	Date
A	Release	BVL	6/21/06

Drawing No.: IS-1.108	TURCK 3000 Campus Drive Plymouth, MN 55441 Phone: (763) 553-7300
Title: Control Drawing for IM72-..Ex0/L with I/S (Entity) Field Circuits	
Scale: NONE	Sheet 1 of 1

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Notes:

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IP 20 REMOTE I/O

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BL20 Gateway Selection Guide

DeviceNet™	PROFIBUS®-DP	Ethernet	Ethernet IP
C7	C8	C9	C10

BL20 Module Selection Guide

Module Type	Pages
Discrete Input	C11
Discrete Output	C17
Discrete AC Input	C23
Discrete Input Blocks	C27
Analog Input	C31
Analog Output	C37
Serial Input & Output	C39
Counter Input	C41
Power Feed	C43
Bus Refreshing	C45
Motor Starter Input & Output	C47

Base Modules	Accessories
C56	C61

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The BL20 Solution

The BL20 modular concept is a very flexible approach to terminal-wired I/O. The gateway, base and electronic modules provide many benefits to the user.

- The gateway provides communication between the fieldbus and I/O modules; modules are not dependent on the fieldbus protocol.
- DIN-rail mountable base modules are available with different wiring configurations to suit the user's needs.
- Electronic modules are hot swappable.
- Power distribution modules can be used to create isolated power segments within the system.

BL20's openness and flexibility provide a viable alternative to traditional PLC I/O.

Maximum Size of a BL20 Station

BL20 stations consist of a gateway and a maximum of 74 I/O modules (equivalent to 1 m station length). Some high-tech and analog I/O modules may consume or produce large amounts of data, and therefore may further limit the number of modules that may be used. It is highly recommended that I/O*assistant* software is used when planning and commissioning BL20 systems. This program allows you to build the BL20 node on your computer and verify that all restrictions with regard to power and size are met. The free I/O*assistant* software is available to download from www.turck.com.

Addressing

As a node on a network, the BL20 station must have an address. The setting of this address is dependent on the network system being used. Each network gateway has a set of rotary switches (one for the most significant digit, or 10's multiplier, and one for the least significant digit, or 1's multiplier) that are used to set the address for the node. DeviceNet™ gateways may be addressed between 0 and 63, while PROFIBUS®-DP and CANopen gateways can be set from 0 to 99.

BL20 Power Distribution

The power supply for a BL20 station is fed via power feeding or bus refreshing modules; the latter also being responsible for the power supply to the internal module bus. Bus refreshing modules are used within a BL20 station (without gateway supply) if the system supply to the BL20 modules (nominal current IMB 1.5 A) is no longer sufficiently guaranteed. Bus refreshing modules are used with tension clamp (BL20-P3T-SBB-B or BL20-P4T-SBBC-B) or screw connection base modules (BL20-P3S-SBB-B or BL20-P4S-SBBC-B). Power feeding modules are used if the system supply to the BL20 modules (nominal current IL < 10 A) is no longer sufficiently guaranteed.

System Supply Via Module Bus

The amount of BL20 modules that may be supplied by a bus refreshing module via the internal module bus depends on the respective minimal current IMB of the individual modules on the bus. The sum of the nominal current inputs of the connected BL20 modules must not exceed 1.5 A. BL20 gateway power requirements (supplied by the first bus refreshing module) should be considered when calculating the required number of bus refreshing modules. If I/O*assistant* software is used, an error message is generated automatically via the <Station - Verify> as soon as the system supply is no longer sufficiently guaranteed.

All bus refreshing modules used in a BL20 station should be connected via the same frame potential. The power supply to the bus is fed via the connections 11 (plus) and 21 (ground) of the respective base module for the bus refreshing module.

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Creating Potential Groups

Both bus refreshing modules and power feeding modules may be used to create a potential group. The base module creates the possible isolation of the potential group on the left-hand side of the respective power distribution module.

It is not permitted for modules with 24 VDC and with 120/230 VAC field supply to be used in a joint potential group. Therefore, when using digital input modules for 120/230 VAC, the power feeding module BL20-PF-120/230VAC-D is to be used to create a special potential group.

C-rail (Cross Connection)

C-rails run through all I/O base modules. The C-rail for base modules for power distribution is mechanically separated; thus potentially isolating the adjoining supply groups.

Access to the C-rail

Access to the C-rail is made via base modules with a C designation (i.e. BL20-S4T-SBCS). The corresponding connection level is indicated by a thick black line on all base modules for BL20 I/O modules. For base modules for power distribution, the black line is only above the connection “24" to indicate that the C-rail is separated from the adjoining potential group to its left.

It is permitted to load the C-rail with a maximum of 24 V; never with 120/230 VAC.

Using the C-rail with Relay Modules

The C-rail may be used to supply a common voltage when relay modules are used. To accomplish this, the load voltage (24 VDC) is connected to a power distribution module and the base module BL20-P4x-SBBC with either tension clamp or screw connections.

If the C-rail is used for the joint supply of voltage to relay modules, there must be a power distribution module used for the potential isolation of the BL20 modules. The C-rail may still be used as protective earth (PE) once the potential isolation has been made.

Using the C-rail as a Protective Earth

A C-rail may be used as a protective earth (PE), where the PE connection for each power distribution modules must be connected to the mounting rail via an additional PE terminal, which is available as an accessory.

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Environmental Conditions

General Technical Data

Potential Isolations	Via Optocoupler
Ambient Temperatures	
Operating Temperature	+32 to +131°F (0 to +55°C)
Storage Temperature	-13 to +185°F (-25 to +85°C
Relative Humidity	5 to 95% (indoor), Level RH-2, without condensation (storage at 45°C)
Noxious Gas	
SO2	10 ppm (rel. humidity <75%, without condensation)
H2S	1.0 ppm (rel. humidity <75%, without condensation)
Shock and Vibration	
Resistant to Vibration	According to EN 61131
Operating Conditions	According to EN 61131
Resistant to Shock	According to IEC 68-2-27
Topple and Fall	According to IEC 68-2-31 and free fall according to IEC 68-2-32
Protection Class	IP 20
Electromagnetic Compatibility (EMC)	According to EN 50 082-2 (Industry)
Tests	According to EN 61131-2
Base Modules	
Measurement Data	According to VDE 0611 part 1/8.92 / IEC 947-7-1/1989
Connection to Technology in TOP Construction	Tension clamp or screw connection
Insulation Stripping Length	8 mm
Crimpable Wire	
Nominal Diameter	1.5 mm^2
"e" solid core H 07V-U	0.5 to 2.5 mm^2
"f" flexible core H 07V-K	0.5 to 1.5 mm^2
"f" with ferrules	According to DIN 46 228/1 (ferrules crimped gas-tight), 0.5 to 1.5 mm^2
Plug Gauge	According to IEC 947-1/1988, A1
Protection Class	IP 20
Approvals	CE, UL, CSA

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DeviceNet Gateway

BL20-GWBR-DNET

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <250 mA from BR power supply
- Supply Current: <10 A to I/O (from U_L)
  <1.5 A to backplane (from U_{SYS})

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20
- Vibration: 1 g @ 5-100 Hz

Material

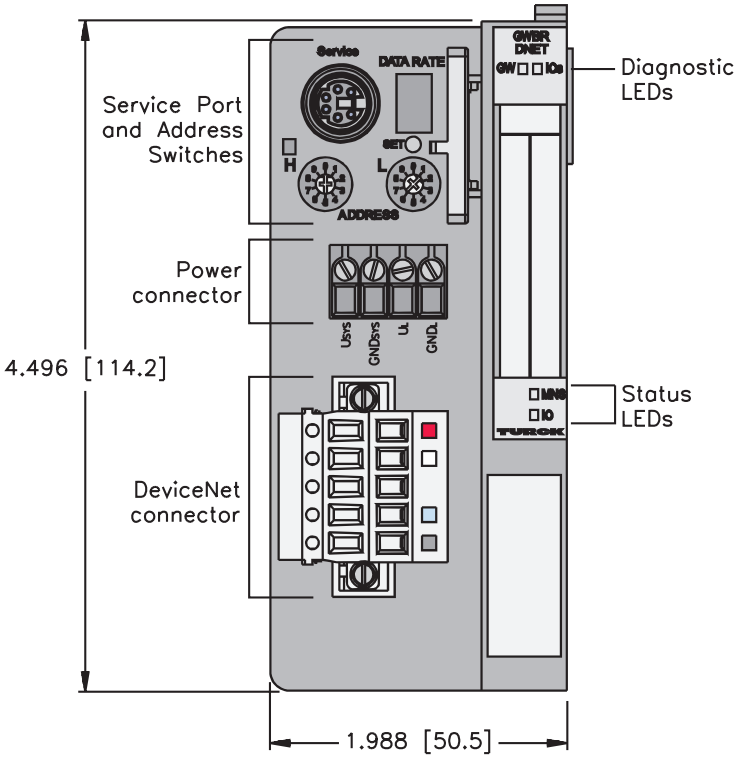
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

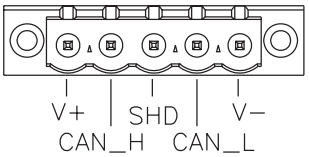
- Diagnostic information available through the DeviceNet I/O map

Diagnostics (Physical)

- LEDs to indicate status of DeviceNet and Module Bus communication

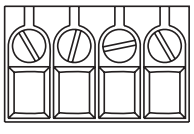


DeviceNet Connector



Power Connection

1 = U_{SYS}
2 = Gnd_{SYS}
3 = U_L
4 = Gnd_L



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PROFIBUS-DP Gateway

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <430 mA from BR power supply (U_{SYS})
- Supply Current: <10 A to I/O (from U_L)
  <1.5 A to backplane (from U_{SYS})

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20
- Vibration: 1 g @ 5-100 Hz

Material

- Housing: PC-V0 (Lexan)

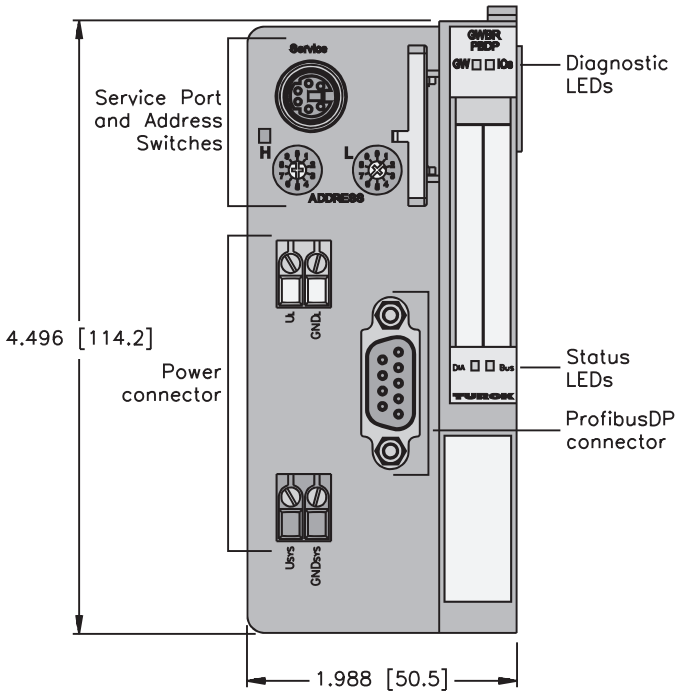
Diagnostics (Logical)

- Diagnostic information available through the PROFIBUS-DP interface

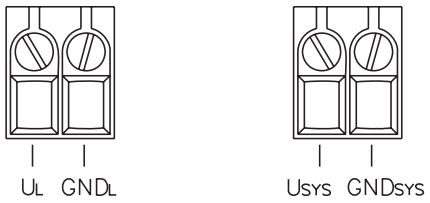
Diagnostics (Physical)

- LEDs to indicate status of PROFIBUS-DP and Module Bus communication

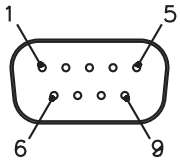
BL20-GW-DPV1



Power Connectors



PROFIBUS-DP Connector



1 = Shield
3 = BUS_B
5 = DGnd
6 = +5 VDC
8 = BUS_A

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Ethernet Gateway

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <430 mA from BR power supply (U_{SYS})
- Supply Current: <10 A to I/O (from U_L)
  <1.5 A to backplane (from U_{SYS})

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20
- Vibration: 1 g @ 5-100 Hz

Material

- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the PROFIBUS-DP interface

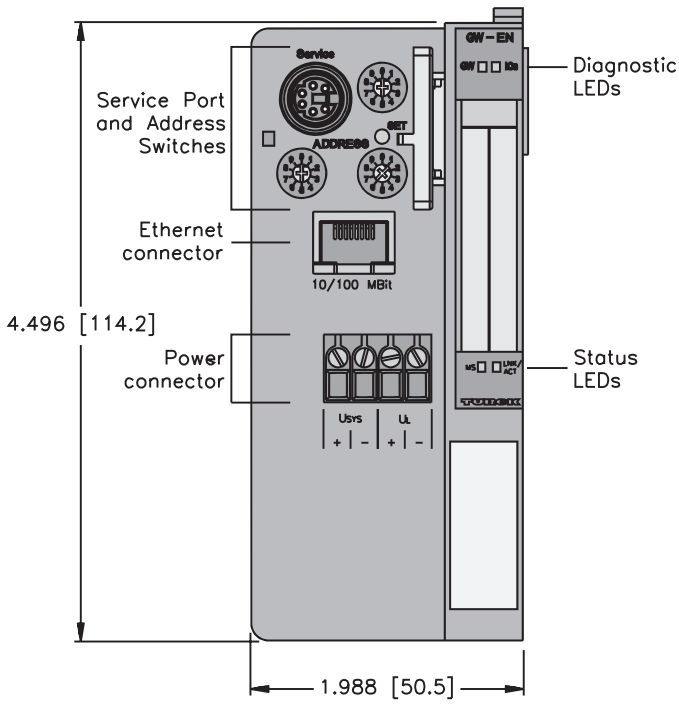
Diagnostics (Physical)

- LEDs to indicate status of PROFIBUS-DP and Module Bus communication

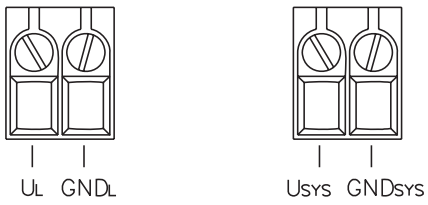
Programmability

- PG in part number designates a programmable gateway
- Programmable according to IEC 61131.3 using CodeSys (includes ladder logic)
- Use CodeSys to create logic programs to control local I/O

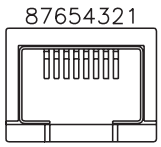
BL20-GW-EN
BL20-PG-EN



Power Connectors



RJ45 Ethernet Standard



1 = WH/or (+TX)
2 = OR (-TX)
3 = WH/GN (+RX)
4 = BU
5 = WH/BU
6 = GN (-RX)
7 = WH/BN
8 = BN

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Ethernet IP Gateway

BL20-GW-EN-IP
BL20-PG-EN-IP

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <430 mA from BR power supply (U_{SYS})
- Supply Current: <10 A to I/O (from U_L)
  <1.5 A to backplane (from U_{SYS})

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20
- Vibration: 1 g @ 5-100 Hz

Material

- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

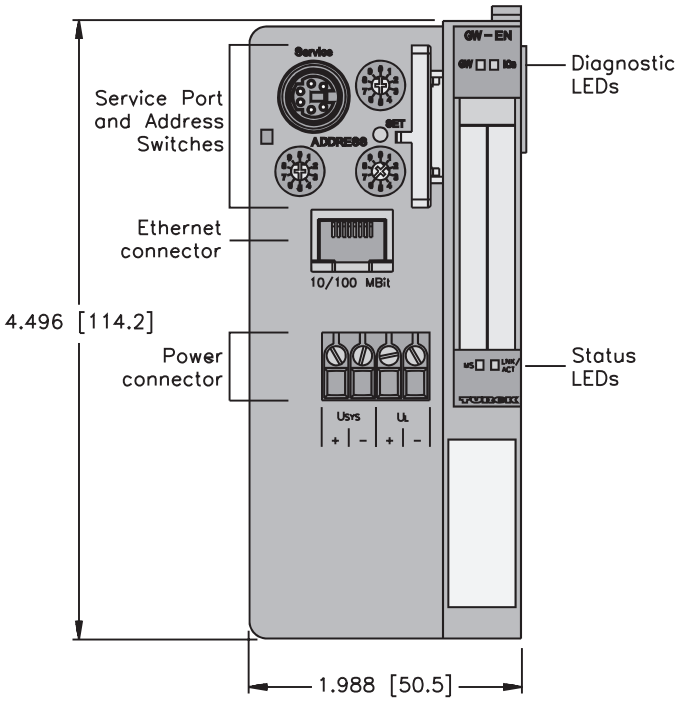
- Diagnostic information available through the PROFIBUS-DP interface

Diagnostics (Physical)

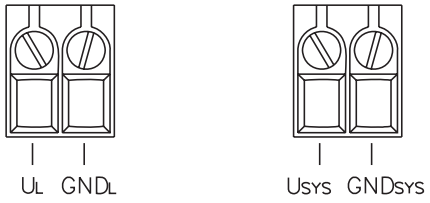
- LEDs to indicate status of PROFIBUS-DP and Module Bus communication

Programmability

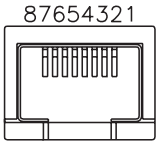
- PG in part number designates a programmable gateway
- Programmable according to IEC 61131.3 using CodeSys (includes ladder logic)
- Use CodeSys to create logic programs to control local I/O



Power Connectors



RJ45 Ethernet Standard



1 = WH/or (+TX)
2 = OR (-TX)
3 = WH/GN (+RX)
4 = BU
5 = WH/BU
6 = GN (-RX)
7 = WH/BN
8 = BN

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Discrete Input Modules

BL20-2DI-24VDC-N
BL20-2DI-24VDC-P
BL20-4DI-24VDC-N
BL20-4DI-24VDC-P (shown)

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <28 mA from V_{MB}
  <20 mA from V_{IO} (...-2DI...)
  <40 mA from V_{IO} (...-4DI...)

Power Distribution

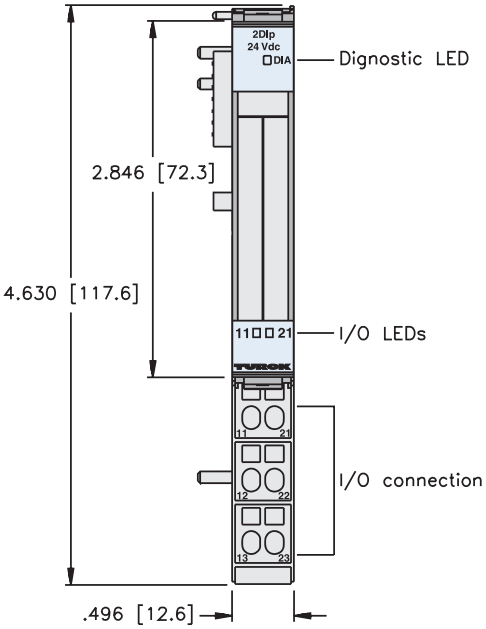
- Inputs: V_{IO}
- Logic: V_{MB} and V_{IO}

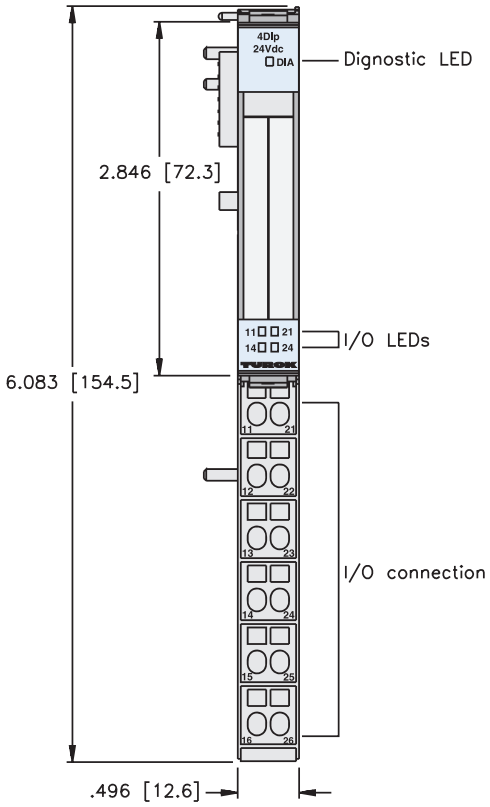
Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Diagnostics

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status





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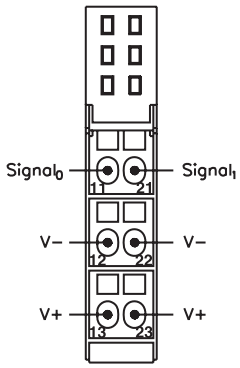
	Inputs							Data
Part Number	Input Count	Pinout	Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map	
BL20-2DI-24VDC-P with BL20-S3*-SBB**	2	B20-3A	PNP				1	
BL20-2DI-24VDC-N with BL20-S3*-SBB**	2	B20-3A	NPN				1	
BL20-4DI-24VDC-P with BL20-S6*-SBBSBB**	4	B20-6A	PNP				2	
BL20-4DI-24VDC-N with BL20-S6*-SBBSBB**	4	B20-6A	NPN				2	

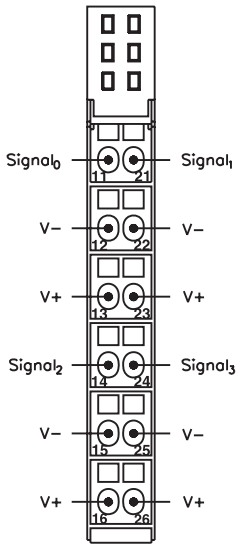
* T = Tension clamp
S = Screw clamp
** Base modules sold separately. See pages C56 - C60.

Input Connectors

B20-3A



B20-6A



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	Data from next discrete modules						I-1	I-0
	n+1	(Data from modules to the right)							

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	Data from next discrete modules				I-3	I-2	I-1	I-0
	n+1	(Data from modules to the right)							

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Discrete Input Economy Module

BL20-E-8DI-24VDC-P
BL20-E-16DI-24VDC-P

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Base and Electronics in One Part**

Electrical

- Operating Current: <30 mA from V_{MB}
  <2 mA from V_{IO}

Power Distribution

- Inputs: V_{IO}
- Logic: V_{MB} and V_{IO}

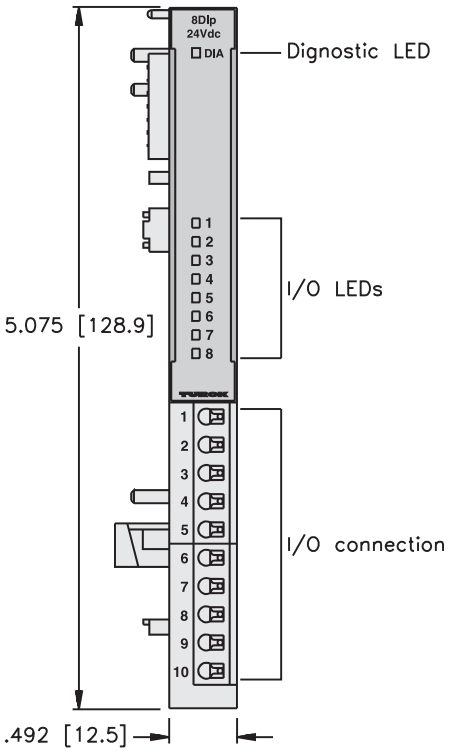
Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

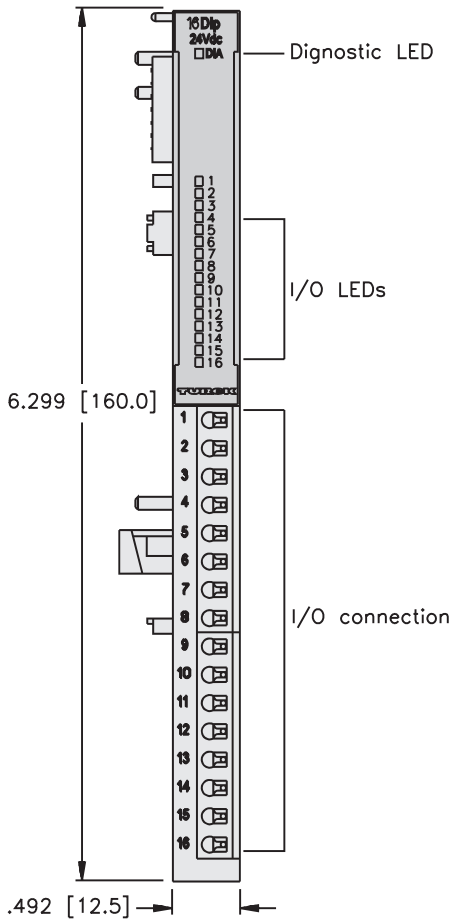
Diagnostics

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status

8DI..



16DI..



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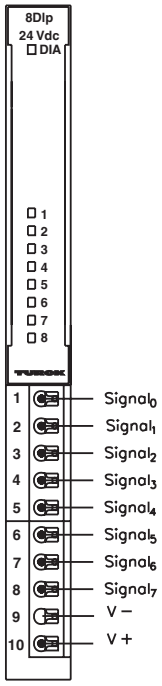
	Inputs						Data
Part Number	Count	Pinout	Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
BL20-E-8DI-24VDC-P	8	B20-E1	PNP				1
BL20-E-16DI-24VDC-P	16	B20-E2	PNP				2

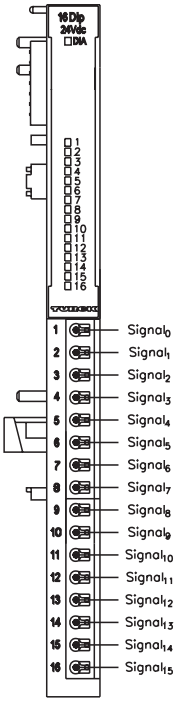
Note: This module can only be used with other tension clamp modules.

Input Connectors

B20-E1



B20-E2



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	n+1	(Data from modules to the right)							

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	n+1	I-8	I-9	I-10	I-11	I-12	I-13	I-14	I-15
	n+2	(Data from right)							

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NAMUR Input Module

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **NAMUR Inputs**

BL20-4DI-NAMUR

CE

Electrical

- Operating Current: <40 mA from V_{MB}
  <30 mA from V_{IO}

Power Distribution

- Inputs: V_{IO}
- Logic: V_{MB} and V_{IO}

Mechanical

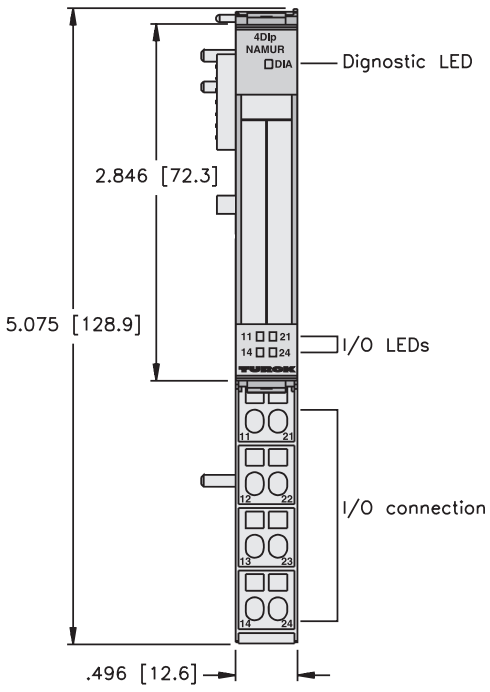
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status



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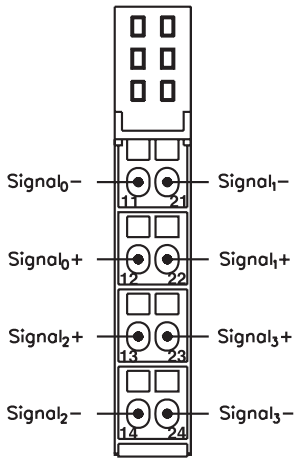
	Inputs							Data
Part Number	Input Count	Pinout	Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map	
BL20-4DI-NAMUR with BL20-S4*-SBBS**	4	B20-4C	NAMUR		X		1	

* T = Tension clamp
S = Screw clamp
** Base modules sold separately. See pages C56 - C60.

Input Connectors

B20-4C



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	S-3	S-2	S-1	S-0	I-3	I-2	I-1	I-0
	n+1	(Data from modules to the right)							

Note: S = status bit

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Discrete DC Output Modules

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Various I/O Styles**

BL20-2DO-24VDC-2A-P
BL20-2DO-24VDC-0.5A-N
BL20-2DO-24VDC-0.5A-P
BL20-4DO-24VDC-0.5A-P

Electrical

- Operating Current: <33 mA from V_{MB}
  <25 mA from V_{IO} (...-0.5A...)
  <50 mA from V_{IO} (...-2A...)
- Output Current: see table on facing page (from V_{IO})

Power Distribution

- Outputs: V_{IO}
- Logic: V_{MB} and V_{IO}

Mechanical

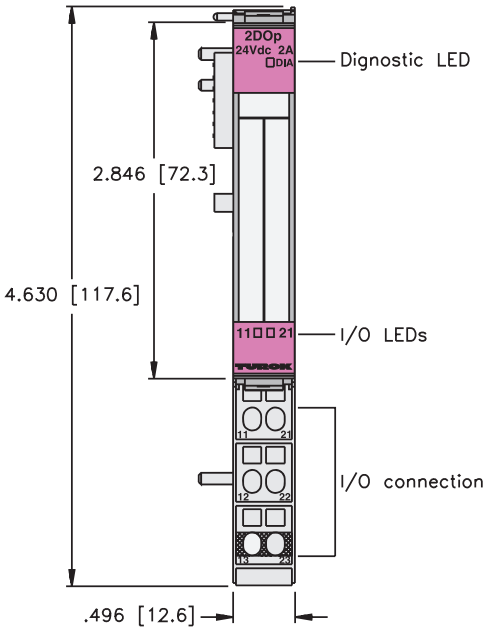
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

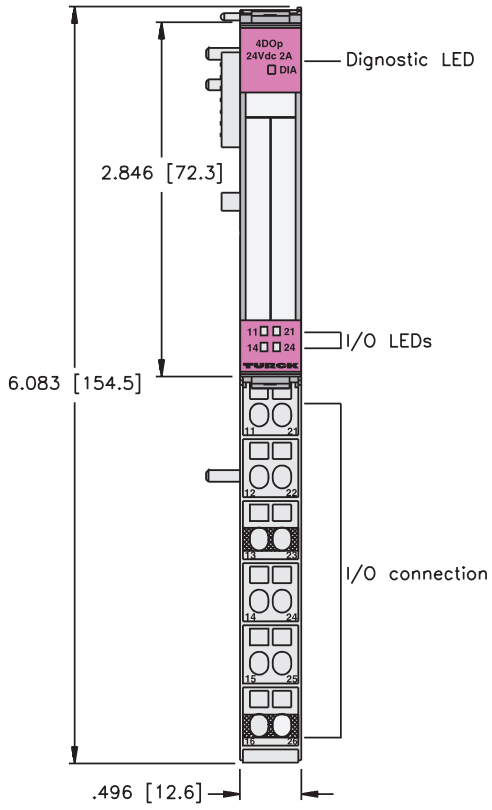
Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status





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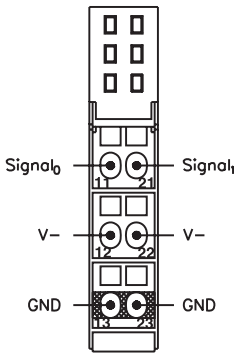
Part Number	Outputs: Input Count	Outputs: Pinout	Outputs: Current	Outputs: Individual Diagnostics	Outputs: Wire-Break Detection	Data: I/O Map
BL20-2DO-24VDC-0.5A-P with BL20-S3*-SBC**	4	B20-3B	0.5 A			1
BL20-2DO-24VDC-0.5A-N with BL20-S3*-SBC**	4	B20-3B	0.5 A			1
BL20-2DO-24VDC-2A-P with BL20-S3*-SBC**	4	B20-3B	2 A			1
BL20-4DO-24VDC-0.5A-P with BL20-S6*-SBCSBC**	4	B20-6B	0.5 A			2

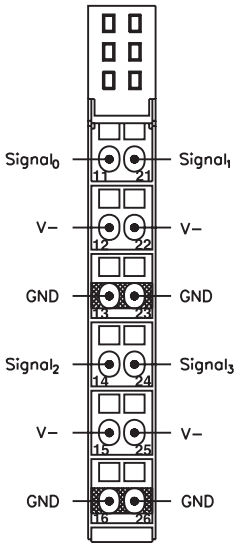
* T = Tension clamp
S = Screw clamp
** Base modules sold separately. See pages C56 - C60.

Output Connectors

B20-3B



B20-6B



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	n–1	(Data for modules to the left)							
	n	Data for next discrete modules						0-1	0-0
	n+1	(Data for modules to the right)							

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	n–1	(Data for modules to the left)							
	n	Data for next discrete modules				0-3	0-2	0-1	0-0
	n+1	(Data for modules to the right)							

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Discrete Output Economy Module

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Base and Electronics in One Part**

BL20-E-8DO-24VDC-0.5A-P
BL20-E-16DO-24VDC-0.5A-P

Electrical

- Operating Current: <30 mA from V_{MB}
  <10 mA from V_{IO}
- Output Current: <0.5 A per output (from V_{IO})

Power Distribution

- Outputs: V_{IO}
- Logic: V_{MB} and V_{IO}

Mechanical

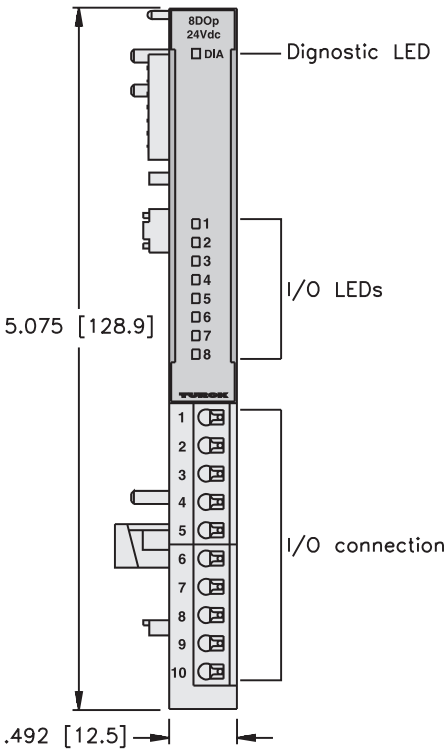
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

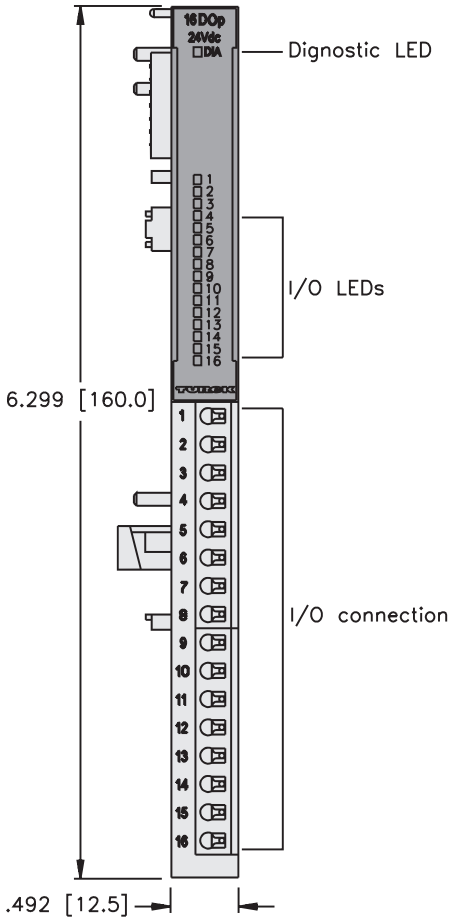
Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status





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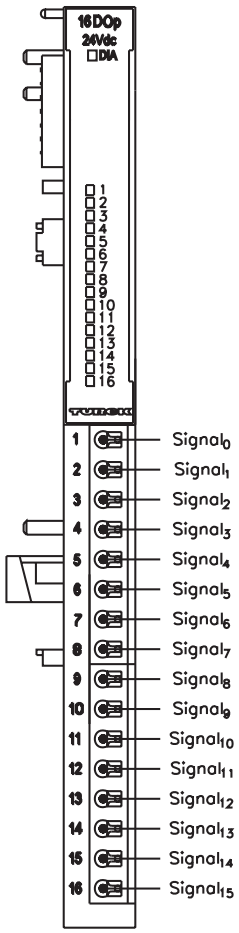
Part Number	Outputs: Input Count	Outputs: Pinout	Outputs: Current	Outputs: Individual Diagnostics	Outputs: Wire-Break Detection	Data: I/O Map
BL20-E-8DO-24VDC-0.5A-P	8	BO-E1	0.5 A	X		1
BL20-E-16DO-24VDC-0.5A-P	16	BO-E2	0.5 A	X		2

Output Connectors

BO-E1

BO-E2



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	n–1	(Data for modules to the left)							
	n	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0
	n+1	(Data for modules to the right)							

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	n–1	(Data for modules to the left)							
	n	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0
	n+1	0-8	0-9	0-10	0-11	0-12	0-13	0-14	0-15
	n+2	(Data from right)							

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Discrete relay Output Modules

BL20-2DO-R-CO
BL20-2DO-R-NO
BL20-2DO-R-NC

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Relay Outputs**

Electrical

- Operating Current: <28 mA from V_{MB}
  <20 mA from V_{IO}

Power Distribution

- Outputs: V_{IO}
- Logic: V_{MB} and V_{IO}

Mechanical

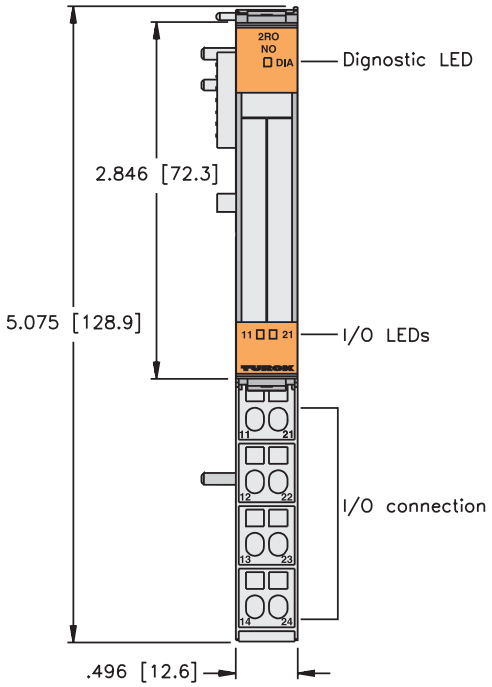
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status



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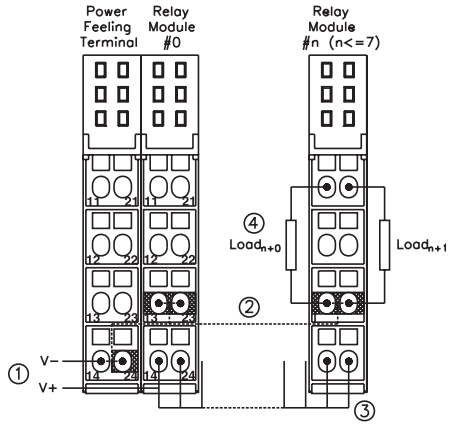
Part Number	Outputs: Count	Pinout	Current	Individual Diagnostics	Wire-Break Detection	Data: I/O Map
BL20-2DO-R-NO with BL20-S4*-SBCS**	2	B20-4A	2 A			1
BL20-2DO-R-NC with BL20-S4*-SBCS**	2	B20-4A	2 A			1
BL20-2DO-R-CO with BL20-S4*-SBBS**	2	B20-4B	2 A			1

* T = Tension clamp
S = Screw clamp
** Base modules sold separately. See pages C56 - C60.

Output Connectors

B20-4A



① Power is supplied by the user.

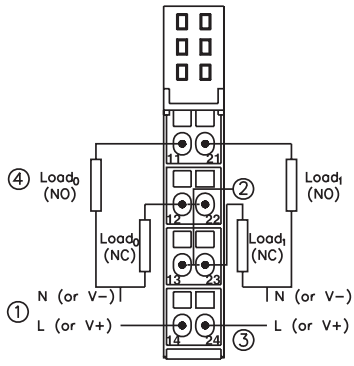
② V– terminal points connected internally via "C–Rail"

③ V+ terminal points connected externally by user (jumper part number XN–QV/*, "*" indicates number of slices to connect, up to 8)

④ Relay$_0$ contact is between terminals 14/11
Relay$_1$ contact is between terminals 24/21

*NOTE: C–Rail scheme may only be used with 24 VDC relays. Not rated for AC use.

B20-4B



① Power is supplied externally by the user.

② Terminal points 12/22 connected internally.
Points 13/23 connected internally.

③ Terminal points 14/24 may be connected externally by user (jumper part number XN–QV/1).

④ Relay$_0$ (NO) contact is between terminals 14/11,
(NC) contact between 24/21.
Relay$_1$ (NO) contact is between terminals 24/21,
(NC) between 24/23.

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	n–1	(Data for modules to the left)							
	n	Data for next discrete modules						0-1	0-0
	n+1	(Data for modules to the right)							

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Discrete AC Input Module

BL20-2DI-120/230VAC-P

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **AC Inputs**

Electrical

- Operating Current: <28 mA (from V_{MB})
  <20 mA (from V_{IO})

Power Distribution

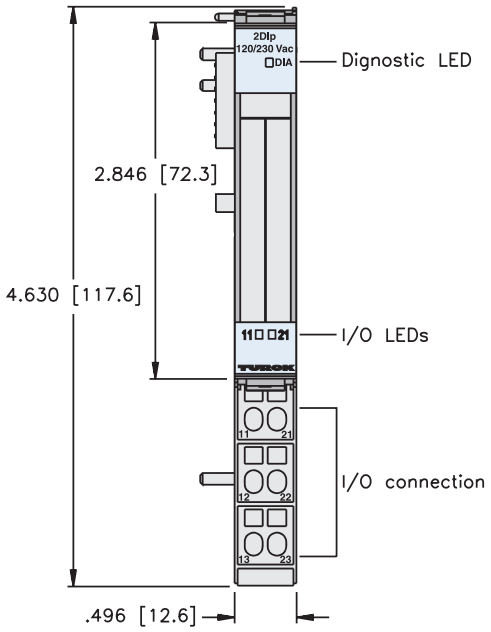
- Inputs: V_{IO}
- Logic: V_{MB} and V_{IO}

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status



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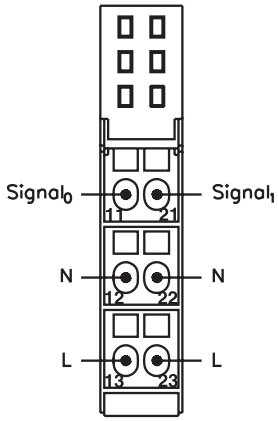
	Inputs							Data
Part Number	Input Count	Pinout	Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map	
BL20-2DI-120/230VAC-P with BL20-S3*-SBB**	2	B20-3C	AC				1	

* T = Tension clamp
S = Screw clamp
** Base modules sold separately. See pages C56 - C60.

Input Connectors

B20-3C



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	Data from next discrete modules						I-1	I-0
	n+1	(Data from modules to the right)							

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Discrete AC Output Module

BL20-2DO-120/230VAC-0.5A

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **AC Outputs**

Electrical

- Operating Current: <35 mA from V_{MB}
  <20 mA from V_{IO}
- Output Current: <0.5 A per output (from V_{IO})

Power Distribution

- Outputs: V_{IO}
- Logic: V_{MB} and V_{IO}

Mechanical

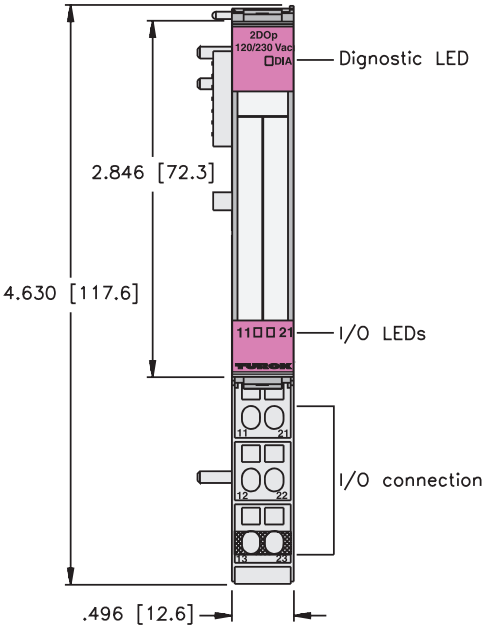
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status



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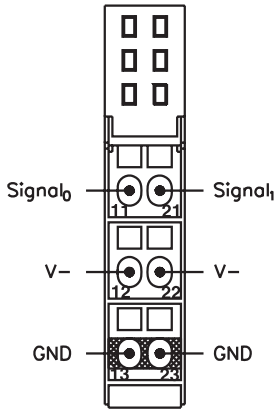
	Outputs						Data
Part Number	Output Count	Pinout	Current	Individual Diagnostics	Wire-Break Detection	I/O Map	
BL20-2DO-120/230VAC-0.5A-P with BL20-S3*-SBC**	2	B20-3B	0.5 A			1	

* T = Tension clamp
S = Screw clamp
** Base modules sold separately. See pages C56 - C60.

Output Connectors

B20-3B



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	n–1	(Data for modules to the left)							
	n	Data for next discrete modules						0-1	0-0
	n+1	(Data for modules to the right)							

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Discrete Input Blocks

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Various I/O Styles**

BL20-32DI-24VDC-P
BL20-16DI-24VDC-P

Electrical

- Operating Current: <45 mA from V_{MB}
  <40 mA from V_{IO} (...-16DI...)
  <30 mA from V_{IO} (...-32DI...)

Power Distribution

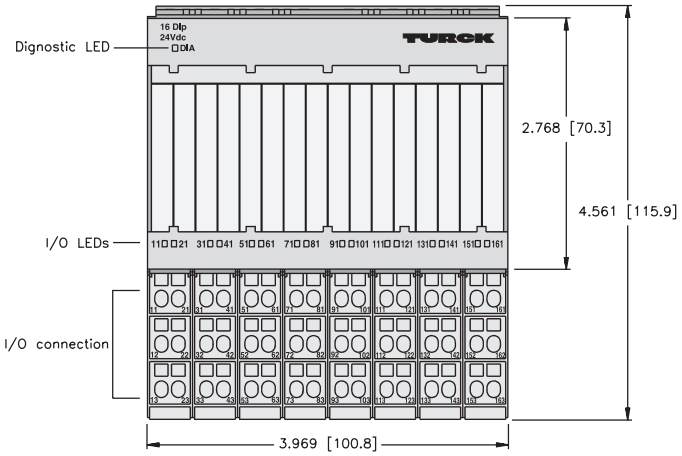
- Inputs: V_{IO}
- Logic: V_{MB} and V_{IO}

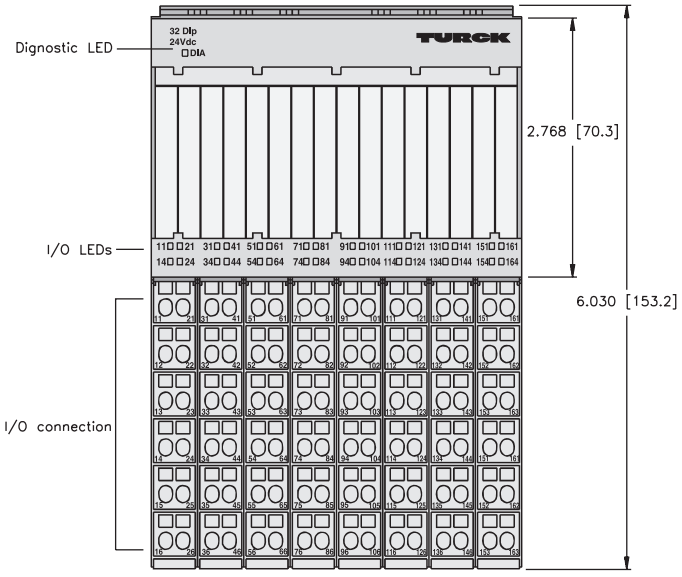
Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status





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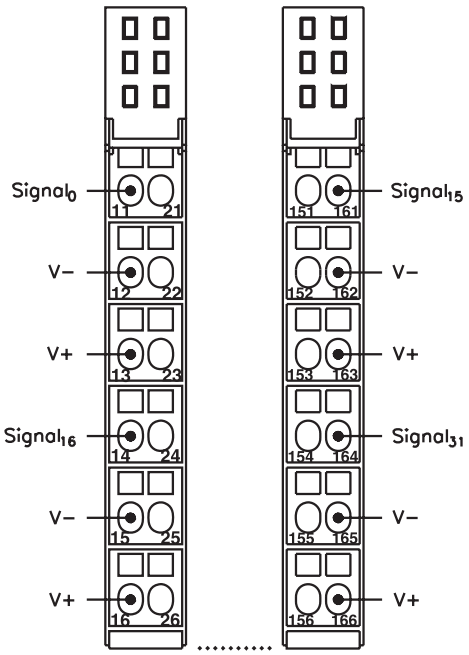
Part Number	Inputs: Input Count	Inputs: Pinout	Inputs: Style	Inputs: Group Diagnostics	Inputs: Individual Diagnostics	Inputs: Wire-Break Detection	Data: I/O Map
BL20-16DI-24VDC-P with BL20-B3*-SBB**	16	B20-B3A	PNP				1
BL20-32DI-24VDC-P with BL20-B6*-SBBSBB**	32	B20-B6A	PNP				2

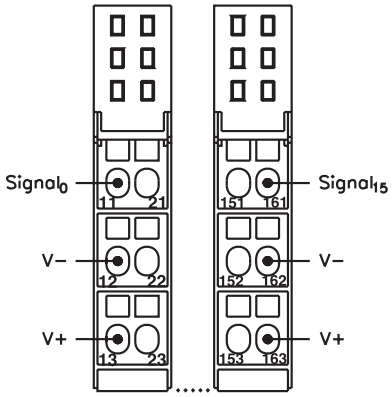
* T = Tension clamp
S = Screw clamp
** Base modules sold separately. See pages C56 - C60.

Input Connectors

B20-B6A



B20-B3A



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	n+1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
	n+2	(Data from modules to the right)							

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	n+1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
	n+2	I-23	I-22	I-21	I-20	I-19	I-18	I-17	I-16
	n+3	I-31	I-30	I-29	I-28	I-27	I-26	I-25	I-24
	n+4	(Data from modules to the right)							

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BL20

Discrete Output Blocks

BL20-32DO-24VDC-0.5A-P
BL20-16DO-24VDC-0.5A-P

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <120 mA from V_{MB}
  <50 mA from V_{IO}
- Output Current: <0.5 A per output (from V_{IO})

Power Distribution

- Outputs: V_{IO}
- Logic: V_{MB} and V_{IO}

Mechanical

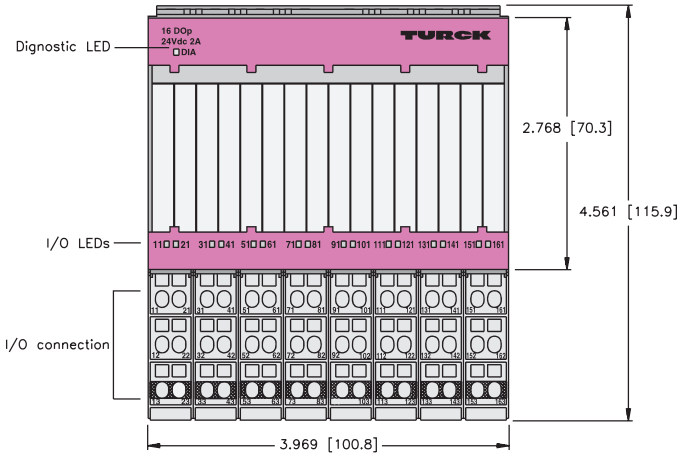
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

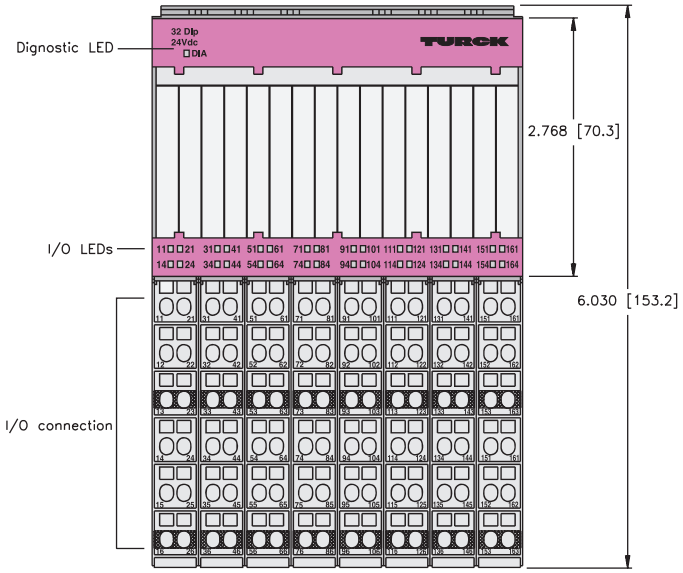
Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status





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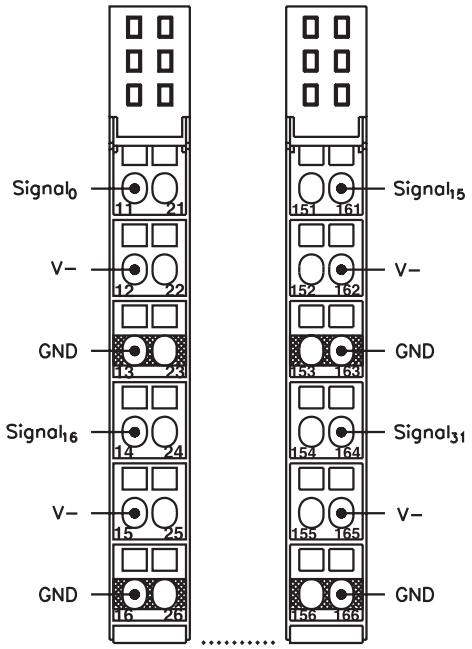
	Outputs						Data
Part Number	Output Count	Pinout	Current	Individual Diagnostics	Wire-Break Detection	I/O Map	
BL20-16DO-24VDC-0.5A-P with BL20-B3*-SBC**	16	B20-B3B	0.5 A			1	
BL20-32DO-24VDC-0.5A-P with BL20-B6*-SBCSBC**	32	B20-B6B	0.5 A			2	

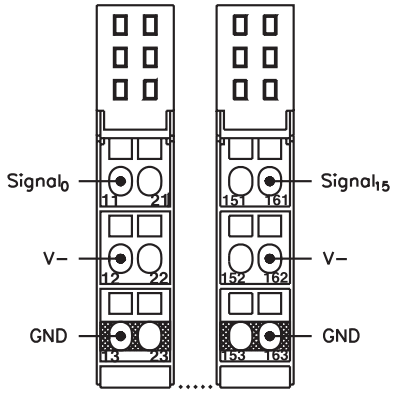
* T = Tension clamp
S = Screw clamp
** Base modules sold separately. See pages C56 - C60.

Output Connectors

B20-B6B



B20-B3B



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	n–1	(Data for modules to the left)							
	n	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0
	n+1	0-15	0-14	0-13	0-12	0-11	0-10	0-9	0-8
	n+2	(Data for modules to the right)							

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
out	n–1	(Data for modules to the left)							
	n	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0
	n+1	0-15	0-14	0-13	0-12	0-11	0-10	0-9	0-8
	n+2	0-23	0-22	0-21	0-20	0-19	0-18	0-17	0-16
	n+3	0-31	0-30	0-29	0-28	0-27	0-26	0-25	0-24
	n+4	(Data for modules to the right)							

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Analog Input Modules

BL20-2AI-U(-10/0 to +10VDC)
BL20-2AI-I(0/4 to 20MA)
BL20-1AI-U(-10/0 to +10VDC)
BL20-1AI-I(0/4 to 20MA)

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <41 mA from V_{MB} (...-1AI...)
  <35 mA from V_{MB} (...-2AI...)
  <50 mA from V_{IO} (...-1AI...)
  <12 mA from V_{IO} (...-2AI...)

Power Distribution

- Inputs: V_{IO}
- Logic: V_{MB} and V_{IO}

Mechanical

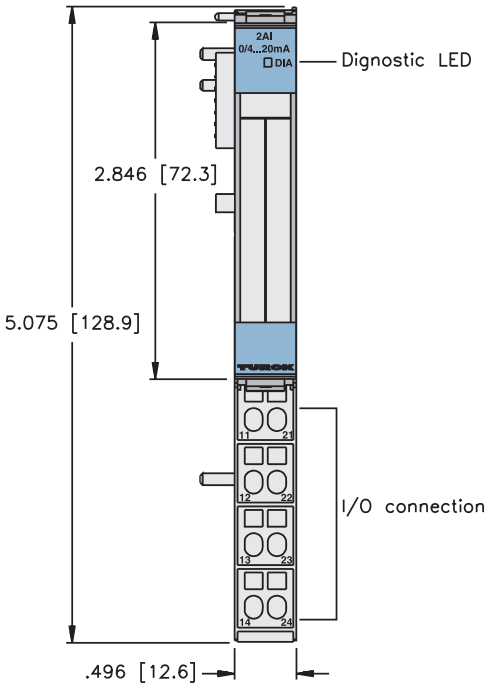
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics



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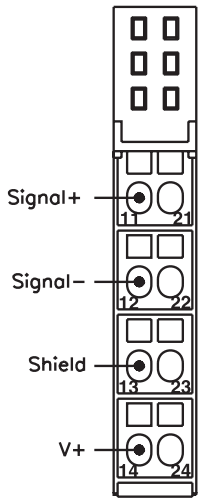
Part Number	Inputs: Input Count	Inputs: Pinout	Inputs: Style	Inputs: Group Diagnostics	Inputs: Individual Diagnostics	Inputs: Wire-Break Detection	Data: I/O Map
BL20-1AI-U(-10/0 to +10VDC) with BL20-S4*-SBBS**	1	B20-4D	-10/0 to 10 V				1
BL20-1AI-I(0/4 to 20MA) with BL20-S4*-SBBS**	1	B20-4D	0/4 to 20 mA				1
BL20-2AI-U(-10/0 to +10VDC) with BL20-S4*-SBBS**	2	B20-4E	-10/0 to 10 V				2
BL20-2AI-I(0/4 to 20MA) with BL20-S4*-SBBS**	2	B20-4E	0/4 to 20 mA				2

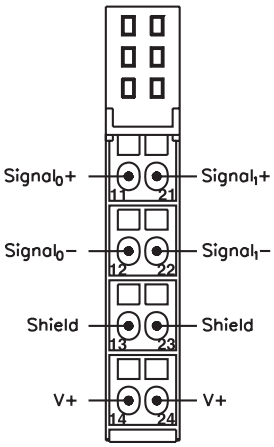
* T = Tension clamp
S = Screw clamp
** Base modules sold separately. See pages C56 - C60.

Input Connectors

B20-4D



B20-4E



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	Channel 0, LSB							
	n+1	Channel 0, MSB							
	n+2	(Data from modules to the right)							

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	Channel 0, LSB							
	n+1	Channel 0, MSB							
	n+2	Channel 1, LSB							
	n+3	Channel 1, MSB							
	n+4	(Data from modules to the right)							

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Analog Input Module

BL20-4AI-U/I

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Voltage and Current Inputs**

Electrical

- Operating Current: <50 mA from V_{MB}
  <20 mA from V_{IO} (...-2AI...)

Power Distribution

- Inputs: V_{IO}
- Logic: V_{MB} and V_{IO}

Mechanical

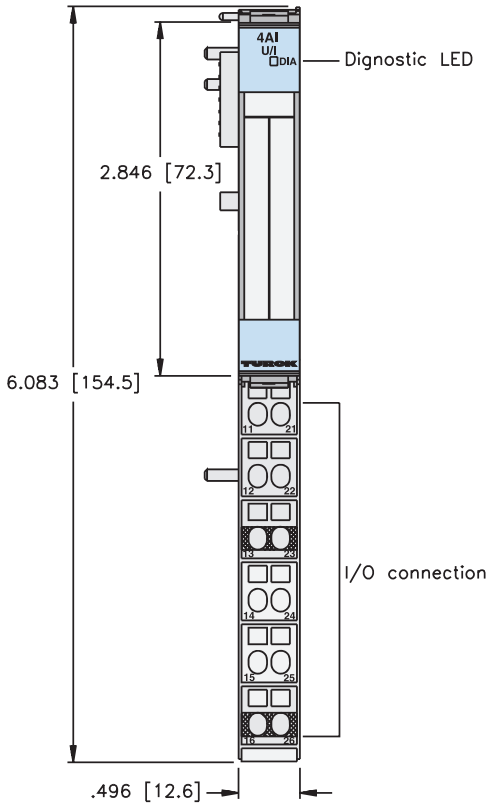
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics



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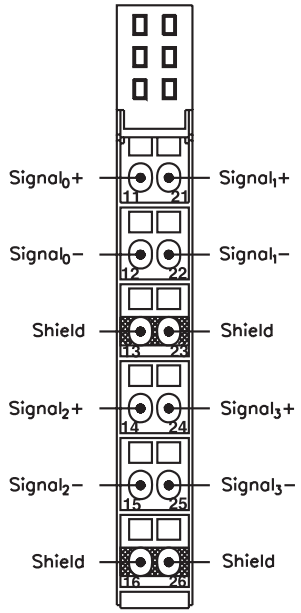
Inputs							Data
Part Number	Input Count	Pinout	Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
BL20-4AI-U/I with BL20-S6*-SBCSBC**	4	B20-6C	0/4 to 20 mA or -10/0 to 10V				1

* T = Tension clamp
S = Screw clamp
** Base modules sold separately. See pages C56 - C60.

Input Connectors

B20-6C



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	Channel 0, LSB							
	n+1	Channel 0, MSB							
	n+2	Channel 1, LSB							
	n+3	Channel 1, MSB							
	n+4	Channel 2, LSB							
	n+5	Channel 2, MSB							
	n+6	Channel 3, LSB							
	n+7	Channel 3, MSB							
	n+8	(Data from modules to the right)							

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Temperature Input Modules

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Thermocouple or RTD Inputs**

BL20-2AI-THERMO-PI
BL20-2AI-PT/NI-2/3

Electrical

- Operating Current: <45 mA from V_{MB}
  <30 mA from V_{IO}
- Thermocouple Types: B, E, J, K, N, R, S, T (... THERMO-PI)
- RTD Types: PT100, PT500, PT1000, Ni100, Ni1000 (...PT/Ni-2/3)

Power Distribution

- Inputs: V_{IO}
- Logic: V_{MB} and V_{IO}

Mechanical

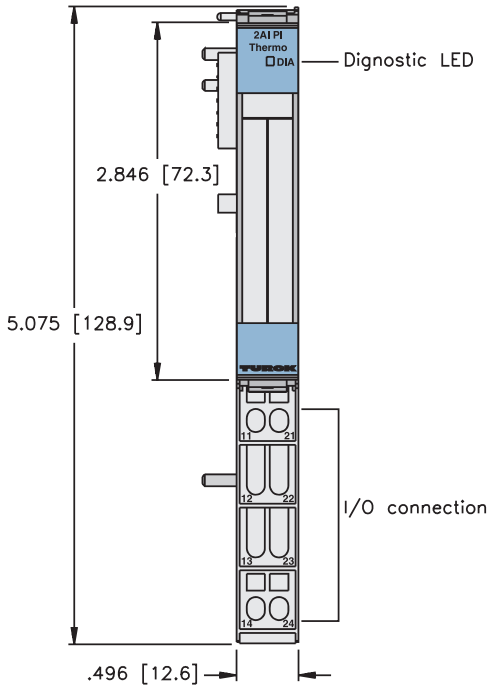
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics



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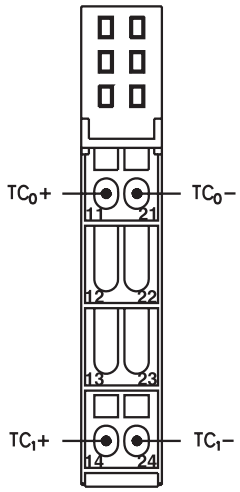
Part Number	Inputs: Input Count	Inputs: Pinout	Inputs: Style	Inputs: Group Diagnostics	Inputs: Individual Diagnostics	Inputs: Wire-Break Detection	Data: I/O Map
BL20-2AI-PT/NI-2/3 with BL20-S4*-SBBS**	2	B20-4F	RTD				1
BL20-2AI-THERMO-PI with BL20-S4*-SBBS-CJ**	2	B20-4G	TC				1

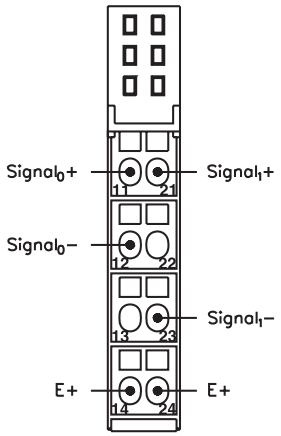
* T = Tension clamp
S = Screw clamp
** Base modules sold separately. See pages C56 - C60.
Note: BL20-S4*-SBBS-CJ has integrated cold junction compensation fro thermocouples.

Input Connectors

B20-4G



B20-4F



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	Channel 0, LSB							
	n+1	Channel 0, MSB							
	n+2	Channel 1, LSB							
	n+3	Channel 1, MSB							
	n+4	(Data from modules to the right)							

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Analog Output Modules

BL20-2AO-I(0/4 to 20MA)
BL20-2AO-U(-10/0 to +10VDC)
BL20-1AO-I(0/4 to 20MA)

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <43 mA (from V_{MB})
- Sensor Current: <50 mA (from V_{IO})

Power Distribution

- Inputs: V_{IO}
- Logic: V_{MB} and V_{IO}

Mechanical

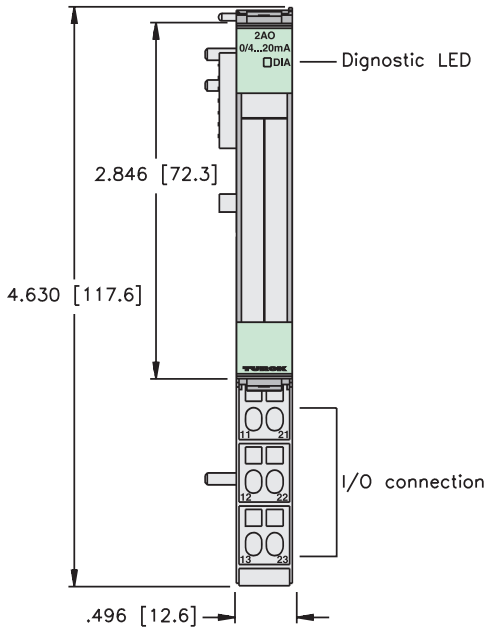
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics



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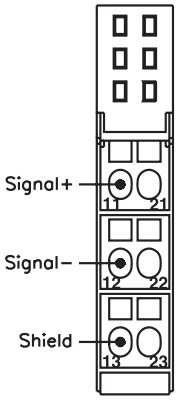
Part Number	Outputs: Output Count	Outputs: Pinout	Outputs: Style	Outputs: Group Diagnostics	Outputs: Individual Diagnostics	Outputs: Wire-Break Detection	Data: I/O Map
BL20-1AO-I(0/4 to 20MA) with BL20-S3*-SBB**	1	B20-3D	0/4 to 20 mA				1
BL20-2AO-I(0/4 to 20MA) with BL20-S3*-SBB**	1	B20-3E	0/4 to 20 mA				2
BL20-2AI-U(-10/0 to +10VDC) with BL20-S3*-SBB**	2	B20-3E	-10/0 to 10 V				2

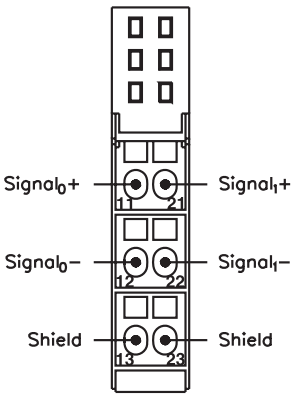
* T = Tension clamp
S = Screw clamp
** Base modules sold separately. See pages C56 - C60.

Output Connectors

B20-3D



B20-3E



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	n–1	(Data for modules to the left)							
	n	Channel 0, LSB							
	n+1	Channel 0, MSB							
	n+2	(Data for modules to the right)							

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	n–1	(Data for modules to the left)							
	n	Channel 0, LSB							
	n+1	Channel 0, MSB							
	n+2	Channel 1, LSB							
	n+3	Channel 1, MSB							
	n+4	(Data for modules to the right)							

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Serial I/O Modules

BL20-1RS232
BL20-1SSI
BL20-1RS485/422

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <25 mA from V_{IO}
  <140 mA from V_{MB} (...1RS232)
  <50 mA from V_{MB} (...1SSI)
  <60 mA from V_{MB} (...1RS485/422)

Power Distribution

- I/O: V_{IO}
- Logic: V_{MB} and V_{IO}

Mechanical

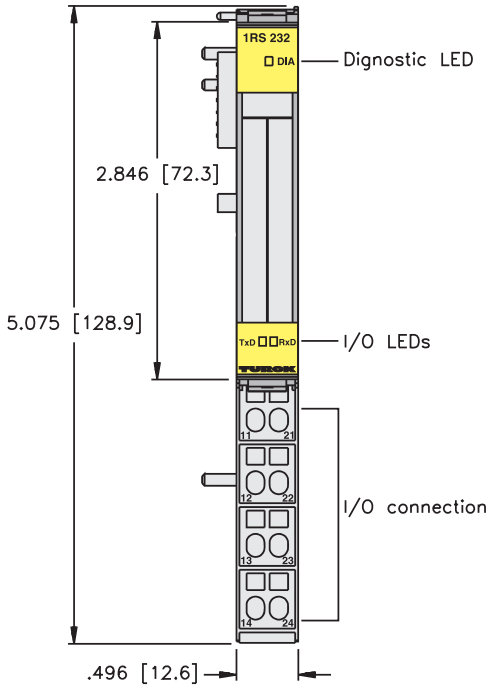
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status



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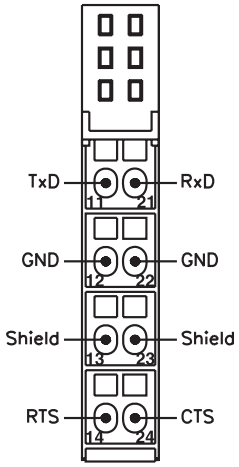
	Inputs						Outputs					Data
Part Number	Input Count	Pinout	Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Pinout	Style	Individual Diagnostics	Wire-Break Detection	I/O Map
BL20-1RS232 with BL20-S4*-SBBS**	1	B20-4H	RS232				1	B20-4H	RS232			#
BL20-1RS485/422 with BL20-S4*-SBBS**	1	B20-4I	RS485/422				1	B20-4I	RS485/422			#
BL20-1SSI with BL20-S4*-SBBS**	1	B20-4J	SSI				1	B20-4J	SSI			#

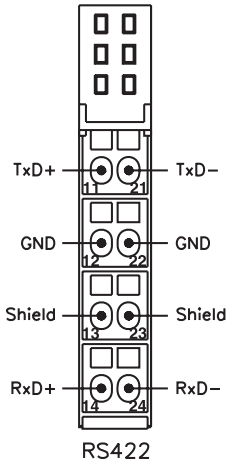
* T = Tension clamp
  S = Screw clamp
** Base modules sold separately. See pages C56 - C60.
# I/O data map is dependant on the fieldbus being used. Consult the user manual for details.

Input/Output Connectors

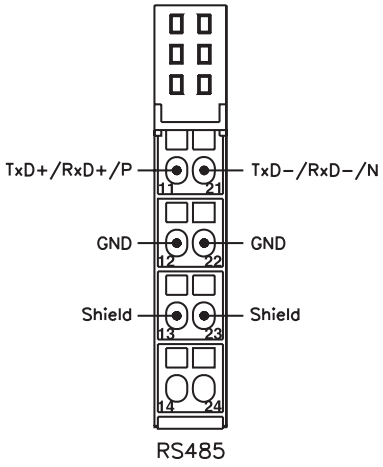
B20-H4



B20-4I



B20-4J



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Counter Module

BL20-1CNT-24VDC

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Counter Input**

Electrical

- Operating Current: <50 mA (from V_{IO})
  <40 mA (from V_{MB})
- Count Range: 0...7FFFFFFF (positive)
  80000000...FFFFFFFF (negative)

Power Distribution

- Inputs: V_{IO}
- Logic: V_{MB} and V_{IO}

Mechanical

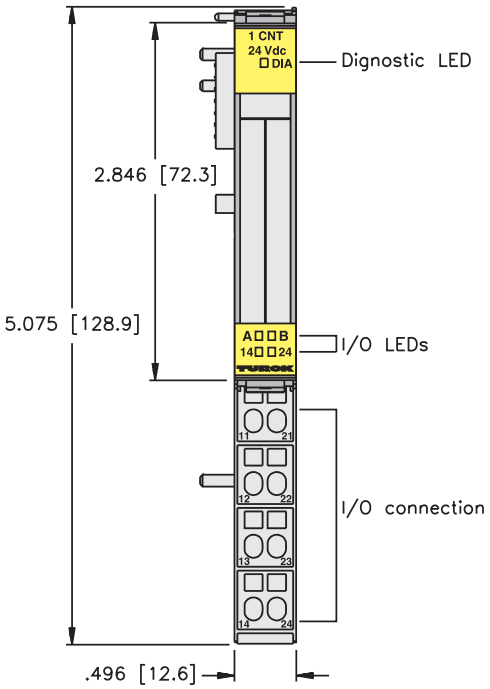
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status



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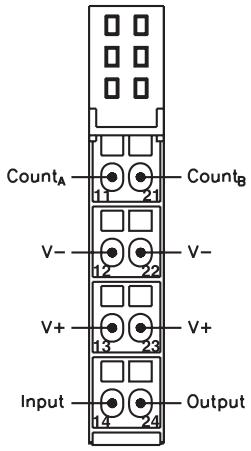
	Inputs						Data
Part Number	Input Count	Pinout	Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
BL20-1CNT-24VDC with BL20-S4*-SBBS**	1	B20-4K	Counter				See below

* T = Tension clamp
  S = Screw clamp
** Base modules sold separately. See pages C56 - C60.

Input Connectors

B20-4K



NOTE: "Input" signal serves several uses (gate, sync, etc)

I/O data map is dependant on the fieldbus being used. Consult the user manual for details.

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Power Feeding Modules

BL20-PF-120/230VAC-D
BL20-PF-24VDC-D

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Supply AC or DC I/O Power**

Electrical

- Operating Current: <28 mA (from V_{MB})
- Output Current: <10 A for downstream I/O

Power Distribution

- Accepts AC (...120/230VAC...) or DC (...24VDC...) supply to provide V_{IO} for downstream modules

Mechanical

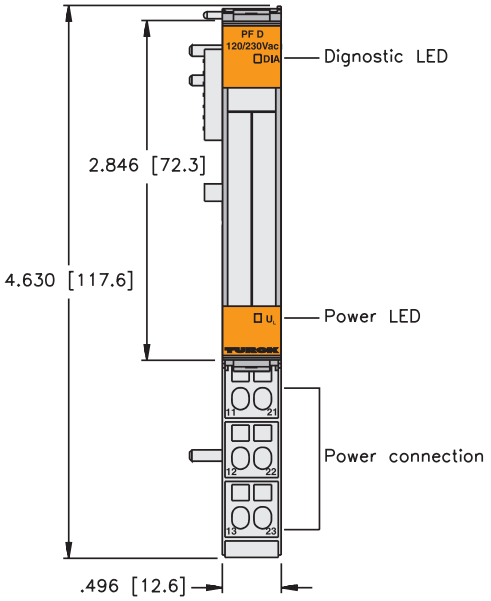
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

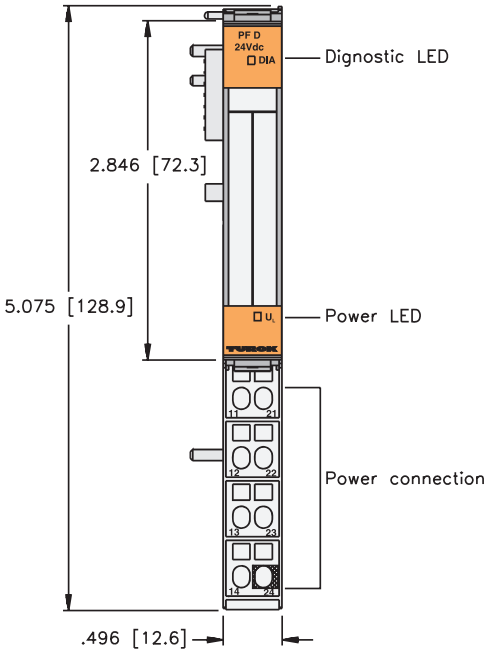
Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication and power supply status.





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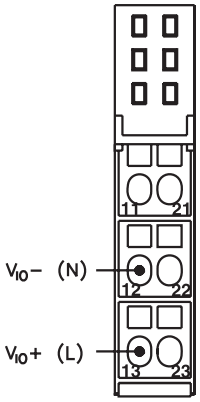
Part Number	Pinout
BL20-PF-120/230VAC-D with BL20-P3*-SBB**	B20-P3
BL20-PF-120/230VAC-D with BL20-P4*-SBBC**	B20-P4
BL20-PF-24VDC-D with BL20-P3*-SBB**	B20-P3
BL20-PF-24VDC-D with BL20-P4*-SBBC**	B20-P4

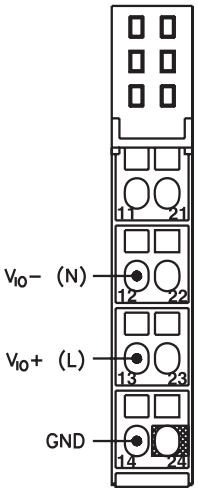
* T = Tension clamp
  S = Screw clamp
** Base modules sold separately. See pages C56 - C60.

Input Connectors

B20-P3



B20-P4



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Bus Refreshing Module

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**

BL20-BR-24VDC-D

Electrical

- Module Bus Supply: <1.5 A
- I/O Supply: <10 A (24 VDC only)

Power Distribution

- Refreshes backplane (V_{MB}) supply and provides new V_{IO} segment for downstream modules

Mechanical

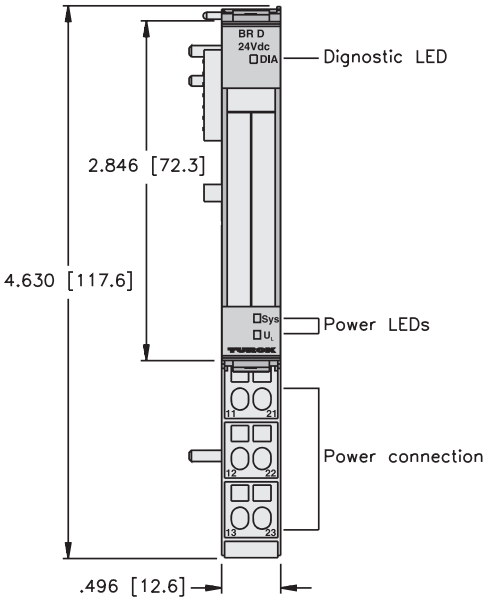
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

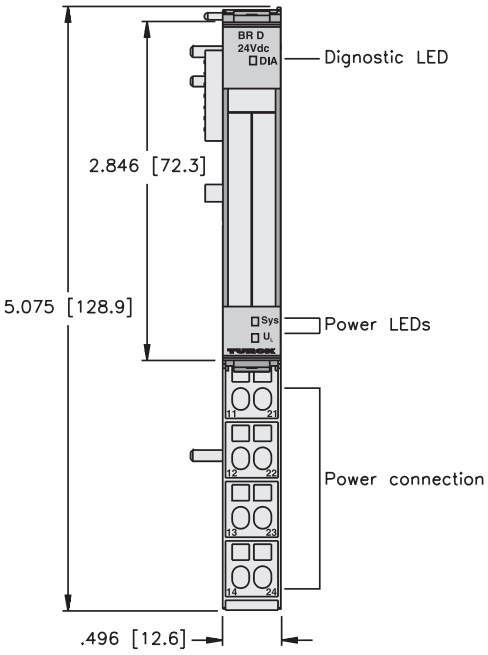
Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication and power supply status.





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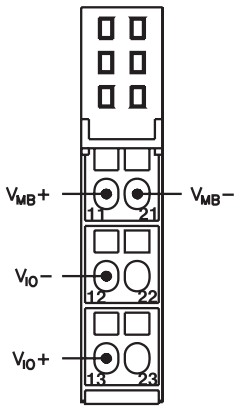
Part Number	Pinout
BL20-BR-24VDC-D with BL20-P3*-SBB-B**	B20-P3A
BL20-BR-24VDC-D with BL20-P4*-SBBC-B**	B20-P4A

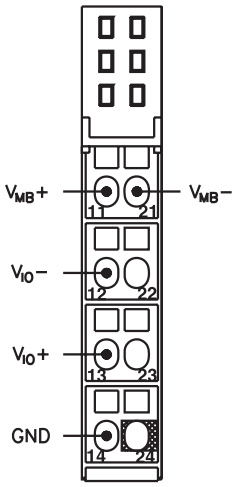
* T = Tension clamp
  S = Screw clamp
** Base modules sold separately. See pages C56 - C60.

Input Connectors

B20-P3A



B20-P4A



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BL20 Motor Starter Modules

BL20 motor starters allow 3-phase motor control to be connected to the same BL20 rack as the standard I/O. BL20 motor starters can be mounted on the same rail as the BL20 gateway, or they can be mounted on another rail to ease placement within panels. The motor starters will be controlled by the gateways via the chosen fieldbus (DeviceNet, PROFIBUS-DP, or CANopen).

How to Order a Motor Starter

PKZM0-1 + PKZM0-XDM12 + DILM7-10 (24 VDC) + BL20-SWIRE-DIL =

How to Implement the Motor Starters

Each SWIRE slice can manage up to 16 non-reversing motor starters.

Each gateway can support up to 3 SWIRE modules for a total of 48 non-reversing motor starters on a single gateway. Any reversing motor starter is considered as 2 non-reversing. The motor starters are rated for .06kW to 15kW (0.08hp to 20hp).

By ordering parts of the motor starter separately will allow for fewer parts to be stored within your inventory and will cost less to repair if just one piece of the motor starter fails. Motor starters are hot-swappable as long as the SWIRE-DIL module stays connected to the SWIRE system.

Refer to the user manual for details on installing and configuring the BL20 motor starter system.

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Available Motor Starter Sizes

Part Number	Motor Rating @ 480 VAC		Rated Operational Current @ 480 VAC	Rated Uninterrupted Current @ 480 VAC	Classification Type
	kW	hp			
PKZM0-0.25	0.06	0.08	0.21	0.25	2
PKZM0-0.4	0.09	0.12	0.31	0.4	2
PKZM0-0.63	0.18	0.24	0.6	0.63	2
PKZM0-1	0.25	0.33	0.8	1	2
PKZM0-1.6	0.55	0.74	1.5	1.6	2
PKZM0-2.5	0.75	1	1.9	2.5	1
PKZM0-4	1.5	2	3.6	4	1
PKZM0-6.3	2.2	2.95	5	6.3	1
PKZM0-10	3	4	6.6	10	1
PKZM0-10*	4	5.4	8.5	10	1
PKZM0-12	5.5	7.38	11.3	12	1
PKZM0-16	7.5	10	15.2	16	1
PKZM0-25	11	15	21.7	25	1
PKZM0-32	15	20	29.3	32	1

*Can be achieved by using DILM9-10(24VDC) instead of the DILM7-10(24VDC)

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Non-Reversing Part Numbers

hp	Motor Contactor Part Number	Wiring Set Part Number	Relay Part Number	SWIRE Communication
0.08	PKZM0-0.25	PKZM0-XDM12	DILM7-10(24 VDC)	BL20-SWIRE-DIL
0.12	PKZM0-0.4			
0.24	PKZM0-0.63			
0.33	PKZM0-1			
0.74	PKZM0-1.6			
1	PKZM0-2.5			
2	PKZM0-4			
2.95	PKZM0-6.3			
4	PKZM0-10			
5.4	PKZM0-10*		DILM9-10(24 VDC)	
7.38	PKZM0-12		DILM12-10(24 VDC)	
10	PKZM0-16		DILM15-10(24 VDC)	
15	PKZM0-25	PKZM0-XDM32	DILM25-10(24 VDC)	
20	PKZM0-32		DILM32-10(24 VDC)	

* To order a motor starter with the rated hp, order one of each part number that appears to the right.

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Reversing Part Numbers

hp	Part Number	Wiring Set Part Number	Relay Part Number	Relay Part Number	SWIRE Communication	SWIRE Communication	Mechanical Interlock
0.08	PKZM0-0.25	PKZM0-XRM12	DILM7-10(24 VDC)	DILM7-10(24 VDC)	BL20-SWIRE-DIL	BL20-SWIRE-DIL	DILM12-XMV
0.12	PKZM0-0.4						
0.24	PKZM0-0.63						
0.33	PKZM0-1						
0.74	PKZM0-1.6						
1	PKZM0-2.5						
2	PKZM0-4						
2.95	PKZM0-6.3						
4	PKZM0-10						
5.4	PKZM0-10*		DILM9-10(24 VDC)	DILM9-10(24 VDC)			
7.38	PKZM0-12		DILM12-10(24 VDC)	DILM12-10(24 VDC)			
10	PKZM0-16		DILM15-10(24 VDC)	DILM15-10(24 VDC)			
15	PKZM0-25	PKZM0-XRM32	DILM25-10(24 VDC)	DILM25-10(24 VDC)			
20	PKZM0-32		DILM32-10(24 VDC)	DILM32-10(24 VDC)			

* To order a motor starter with the rated hp, order one of each part number that appears to the right.

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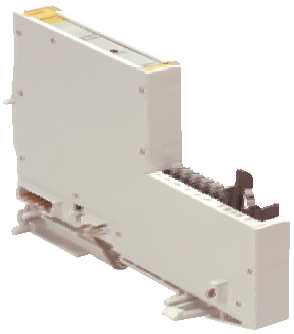
SWIRE Economy Communication Module



BL20-E-1SWIRE

- **Modular Motor Starter Control**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Base and Electronics in One Part**

Electrical

- Operating Current: ≤60 mA from V_{MB}
  <3 A from V_{IO}

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Diagnostics (Logical)

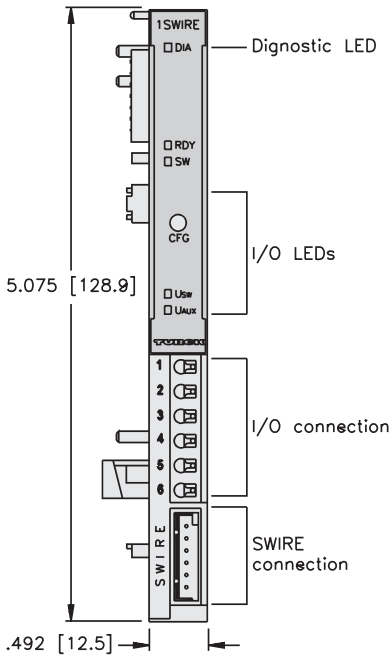
- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LEDs for status and I/O diagnostics

Supported Gateways

- BL20-GW-DPV1
- BL20-GWBR-CANopen
- BL20-GWBR-DNET



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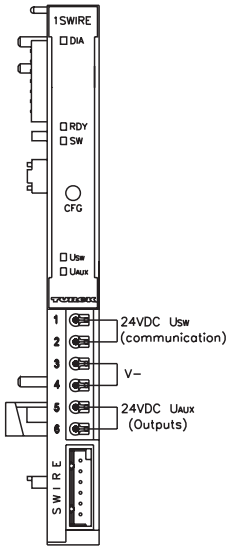
Part Number	Input Count	Pinout	Current	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
BL20-E-1SWIRE		1	3 A	X	X		1

Note: This module can only be used with other tension clamp modules unless it is separated using a BL20-PF-24VDC-D and BL20-P4T-SBBC base.

1



Mating Cordsets:

From SWIRE slice to first motor starter: BL20-SWIRE-CAB-XXX.

End cap for last motor starter; BL20-SWIRE-CAB-000

From one motor starter to an adjacent motor starter: BL20-SWIRE-CAB-008

XXX = Cable length in cm, cable lengths available in 25, 50, 100 and 200 cm.

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	–1	(Data from modules to the left)							
	n	SWIRE Slave 2				SWIRE Slave 1			
		SD2		PKZ-ST2	SI2	SD1		PKZ-ST1	SI1
	n+1	SWIRE Slave 4				SWIRE Slave 3			
		SD4		PKZ-ST2	SI2	SD3		PKZ-ST3	SI3
	n+2	SWIRE Slave 6				SWIRE Slave 5			
		SD6		PKZ-ST2	SI2	SD5		PKZ-ST5	SI5
	n+3	SWIRE Slave 8				SWIRE Slave 7			
		SD8		PKZ-ST2	SI2	SD7		PKZ-ST7	SI7
	n+4	SWIRE Slave 10				SWIRE Slave 9			
		SD10		PKZ-ST2	SI2	SD9		PKZ-ST9	SI9
	n+5	SWIRE Slave 12				SWIRE Slave 11			
		SD12		PKZ-ST2	SI2	SD11		PKZ-ST11	SI11
	n+6	SWIRE Slave 14				SWIRE Slave 13			
		SD14		PKZ-ST2	SI2	SD13		PKZ-ST13	SI13
	n+7	SWIRE Slave 16				SWIRE Slave 15			
		SD16		PKZ-ST2	SI2	SD15		PKZ-ST15	SI15
	n+8	(Data from modules to the right)							

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
OUT	–1	(Data from modules to the left)							
	n	SWIRE Slave 2				SWIRE Slave 1			
					SO2				SO1
	n+1	SWIRE Slave 4				SWIRE Slave 3			
					SO4				SO3
	n+2	SWIRE Slave 6				SWIRE Slave 5			
					SO6				SO5
	n+3	SWIRE Slave 8				SWIRE Slave 7			
					SO8				SO7
	n+4	SWIRE Slave 10				SWIRE Slave 9			
					SO10				SO9
	n+5	SWIRE Slave 12				SWIRE Slave 11			
					SO12				SO11
	n+6	SWIRE Slave 14				SWIRE Slave 13			
					SO14				SO13
	n+7	SWIRE Slave 16				SWIRE Slave 15			
					SO16				SO15
	n+8	(Data from modules to the right)							

SIx: Motor Starter is On
PKZ-STx: Motor Starter is OK
SDx:Slave Diagnostics Available

SOx: Turn on Motor Starter

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Motor Overload Contactor

- **Protects Motor from Current Overload**

Housing	Part Number	Application
	PKZM0-*	• Available in multiple amperages • See table on page C50 for Specs.

Motor Starter Wiring Set

- **Wires Motor Overload Contactor to Relay Module**

Housing	Part Number	Application
	PKZM0-X*M*2	• Different styles for different amperages • See tables on C51 & C52 for correct part numbers

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Relay Module

- **Controls whether or not Power is Supplied to Connected Motor**

Housing	Part Number	Application
	DILM*	• Available in different styles for different amperages • See pages C51 & C52 for correct part numbers • "10" in part number refers to normally open contact • "01" in part number refers to normally closed contact

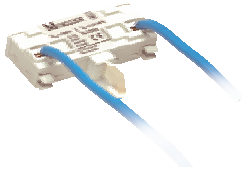
SWIRE Communication

- **Controls SWIRE Communication and Activates the Motor Starter**

Housing	Part Number	Application
	BL20-SWIRE-DIL	• Use with all DILM* modules • Control motor starter through SWIRE network

Trip Indication

- **Provide Feedback Status of Motor Starter because of Overcurrent or Short Circuit**

Housing	Part Number	Application
	NHI-E-10L-PL20	• Monitor motor starter status

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Bus Commoning Bars

- **Easily Connect Multiple Motor Starters without the need for Separate Wiring**

Housing	Part Number	Application
	BK25/3-PKZ0 B3.0/2-PKZ0* B3.0/4-PKZ0* B3.0/5-PKZ0*	• BK25 is used to land 3 phase wires to beginning of the bus • B3.0/x; x refers to the number of motor starters can be connected to the bar • Max 63A can be carried through a bus bar

* If bussing a reverse motor starter, a cover may be necessary for finger safe needs. Order a cap with p/n H-B3-PKZ0.

Power Feed Module

- **Safety Zone Separation**

Housing	Part Number	Application
	BL20-SWIRE-PF	• Separate motor starter sets into separate safety zones

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Base Modules for Slice I/O

Housing	Part Number	Description
Three Terminal Block	BL20-S3T-SBB	Tension Clamp Connection
	BL20-S3S-SBB	Screw Terminal Connection
Three Terminal Block with C-Connection	BL20-S3T-SBC	Tension Clamp Connection
	BL20-S3S-SBC	Screw Terminal Connection
Four Terminals	BL20-S4T-SBBS	Tension Clamp Connection
	BL20-S4S-SBBS	Screw Terminal Connection
Four Terminals with Cold Junction Compensation for Thermocouples	BL20-S4T-SBBS-CJ	Tension Clamp Connection
	BL20-S4S-SBBS-CJ	Screw Terminal Connection

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Base Modules for Slice I/O

Housing	Part Number	Description
Four Terminals with C-Connection	BL20-S4T-SBBC	Tension Clamp Connection
	BL20-S4S-SBBC	Screw Terminal Connection
Four Terminals with C-Connection, Dual Signal	BL20-S4T-SBCS	Tension Clamp Connection
	BL20-S4S-SBCS	Screw Terminal Connection
Six Terminals	BL20-S6T-SBBSBB	Tension Clamp Connection
	BL20-S6S-SBBSBB	Screw Terminal Connection
Six Terminals with C-Connection	BL20-S6T-SBCSBC	Tension Clamp Connection
	BL20-S6S-SBCSBC	Screw Terminal Connection

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Base Modules for Block I/O

Housing	Part Number	Description
Three Terminal Block	BL20-B3T-SBB	Tension Clamp Connection
	BL20-B3S-SBB	Screw Terminal Connection
Three Terminal Block with C-Connection	BL20-B3T-SBC	Tension Clamp Connection
	BL20-B3S-SBC	Screw Terminal Connection
Four Terminal Block with C-Connections	BL20-B4T-SBBC	Tension Clamp Connection
	BL20-B4S-SBBC	Screw Terminal Connection
Six Terminal Block	BL20-B6T-SBBSBB	Tension Clamp Connection
	BL20-B6S-SBBSBB	Screw Terminal Connection

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Base Modules for Block I/O

Housing	Part Number	Description
Six Terminal Block with C-Connection	B6T-SBCSBC	Tension Clamp Connection
	B6S-SBCSBC	Screw Terminal Connection

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Base Modules for Power Input

Housing	Part Number	Description
Three Terminal Power Base	BL20-P3T-SBB	Tension Clamp Connection
	BL20-P3S-SBB	Screw Terminal Connection
Three Terminal Power Base with Gateway Feed	BL20-P3T-SBB-B	Tension Clamp Connection
	BL20-P3S-SBB-B	Screw Terminal Connection
Four Terminal Power Base with C-Connection	BL20-P4T-SBBC	Tension Clamp Connection
	BL20-P4S-SBBC	Screw Terminal Connection
Four Terminal Power Base with C-Connection and Gateway Feed	BL20-P4T-SBBC-B	Tension Clamp Connection
	BL20-P4S-SBBC-B	Screw Terminal Connection

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Modular Industrial I/O System Accessories

Housing	Part Number	Description
Markers **Used for color coding terminals on BL20 base modules** 	XN-ANBZ-WS (10/PKG) XN-ANBZ-GN/GE/BED (10/PKG) XN-ANBZ-RT/BL-BED (10/PKG) XN-ANBZ-BR (10/PKG) XN-ANBZ-SW (10/PKG) XN-ANBZ-GN (10/PKG) XN-ANBZ-RT (10/PKG) XN-ANBZ-BL (10/PKG)	White Green/Yellow Red/Blue Brown Black Green Red Blue
Jumpers **For use with BL20 relay modules** 	XN-QV/8 (10/PKG) XN-QV/7 (10/PKG) XN-QV/6 (10/PKG) XN-QV/5 (10/PKG) XN-QV/4 (10/PKG) XN-QV/3 (10/PKG) XN-QV/2 (10/PKG) XN-QV/1 (10/PKG)	8 pair 7 pair 6 pair 5 pair 4 pair 3 pair 2 pair 1 pair
Coding Blocks **For keying electronic modules to base modules** 	XN-KO/17 (10/PKG) XN-KO/16 (10/PKG) XN-KO/14 (10/PKG) XN-KO/13 (10/PKG) XN-KO/12 (10/PKG) XN-KO/11 (10/PKG) XN-KO/10 (10/PKG) XN-KO/9 (10/PKG) XN-KO/8 (10/PKG) XN-KO/6 (10/PKG) XN-KO/2 (10/PKG)	BL20-PF-120/230VAC-D BL20-PF-24VDC-D BL20-2AO-U(-10/0...+10V) BL20-1AO-I(0/4...20MA) RTD and TC temperature modules, BL20-1AI-U(-10/0...+10V) BL20-1AI-I(0/4...20MA) BL20-2DO-R-CO BL20-2DO-R-NC BL20-2DO-R-NO BL20-*DO-24VDC* BL20-*DI-24VDC*

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Modular Industrial I/O System Accessories

Housing	Part Number	Description
Labels	FW5/151-200 (10 SETS/PKG) FW5/101-150 (10 SETS/PKG) FW5/51-100 (10 SETS/PKG) FW5/1-50 (10 SETS/PKG)	Numbered 151-200 Numbered 101-150 Numbered 51-100 Numbered 1-50
End Bracket	XN-WEW-35/2-SW (1/PKG)	
End Plate	XN-ABPL	
Shield Connection - For use with analog modules	XN-KLBU/S (10/PKG) XN-KLBU/T (10/PKG)	Screw terminal Tension clamp
Labels - For labeling electronic modules. DIN A5 sheets	BL20-LABEL/BLOCK (5 SHEETS/PKG) BL20-LABEL/SCHEIBE (5 SHEETS/PKG)	For block modules For slice modules
Tension Clamp Tool - For ease of operating tension clamp connections	ZBW5-2	
Ferrite Ring - For damping high frequency interference on data and supply lines	PS416-ZBX-405 (2/PKG)	
Shield Connection - For use with direct wiring gateways	SCH-1-WINBLOC (1/PKG)	
Programming Cable - For connecting the BL20/BL67 system to the I/O Assistant software	XN-PS2-CABLE	

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excom Selection Guide

PROFIBUS-DP® Gateway
D4

Module Type	Pages
Discrete Input	D5
Discrete Output	D7
Discrete Input & Output	D9
Analog Input	D11, D17
Analog Output	D13
Frequency/Counter Input	D15

Accessories
D19 - D24

Certification Table

Housing	FM	CSA
DM80EX	X	X
D040EX	X	X
AIH40EX	X	X
AIH41EX		X
A040EX	X	X
AI41EX		
TI40EX	X	X
GDP 1.5	X	X
PSD24EX	X	X
MT 9	X	X
MT 18	X	X
SC12-EX	X	

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The *excom*® System

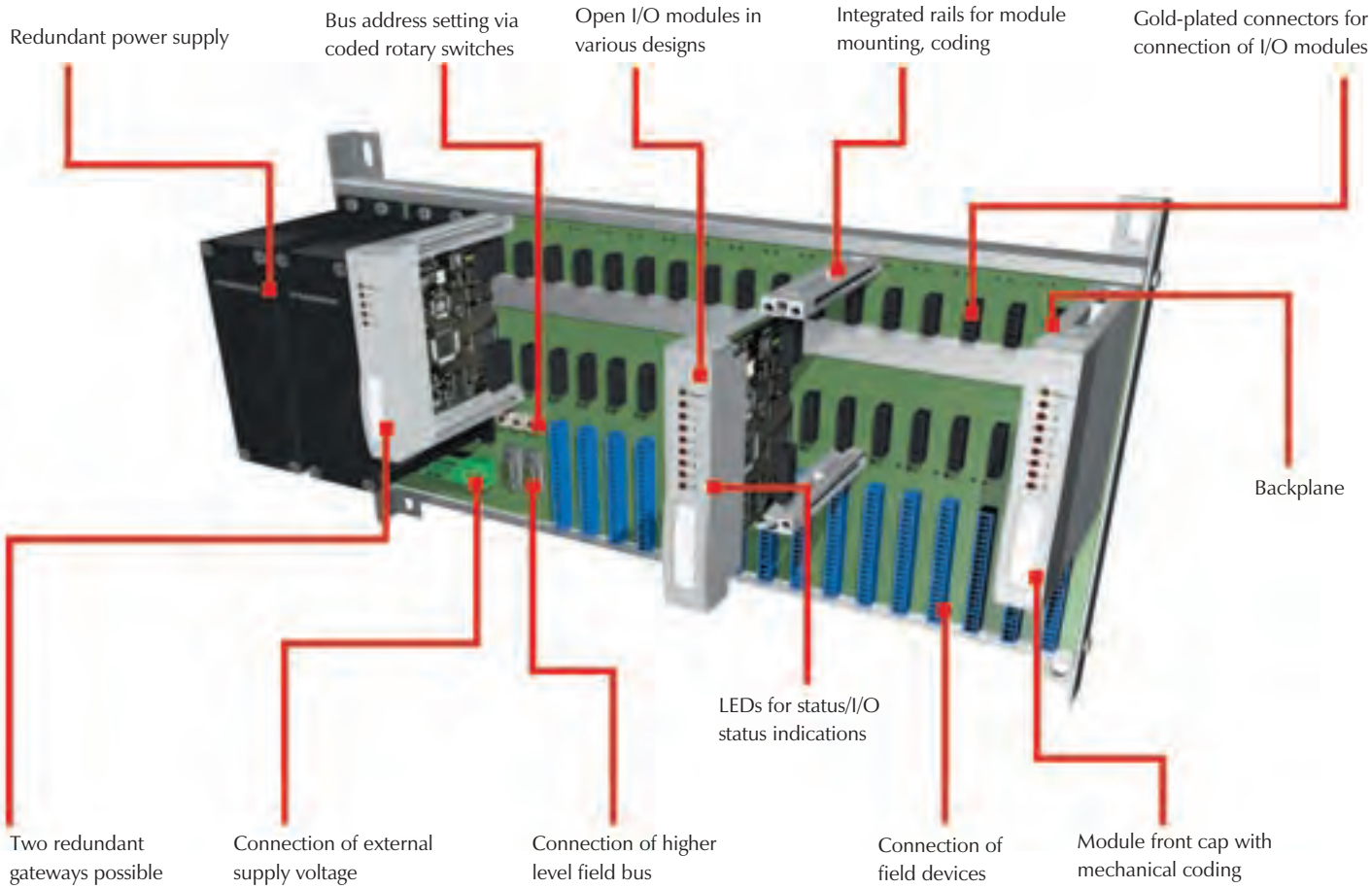
excom is a remote I/O system for use in hazardous locations. It provides PROFIBUS®-DP compatible I/O modules in an IP 20 protected solution for connecting discrete and analog intrinsically safe field devices. It is approved for use in Class I, Division 2 locations, and may be connected to field devices in Class I, Division 1 areas.

The modular system consists of power modules, PROFIBUS-DP communication gateways, I/O modules and a backplane rack. The backplane is available in two sizes, with support for 8 or 16 I/O modules. The larger rack (MT18…) also allows for redundant power supplies and PROFIBUS-DP gateway cards to be used. This allows a failsafe communication scheme to be used.

The I/O modules provide the interface to field devices. The backplane provides power for I/O from the mounted power supply, with no need for a separate field supply. The gateways, power supplies and I/O cards are simply plugged into the backplane rack, with all power, PROFIBUS-DP and I/O wiring separate from the removable modules. I/O modules may also be changed during operation ("hot-swapped"). The system automatically checks whether a newly inserted module matches the configuration.

The internal cycle time of the excom system is less than 5 ms for discrete signals and less than 20 ms for analog signals. Total response time of the PROFIBUS-DP system depends on the cycle time of the controller and its program, as well as the data rate of the PROFIBUS-DP system. HART values may be exchanged with supported devices via PROFIBUS-DPV1 communication.

In order to use the excom system in a hazardous area, the PROFIBUS-DP communication must be conditioned through a segment coupler. Couplers are available for both wire and fiber-optic media.



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Diagnostics

The ***excom*** gateway provides extended PROFIBUS-DP diagnostic information, including channel-specific error indication. Each module also features LEDs for visual error indication as well as I/O status. Consult the user manual for the ***excom*** system for detailed information.

Addressing

The I/O modules need no user configured address since the gateway recognizes them by which backplane slot they are inserted in. The ***excom*** system itself needs a PROFIBUS-DP address, which is set via three rotary switches. The maximum address of the system is 125.

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PROFIBUS-DP Gateway

- **Modular I/O**
- **PROFIBUS-DP Compatible**
- **Hazardous Area Usage**
- **Various I/O Styles**

Electrical

- Power Consumption: <3 W (from backplane)

Mechanical

- Operating Temperature: -20 to +60°C (-4 to +140°F)
- Protection: IP 20

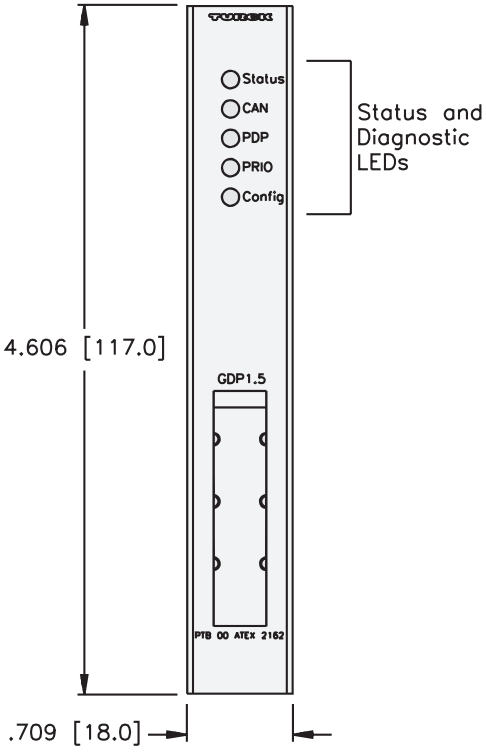
Diagnostics (Logical)

- I/O faults are mapped to the PROFIBUS-DP diagnostic area

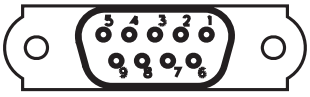
Diagnostics (Physical)

- LEDs to indicate status of PROFIBUS-DP and backplane communication

GDP1.5



PROFIBUS-DP Connector



1 = Shield
3 = BUS_B
5 = DGnd
6 = +5 VDC
8 = BUS_A

Note: Connector is mounted to the excom backplane rack.

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4 Channel
Discrete Input Module

- **Modular I/O**
- **PROFIBUS-DP Compatible**
- **Hazardous Area Usage**
- **NAMUR Inputs**

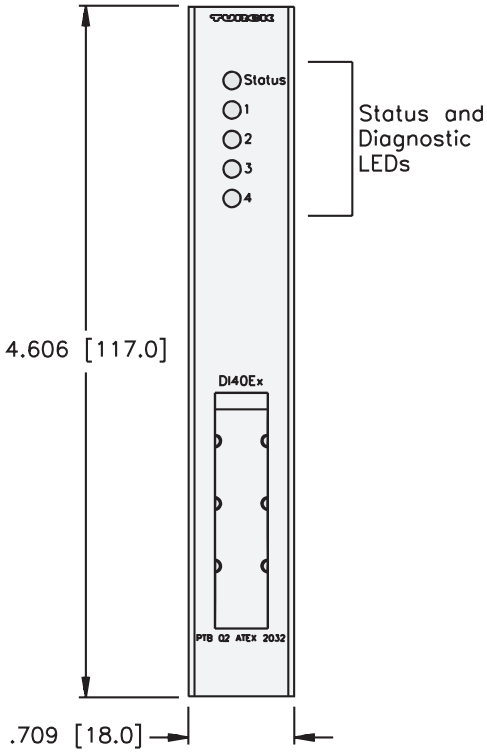
Electrical
- Power Consumption: <2 W (from backplane)
- Sensor Type: NAMUR

Mechanical
- Operating Temperature: -20 to +70°C (-4 to +158°F)
- Protection: IEC IP 20

Diagnostics (Logical)
- I/O faults are mapped to the PROFIBUS-DP diagnostic area
- Open/short-circuit detection is configurable

Diagnostics (Physical)
- LEDs indicate faults for each channel

DI40EX



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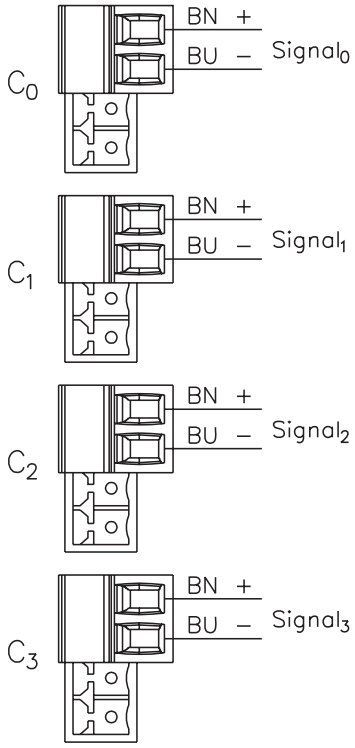
	Inputs								Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	OCD	I/O Map
DI4OEX	4	0-3	E-I	1	NAMUR		X	X	1

E-I



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	Data from next discrete modules				I-3	I-2	I-1	I-0
	n+1	(Data from modules to the right)							

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4 Channel
Discrete Output Module

- **Modular I/O**
- **PROFIBUS-DP Compatible**
- **Hazardous Area Usage**
- **Selectable Output Power**

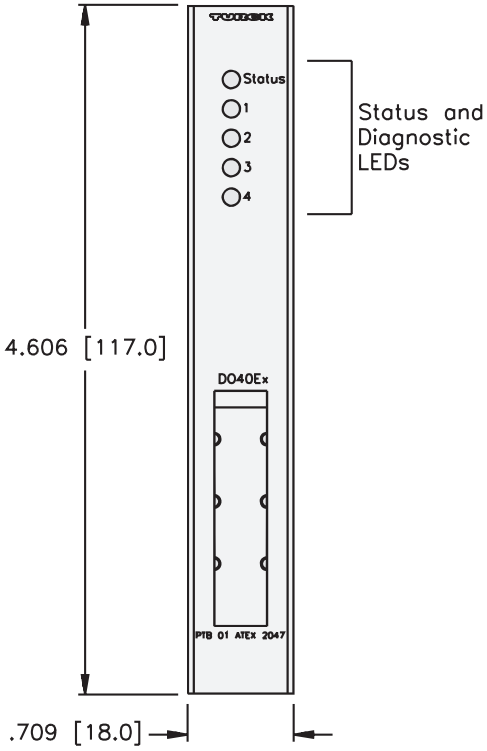
Electrical
- Power Consumption: <4.5 W (from backplane)
- Output Voltage: 16 or 24 VDC (depending on terminals used)

Mechanical
- Operating Temperature: -20 to +60°C (-4 to +140°F)
- Protection: IEC IP 20

Diagnostics (Logical)
- I/O faults are mapped to the PROFIBUS-DP diagnostic area
- Open/short-circuit detection is configurable

Diagnostics (Physical)
- LEDs indicate faults for each channel

DO40EX



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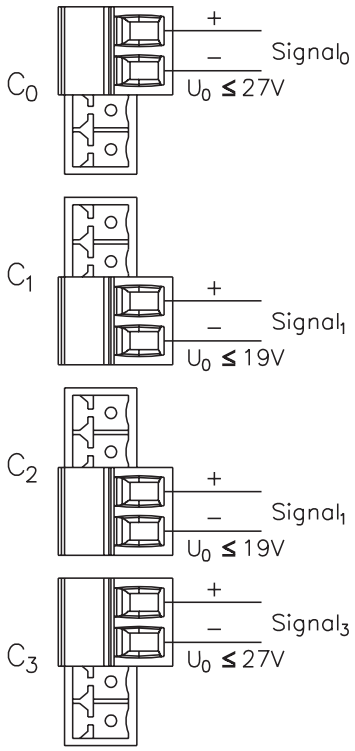
	Outputs								Data
Part Number	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map	
DO40EX	4	0-3	E-O	1	45 mA (@12 V)	X	X	1	

E-O



Note: Each output can be used in either the 19 or 27 V mode

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	n–1	(Data for modules to the left)							
	n	Data for next discrete modules				0-3	0-2	0-1	0-0
	n+1	(Data for modules to the right)							

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8 Channel Discrete Input/Output Module

- **Modular I/O**
- **PROFIBUS-DP Compatible**
- **Hazardous Area Usage**
- **Channels can be Input or Output**

DM80EX

Electrical

- Power Consumption: <2 W (from backplane)
- Input Type: NAMUR or dry contact
- Output Voltage: 8 VDC

Mechanical

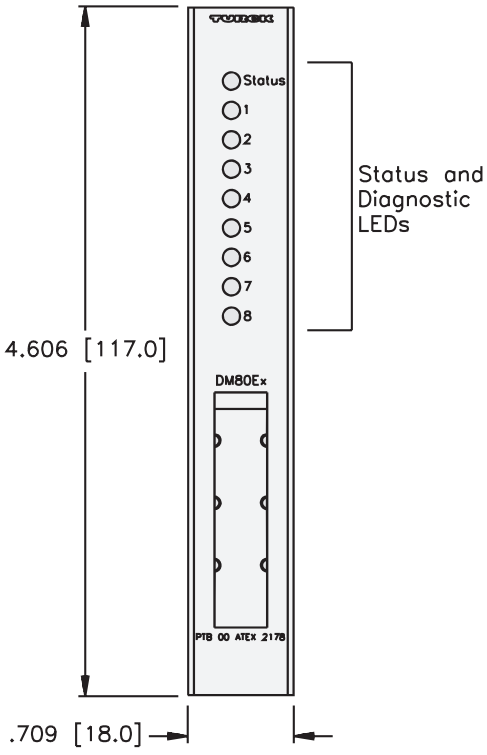
- Operating Temperature: -20 to +60°C (-4 to +140°F)
- Protection: IEC IP 20

Diagnostics (Logical)

- I/O faults are mapped to the PROFIBUS-DP diagnostic area
- Open/short-circuit detection is configurable

Diagnostics (Physical)

- LEDs indicate faults for each channel



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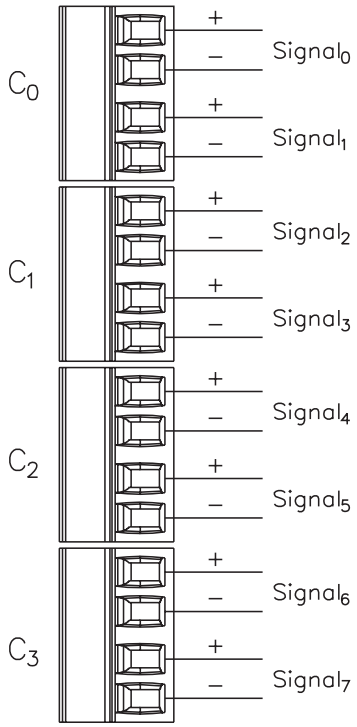
	Inputs								Outputs							Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
DM80EX	8	0-3	E-X	2	NAMUR		X	X	8	0-3	E-X	2	~4 mA	X	X	1

E-X



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	n+1	(Data from modules to the right)							

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4 Channel Analog Input Modules

- **Modular I/O**
- **PROFIBUS-DP Compatible**
- **Hazardous Area Usage**
- **HART Capability**

Electrical

- Power Consumption: <3.5 W (from backplane)
- Input Type: 2-wire (AI(H)40EX) or 4-wire (AI(H)41EX) sensors

Mechanical

- Operating Temperature: -20 to +70°C (-4 to +158°F)
- Protection: IEC IP 20

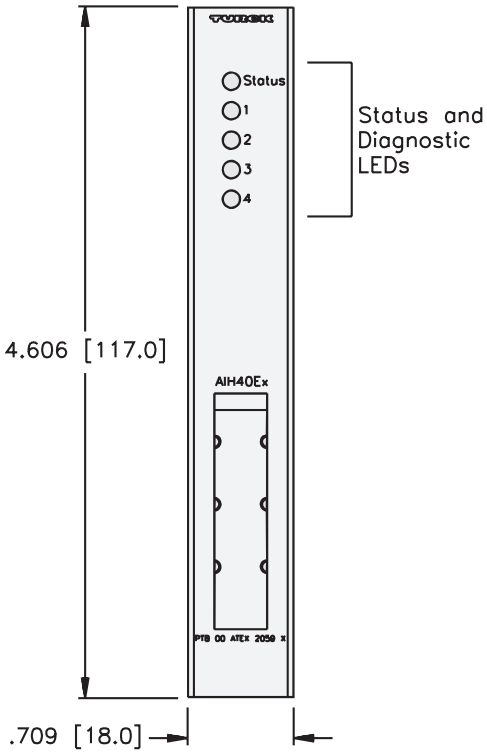
Diagnostics (Logical)

- I/O faults are mapped to the PROFIBUS-DP diagnostic area
- Open/short-circuit detection is configurable

Diagnostics (Physical)

- LEDs indicate faults for each channel

AI40EX
AIH40EX
AI41EX
AIH41EX



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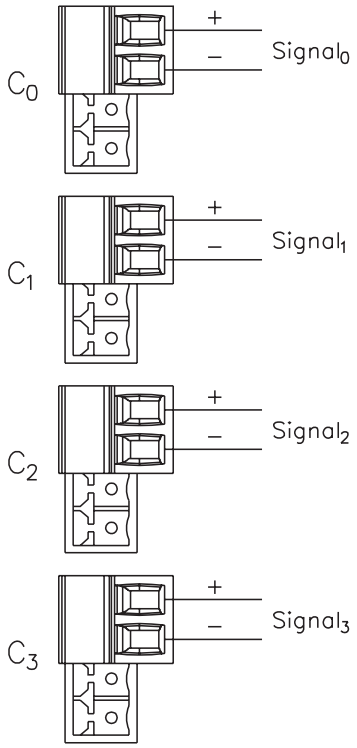
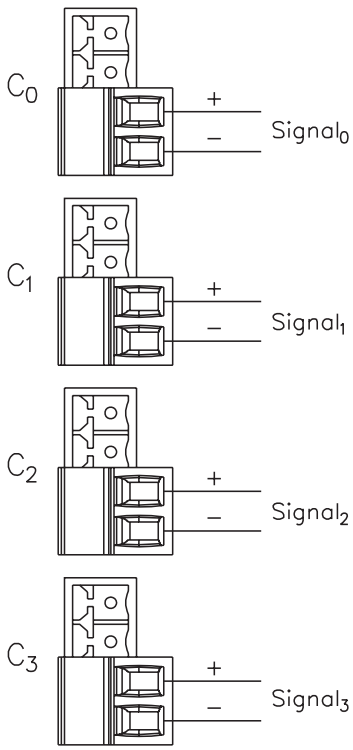
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Individual Diagnostics	Wire-Break Detection	HART Compatible	I/O Map
	Inputs								Data
AI40EX	4	0-3	E-AI2	1	0/4 to 20 mA	X	X		1
AI41EX	4	0-3	E-AI4	1	0/4 to 20 mA	X	X		1
AIH40EX	4	0-3	E-AI2	1	0/4 to 20 mA	X	X	X	1
AIH41EX	4	0-3	E-AI4	1	0/4 to 20 mA	X	X	X	1

E-AI2



E-AI4



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	Channel 0, MSB							
	n+1	Channel 0, LSB							
	n+2	Channel 1, MSB							
	n+3	Channel 1, LSB							
	n+4	Channel 2, MSB							
	n+5	Channel 2, LSB							
	n+6	Channel 3, MSB							
	n+7	Channel 3, LSB							
	n+8	(Data from modules to the right)							

Note: Default data map shown. More data is returned if HART variables are used. Consult product user manual for details.

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4 Channel Analog Output Modules

- **Modular I/O**
- **PROFIBUS-DP Compatible**
- **Hazardous Area Usage**
- **HART Capability**

Electrical

- Power Consumption: <3.5 W (from backplane)
- Output Type: 0/4...20 mA actuators

Mechanical

- Operating Temperature: -20 to +70°C (-4 to +158°F)
- Protection: IEC IP 20

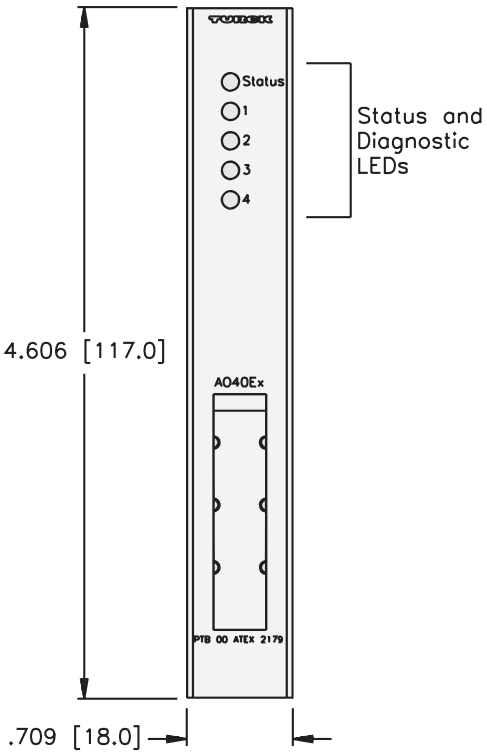
Diagnostics (Logical)

- I/O faults are mapped to the PROFIBUS-DP diagnostic area
- Open/short-circuit detection is configurable

Diagnostics (Physical)

- LEDs indicate faults for each channel

AO40EX
AOH40EX



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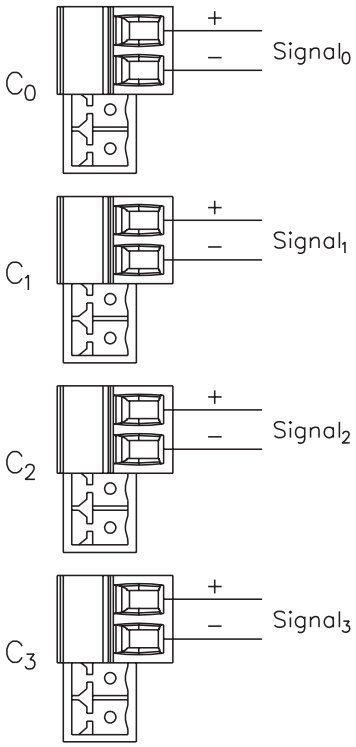
	Outputs								Data
Part Number	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	HART Compatible	I/O Map
AO40EX	4	0-3	E-AO	1	0/4 to 20 mA	X	X		1
AOH40EX	4	0-3	E-AO	1	0/4 to 20 mA	X	X	X	1

E-AO



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	n–1	(Data for modules to the left)							
	n	Channel 0, MSB							
	n+1	Channel 0, LSB							
	n+2	Channel 1, MSB							
	n+3	Channel 1, LSB							
	n+4	Channel 2, MSB							
	n+5	Channel 2, LSB							
	n+6	Channel 3, MSB							
	n+7	Channel 3, LSB							
	n+8	(Data for modules to the right)							

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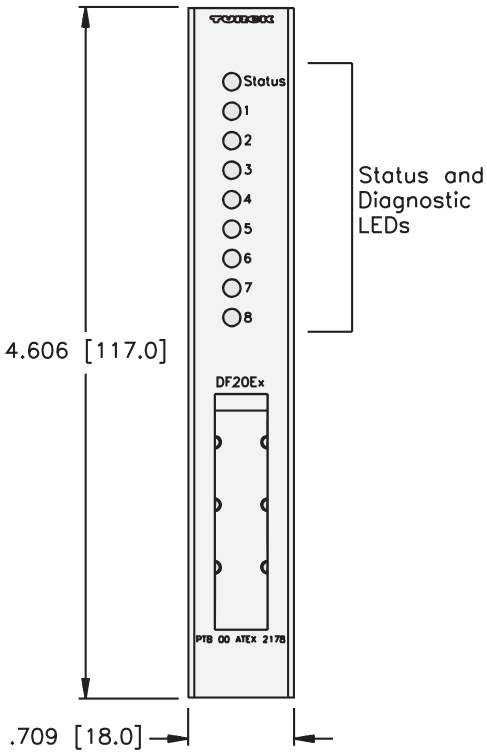

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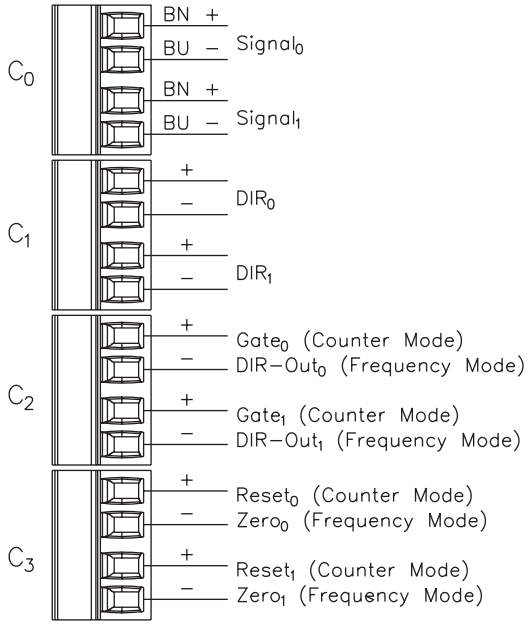
	Inputs								Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
DF20EX	2	0-3	E-F	2	Frequency/ Counter		X	X	1

E-F



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	S-0	OV-0*	SIGN-0	Channel 0 (MS bits)				
	n+1	Channel 0							
	n+2	Channel 0							
	n+3	Channel 0 (LSB)							
	n+4	S-1	OV-1*	SIGN-1	Channel 1 (MS bits)				
	n+5	Channel 1							
	n+6	Channel 1							
	n+7	Channel 1 (LSB)							
	n+8	(Data from modules to the right)							

*** OV is used in counter mode only**

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4 Channel Temperature Input Module

TI40EX

- **Modular I/O**
- **PROFIBUS-DP Compatible**
- **Hazardous Area Usage**
- **Thermocouple or RTD Inputs**

Electrical

- Power Consumption: <3 W (from backplane)
- Input Type: PT100, PT1000, NI100 2-, 3- or 4-wire RTDs
  Type B, E, J, K, L, N, R, S, T Thermocouples

Mechanical

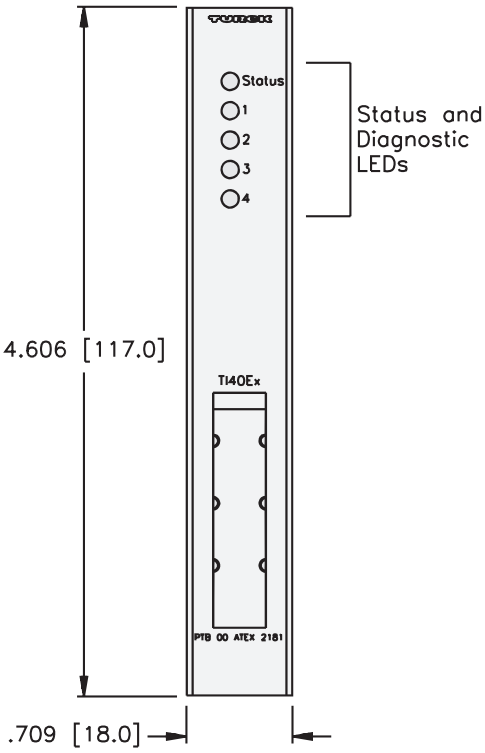
- Operating Temperature: -20 to +70°C (-4 to +158°F)
- Protection:IEC IP 20

Diagnostics (Logical)

- I/O faults are mapped to the PROFIBUS-DP diagnostic area
- Open/short-circuit detection is configurable

Diagnostics (Physical)

- LEDs indicate faults for each channel



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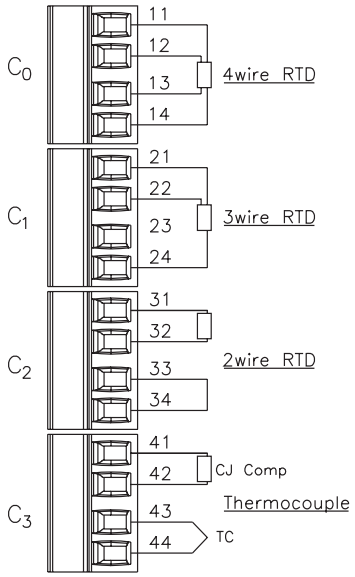
	Inputs								Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
TI40EX	4	0-3	E-T	1	TC / RTD		X	X	1

E-T



Note: Each channel may be used in any of the four example forms shown.

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n–1	(Data from modules to the left)							
	n	S-0	Channel 0, MSB						
	n+1	Channel 0, LSB							
	n+2	S-1	Channel 1, MSB						
	n+3	Channel 1, LSB							
	n+4	S-2	Channel 2, MSB						
	n+5	Channel 2, LSB							
	n+6	S-3	Channel 3, MSB						
	n+7	Channel 3, LSB							
	n+8	(Data from modules to the right)							

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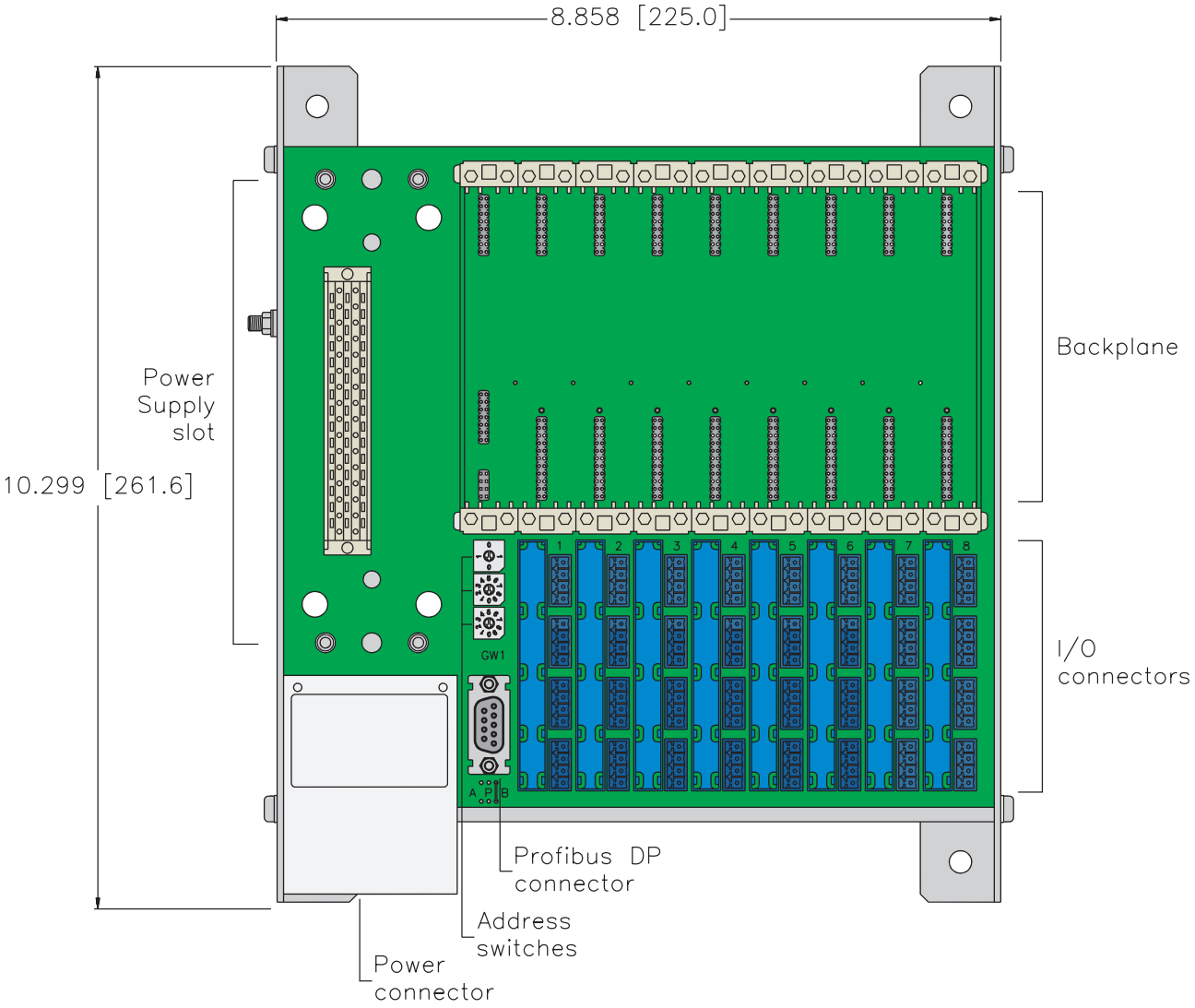
Backplane Racks

- Modular I/O
- PROFIBUS-DP Compatible
- Hazardous Area Usage
- Redundant Communication Option

MT9/FM
MT18-R024

Excom Racks				
Part Number	I/O Slots	Redundancy	Connector Type	FM Approval
MT9/FM	8		Screw Terminal	X
MT9-R024	8		Screw Terminal	Pending
MT18-R024	16	X	Screw Terminal	Pending



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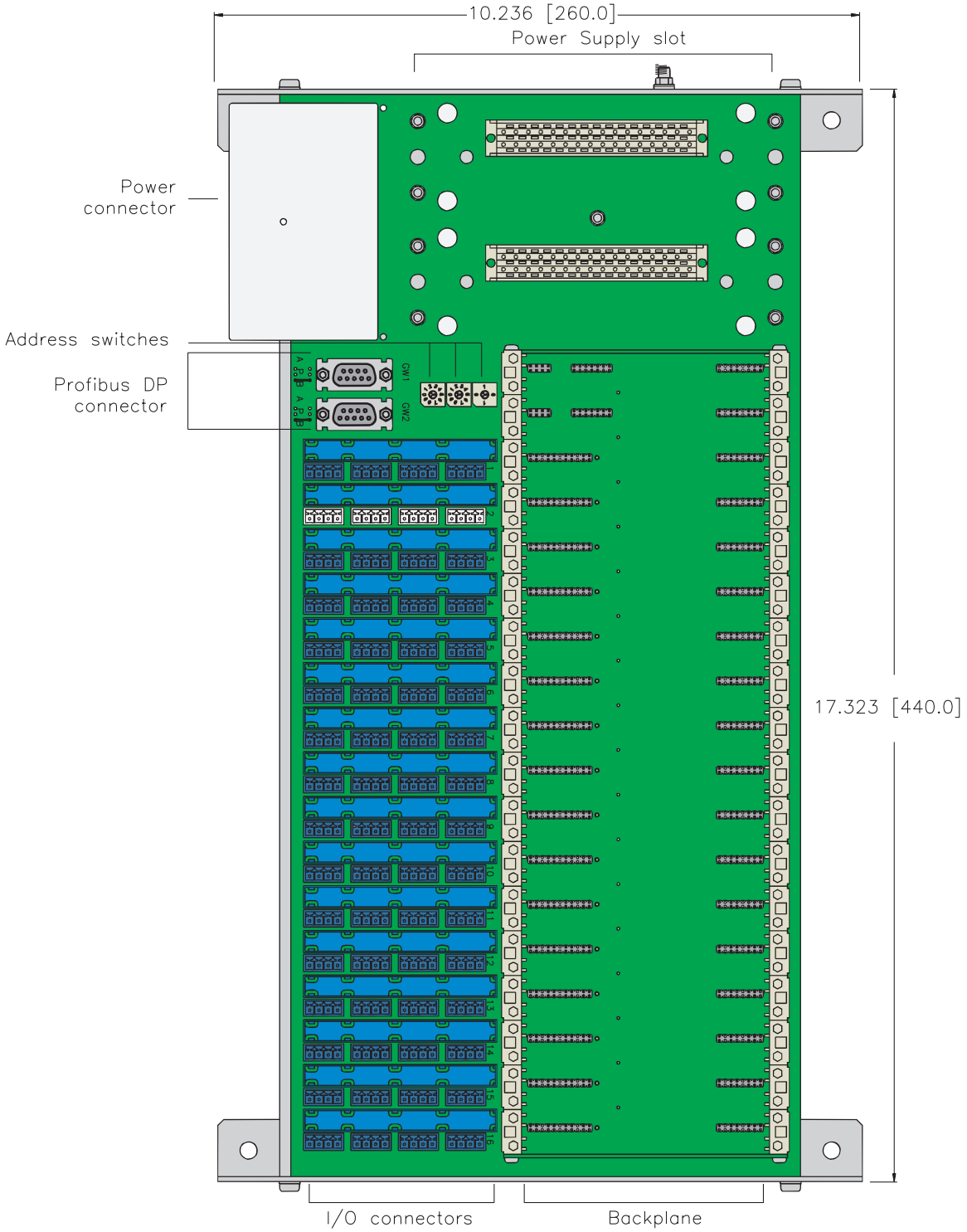
MT18..



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PSD24EX

- **Power Supply Module (24 VDC in) for Excom Rack**

Electrical

- Power Consumption: 75 W
- Power Output: 60 W
- Voltage Input: 18...33 VDC

Mechanical

- Operating Temperature: -20 to +60°C (-4 to +140°F)
- Protection: IEC IP50

Diagnostics (Physical)

- LEDs indicate status of power supply

BM1

- **Blank Cover for Unused *excom* Slots**

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excom® Module Accessories

Image	Part Number	Description
	D9T-RS485	D9 PROFIBUS®-DP connector for use in safe areas.
	D9T-RS485IS	D9 PROFIBUS-DP connector for use in hazardous (FM Div 2) areas.
	D9T-RS485PG	D9 PROFIBUS-DP connector with programming port for use in safe areas
	MODEX-FILTER	Capacitor to improve power up performance and operational safety of ***excom***

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PROFIBUS-DP IS Couplers

- **Redundant Communication**
- **PROFIBUS-DP Compatible**
- **Hazardous Area Usage**
- **Fiber Optic or Copper Media**

Electrical

- Voltage In: 18 to 32 VDC
- Current Consumption: <100 mA (OC11...), <200 mA (SC12...)

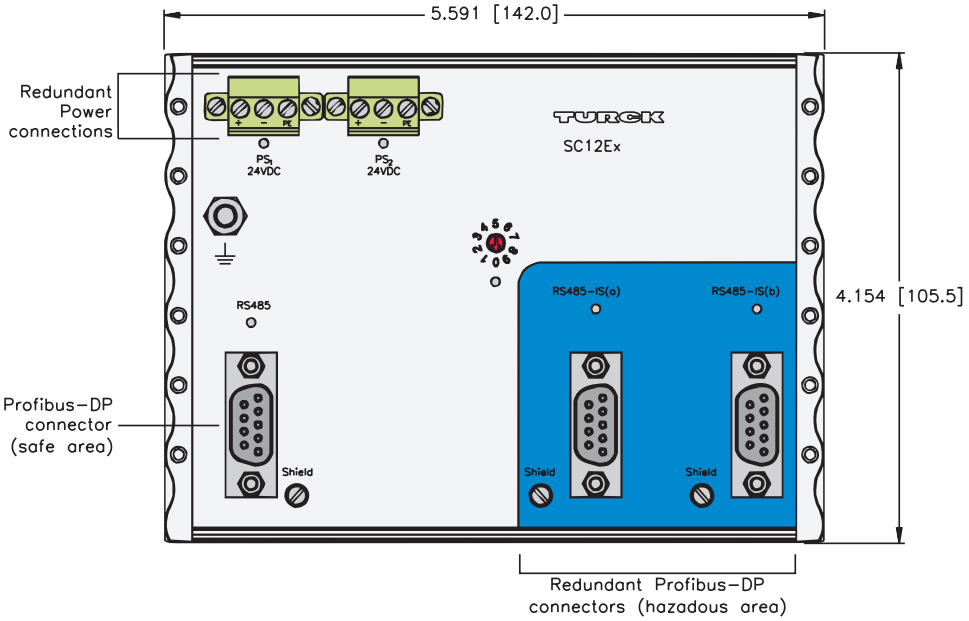
Mechanical

- Operating Temperature: -20 to +70°C (-4 to +158°F)
- Protection: IEC IP 20

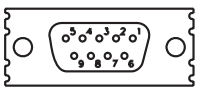
Diagnostics (Physical)

- LEDs indicate status of power and PROFIBUS-DP communication

OC11EX/2G
OC11EX/3G
SC12-EX



SC12-EX shown



1=Shield
3=BUS_B
5=DGND
6=+VDC
8=BUS_A

Note: For fiber optic communication the part number CABLE LWL-2ST/SY-*M (where * is the length in meters) must be used.

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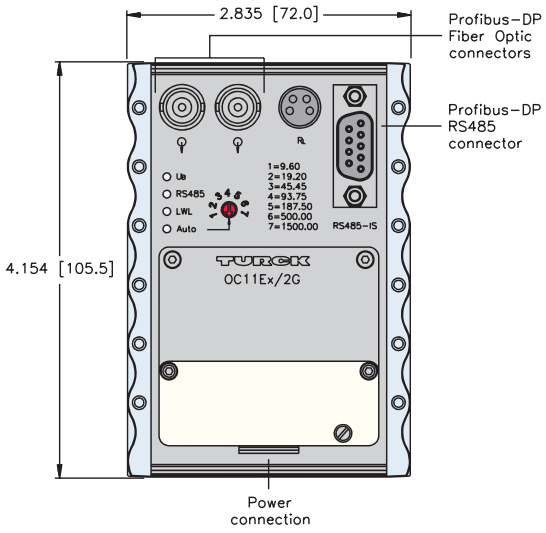
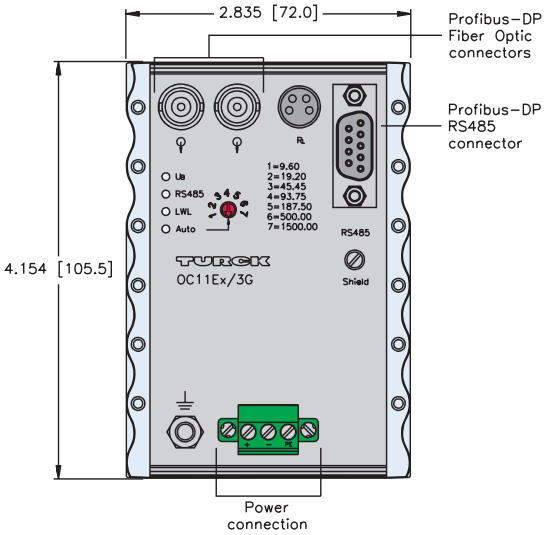
Part Number	Classification	Connection
OC11EX/2G	Zone 1	Fiber
OC11EX/3G	Zone 2	Fiber
SC12-EX		Copper

Note: For fiber-optic communication the part number CABLE LWL-2ST/SY-*M (where * is the length in meters) must be used.

Zone 1



Zone 2



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NETWORKS

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FOUNDATION™ fieldbus Selection Guide

Power Conditioner	Cables	Terminating Resistors
E7 - E16	E17 - E21	E22

Feed Through Connectors	Field Wireable Tee	Junctions
E23	E24	E25 - E50

Conduit Adapters	Power Supply Conditioner	Tees	Gender Changers
E51	E53	E55	E56

Surge Suppressor	Receptacles	Field Wireable Connectors
E57	E59 - E66	E67

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FOUNDATION™ fieldbus General Specifications

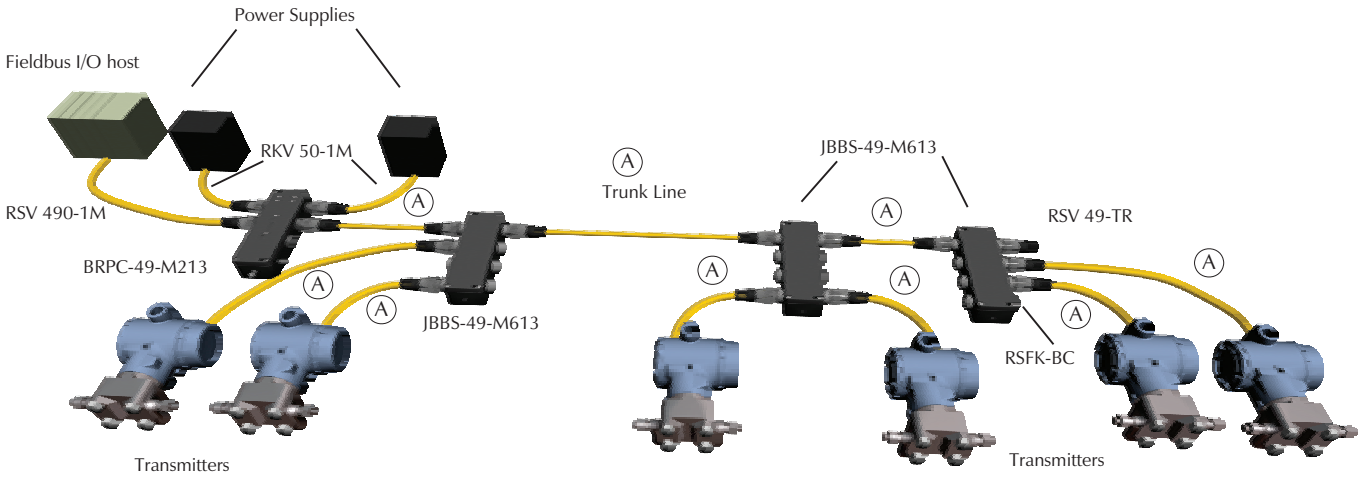
FOUNDATION fieldbus is a communication protocol and physical method to interconnect smart devices such as temperature transmitters, pressure transmitters and valve actuators. The physical layer conforms to ISA SP50.02 and IEC 1158-2 standards for fieldbuses.

Fieldbus technology allows many smart devices to share one communication medium. The digital communication signal is superimposed onto a DC carrier. This reduces the amount of terminations to connect all the field devices to a host system and allows greater flexibility for future additions of I/O points.

A FOUNDATION fieldbus device is addressable and can store and transmit data. The devices can store values, track changes and use pre-set alarms to trigger. Based on pre-defined tag names host systems can read transmitter values such as temperature and pressure to set values of a valve actuator.

Digital signal encoding is done using Manchester BiPhase-L and error checking is done with the CRC method. FOUNDATION fieldbus has two types of devices - A Basic Device (BD) which reads inputs, track values and set outputs if programmed to do so - A Link Active Scheduler (LAS) performs the same features as a BD and handles network communication timing between all the active devices on the network.

Topology



(A) = RSV RKV 490-1M

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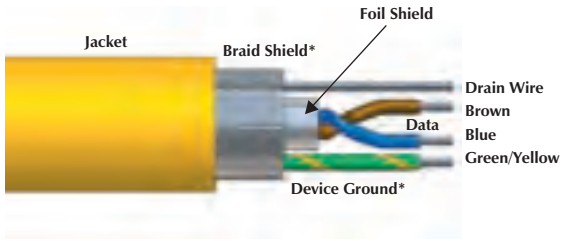
FOUNDATION™ fieldbus, Cable Specifications

- **Cable that Meets the Requirements of ISA/SP50 and FOUNDATION™ fieldbus Requirements for Type A Cable**
- **Cables are Available in 3-wire Versions with a Device Ground or 2-wire Versions**

Figure A

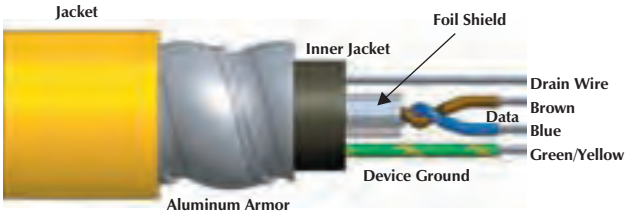


*Available on some cable types

Type A Cable Specifications

- Temperature range: -40 to +105°C
- Governed by: ISA SP50.02 specification
- Sunlight Resistant
- PLTC and ITC Rated (CSA FT4)
- Impedance [Z_0 at f_r (31.25 kHz)] = 100 Ohms ± 20 %
- Maximum Attenuation at 1.25 f_r (39 kHz) = 3.0 dB/km
- Maximum Capacitive Unbalance to Shield = 2 nF/km
- Maximum DC Resistance (per conductor) = 24 Ohms/km
- Maximum Propagation Delay Variance 0.25 f_r to 1.25 f_r = 1.7 µs/km
- Conductor Cross-sectional area (wire size) = nominal 0.8 mm^2 (#18 AWG) or 1.2 mm^2 (#16 AWG)
- Shield Coverage =100 % (90 % minimum)

Figure B



Type	Approvals	Data Pair		Device Ground	Outer Jacket	Shields	Bulk Cable Part Number / Weight/300 M	Figure
		AWG Color Code	DCR (/1000 feet) Insulation	AWG Color Code	Material Color Nominal O.D.	Type Drain Wire		
490 AWM 2517 105°C 300 Volts	**NEC ITC** PLTC Open Wiring **CEC** [CMG] AWM I/II A/B FT4	2/18 AWG BU/BN	6.5 Ohms XLPE	18 AWG GN/YE	PVC Yellow 8.4 mm (.330 in)	Foil 20 AWG	RB50693-*M 58 lbs.	**A**
490B AWM 2517 105°C 300 Volts	**NEC ITC** PLTC Open Wiring **CEC** [CMG] AWM I/II A/B FT4	2/18 AWG BU/BN	6.5 Ohms XLPE	18 AWG GN/YE	PVC Blue 8.4 mm (.330 in)	Foil 20 AWG	RB50783-*M 58 lbs.	**A**
492A 105°C 300 Volts	**NEC ITC** PLTC/CM **CEC** [CMG HLBCD]	2/18 AWG BU/BN	6.5 Ohms XLPE	18 AWG GN/YE	Armor/PVC Yellow 12.7 mm (0.5 in)	Foil 18 AWG	RB50874-*M 96 lbs. ***armorfast*** ®	**B**
492BA 105°C 300 Volts	**NEC ITC** PLTC/CM **CEC** [CMG HLBCD]	2/18 AWG BU/BN	6.5 Ohms XLPE	18 AWG GN/YE	Armor/PVC Blue 12.7 mm (0.5 in)	Foil 18 AWG	RB50803-*M 96 lbs. ***armorfast*** ®	**B**
493 AWM 2517 105°C 300 Volts	**NEC ITC** PLTC Open Wiring **CEC** [CMG] AWM I/II A/B FT4	2/18 AWG BU/BN	6.5 Ohms XLPE	None	PVC Yellow 8.5 mm (.335 in)	Foil/Braid 20 AWG	RB50784-*M 59 lbs.	**A**
493B AWM 2517 105°C 300 Volts	**NEC ITC** PLTC Open Wiring **CEC** [CMG] AWM I/II A/B FT4	2/18 AWG BU/BN	6.5 Ohms XLPE	None	PVC Blue 8.5 mm (.335 in)	Foil/Braid 20 AWG	RB50786-*M 59 lbs.	**A**

* Indicates length in meters.
Standard cable lengths are 30, 75, 150, 225 and 300 meters.

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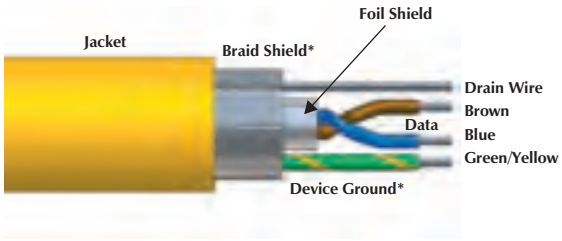
FOUNDATION™ fieldbus, Cable Specifications

- **Cable that Meets the Requirements of ISA/SP50 and FOUNDATION™ fieldbus Requirements for Type A Cable**
- **Cables are Available in 3-wire Versions with a Device Ground or 2-wire Versions**

Figure A

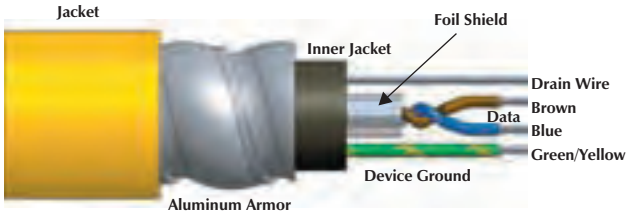


*Available on some cable types

Type A Cable Specifications

- Temperature range: -40 to +105°C
- Governed by: ISA SP50.02 specification
- Sunlight Resistant
- PLTC and ITC Rated (CSA FT4)
- Impedance [Z_0 at f_r (31.25 kHz)] = 100 Ohms ± 20 %
- Maximum Attenuation at 1.25 f_r (39 kHz) = 3.0 dB/km
- Maximum Capacitive Unbalance to Shield = 2 nF/km
- Maximum DC Resistance (per conductor) = 24 Ohms/km
- Maximum Propagation Delay Variance 0.25 f_r to 1.25 f_r = 1.7 µs/km
- Conductor Cross-sectional area (wire size) = nominal 0.8 mm² (#18 AWG) or 1.2 mm² (#16 AWG)
- Shield Coverage =100 % (90 % minimum)

Figure B



Type	Approvals	Data Pair		Device Ground	Outer Jacket	Shields	Bulk Cable Part Number / Weight/300 M	Figure
		AWG Color Code	DCR (/1000 feet) Insulation	AWG Color Code	Material Color Nominal O.D.	Type Drain Wire		
493O AWM 2517 105°C 300 Volts	**NEC ITC** PLTC Open Wiring **CEC** [CMG] AWM I/II A/B FT4	2/18 AWG BU/BN	6.5 Ohms XLPE	None	PVC Orange 8.5 mm (.335 in)	Foil/Braid 20 AWG	RB50785-*M 59 lbs.	A
496 AWM 2517 105°C 300 Volts	**NEC ITC** PLTC Open Wiring **CEC** [CMG] AWM I/II A/B FT4	2/16 AWG BU/BN	4.1 Ohms XLPE	None	PVC Yellow 9.6 mm (.378 in)	Foil 18 AWG	RB50891-*M 64 lbs.	A
496BK AWM 2517 105°C 300 Volts	**NEC ITC** PLTC Open Wiring **CEC** [CMG] AWM I/II A/B FT4	2/16 AWG BU/BN	4.1 Ohms XLPE	None	PVC Black 9.6 mm (.378 in)	Foil 18 AWG	RB51300-*M 64 lbs.	A

* Indicates length in meters.
Standard cable lengths are 30, 75, 150, 225 and 300 meters.

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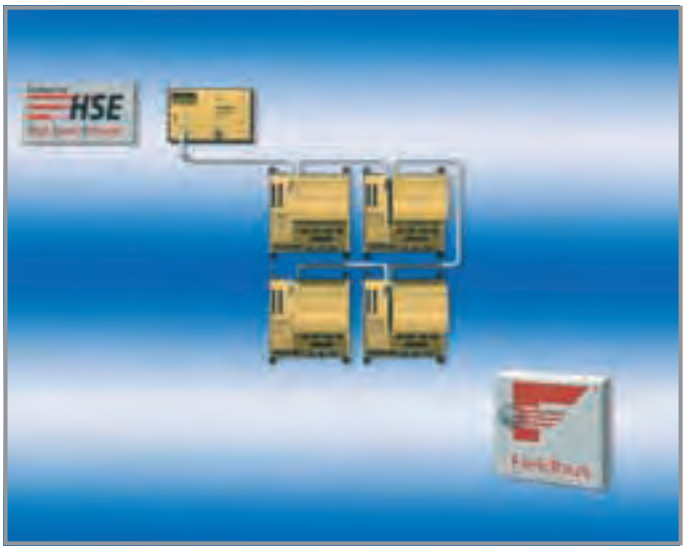
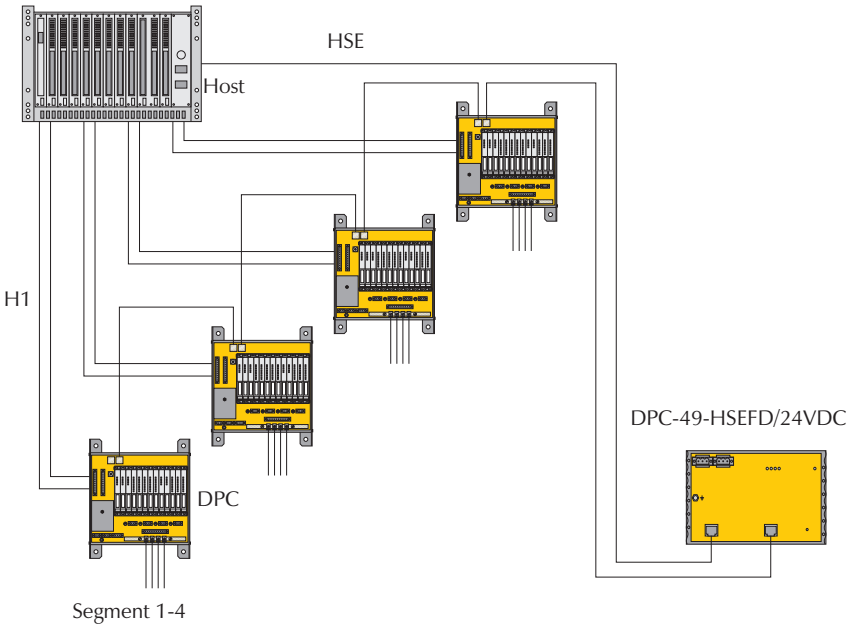


The DPC-System (Diagnostic Power Conditioner System) is a power supply system for the installation of FOUNDATION™ fieldbus H1 segments. It provides comprehensive diagnostic functions for the monitoring of FOUNDATION fieldbus segments and supports asset management for the entire system.

A DPC system consists of one or more module racks (DPC-49-MB-RC) each with up to eight power supply modules (DPC-49-IPS) and one diagnostic module (DPC-49-ADU). Up to four H1 segments for each module rack can be operated and monitored redundantly. The diagnostic data from the H1 segments are transmitted via the HSE interface module (DPC-49-HSEFD/24VDC) to the higher level asset management system.

The diagnostic module (DPC-49-ADU) is used as a communication and diagnostic interface between the H1 segments and the power supply module. The diagnostics module monitors the electrical parameters and the communication parameters of the H1 segments. Operation without diagnostic module is possible. In this configuration, simple diagnostics are provided locally.

The diagnostic information is collected in the device and transmitted via the HSE interface module to the higher fieldbus level (e.g. to the host) as diagnostic and alarm data. The diagnostic module can be plugged in and unplugged during operation (hot swapable).



DPC system configuration

Diagnostics via DTM

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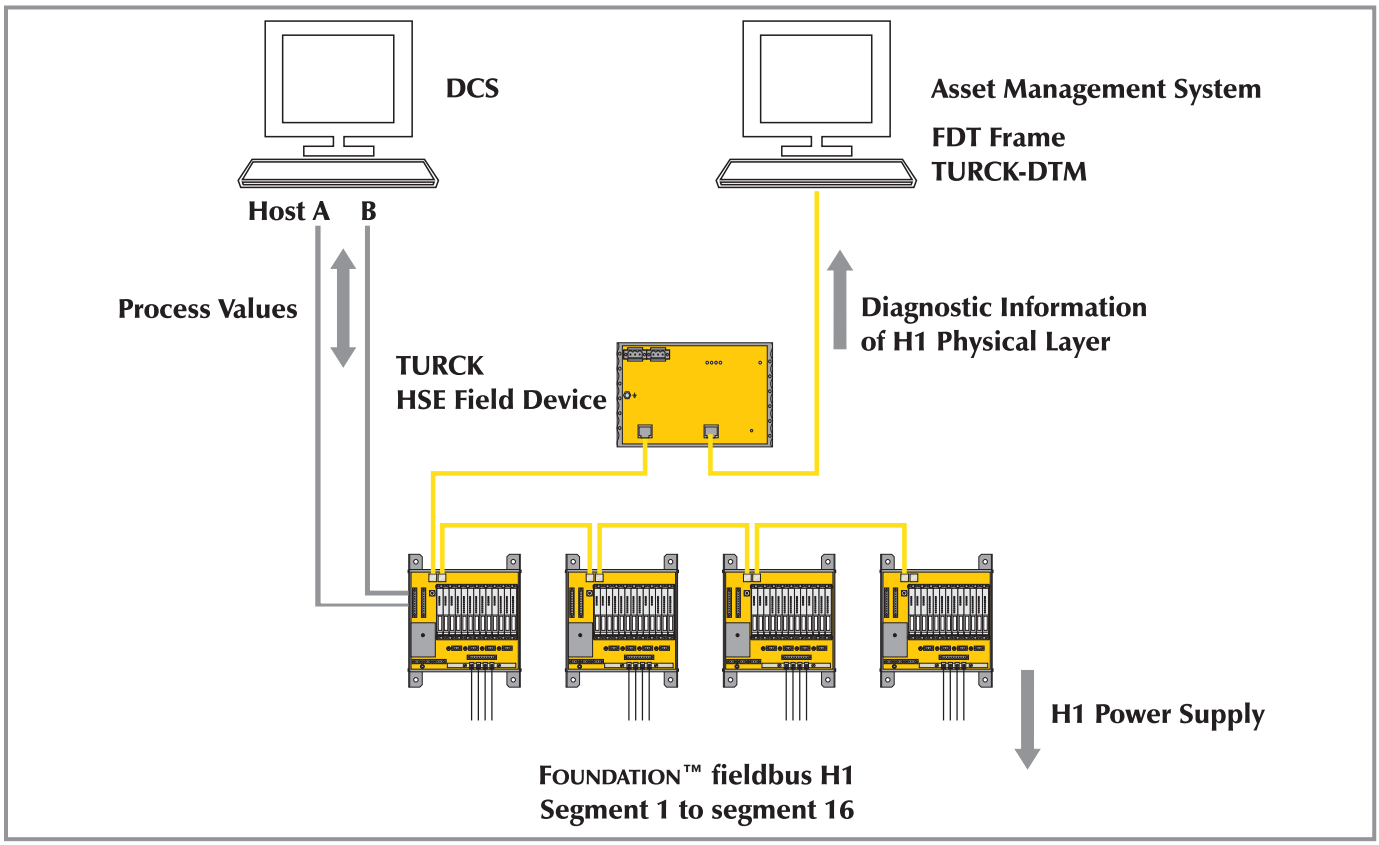
Fieldbus – The Dynamic Asset

Information concerning the components of the control system and field devices are typically stored and monitored by that system. Information on assets that make up the communication infrastructure (physical layer components) have been simply stored in an asset management system. With the DPC system, the physical layer components are continuously monitored providing virtually instantaneous information regarding the quality and the status of the communication link.
This aspect of the system is the key to achieving the main objective of asset management to minimize maintenance and lower system operating costs.

TURCK has drastically improved on existing physical layer components for use in FOUNDATION™ fieldbus applications. The introduction of this system allows the continuous monitoring of every physical layer component, thus treating the entire physical layer as an asset and providing the means for it to be managed as such.



The DPC System detects errors that may develop over an extended period of time or through typical failure modes. These changes can occur due to many factors, such as environmental changes, deterioration of components over time, and any other factors that may affect the physical components of a fieldbus segment. Some of these factors may appear as changes in jitter, hum, noise levels etc. Alarm strategies may be employed that will warn of typical asset errors, potential errors or failures. Preventive measures can be implemented well in advance of a potential system failure. Most common failures can be completely avoided when a preventive maintenance schedule is implemented.
The DPC system also supports the set-up of fieldbus assets by using expedient localization of error sources, as well as documentation indicating a "good condition" of the segment structure.

The DPC system provides an option for redundant segment supplies. The system, fully loaded, can accomodate up to 16 fully redundant FOUNDATION fieldbus segments each with an output of 800 mA and 30 VDC. Diagnostic date is available via a DTM, standard FOUNDATION fieldbus function block libraries or an embedded web server in the HSE field device.

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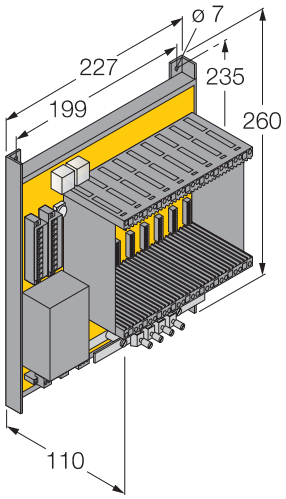
DPC-49-MB-RC — Backplane for the DPC System



The DPC-System (Diagnostic-Power-Conditioner-System) is a power supply system for the installation of FOUNDATION™ fieldbus H1 segments. It offers comprehensive diagnostic functions for the monitoring of FOUNDATION™ fieldbus segments and thus supporting Asset Management for the whole system.

A DPC system consists of one or more module racks DPC-49-MB-RC each with up to eight power supply modules DPC-49-IPS and one diagnostic module DPC-49-ADU. Up to four H1 segments for each module rack can be operated and monitored redundantly in the FOUNDATION™ fieldbus. The diagnostic data from the H1 segments are transmitted via the HSE interface module DPC-49-HSEFD/24VDC to the higher level Asset-Management-System.

The module rack DPC-49-MB-RC consists of a backplane and the actual rack system for the power supply modules and the diagnostic module.

The single components of the system are electrically linked via the connection terminals of the backplane from the user side. Thereby from an electrical perspective, the backplane is to be considered passive.

The power can be supplied via two 2-pole screw connectors. The connection to the host system is established via two system cables. Optional pre-assembled system cables are available at **TURCK**.

For the connection of the H1 segments to the fieldbus side a 2-pole screw connector terminal is provided for each segment, or alternatively a 10-pole screw connector terminal for all segments together on the system side (system connection). Each H1 segment is equipped with a terminating resistor.

Shielding is established via a shielding bus bar DPC-49-SB4 or via the system connection, which is internally connected with the M5 threaded bolt for equipotential bonding.

A connection to the relay alarm contact of the diagnostic module is available for simple diagnostics processing. Additionally a terminal for the connection of test devices is available for each H1 segment.

The rack system is made of extruded aluminum sections. Thus high system stability and shielding is guaranteed. The module rack is suited for wall mounting as well as for 19" rail mounting.

Features:

- Backplane for up to 8 power conditioner modules and 1 diagnostics module
- Exchangeable EMC filter
- Redundant host connection
- Redundant power supply
- Removable terminal blocks with screw connection
- RJ45 connector for HSE fieldbus diagnostics
- Insulated shield terminals
- Terminating resistor with segment output

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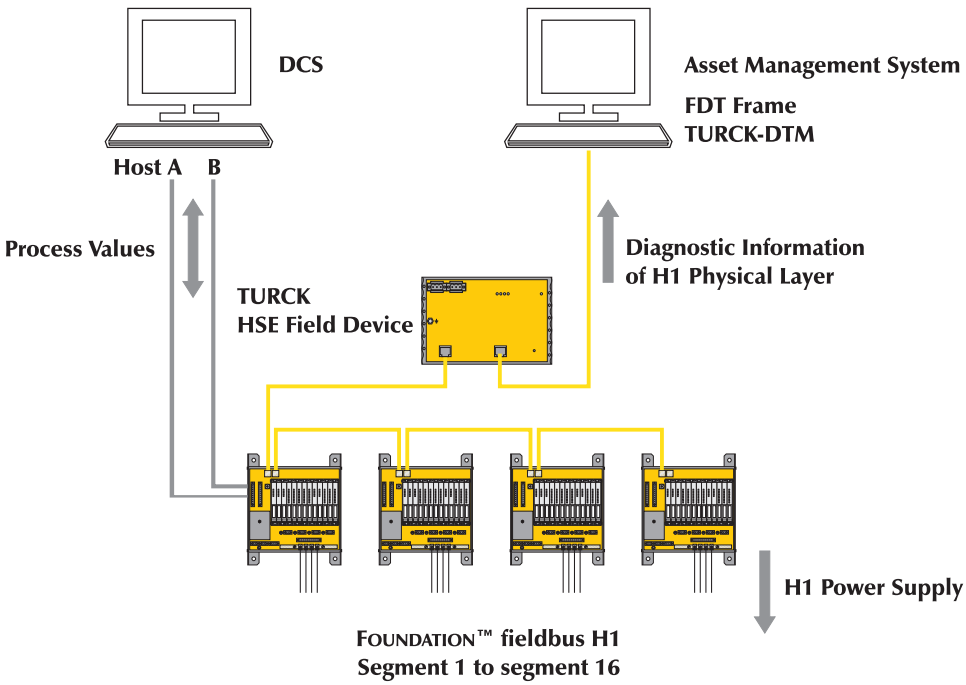
Backplane for the DPC System — DPC-49-MB-RC

Part Number	DPC-49-MB-RC
ID Number	M6882010
Fieldbus Standard	IEC 61158-2
Operating Voltage (Pwr)	18 to 32 VDC
Surge / Overvoltage Suppression	< 250 mA
Connection	Removable terminal block, reverse polarity protected, screw connection RJ45 socket
Protection Degree	IP 20
Ambient Temperature	-20 to +60°C (-4 to +140°F)
Housing Material	Aluminum
Housing Color	Black / Yellow
Dimensions	227 x 260 x 110 mm
Mounting	Flush Panel

Installation Example:



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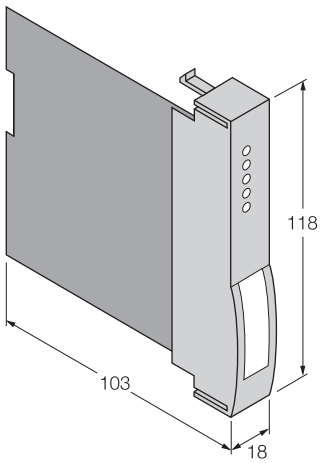
DPC-49-IPS — Power Supply Module



The DPC-System (Diagnostic-Power-Conditioner-System) is a power supply system for the installation of Foundation fieldbus™ H1 segments. It offers comprehensive diagnostic functions for the monitoring of FOUNDATION™ fieldbus segments and thus supporting Asset Management for the whole system.

A DPC system consists of one or more module racks DPC-49-MB-RC each with up to eight power supply modules DPC-49-IPS and one diagnostic module DPC-49-ADU. Up to four H1 segments for each module rack can be operated and monitored redundantly in the FOUNDATION™ fieldbus. The diagnostic data from the H1 segments are transmitted via the HSE interface module DPC-49-HSEFD/24VDC to the higher level Asset-Management-System.

The power supply module provides up to 30 VDC and 800 mA for the installation of the segment. Due to this maximum output power broad segment allocation (up to 1900 m) is possible without restriction.

If two power supply modules are applied, a redundant operation of the segment is possible. Therefore the power supply modules can be plugged in and unplugged shock-free (Hot swapable in run).

Due to complete galvanic isolation:

H1 to H1
H1 for the internal supply
H1 to the diagnostics module
H1 to the HSE diagnostics bus

Potential transfer is avoided and an error-free communication is insured. In order to simplify the start-up and the diagnostics on site, the following LED functions are available:

Pwr: green: Operational readiness
On / Off yellow: Output switched on
Load: yellow: Recognition of consumers (field device) at the segment
Com: yellow: Communication display
Fault: red: Short-circuit message

Features:

- Supply of a FOUNDATION™ fieldbus H1 segment
- Output current: 800 mA
- Output voltage: 28 to 30 VDC
- Local diagnostics via LEDs
- Complete galvanic isolation

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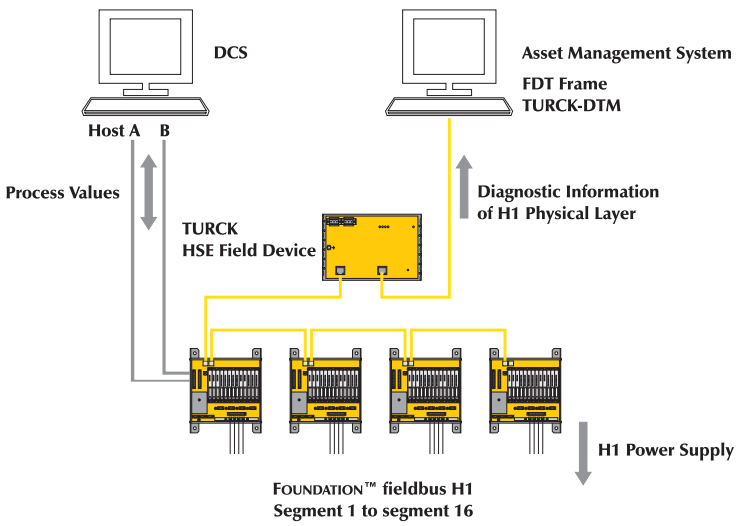
Power Supply Module — DPC-49-IPS

Part Number	DPC-49-IPS
ID Number	M6882013
Fieldbus Standard	IEC 61158-2
Supply Voltage	Via the backplane
Current Consumption	0.8 to 1.7 A
Galvanic Isolation	Complete galvanic isolation, test voltage 500 VAC
Output Circuits	Field
Output Current	≤ 800 mA
Output Voltage	> 28 VDC
Short-circuit Protection	≤ 850 mA
Efficiency	80%
Output Circuits	HOST
Output Current	< 30 mA
Output Voltage	< 27 VDC
Indication	
Operational Readiness	1 x green
Output Active	1 x yellow
Output Current	1 x yellow
Short-circuit Message	1 x red
Bus Communication	1 x yellow
Protection Degree	IP 20
Ambient Temperature	-20 to +60°C (-4 to +140°F)
Housing Material	Plastic / flammability class V-0 to UL 96
Housing Color	Yellow
Dimensions	18 x 118 x 103 mm

Installation Example:



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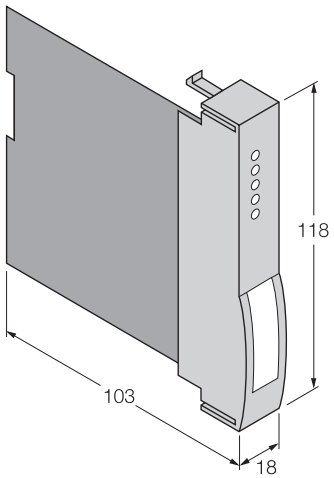
DPC-49-ADU — Diagnostics Module



The DPC-System (Diagnostic-Power-Conditioner-System) is a power supply system for the installation of FOUNDATION fieldbus™ H1 segments. It offers comprehensive diagnostic functions for the monitoring of FOUNDATION fieldbus™ segments and thus supporting Asset Management for the whole system.

A DPC system consists of one or more module racks DPC-49-MB-RC each with up to eight power supply modules DPC-49-IPS and one diagnostic module DPC-49-ADU. Up to four H1 segments for each module rack can be operated and monitored redundantly in the FOUNDATION fieldbus™. The diagnostic data from the H1 segments are transmitted via the HSE interface module DPC-49-HSEFD/24VDC to the higher level Asset-Management-System.

The diagnostic module DPC-49-ADU is used as a communication and diagnostic interface between the H1 segments and the power supply module. The diagnostics module monitors the electrical parameters and the communication parameters of the H1 segments. Operation without diagnostic module is possible.

The diagnostic information is collected in the device and transmitted via the HSE interface module to the higher fieldbus level (e.g. to the host) as diagnostic and alarm data. The diagnostic module can be plugged in and unplugged during operation (Hot swap-able in run).

The device features a LED display which indicates the operating status of the H1 segments. A pre-alarm is indicated yellow and a main alarm red on the LED display. Alarm signals can also be transmitted via a relay contact.

Features:

- Continuous diagnostics for 4 H1 segments
- Local diagnostics via LEDs
- Alarm signal via relay contact
- Complete galvanic isolation

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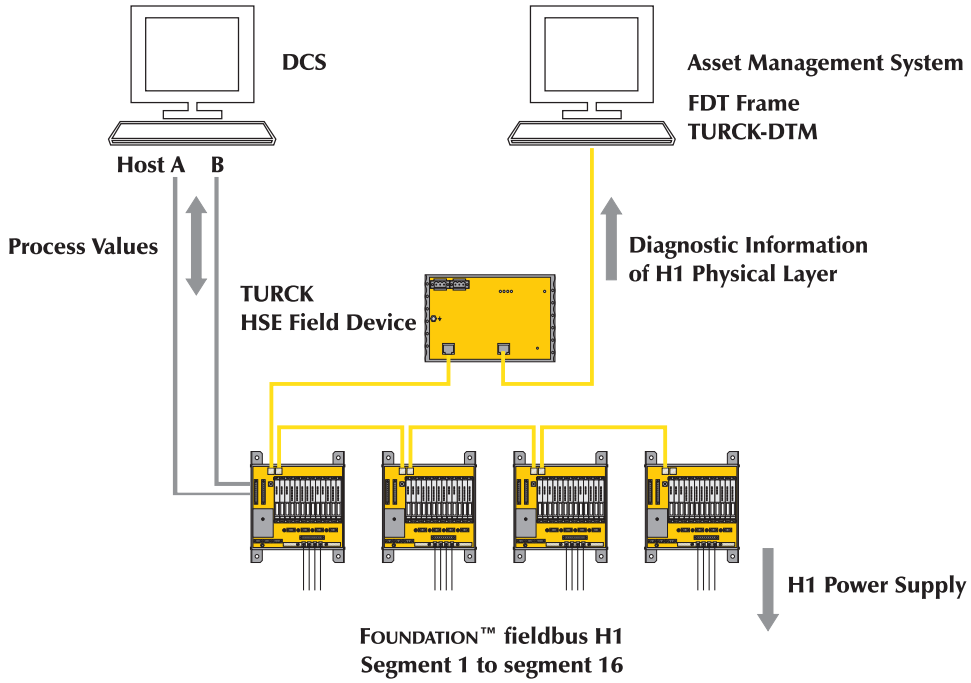
Diagnostics Module — DPC-49-ADU

Part Number	DPC-49-ADU
ID Number	M6882012
Fieldbus Standard	IEC 61158-2
Supply Voltage	Via the backplane
Current Consumption	< 100 mA
Galvanic Isolation	Complete galvanic isolation, test voltage 500 VAC
Diagnosis	1 x relay
Switching Current	≤ 1000 mA
Switching Voltage	≤ 30 VDC galvanically isolated against other electronic parts
Operational Readiness	1 x green / red
Alarm	4 x yellow / red
Protection Degree	IP 20
Ambient Temperature	-20 to +60°C (-4 to +140°F)
Housing Material	Plastic
Housing Color	Yellow
Dimensions	18 x 118 x 103 mm

Installation Example:



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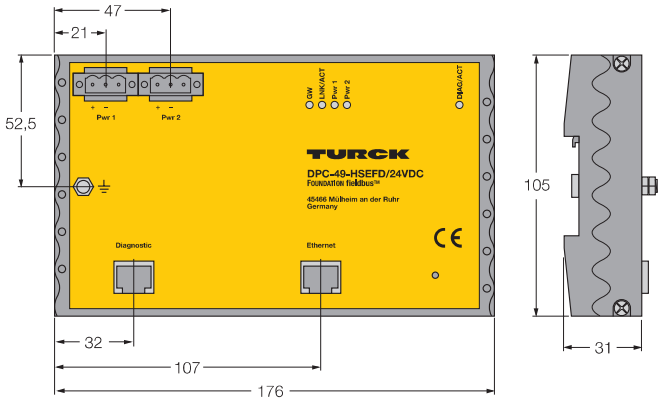
DPC-49-HSEFD/24VDC — HSE Field Device



The DPC-System (Diagnostic-Power-Conditioner-System) is a power supply system for the installation of Foundation fieldbus™ H1 segments. It offers comprehensive diagnostic functions for the monitoring of FOUNDATION™ fieldbus segments thus supporting Asset Management for the whole system.

A DPC system consists of one or more module racks DPC-49-MB-RC, each with up to eight power supply modules DPC-49-IPS and one diagnostic module DPC-49-ADU. Up to four H1 segments for each module rack can be operated and monitored redundantly in the FOUNDATION™ fieldbus.

The diagnostic data from the H1 segments are transmitted via the HSE interface module DPC-49-HSEFD/24VDC to the higher level Asset-Management-System. Only the diagnostics data of the diagnostic module DPC-49-ADU are transmitted with the HSE interface module, not the process data of the H1 field device. Each diagnostic module monitors up to four H1 segments.

The HSE interface module is a FOUNDATION™ fieldbus field device, which contains one resource and one transducer block and various standard function blocks. On the basis of these standard function blocks, suitable applications for the analysis of the diagnostics data can be programmed in the control system.

Features:

- HSE interface module for the transmission of diagnostic data
- FOUNDATION™ fieldbus function blocks for remote diagnostics
- Diagnostics via LEDs
- Continuous diagnostics for sixteen H1 segments
- Complete galvanic isolation
- Complete galvanic isolation

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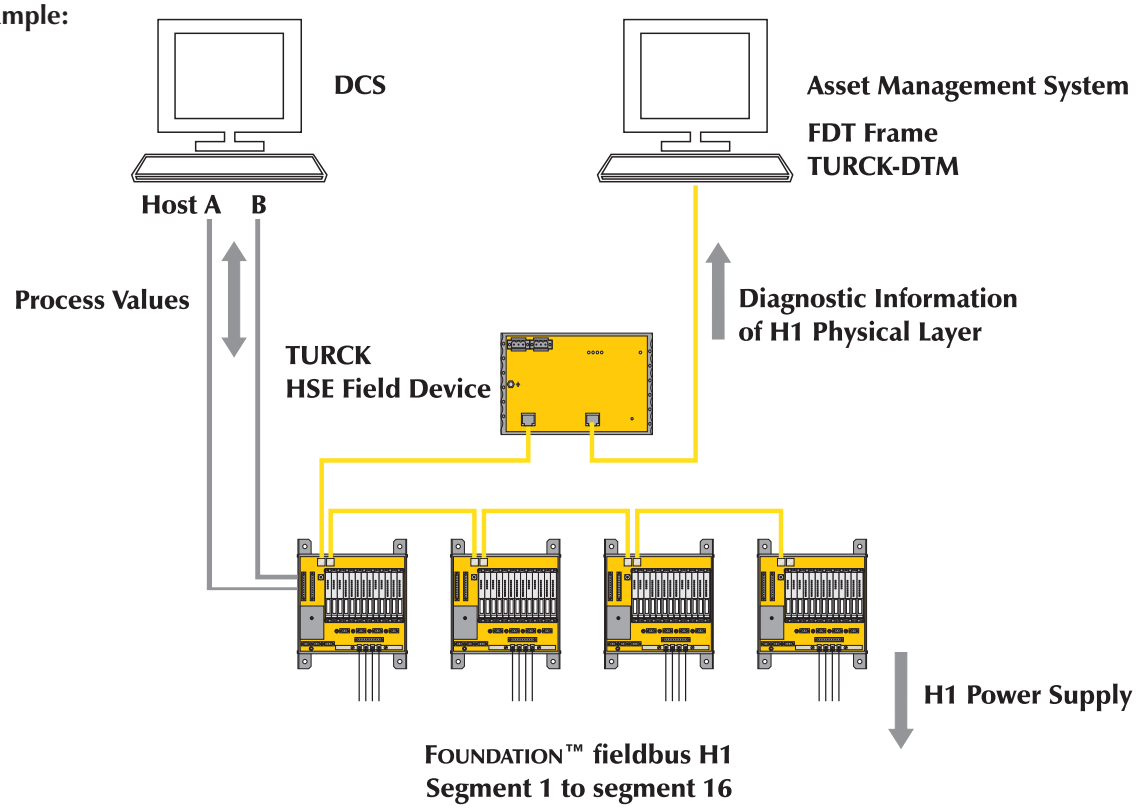
HSE Field Device — DPC-49-HSEFD/24VDC

Part Number	DPC-49-HSEFD/24VDC
ID Number	M6882014
Fieldbus Standard	IEC 61158-2
Supply Voltage	Two power terminals - PWR1 & PWR2
Current Consumption	< 100 mA
Galvanic Isolation	Complete galvanic isolation, test voltage 500 VAC
Indication	
Operational Readiness	2 x green
State / Fault	1 x yellow / red
Bus Communication	1 x green / yellow
Int. Communication (CAN)	1 x yellow / red
Protection Degree	IP 20
Ambient Temperature	-20 to +60°C (-4 to +140°F)
Housing Material	Aluminum
Housing Color	Black / Yellow
Dimensions	176 x 105 x 31 mm
Connection Mode	Snap-on DIN rail (DIN 50022)

Installation Example:



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FOUNDATION™ fieldbus, Cable and Cordset Selection Matrix

			minifast ®				*eurofast* ®
			Pin (Male)		Socket (Female)		Pin (Male)
			1 RSV	2 WSV	3 RKV	4 WKV	5 RSCV
		Bare	RSV 49x-*M	WSV 49x-*M	RKV 49x-*M	WKV 49x-*M	RSCV 49x-*M
minifast	Pin (Male)	1 RSV	RSV RSV 49x-*M	RSV WSV 49x-*M	RSV RKV 49x-*M	RSV WKV 49x-*M	RSV RSCV 49x-*M
		2 WSV		WSV WSV 49x-*M	WSV RKV 49x-*M	WSV WKV 49x-*M	WSV RSCV 49x-*M
	Socket (Female)	3 RKV			RKV RKV 49x-*M	RKV WKV 49x-*M	RKV RSCV 49x-*M
		4 WKV				WKV WKV 49x-*M	WKV RSCV 49x-*M
eurofast	Pin (Male)	5 RSCV					RSCV RSCV 49x-*M
		6 WSCV					
	Socket (Female)	7 RKCV					
		8 WKCV					

See pages E19 - E20 for dimensional drawings.

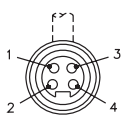
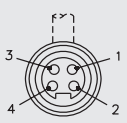
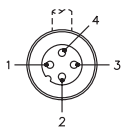
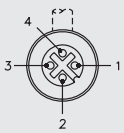
* Indicates length in meters.

x Indicates cable type.

Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.

Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 Meters. Consult factory for other lengths.

For stainless steel coupling nuts change part number RSM ... to RSV, WSM ... to WSV. For ***eurofast armorfast*** ® cable RSC ... to RSA.

minifast		Pinouts	*eurofast*	
Male	Female		Male	Female
		1. Blue (- Voltage) 2. Brown (+ Voltage) 3. Bare (Shield Drain Wire) 4. Green/Yellow (Ground)		

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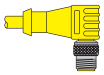
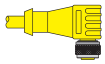
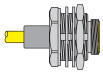
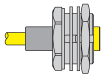
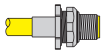
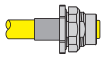
FOUNDATION™ fieldbus, Cable and Cordset Selection Matrix

eurofast®			*minifast*® Bulkhead		*eurofast* Bulkhead	
Pin (Male)	Socket (Female)		Pin (Male)	Socket (Female)	Pin (Male)	Socket (Female)
6  WSCV	7 RKCV	8  WKCV	9  RSFPV	10  RKFPV	11  FSFDV	12  FKFDV
WSCV 49x-*M	RKCV 49x-*M	WKCV 49x-*M	RSFPV 49x-*M	RKFPV 49x-*M	FSFDV 49x-*M	FKFDV 49x-*M
RSV WSCV 49x-*M	RSV RKCV 49x-*M	RSV WKCV 49x-*M	RSV RSFPV 49x-*M	RSV RKFPV 49x-*M	RSV FSFDV 49x-*M	RSV FKFDV 49x-*M
WSV WSCV 49x-*M	WSV RKCV 49x-*M	WSV WKCV 49x-*M	WSV RSFPV 49x-*M	WSV RKFPV 49x-*M	WSV FSFDV 49x-*M	WSV FKFDV 49x-*M
RKV WSCV 49x-*M	RKV RKCV 49x-*M	RKV WKCV 49x-*M	RKV RSFPV 49x-*M	RKV RKFPV 49x-*M	RKV FSFDV 49x-*M	RKV FKFDV 49x-*M
WKV WSCV 49x-*M	WKV RKCV 49x-*M	WKV WKCV 49x-*M	WKV RSFPV 49x-*M	WKV RKFPV 49x-*M	WKV FSFDV 49-*M	WKV FKFDV 49x-*M
RSCV WSCV 49x-*M	RSCV RKCV 49x-*M	RSCV WKCV 49x-*M	RSCV RSFPV 49x-*M	RSCV RKFPV 49x-*M	RSCV FSFDV 49x-*M	RSCV FKFDV 49x-*M
WSCV WSCV 49x-*M	WSCV RKCV 49x-*M	WSCV WKCV 49x-*M	WSCV RSFPV 49x-*M	WSCV RKFPV 49x-*M	WSCV FSFDV 49x-*M	WSCV FKFDV 49x-*M
	RKCV RKCV 49x-*M	RKCV WKCV 49x-*M	RKCV RSFPV 49x-*M	RKCV RKFPV 49x-*M	RKCV FSFDV 49x-*M	RKCV FKFDV 49x-*M
		WKCV WKCV 49x-*M	WKCV RSFPV 49x-*M	WKCV RKFPV 49x-*M	WKCV FSFDV 49x-*M	WKCV FKFDV 49x-*M

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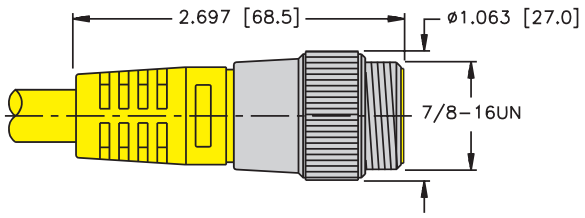
FOUNDATION™ fieldbus, *minifast*® Cordset and Receptacle Connector Dimensions

Specifications

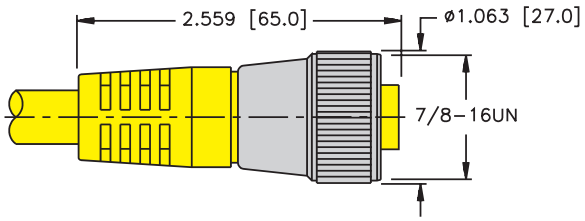
Housing:	PUR (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	300 V
Rated Current:	9 A
Ambient Temperature:	-40° to +105°C (-40° to +221°F)

1



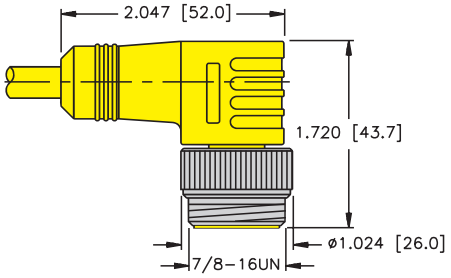
RSV .. **Pages E17 - E18**

3



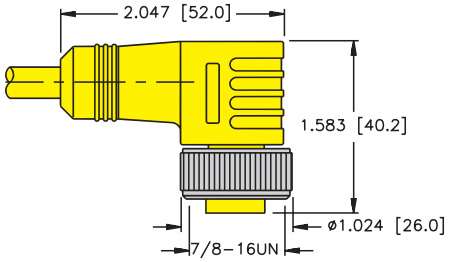
RKV .. **Pages E17 - E18**

2



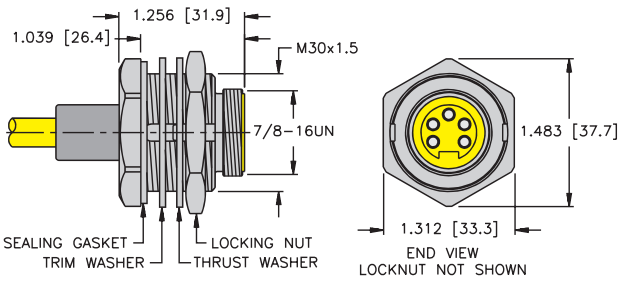
WSV .. **Pages E17 - E18**

4



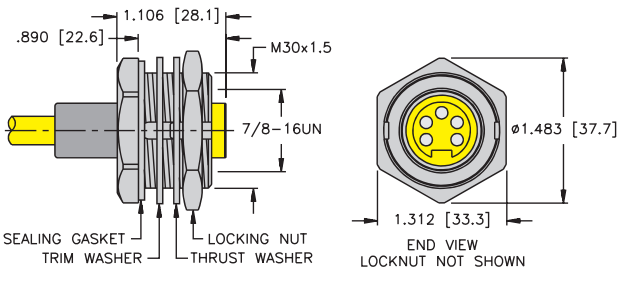
WKV .. **Pages E17 - E18**

9



RSFPV .. **Pages E17 - E18**

10



RKFPV .. **Pages E17 - E18**

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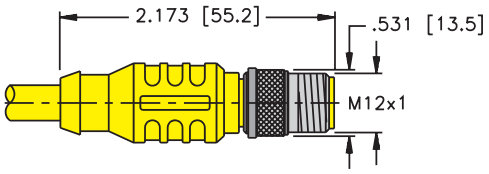
FOUNDATION™ fieldbus, *eurofast*® Cordset and Receptacle Connector Dimensions

Specifications

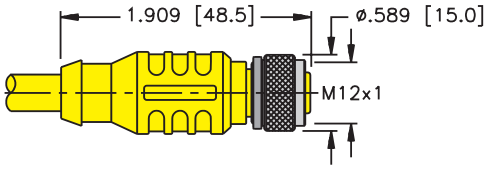
Housing:	PUR (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +105°C (-40° to +221°F)

5



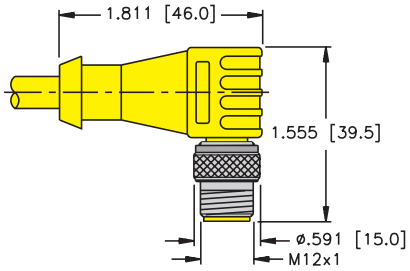
RSCV .. **Pages E17 - E18**

7



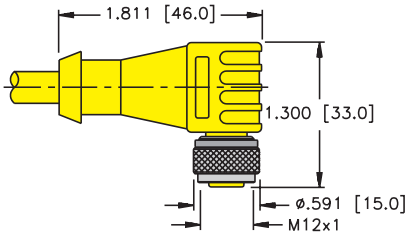
RKCV .. **Pages E17 - E18**

6



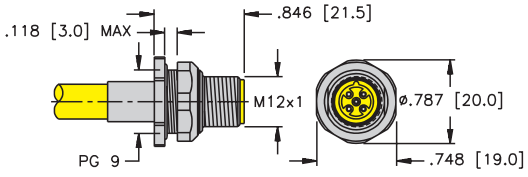
WSCV .. **Pages E17 - E18**

8



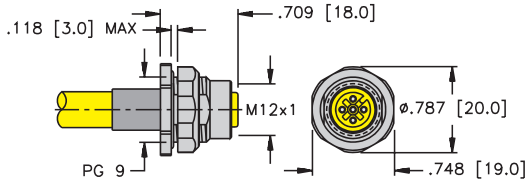
WKCV .. **Pages E17 - E18**

11



FSFDV .. **Pages E17 - E18**

12



FKFDV .. **Pages E17 - E18**

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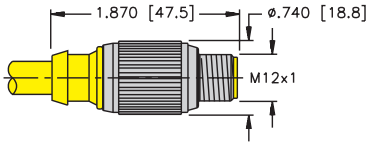
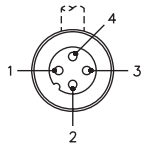
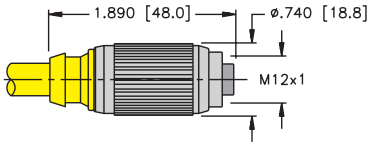
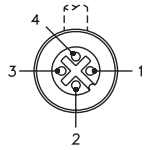
FOUNDATION™ fieldbus, *eurofast*® Heavy Duty Cordsets

- **Heavy Duty Coupling Nut Completely Supports the Molded Plug Body**
- **Provides Superior Strength**

Housing	Part Number	Specs	Applications	Pinouts
	RSGV-49x-*M	TPU (Polyurethane) Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +105°C	***eurofast*** Heavy Duty Cordsets • Heavy coupling nut completely supports the molded plug body to provide superior strength	**Male** 
	RKGV-49x-*M			**Female** 

* Indicates length in meters.
x Indicates cable type.
For nickel plated brass coupling nut change: RSGV ... to RSG ... or RKGV ... to RKG ...

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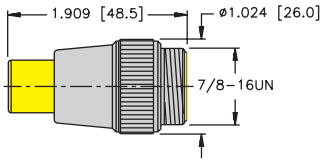
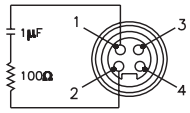
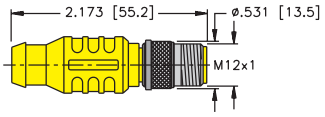
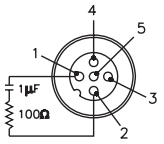
FOUNDATION™ fieldbus, Terminating Resistors

- **Terminating Resistors Stabilize and Minimize Reflections on the Bus Line**
- **A Terminating Resistor is Required at the Beginning and End of the Main Bus Line**

Housing	Part Number	Specs	Application	Pinouts
	RSV 49-TR	Nickel Plated Brass or Stainless Steel 250 V, 4 A -40° to +75°C	***minifast*®** Terminating Resistor • Male ***minifast*** connector	**Male** 
	RSEV 49-TR		***eurofast*®** Terminating Resistor • Male ***eurofast*** connector	**Male** 

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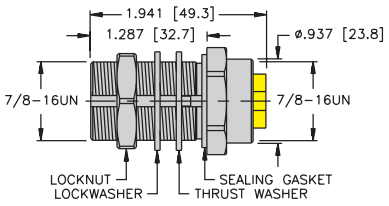
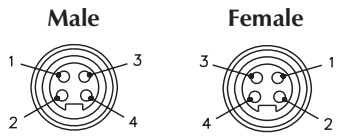
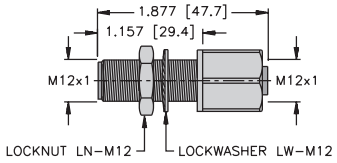
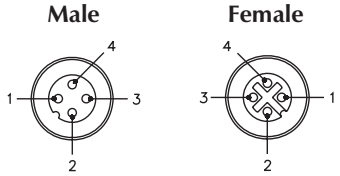
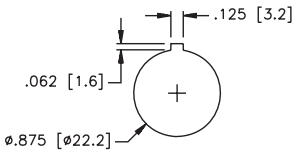
FOUNDATION™ fieldbus, Feed Through Connectors

- **Receptacles Provide Transition from Male to Female Connectors**
- **Available for Bulkhead and Feed Through Applications**

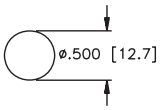
Housing	Part Number	Specs	Application	Pinouts
	RSFV RKFV 49/22	Nickel Plated CuZn or Stainless Steel 300 V, 9 A -40° to +75°C	***minifast*** ® Bulkhead Receptacle • Straight male/female feed-through • For use with ***minifast*** cordsets	
	FKV FSV 49/M12	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +75°C	***eurofast*** ® Bulkhead Receptacle • Straight male/female connector • For use with ***eurofast*** cordsets	

Standard housing material is nickel plated brass. "RSF RKF .."; "RSFV RKFV .." indicates stainless steel housing.

Panel Cutout
RSF RKF 49/22



Panel Cutout
FKM FS 49/M12



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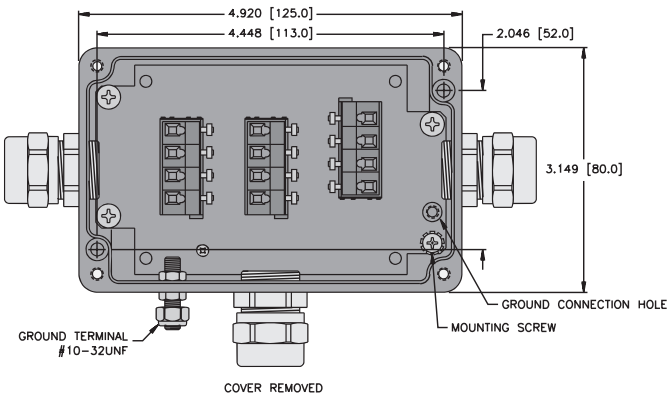
FOUNDATION™ fieldbus, Field Wireable Tee

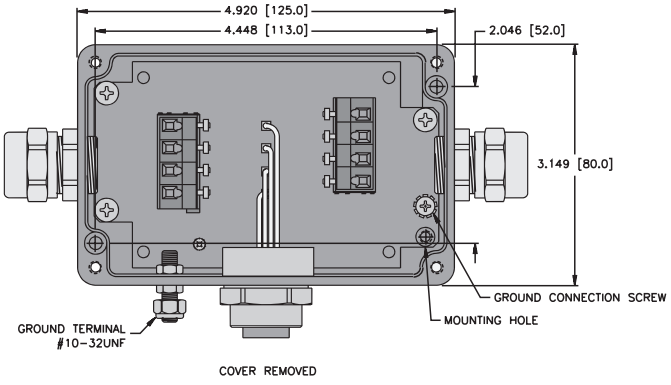
- **A Hybrid Connection System Offering Reliable Connections on Short Drops and Ease of Installation on Long Trunk Runs**
- **Features Standard *minifast*® Connector for the Drop Connection and Terminal Connectors on the Trunk Connections**

Housing	Part Number	Specs	Application	Pinout
See Drawing 1	SPTT1-A49	Anodized Aluminum 250 V, 4 A -40° to +75°C NEMA 1, 3, 4, 6P and IEC IP 68	Field wireable terminals and (7/8-16UN) ***minifast*** connector on drop connection	**Female**
See Drawing 2	SPTTM13-A49			

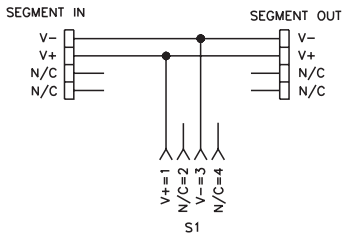
1



2



Wiring Diagram



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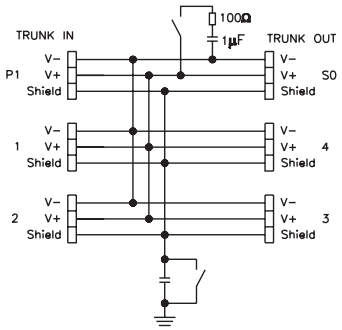
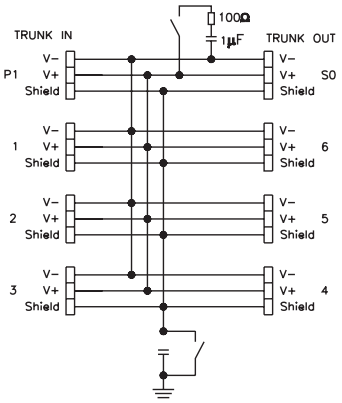
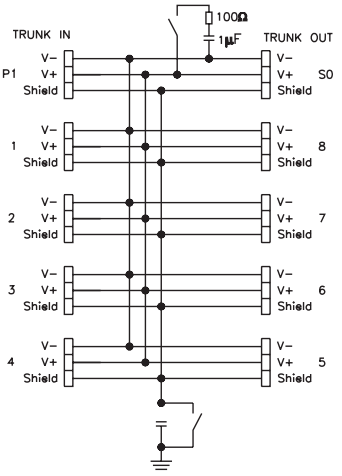
FOUNDATION™ fieldbus, Junction Box for Din Rail Mounting

- **IP20 DIN Rail Mounted Junctions**
- **Available in 4, 6, and 8 Channel**

Part Number	Application	Wiring Diagram
JRBS-40-4/EX	4-port Junction Tee • Four cage clamp device ports • Approval: ATEX II 2 G EEx ib IIC/IIB T4	
JRBS-40SC-4/EX	4-port Junction Tee • Four cage clamp device ports • Short-circuit protection: adjustable 30, 35, 45, 60 mA • Open circuit voltage: 32 V • Current consumption: 7 mA • LED indicators Power: Green = On Short-circuit: Red = On • Approval: ATEX II 2 G EEx ib IIC/IIB T4	
JRBS-40-6/EX	6-port Junction Tee • Six cage clamp device ports • Approval: ATEX II 2 G EEx ib IIC/IIB T4	
JRBS-40SC-6/EX	6-port Junction Tee • Six cage clamp device ports • Short-circuit protection: adjustable 30, 35, 45, 60 mA • Open circuit voltage: 32 V • Current consumption: 7 mA • LED indicators Power: Green = On Short-circuit: Red = On • Approval: ATEX II 2 G EEx ib IIC/IIB T4	
JRBS-40-8/EX	8-port Junction Tee • Eight cage clamp device ports • Approval: ATEX II 2 G EEx ib IIC/IIB T4	
JRBS-40SC-8/EX	8-port Junction Tee • Eight cage clamp device ports • Short-circuit protection: adjustable 30, 35, 45, 60 mA • Open circuit voltage: 32 V • Current consumption: 7 mA • LED indicators Power: Green = On Short-circuit: Red = On • Approval: ATEX II 2 G EEx ib IIC/IIB T4	

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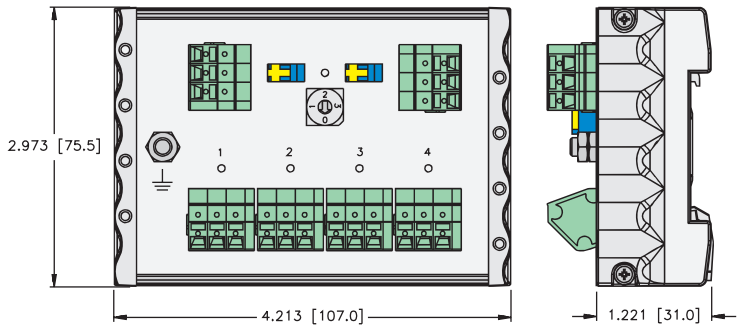
Specifications

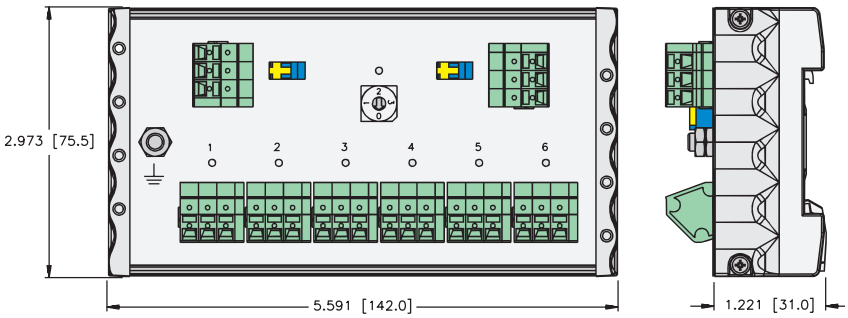
Housing:	Aluminum
Contact Carrier:	PA (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1 and IP 20
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-25° to +70°C (-13° to +158°F)

Dimensions

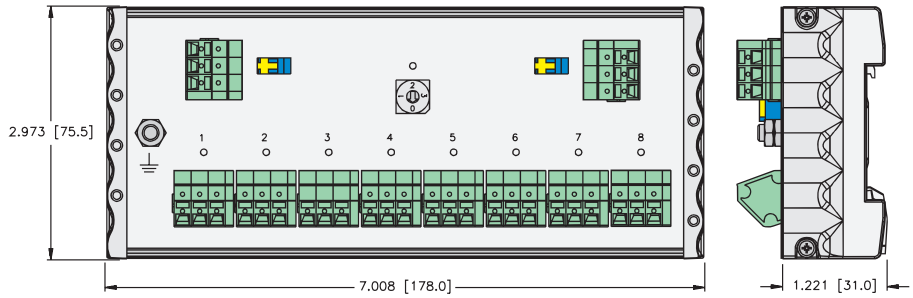
4 Channel



6 Channel



8 Channel



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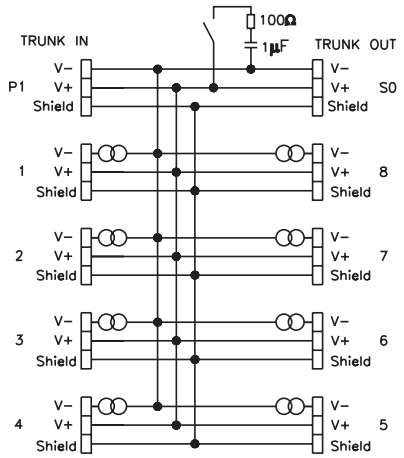
FOUNDATION™ fieldbus, Junction Box for Din Rail Mounting

- **IP 20 DIN Rail Mounted Junctions**
- **8 Channel**

Part Number	Application	Wiring Diagram
JRBS-49SC-8	8-port Junction Tee • Eight cage clamp device ports • 55 mA Short-circuit protected • Open circuit voltage: 33 V • Current consumption: 15 mA • LED indicators Power: Green = On Comm: Green = Data transfer Short-circuit: Red = On • Switchable terminating resistor	

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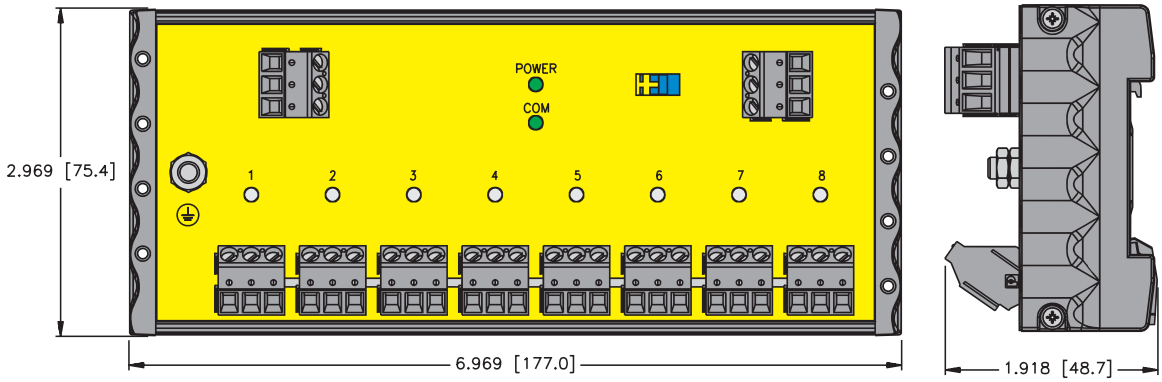
Specifications

Housing:	Aluminum
Contact Carrier:	PA (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1 and IP 20
Connection Mode:	Snap-on DIN RAIL (DIN 50022)
Ambient Temperature:	-25° to +70°C (-13° to +158°F)

Dimensions

8 Channel



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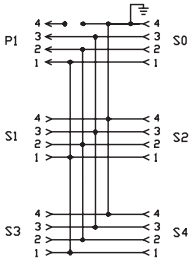
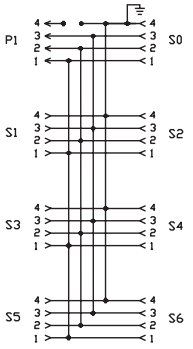
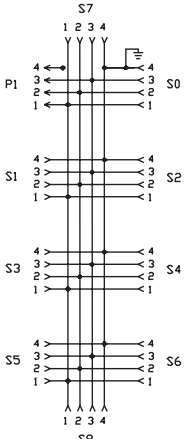
FOUNDATION™ fieldbus, *minifast*® Passive Multiport Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**

FM APPROVED

Part Number	Specs	Application	Wiring Diagrams
JBBS-49-M413 JBBS-49-M414	No short-circuit protection	4-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Four (7/8-16UN) ***minifast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-49-M613 JBBS-49-M614	No short-circuit protection	6-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Six (7/8-16UN) ***minifast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-49-M813 JBBS-49-M814	No short-circuit protection	8-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Eight (7/8-16UN) ***minifast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	

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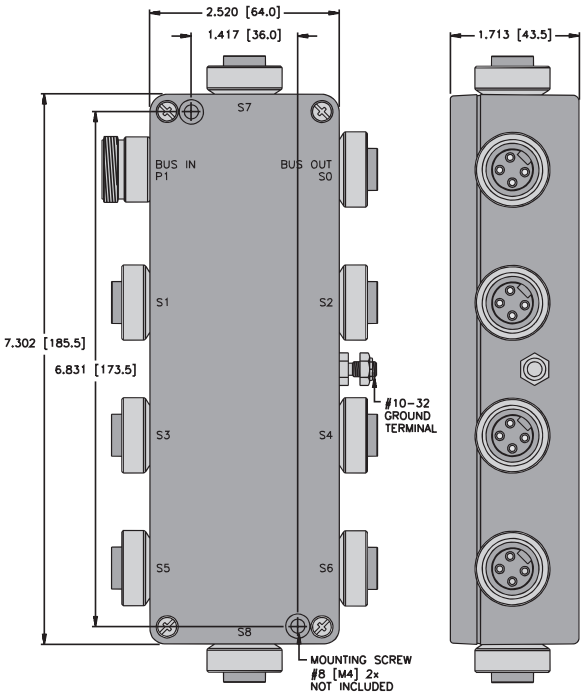
Specifications

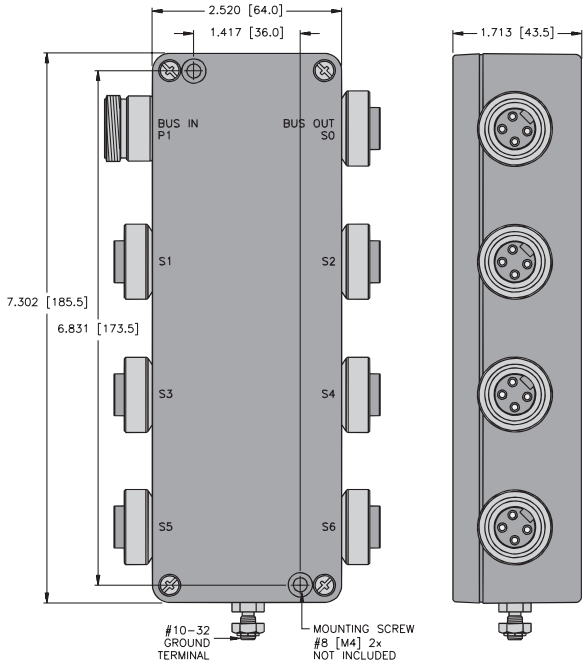
Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	300 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

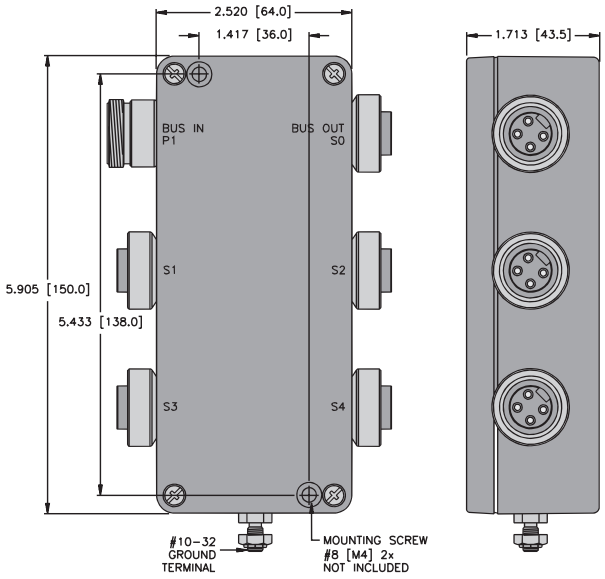
8-Port



6-Port



4-Port



Pinouts

minifast	
Male	**Female**

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FOUNDATION™ fieldbus, *minifast*® Passive Multiport Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**

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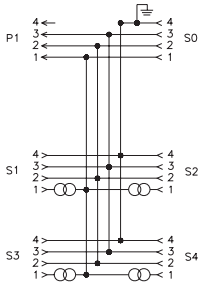
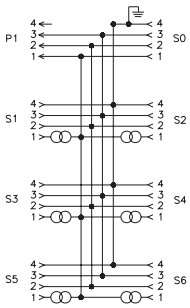
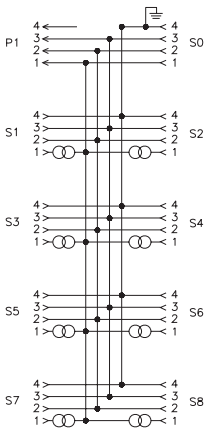
Part Number	Specs	Application	Wiring Diagrams
JBBS-49SC-M413	**Electrical** • Short-circuit protection: 55 mA (Isc) • Open circuit voltage: 33 VDC • Current consumption: <60 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted	4-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Four (7/8-16UN) ***minifast*** connectors for field devices CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-49SC-M613	**Electrical** • Short-circuit protection: 55 mA (Isc) • Open circuit voltage: 33 VDC • Current consumption: <60 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted	6-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Six (7/8-16UN) ***minifast*** connectors for field devices CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-49SC-M813	**Electrical** • Short-circuit protection: 55 mA (Isc) • Open circuit voltage: 33 VDC • Current consumption: <60 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted	8-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Eight (7/8-16UN) ***minifast*** connectors for field devices CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	

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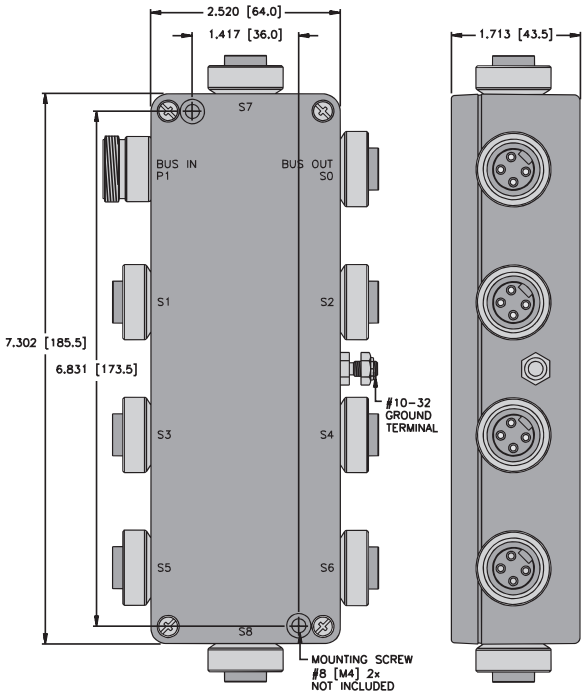
Specifications

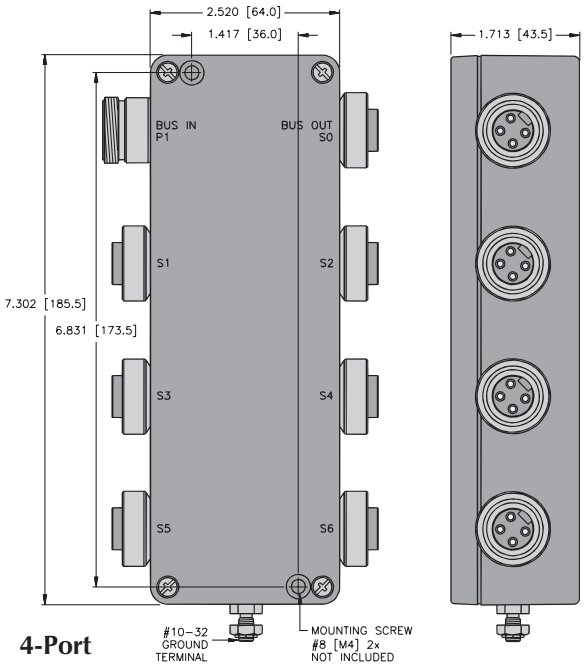
Housing:	Anodized Aluminum
Coupling Nut:	Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	300 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

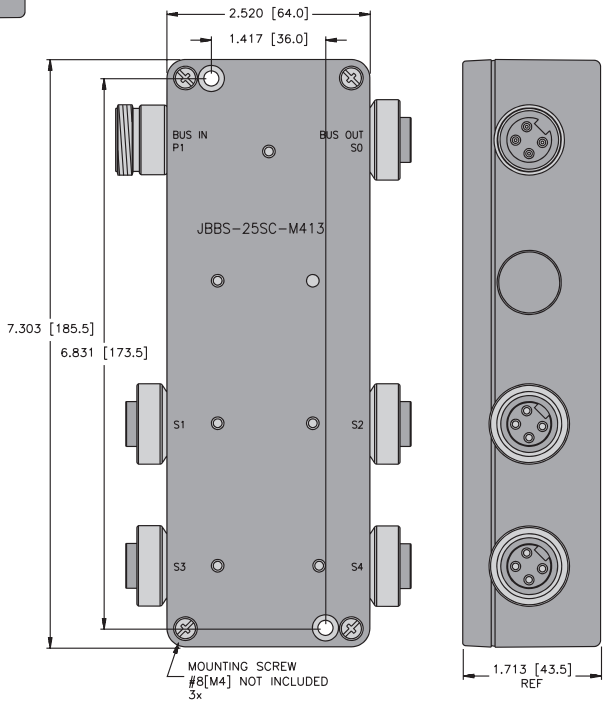
8-Port



6-Port



4-Port



Pinouts

minifast	
Male	**Female**

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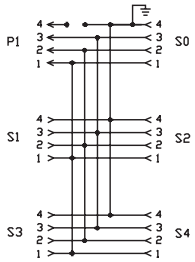
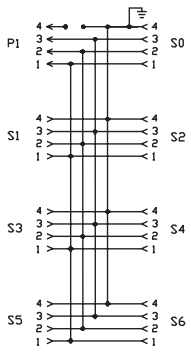
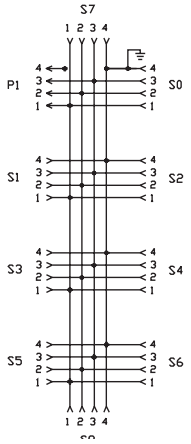
Part Number	Specs	Application	Wiring Diagrams
JBBS-49-M423 JBBS-49-M424	No short-circuit protection Fiberglass housing	4-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Four (7/8-16UN) ***minifast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-49-M623 JBBS-49-M624	No short-circuit protection Fiberglass housing	6-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Six (7/8-16UN) ***minifast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-49-M823 JBBS-49-M824	No short-circuit protection Fiberglass housing	8-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Eight (7/8-16UN) ***minifast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	

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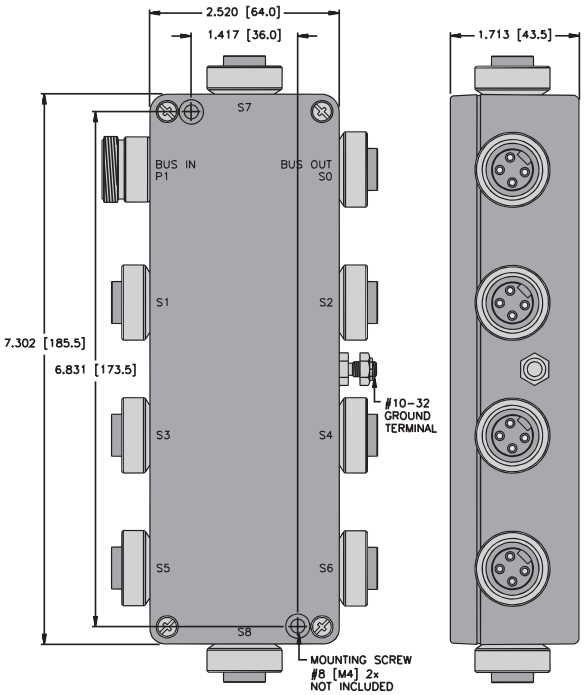
Specifications

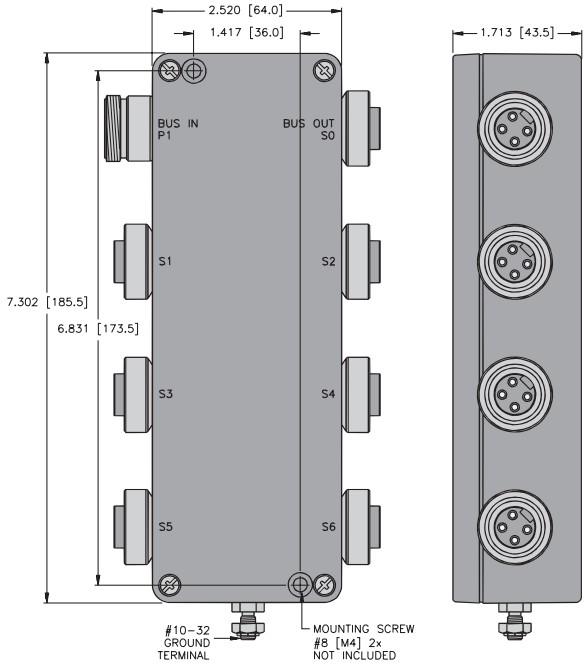
Housing:	Fiberglass
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	300 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

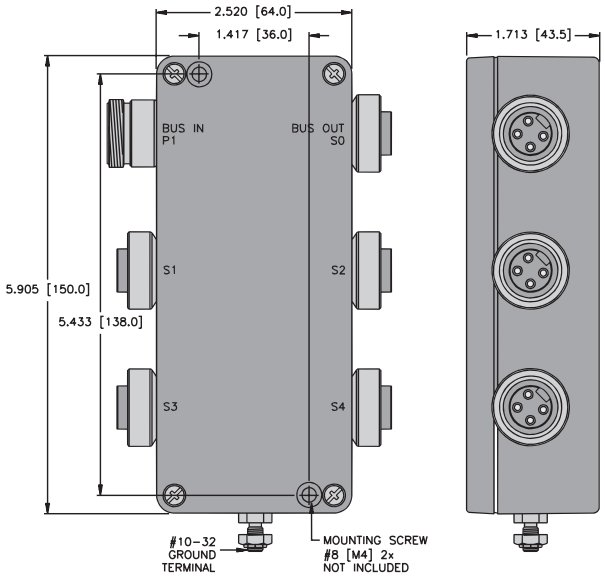
8-Port



6-Port



4-Port



Pinouts

minifast	
Male	**Female**

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FOUNDATION™ fieldbus, *minifast*® Passive Multiport Junctions

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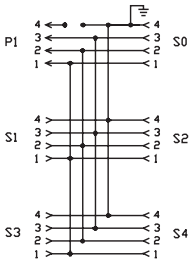
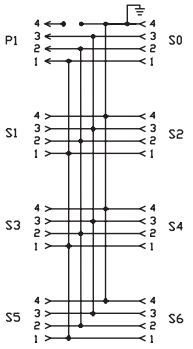
Part Number	Specs	Application	Wiring Diagrams
JBBS-49-M413/EX	No short-circuit protection	4-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Four (7/8-16UN) ***minifast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only) • FISCO/ENTITY Field Device	
JBBS-49-M613/EX	No short-circuit protection	6-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Six (7/8-16UN) ***minifast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only) • FISCO/ENTITY Field Device	

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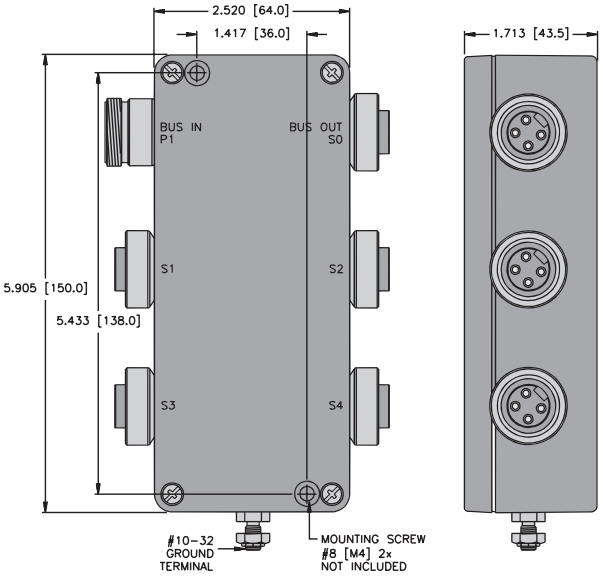
Specifications

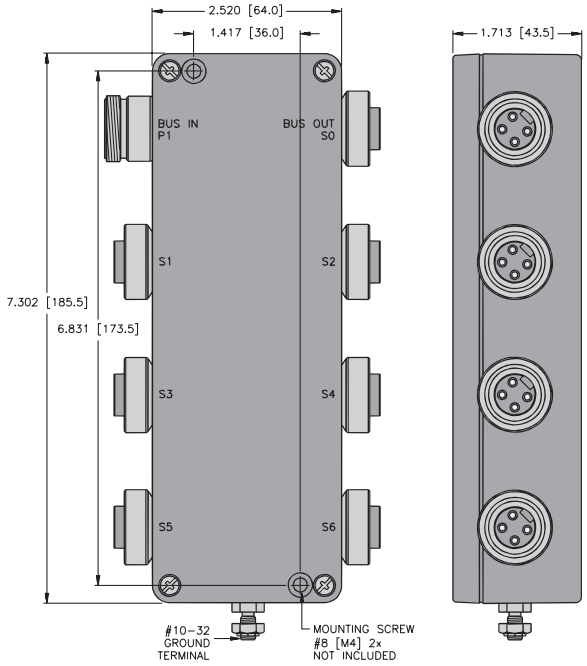
Housing:	Anodized Aluminum
Coupling Nut:	Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	300 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

4-Port



6-Port



Pinouts

minifast	
Male	**Female**

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FOUNDATION™ fieldbus, *minifast*® Passive Multiport Junctions

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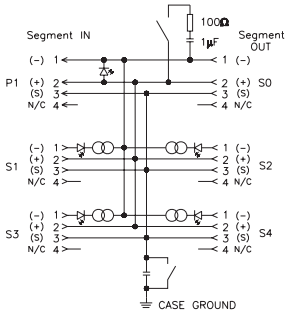
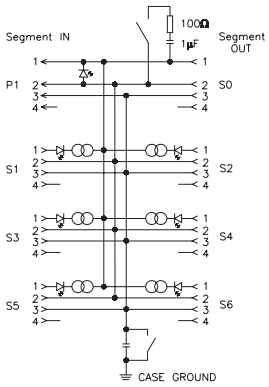
Part Number	Specs	Application	Wiring Diagrams
JBBS-49SC-M413/EX	**Electrical** • Short-circuit protection: 55 mA (Isc) • Open circuit voltage: 35 VDC • Current consumption: 5 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted	4-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Four (7/8-16UN) ***minifast*** connectors for field devices CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only) FISCO/ENTITY Field Device	
JBBS-49SC-M613/EX	**Electrical** • Short-circuit protection: 55 mA (Isc) • Open circuit voltage: 35 VDC • Current consumption: 5 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted	6-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Six (7/8-16UN) ***minifast*** connectors for field devices CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only) FISCO/ENTITY Field Device	

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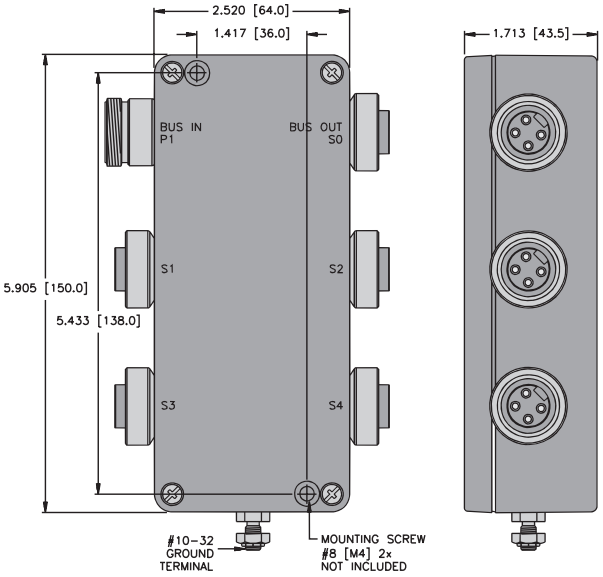
Specifications

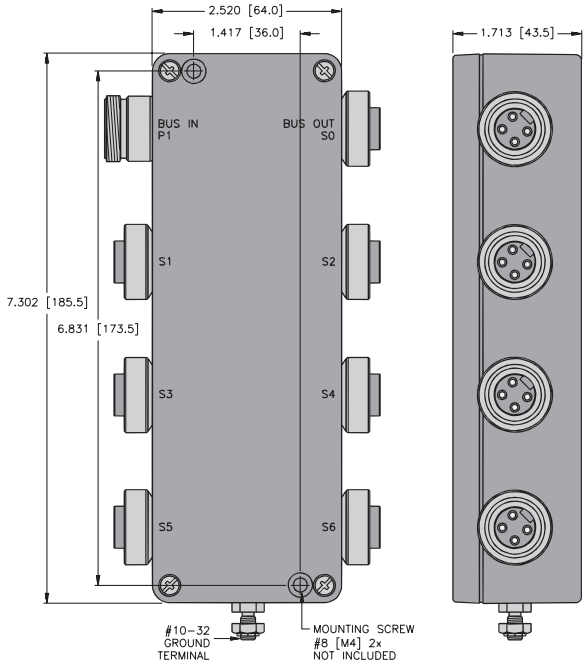
Housing:	Anodized Aluminum
Coupling Nut:	Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	300 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

4-Port



6-Port



Pinouts

minifast	
Male	**Female**

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FOUNDATION™ fieldbus, *minifast*® Passive Multiport Junctions

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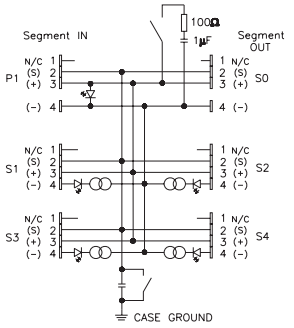
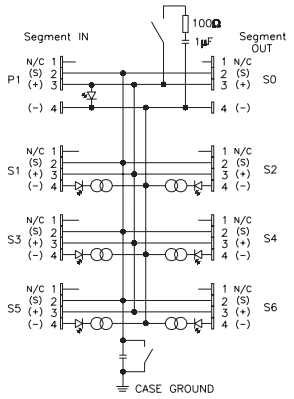
Part Number	Specs	Application	Wiring Diagrams
JBBS-49SC-T415B/EX	**Electrical** • Short-circuit protection: 35 mA (Isc) • Voltage drop: 0.3 V • Current consumption: 7 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted	4-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Four (7/8-16UN) ***minifast*** connectors for field devices CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only) FISCO/ENTITY Field Device	
JBBS-49SC-T615B/EX	**Electrical** • Short-circuit protection: 35 mA (Isc) • Voltage drop: 0.3 V • Current consumption: 5 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted	6-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Six (7/8-16UN) ***minifast*** connectors for field devices CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only) FISCO/ENTITY Field Device	

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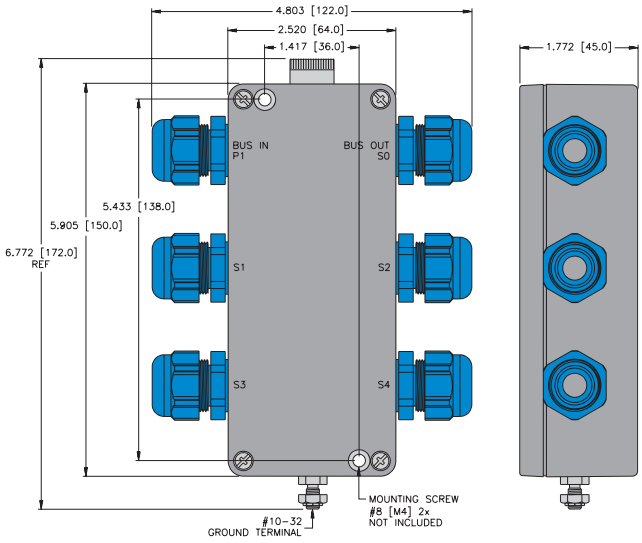
Specifications

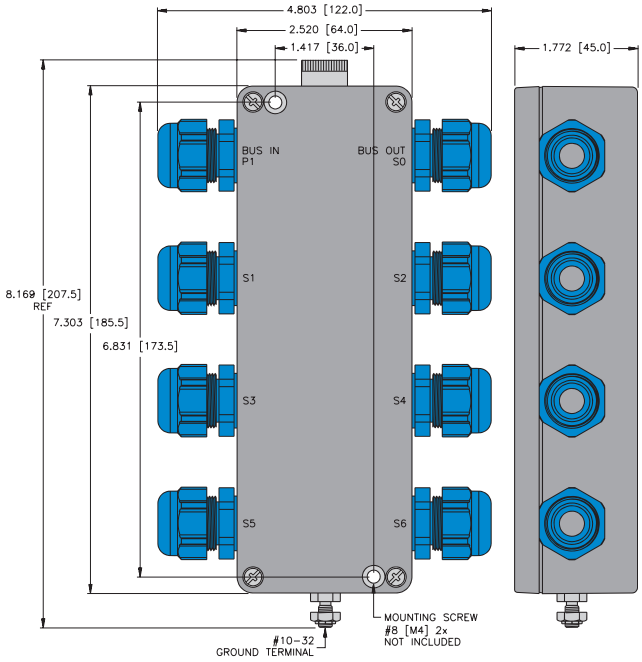
Housing:	Anodized Aluminum
Coupling Nut:	Cable Glands
Contact Carrier:	TPU (Polyurethane)
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	300 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

4-Port



6-Port



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FOUNDATION™ fieldbus, *eurofast*® Passive Multiport Junctions

- **Rugged, Fully Encapsulated Enclosure**
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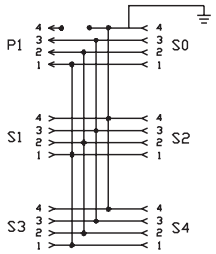
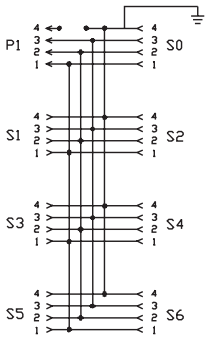
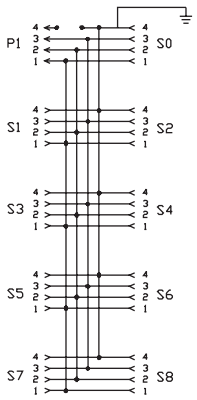
Part Number	Specs	Application	Wiring Diagrams
JBBS-49-E413 JBBS-49-E414	No short-circuit protection	4-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Four (M12x1) ***eurofast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-49-E613/3GD JBBS-49-E614	No short-circuit protection	6-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Six (M12x1) ***eurofast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-49-E813 JBBS-49-E814	No short-circuit protection	8-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Eight (M12x1) ***eurofast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	

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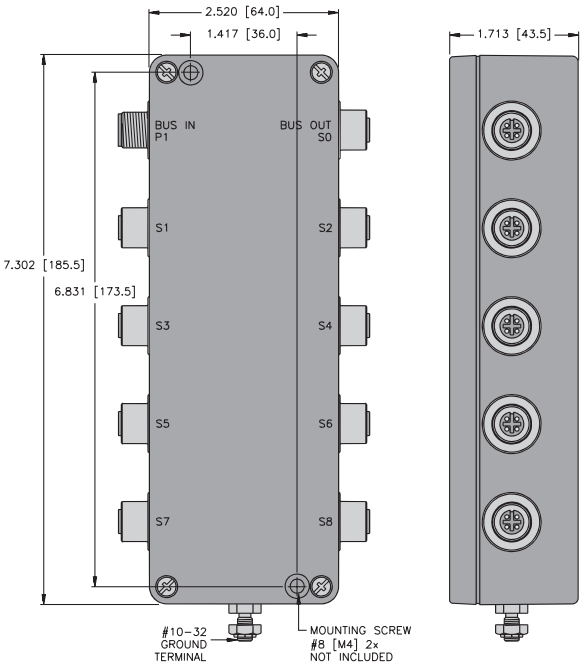
Specifications

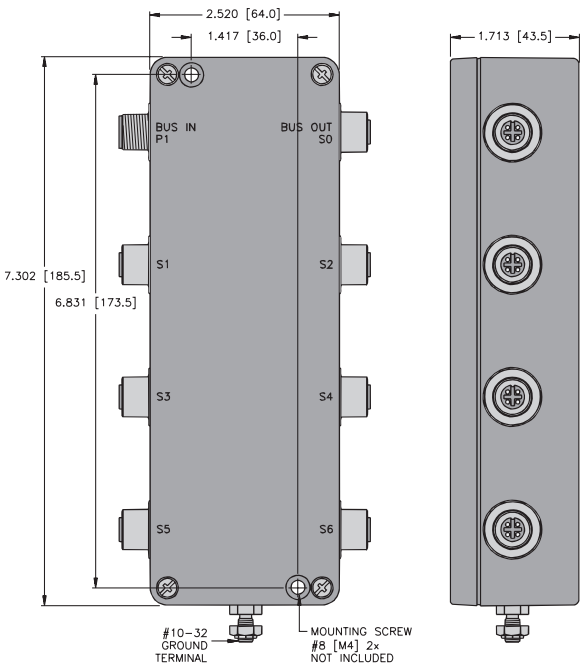
Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

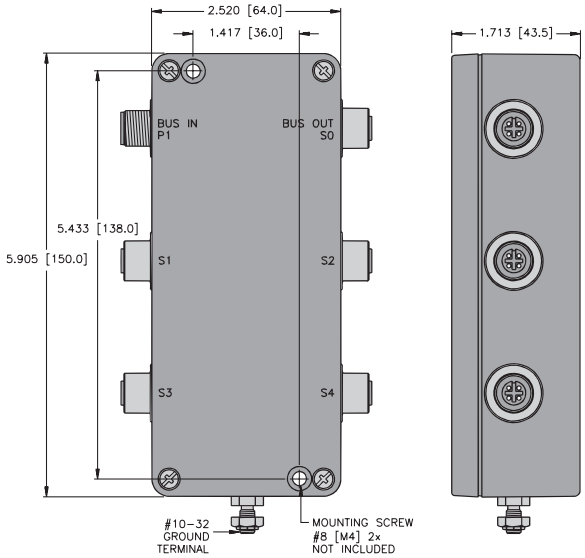
8-Port



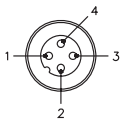
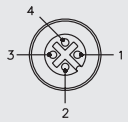
6-Port



4-Port



Pinouts

eurofast	
Male	**Female**
	

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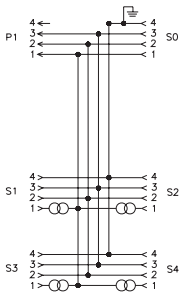
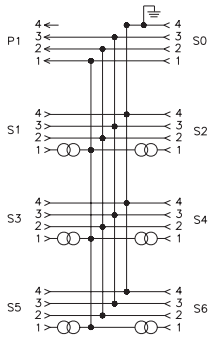
FOUNDATION™ fieldbus, *eurofast*® Passive Multiport Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**

FM APPROVED

Part Number	Specs	Application	Wiring Diagrams
JBBS-49SC-E413	**Electrical** • Short-circuit protection: 55 mA (Isc) • Open circuit voltage: 35 VDC • Current consumption: 5 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted	4-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Four (M12x1) ***eurofast*** connectors for field devices CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-49SC-E613	**Electrical** • Short-circuit protection: 55 mA (Isc) • Open circuit voltage: 35 VDC • Current consumption: 5 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted	6-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Six (M12x1) ***eurofast*** connectors for field devices CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	

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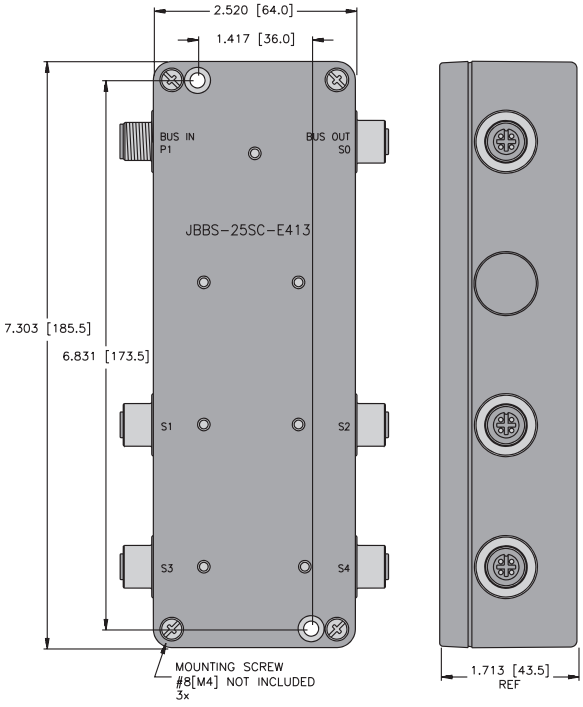
Specifications

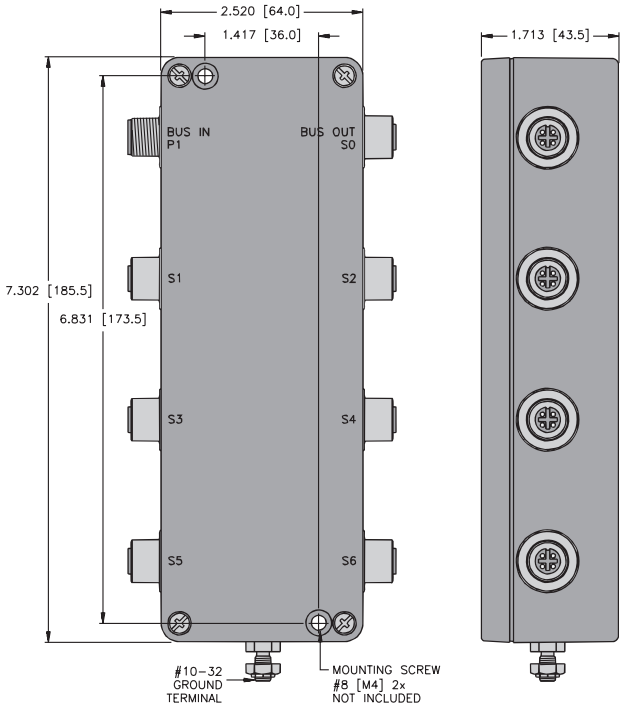
Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

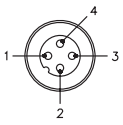
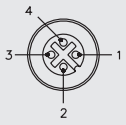
4-Port



6-Port



Pinouts

eurofast	
Male	**Female**
	

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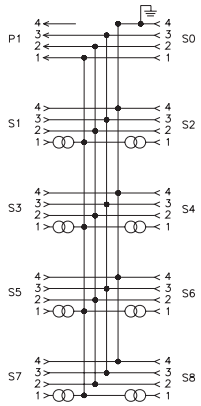
FOUNDATION™ fieldbus, *eurofast*® Passive Multiport Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**

FM APPROVED

Part Number	Specs	Application	Wiring Diagrams
JBBS-49SC-E813	**Electrical** • Short-circuit protection: 55 mA (Isc) • Open circuit voltage: 35 VDC • Current consumption: 5 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted	8-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Eight (M12x1) ***eurofast*** connectors for field devices CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	

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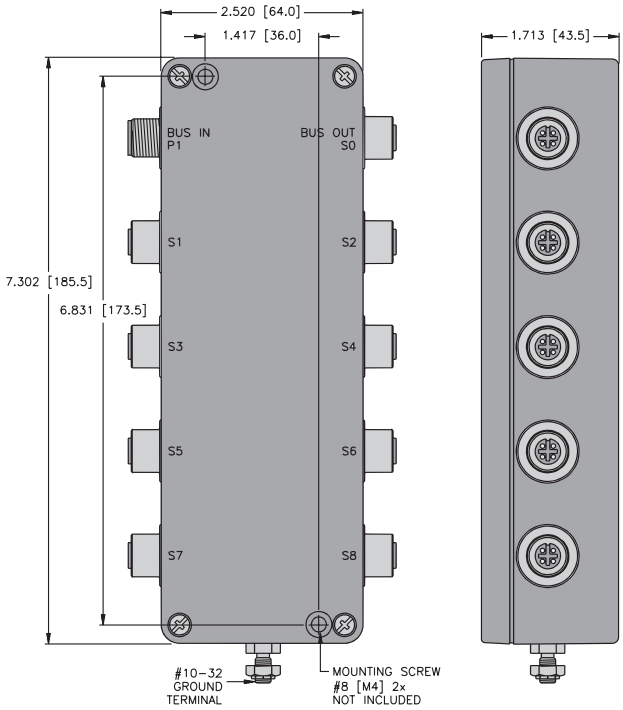
Specifications

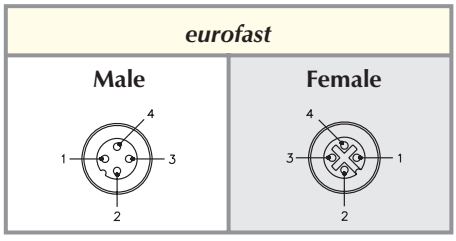
Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

8-Port



Pinouts



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FOUNDATION™ fieldbus, *eurofast*® Passive Multiport Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**

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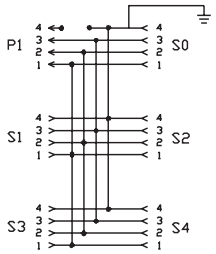
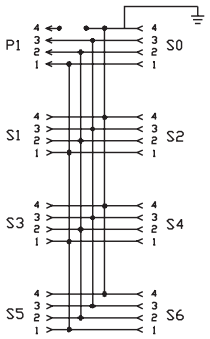
Part Number	Specs	Application	Wiring Diagrams
JBBS-49-E423 JBBS-49-E424	No short-circuit protection	4-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Four (M12x1) ***eurofast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-49-E623 JBBS-49-E624	No short-circuit protection	6-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Six (M12x1) ***eurofast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	

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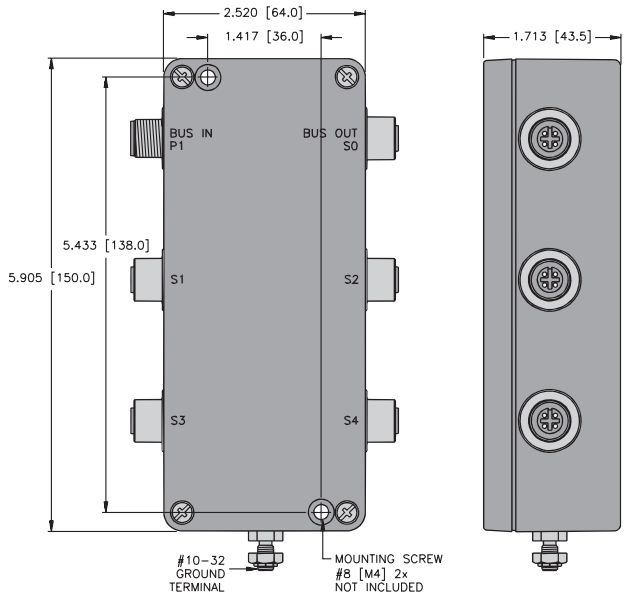
Specifications

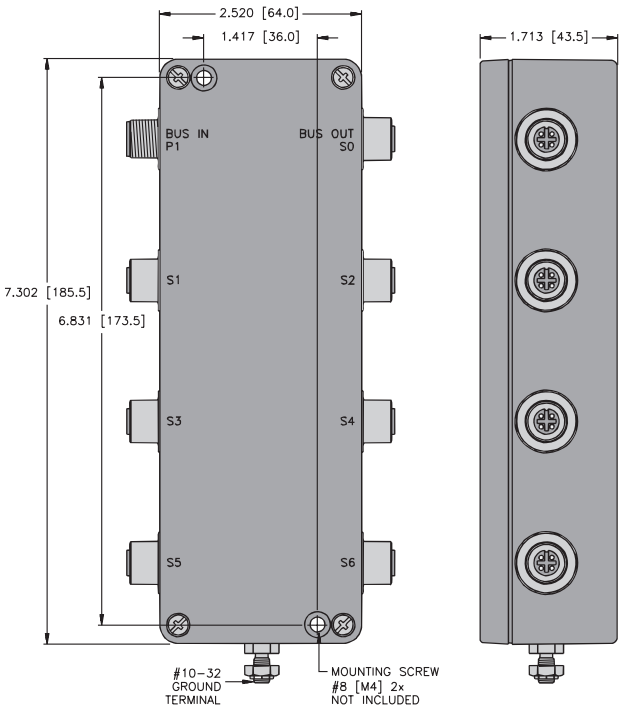
Housing:	Fiberglass
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

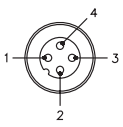
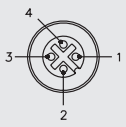
4-Port



6-Port



Pinouts

eurofast	
Male	**Female**
	

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FOUNDATION™ fieldbus, *eurofast*® Passive Multiport Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**

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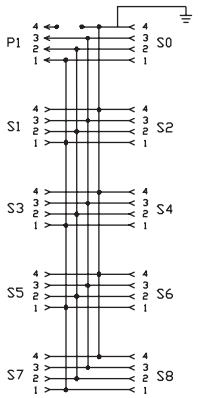
Part Number	Specs	Application	Wiring Diagrams
JBBS-49-E823 JBBS-49-E824	No short-circuit protection	8-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Eight (M12x1) ***eurofast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	

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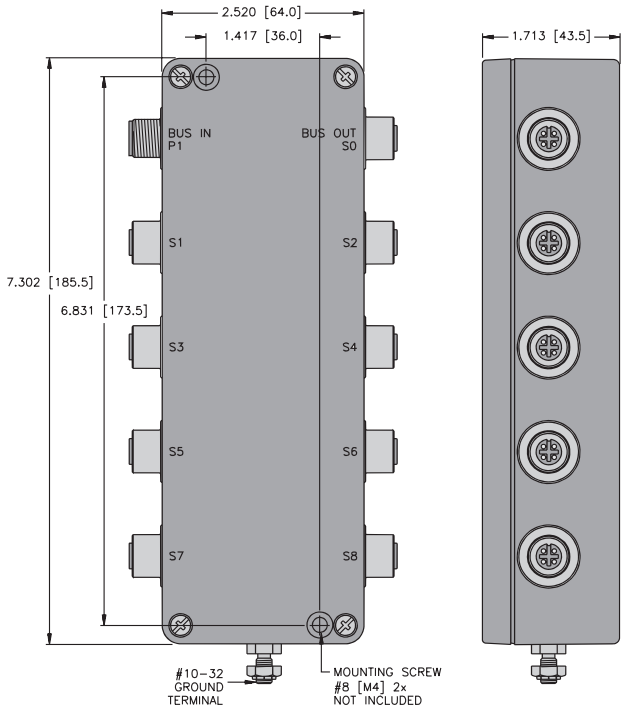
Specifications

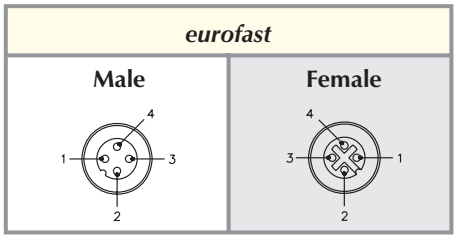
Housing:	Fiberglass
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

8-Port



Pinouts



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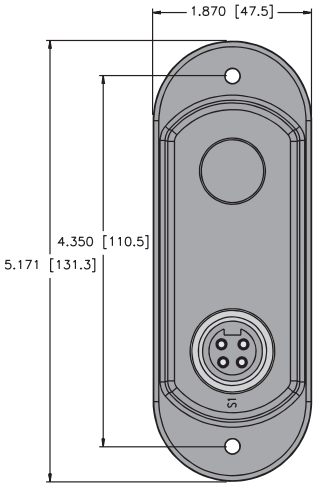
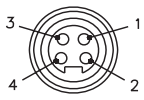
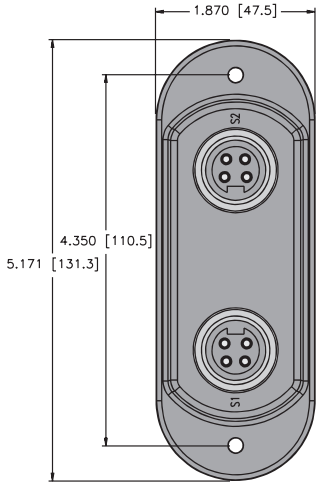
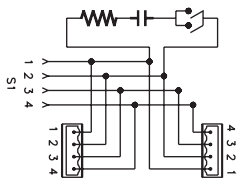
FOUNDATION™ fieldbus, *minifast*® Conduit Adapters

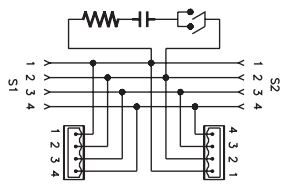
- **Gasket and Mounting Screws Provided**
- **Same Housing Style for Single or Double Port**

Housing	Part Number	Specs	Application	Pinout
	BCA 49-M123	Nylon Housing 300 V, 9 A -40° to +75°C	Attaches to standard conduit body* for transition to 4-wire (7/8-16UN) ***minifast*** connector *Crouse Hinds 3/4" Form 8, Mark 9 or equivalent	**Female** 
	BCA 49SC-M123	**Electrical** • Short-circuit protection: 55 mA • Open circuit voltage: 35 VDC • Current consumption: 5 mA **Diagnostics** • LED indicators Power: Green = On Short-circuit: Red = Shorted		
	BCA 49-M223	Nylon Housing 300 V, 9 A -40° to +75°C		
	BCA 49SC-M223	**Electrical** • Short-circuit protection: 55 mA • Open circuit voltage: 35 VDC • Current consumption: 5 mA **Diagnostics** • LED indicators Power: Green = On Short-circuit: Red = Shorted		

1-port Wiring Diagram



2-port Wiring Diagram



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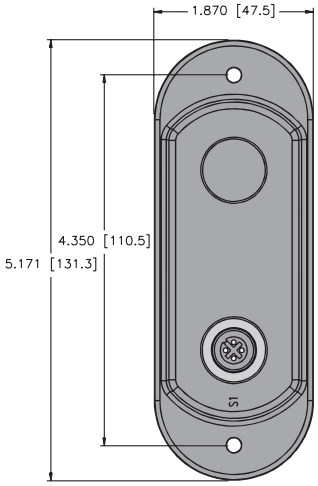
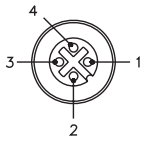
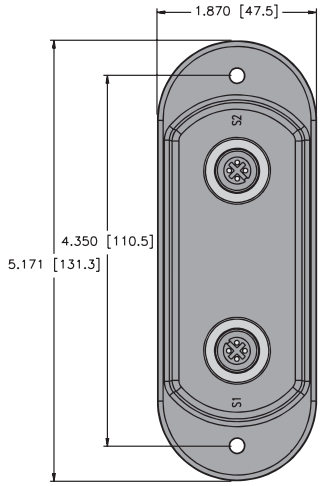
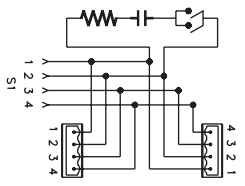
FOUNDATION™ fieldbus, *eurofast*® Conduit Adapters

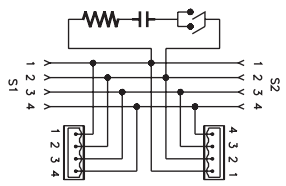
- **Gasket and Mounting Screws Provided**
- **Same Housing Style for Single or Double Port**

Housing	Part Number	Specs	Application	Pinout
	BCA 49-E123	Nylon Housing 250 V, 4 A -40° to +75°C	Attaches to standard conduit body* for transition to 4-wire (M12x1) ***eurofast*** connector *Crouse-Hinds 3/4" Form 8, or Mark 9 or equivalent.	**Female** 
	BCA 49-E223		Attaches to standard conduit body* for transition to 4-wire (M12x1) ***eurofast*** connector *Crouse-Hinds 3/4" Form 8, or Mark 9 or equivalent.	

1-port Wiring Diagram



2-port Wiring Diagram



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FOUNDATION™ fieldbus, Power Supply Conditioner

- **Meets the Needs of Redundant Power Supplies for FOUNDATION fieldbus**
- **Has Primary and Secondary Power Inputs to Supply Two Fieldbus H1 Segments**
- **Filters the Fieldbus Signal from the Power Source**

Part Number	Specs	Application
BRPC-49-M213	**Electrical** • Supply voltage (Supply A & B): 12-32 VDC • Supply surge protection (Supply A & B): >36 VDC • Supply redundancy (Supply A & B): Supply "A" is primary. If Supply "A" Voltage drops below 11 Volts, Supply "B" becomes Active. Supply "A" becomes active once voltage >11 Volts • Output voltage (Segment 1 & 2): Input Voltage - 3 Volts • Output current (Segment 1 & 2): <1 Amp • Short-circuit protection (Segment 1 & 2): > 1 Amp to infinite **Diagnostic** • Power LED indications: Green - Active / Red - No Power • Segment LED indications: Green - Active • Supply monitor contacts (Supply A & B): Solid State, AC/DC <400 Volts, <70 mA when supply voltage >11 Volts, contact is closed.	4-port Power Supply Conditioner • Primary and secondary power inputs • Diagnostics for each power supply • Internal switches for terminators

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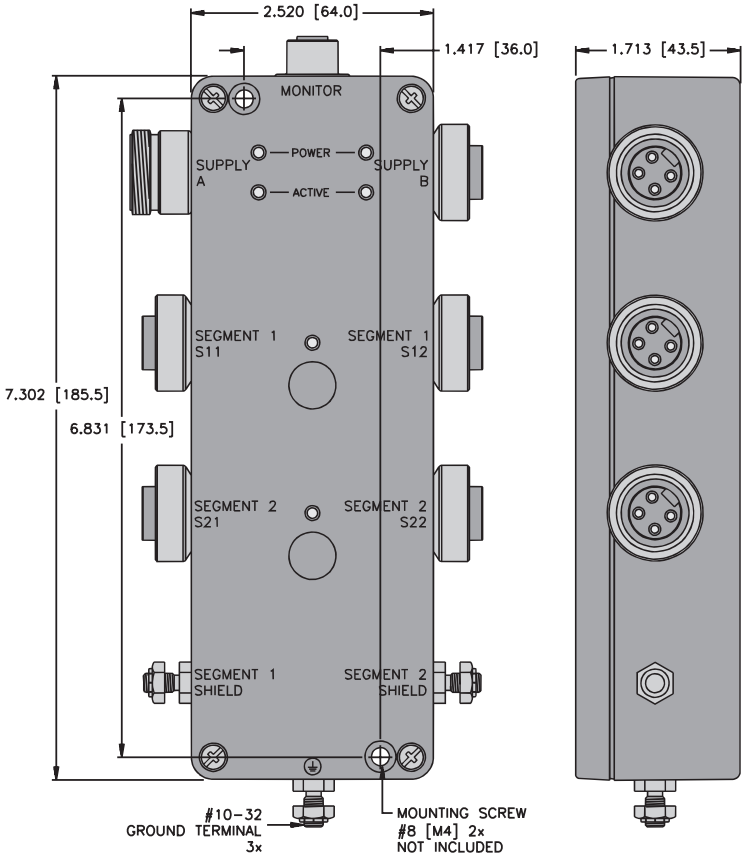
Specifications

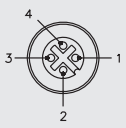
Housing:	Anodized Aluminum
Coupling Nut:	Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

BRPC-49-M213



Pinouts

minifast		*eurofast*
Female	**Male**	**Female**
		

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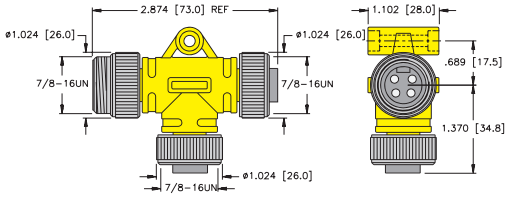
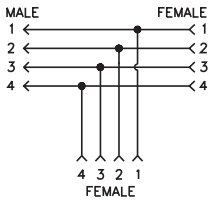
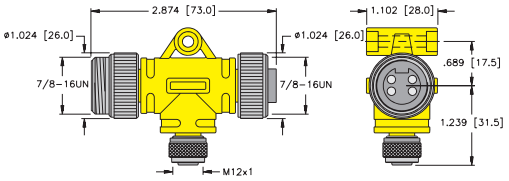
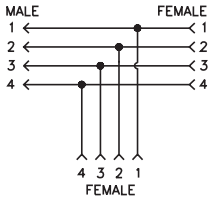
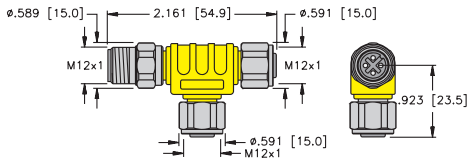
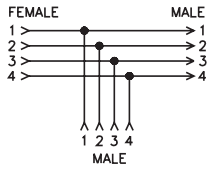
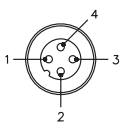
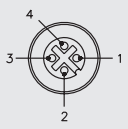
FOUNDATION™ fieldbus, Tees

- Creates a Drop or Branch from the Main Bus Line
- *minifast*® Connectors on Bus Line
- *minifast* or *eurofast*® Connectors on Dropline

Housing	Part Number	Specs	Application	Wiring Diagrams
	RSV 2RKV 49	PUR (Polyurethane) 250 V, 4 A -40° to +75°C	***minifast*** Tee • Data, ground, shield • Stainless steel coupling nuts	
	RSV FKV RKV 49		***minifast*** to ***eurofast*** Drop • Data, ground, shield • Stainless steel coupling nuts	
	RSCV 2RKCV 49		***eurofast*** Tee • Stainless steel coupling nuts	

Pinouts

minifast		*eurofast*	
Male	Female	Male	Female
			

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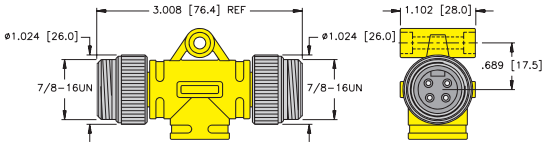
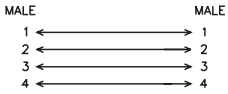
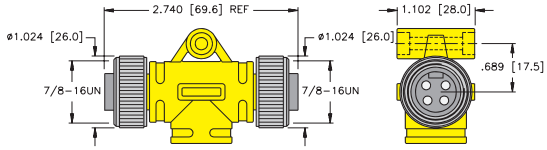
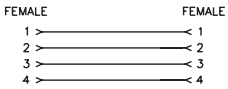
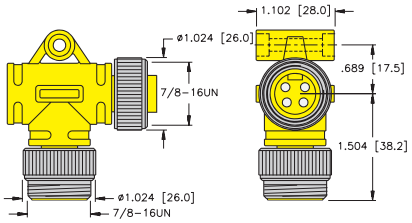
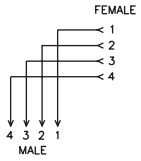
FOUNDATION™ fieldbus, Gender Changers and Elbow Connectors

- **Allows Quick and Easy Changes from Male to Female *minifast*® Connectors**

Housing	Part Number	Specs	Application	Wiring Diagrams
	RSV RSV 49	TPU (Polyurethane) 250 V, 4 A -40° to +75°C	Male ***minifast*** Gender Changer • Changes female cordset to male receptacle	
	RKV RKV 49		Female ***minifast*** Gender Changer • Changes female cordset to male receptacle	
	WSV RKV 49		***minifast*** Elbow • Right angle male to female connector	

Pinouts

minifast	
Male	**Female**

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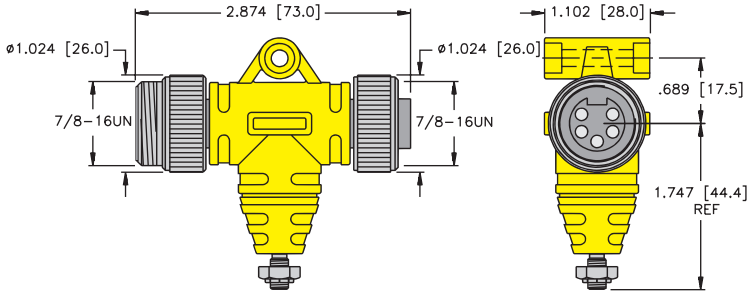
FOUNDATION™ fieldbus, Surge Suppressor

- **Protects Data Communication Lines (V+ and V-)**
- **Absorbs the Front End of the Transient, Responding in Less Than a Nanosecond**
- **Diverts the Surge Energy to Ground**
- **Automatically Resets and waits for Next Surge**

Housing	Part Number	Specs	Application	Pinouts
See Drawing 1	RSV RKV 49 SS	**Electrical** • Maximum operating voltage: 27 Volts • Maximum operating current: 200mA • Clamping action turn-on: 28.5 Volts • Maximum clamping at 2 kA: (8 x 20 Sec): 44 Volts • Maximum surge voltage: 20 kV • Maximum surge current: 2.5 kA • Current leakage/line at operating voltage: 5 A • Capacitance /line at operating voltage: 500 pF • Response time: less than 1 nanosecond **Mechanical** • Ground stud: 10-32 stainless steel • Operating temperature: -40° to +85°C	Male and Female minifast®, 4-pin	**Male** **Female**

1



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Notes

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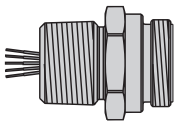
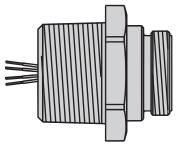
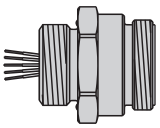
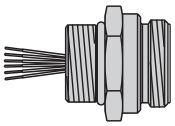
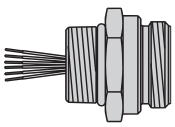
FOUNDATION™ fieldbus, (7/8-16UN) *minifast*® Male Receptacles

- **Provides Quick Connection to Field Devices**
- **Available for 1/2-14NPT, 1/2-14NPSM, 3/4-14NPT and M20 Threads**

Housing	Part Number	Specs	Application	Pinouts	
13 	RSFV 49-*M/14.5	Nickel Plated CuZn or Stainless Steel 300 V, 9 A -40° to +105°C	1/2-14NPT full length threads	1. BU 2. BN 3. N/C 4. GN/YE	Male
15 	RSFV 49-*M/14.75		3/4-14NPT full length threads		
14 	RSFV 49-*M/M20		M20x1.5 threads		
16 	RSFV 49-*M		1/2-14NPSM threads		
17 	RSFV 49-*M/NPT		1/2-14NPT modified length threads		

See page E63 for dimensional drawings.

Standard cable length is 0.3 meters. Consult factory for other lengths.
Receptacles require a 13/16" (21.0 mm) clearance hole for panel mounting.
Standard housing material is stainless steel. "RKF .."; "RKFV .." indicates 316 nickel plated brass housing.
For locknuts to be included, add "W/LN" to the end of the part number.

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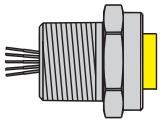
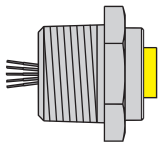
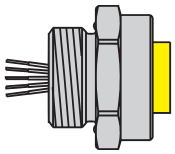
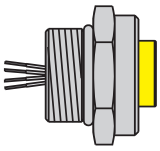
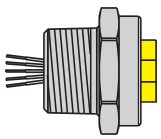
FOUNDATION™ fieldbus, (7/8-16UN) *minifast*® Female Receptacles

- **Provides Quick Connection to Field Devices**
- **Available for 1/2-14NPT, 1/2-14NPSM, 3/4-14NPT and M20 Threads**

Housing	Part Number	Specs	Application	Pinouts	
18 	RKFV 49-*M/14.5	Nickel Plated CuZn or Stainless Steel 300 V, 9 A -40° to +105°C	1/2-14NPT full length threads	1. BU 2. BN 3. GY 4. GN/YE	Female
20 	RKFV 49-*M/14.75		3/4-14NPT full length threads		
19 	RKFV 49-*M/M20		M20x1.5 threads		
21 	RKFV 49-*M		1/2-14NPSM threads		
22 	RKFV 49-*M/NPT		1/2-14NPT modified length threads		

See page E64 for dimensional drawings.

Standard cable length is 0.3 meters. Consult factory for other lengths.
Receptacles require a 13/16" (21.0 mm) clearance hole for panel mounting.
Standard housing material is stainless steel. "RKF ..."; indicates 316 nickel plated brass housing.
For locknuts to be included, add "W/LN" to the end of the part number.

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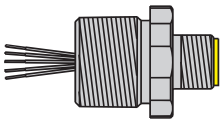
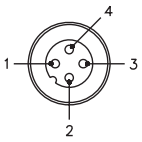
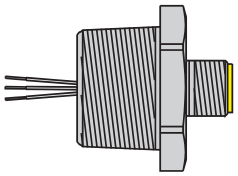
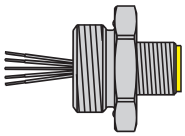
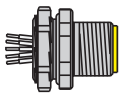
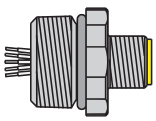
FOUNDATION™ fieldbus, (M12x1) *eurofast*® Male Receptacles

- **Mounted for Quick Connection to Enclosures**
- **Available for 1/2-14NPT, 1/2-14NPSM, 3/4-14NPT and M20 Threads**

Housing	Part Number	Specs	Application	Pinout	
23 	FSV 49-*M/14.5	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +105°C	1/2-14NPT full length threads	1. BU 2. BN 3. N/C 4. GN/YE	Male 
25 	FSV 49-*M/14.75		3/4-14NPT full length threads		
24 	FSV 49-*M/M20		M20x1.5 threads		
26 	FSV 49-*M		PG 9 threads		
27 	FSV 49-*M/NPT		1/2-14NPT modified length threads		

See page E65 for dimensional drawings.

Standard cable length is 0.3 meters. Consult factory for other lengths.
Receptacles require a 13/16" (21.0 mm) clearance hole for panel mounting.
Standard housing material is stainless steel. "RKF ..."; indicates 316 nickel plated brass housing.

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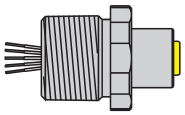
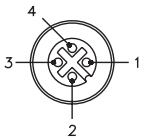
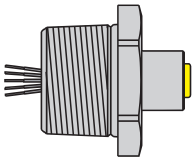
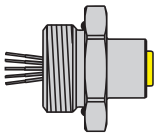
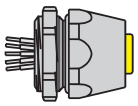
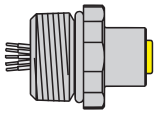
FOUNDATION™ fieldbus, (M12x1) *eurofast*® Female Receptacles

- **Mounted for Quick Connection to Enclosures**
- **Available for 1/2-14NPT, 1/2-14NPSM, 3/4-14NPT and M20 Threads**

Housing	Part Number	Specs	Application	Pinouts	
28 	FKV 49-*M/14.5	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +105°C	1/2-14NPT Full Length Threads	1. BU 2. BN 3. N/C 4. GN/YE	Female 
30 	FKV 49-*M/14.75		3/4-14NPT Full Length Threads		
29 	FKV 49-*M/M20		M20x1.5 Threads		
31 	FKV 49-*M		PG 9 Threads		
32 	FKV 49-*M/NPT		1/2-14NPT Modified Length Threads		

See page E66 for dimensional drawings.

Standard cable length is 0.3 meters. Consult factory for other lengths.
Receptacles require a 13/16" (21.0 mm) clearance hole for panel mounting.
Standard housing material is stainless steel. "RKF .."; "RKFV .." indicates 316 nickel plated brass housing.

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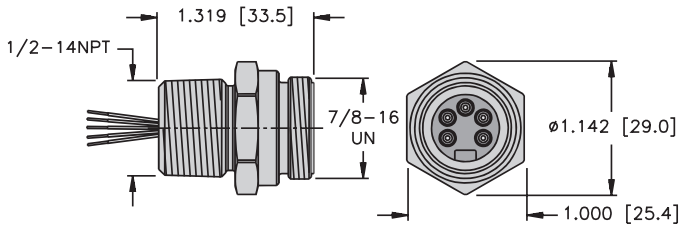
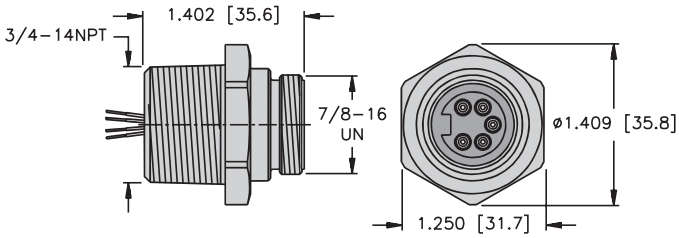
minifast® Male Receptacles

13



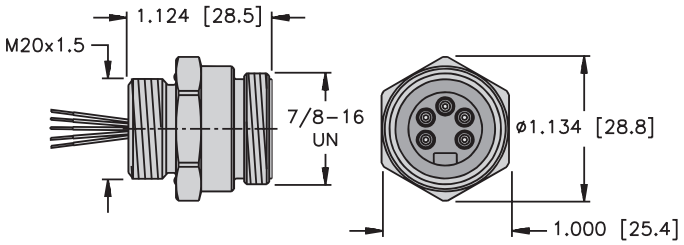
RSFV .. 14.5 **Page E59**

15



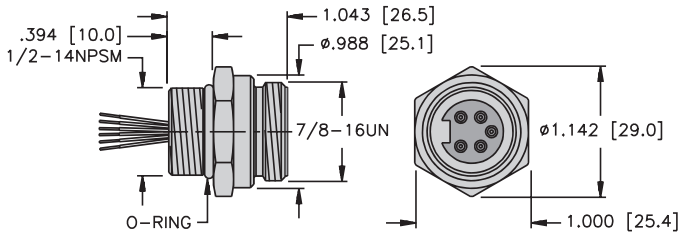
RSFV .. 14.75 **Page E59**

14



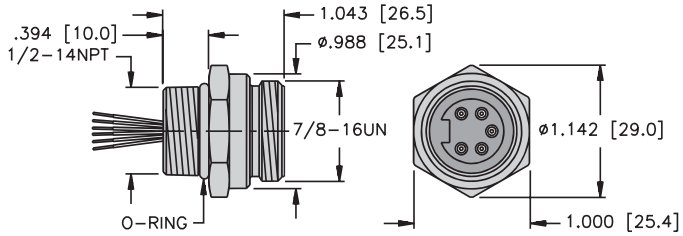
RSFV .. M20 **Page E59**

16



RSFV .. **Page E59**

17



RSFV .. NPT **Page E59**

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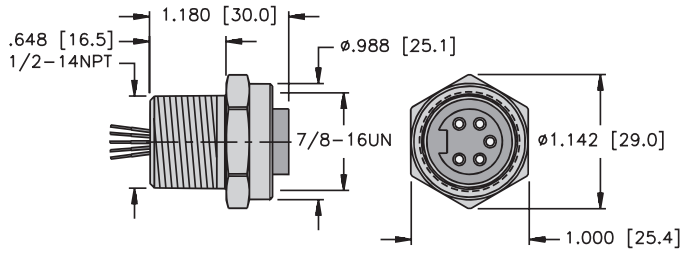
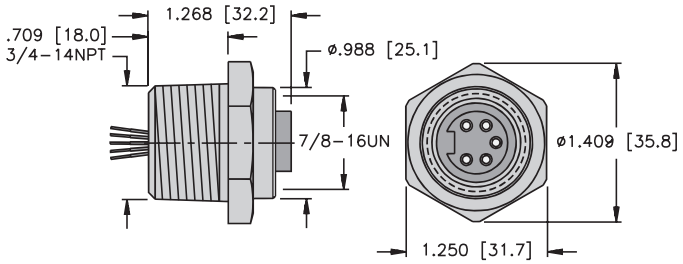
minifast® Female Receptacles

18



RKFV .. 14.5 **Page E60**

20



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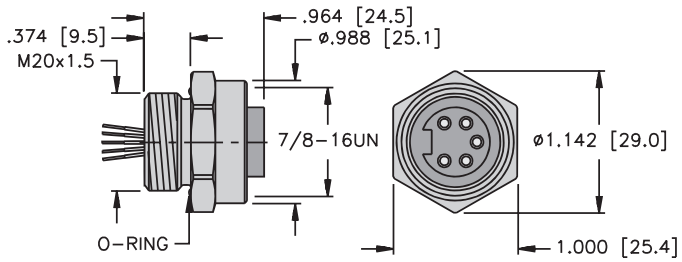

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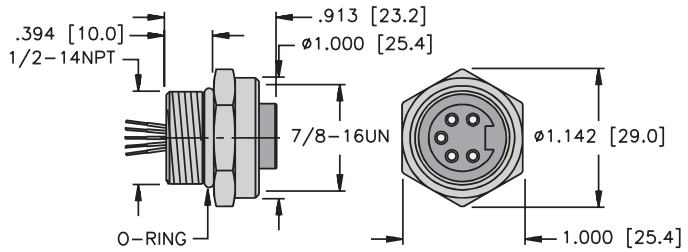
21



RKFV .. **Page E60**

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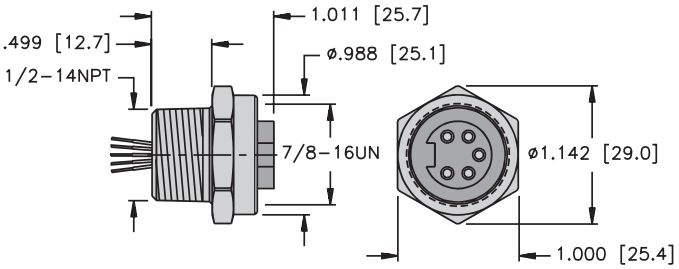

RKFV .. NPT **Page E60**

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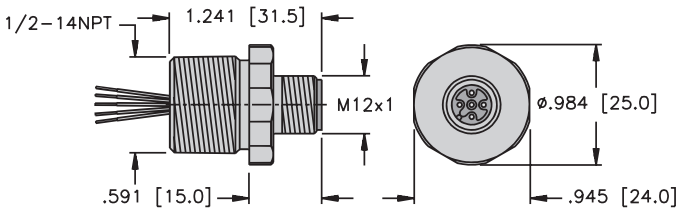
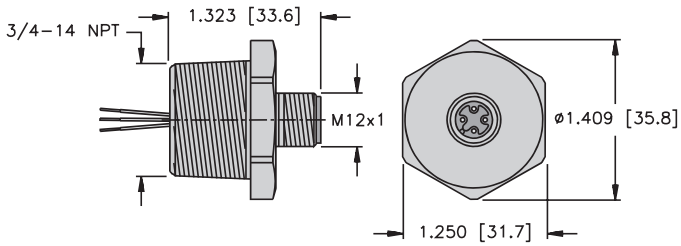
eurofast® Male Receptacles

23



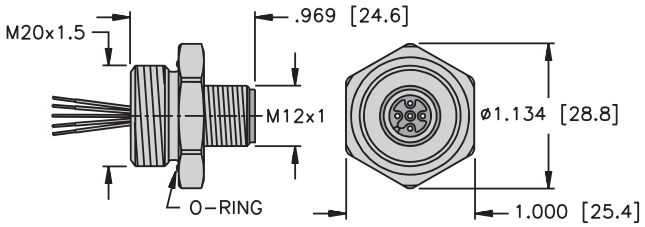
FSV .. 14.5 **Page E61**

25



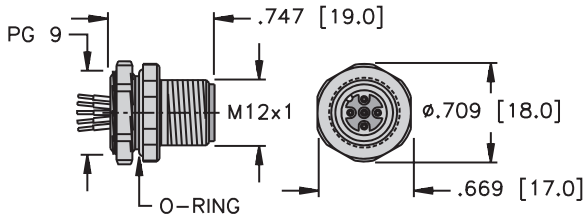
FSV .. 14.75 **Page E61**

24



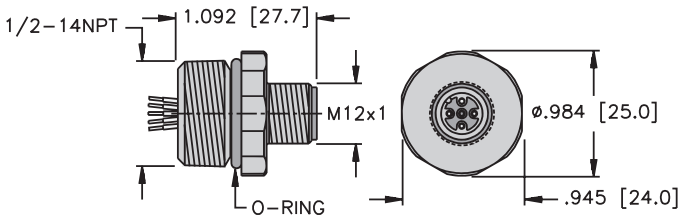
FSV .. M20 **Page E61**

26



FSV .. **Page E61**

27



FSV .. NPT **Page E61**

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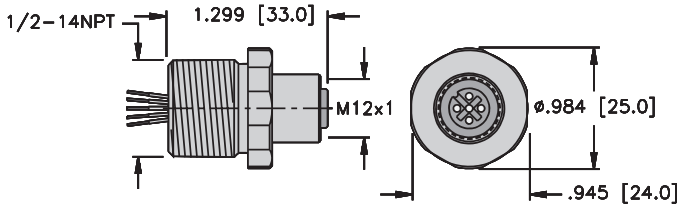
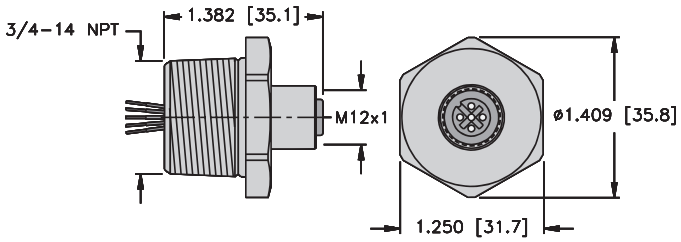
eurofast® Female Receptacles

28



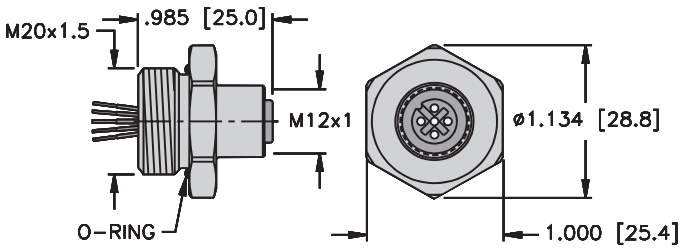
FKV .. 14.5 Page E62

30



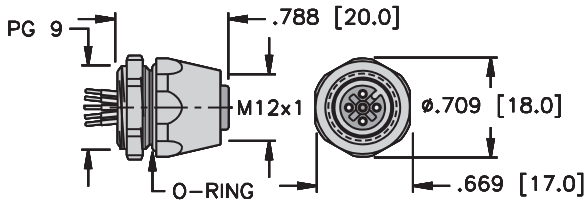
FKV .. 14.75 Page E62

29



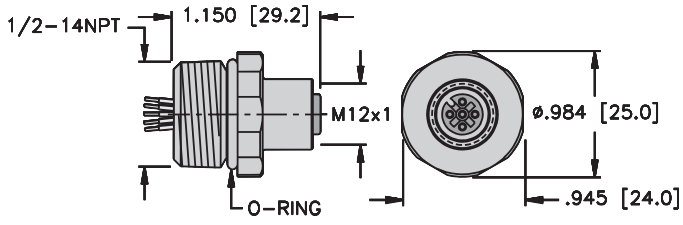
FKV .. M20 Page E62

31



FKV .. Page E62

32



FKV .. NPT Page E62

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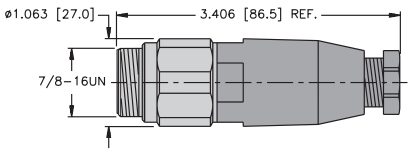
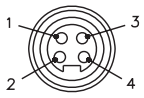
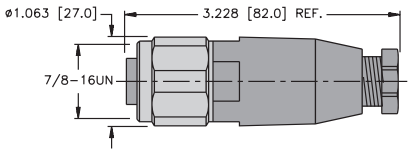
FOUNDATION™ fieldbus, *minifast*® Field Wireable Connectors

- **Screw Terminals Accept up to 16 AWG Conductors**

Housing	Part Number	Specs	Application	Pinouts
	BSV 4149-0/9	Glass filled nylon, stainless steel coupling nut PG 9 cable gland, accepts 6-8 mm cable diameter 85°C 250 V, 9 A	Mates with all 4-pin cordsets and receptacles	**Male** 
	BSV 4149-0/16	Glass filled nylon, stainless steel coupling nut PG 13.5 cable gland accepts 12-14 mm cable diameter 85°C 250 V, 9 A		
	BV 4149-0/9	Glass filled nylon, stainless steel coupling nut PG 9 cable gland, accepts 6-8 mm cable diameter 85°C 250 V, 9 A		**Female**
	BV 4149-0/16	Glass filled nylon, stainless steel coupling nut PG 13.5 cable gland accepts 12-14 mm cable diameter 85°C 250 V, 9 A		

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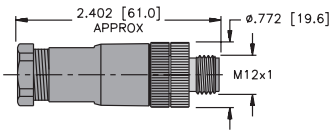
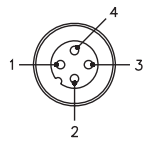
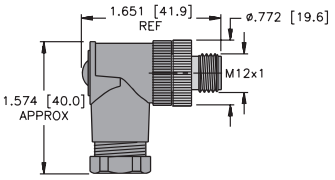
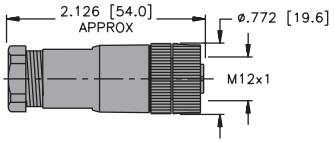
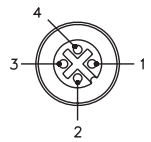
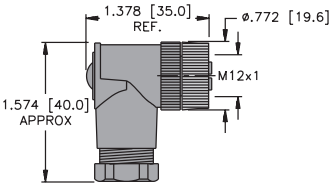
FOUNDATION™ fieldbus, *eurofast*® Field Wireable Connectors

- **Screw Terminals Accept up to 18 AWG Conductors**

Housing	Part Number	Specs	Application	Pinouts
	BS 8141-0/PG9	PBT, Black PG 7 cable gland accepts 6-8 mm cable diameter 85°C 125 V, 4 A	Mates with standard key 4-pin cordsets and receptacles	**Male** 
	BS 8241-0/PG9	PBT, Black PG 7 cable gland accepts 6-8 mm cable diameter 85°C 125 V, 4 A		
	B 8141-0/PG9	PBT, Black PG 7 cable gland accepts 6-8 mm cable diameter 85°C 250 V, 4 A		**Female** 
	B 8241-0/PG9	PBT, Black PG 7 cable gland accepts 6-8 mm cable diameter 85°C 250 V, 4 A		

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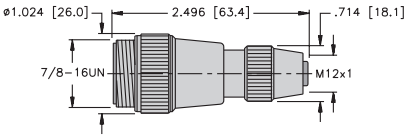
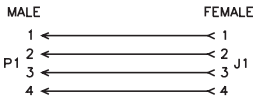
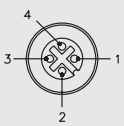
FOUNDATION™ fieldbus, Gender Changer

- **Allows Quick and Easy Changes from Male to Female and *minifast*® to *eurofast*® Connectors**

Housing	Part Number	Specs	Application	Wiring Diagram
	RSM 49-FK 4.5	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +75°C	Female ***eurofast***, male ***minifast***, 4-pin	

Pinouts

minifast	*eurofast*
Male	**Female**
	

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Notes:

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Ethernet I/O Selection Guide

BL67 Gateway	AS-i Gateway
F5 - F8	F9 - F16

Ethernet 8-wire Selection Guide

Cables	Switches	Conduit Adapters
F17 - F22	F23 - F24	F25

Cabinet Adapters	Receptacles
F26	F27- F30

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Ethernet 4-wire Selection Guide

Cables	Switches	Conduit Adapters
F31 - F35	F37 - F42	F43

Wall Plate Adapter	Cabinet Adapters	Receptacles
F44	F45	F46

Field Wireables	RJ11 Cordset
F47 - F48	F49

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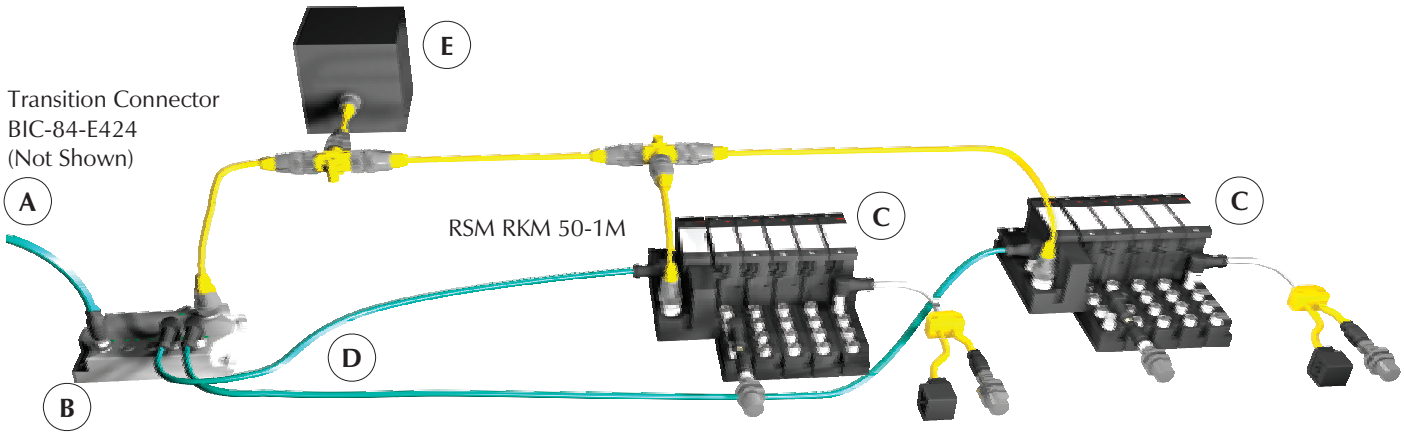
Ethernet System Description

Ethernet is the most popular protocol used to connect office computers and peripherals today. It is increasingly finding its way into other applications, and is rapidly becoming the network of choice for higher level industrial control applications. Ethernet is primarily used to connect PLCs, computers, HMI displays and other high level components.

The term "Ethernet" actually refers to the lower level communication structure. Various different versions, or implementations, of Ethernet are available, such as Ethernet/IP™ and Modbus-TCP. It is important to note that while all of these different specifications use the same physical communication method and can operate on the same cable simultaneously, they cannot necessarily communicate with each other. For example, Modbus-TCP devices cannot communicate with Ethernet/IP devices. This is because the messages and communication protocol have been defined differently for these systems, even though the physical electrical structure is the same. Think of it as two people who speak different languages; they speak by moving air with their mouths, but the rules of the languages are different.

TURCK's BL67 Ethernet gateways provide a convenient way to connect industrial I/O devices directly to the Ethernet system, expediting monitoring and troubleshooting for the overall control scheme.

Typical System Configuration



Basic Parts List

A typical Ethernet system consists of the following parts:

- A - Controller
- B - Switches
- C - Ethernet I/O modules
- D - Ethernet cable
- E - Power supply

Ethernet I/O modules act as clients on a network. A server device is needed to retrieve data from and post data to the client. This is analogous to an office network, where the client PC on a user's desk may actively connect with multiple servers to access information in different areas of the enterprise. **TURCK** Ethernet stations are designed to be fully compatible with established Ethernet standards for industrial use.

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Cordsets

TURCK offers a complete line of molded Ethernet cordsets to facilitate network installation, resulting in a faster start-up and fewer wiring errors. Cables are available with stranded or solid-core conductors, with or without shielding.

Most **TURCK** Ethernet equipment uses the 4 or 8-pin (M12) ***eurofast***® connector specifications. These connectors provide a tough, rugged seal, and are IP 67 rated. In some cases (mainly in the control cabinet) a traditional RJ45 Ethernet connector needs to be used. **TURCK** provides RJ45 cordsets, as well as a variety of devices made to convert between RJ45 and ***eurofast*** connectors.

TURCK cordsets for the Ethernet system are available in standard lengths. Please contact your local sales representative to order custom lengths.

Addressing

Industrial Ethernet stations use the IP addressing scheme. An address defined by this scheme consists of four byte values usually displayed in decimal form, for example, 192.168.1.254. Different classifications of networks require different portions of this address to be constant for all devices on the network (referred to as a "subnet"). This means that the number of stations allowed on a particular network varies depending on what class of subnet is being used. If the first three bytes of the IP address are constant (which is common), then the remaining byte may be addressed between 2 and 254, resulting in 253 possible addresses.

Maximum Ratings

Ethernet allows different maximum cable lengths depending on the type of cable being used. Normally an Ethernet segment may be as long as 100 m, where 90 m must be solid core cable and the remaining 10 m can be stranded patch cords.

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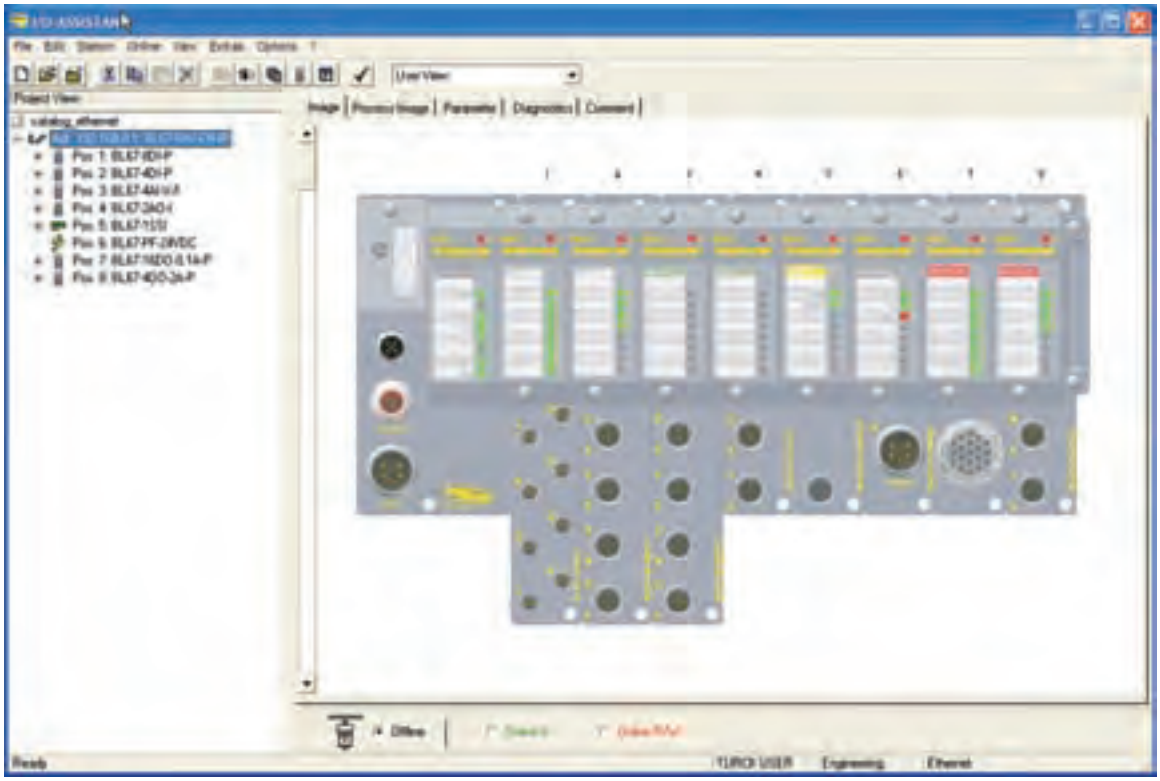
Ethernet BL67 Stations

TURCK's BL67 is a modular, user configurable network I/O system designed to allow installation of nodes containing different types and sizes of I/O depending on the users needs for a particular area. Featuring IP 67 protection and metal threaded connectors, the BL67 can often be mounted directly on a machine without the need to plan or purchase a separate enclosure for the I/O. This saves planning and installation time, as well as the cost of the enclosure itself.

The BL67 system supports several different network protocols, including Ethernet/IP™ and Modbus-TCP. A BL67 station consists of a gateway module that interfaces to the Ethernet system, and several I/O modules that interface with the physical I/O in the field. Different connector options are available to allow a greater level of customization to the user.

For more details on the BL67 system please see section G of this catalog.



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ModBus TCP/IP Ethernet Gateways

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

Gateway:
BL67-GW-EN
Progammable Gateway:
BL67-PG-EN

Electrical

- Operating Current: <600 mA from V_{MB}
- Input Supply Current: <4 A (from V_I)
- Output Supply Current: <8 A (from V_O)
- Backplane Current: <1.5 A (from V_{MB})

Mechanical

- Operating Temperature: -12 to +55°C (-13 to +131°F)
- Protection: IP 67
- Vibration: 5 g @ 10-500 Hz

Material

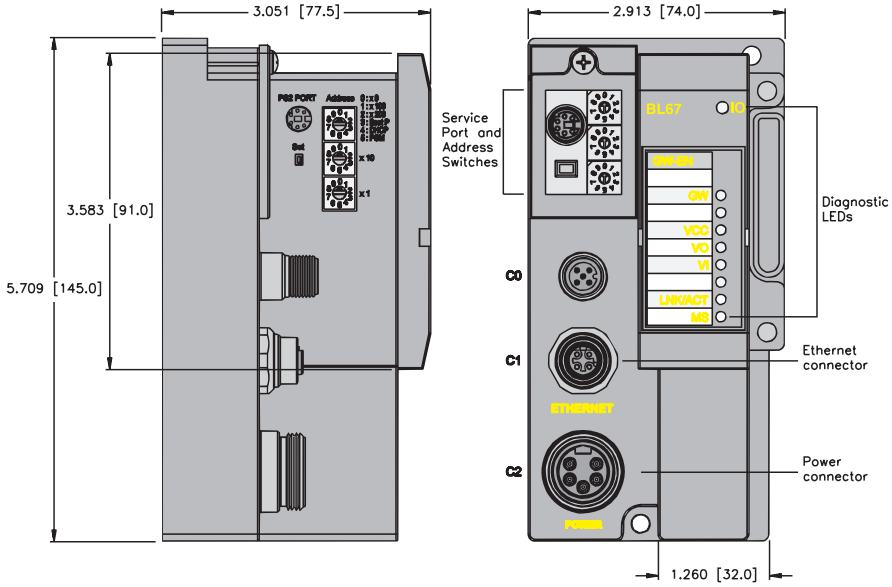
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the system I/O map

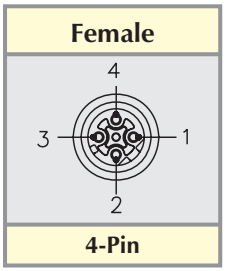
Diagnostics (Physical)

- LEDs to indicate status of Network and Module Bus communication



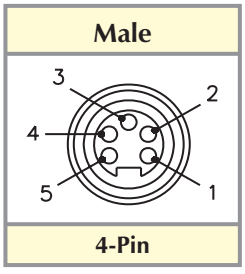
Ethernet Pinout

1 = TD+
2 = RD+
3 = TD-
4 = RD-



5-pin *minifast*® Power Pinout

1 = Gnd
2 = Gnd
3 = PE
4 = V_I
5 = V_O



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BL67 Ethernet

Ethernet IP
Ethernet Gateways

Gateway:
BL67-GW-EN-IP
Programmable Gateway
BL67-PG-EN-IP

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

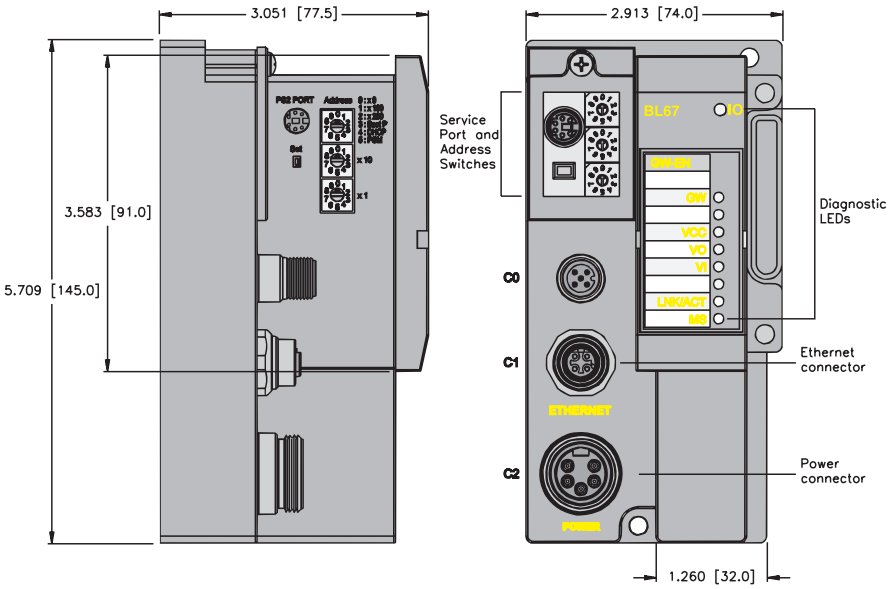
Electrical
- Operating Current: <600 mA from V_{MB}
- Input Supply Current: <4 A (from V_I)
- Output Supply Current: <8 A (from V_O)
- Backplane Current: <1.5 A (from V_{MB})

Mechanical
- Operating Temperature: -12 to +55°C (-13 to +131°F)
- Protection: IP 67
- Vibration: 5 g @ 10-500 Hz

Material
- Housing: PC-V0 (Lexan)

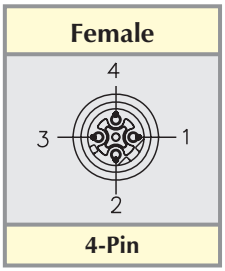
Diagnostics (Logical)
- Diagnostic information available through the system I/O map

Diagnostics (Physical)
- LEDs to indicate status of Network and Module Bus communication



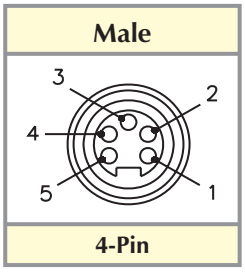
Ethernet Pinout

1 = TD+
2 = RD+
3 = TD-
4 = RD-



5-pin *minifast*® Power Pinout

1 = Gnd
2 = Gnd
3 = PE
4 = V_I
5 = V_O



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Profinet
Ethernet Gateways

BL67-GW-EN-PN

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

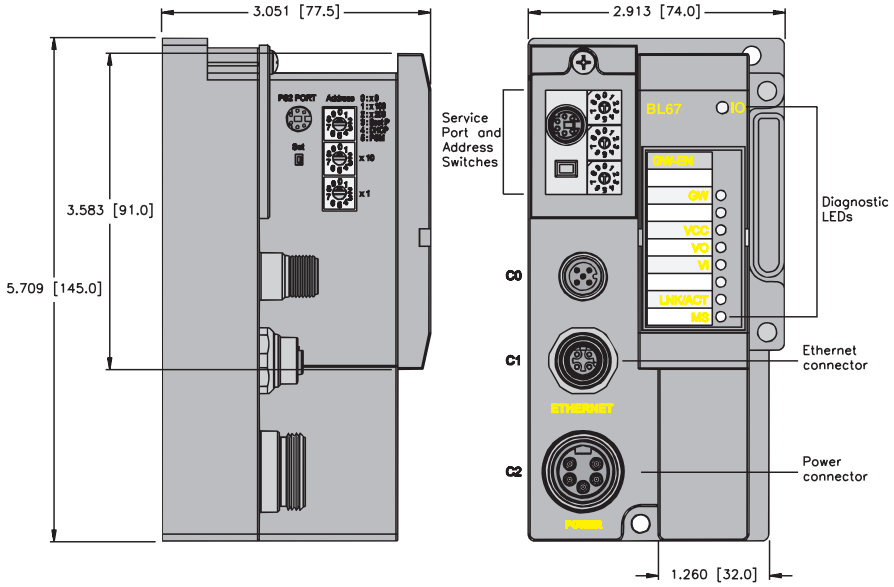
Electrical
- Operating Current: <600 mA from V_{MB}
- Input Supply Current: <4 A (from V_I)
- Output Supply Current: <8 A (from V_O)
- Backplane Current: <1.5 A (from V_{MB})

Mechanical
- Operating Temperature: -12 to +55°C (-13 to +131°F)
- Protection: IP 67
- Vibration: 5 g @ 10-500 Hz

Material
- Housing: PC-V0 (Lexan)

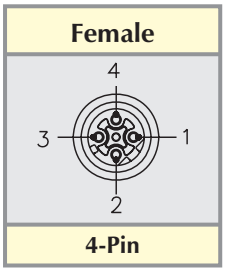
Diagnostics (Logical)
- Diagnostic information available through the system I/O map

Diagnostics (Physical)
- LEDs to indicate status of Network and Module Bus communication



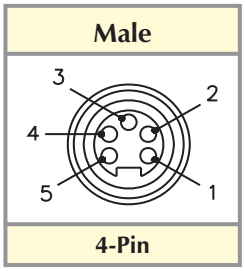
Ethernet Pinout

1 = TD+
2 = RD+
3 = TD-
4 = RD-



5-pin *minifast*® Power Pinout

1 = Gnd
2 = Gnd
3 = PE
4 = V_I
5 = V_O



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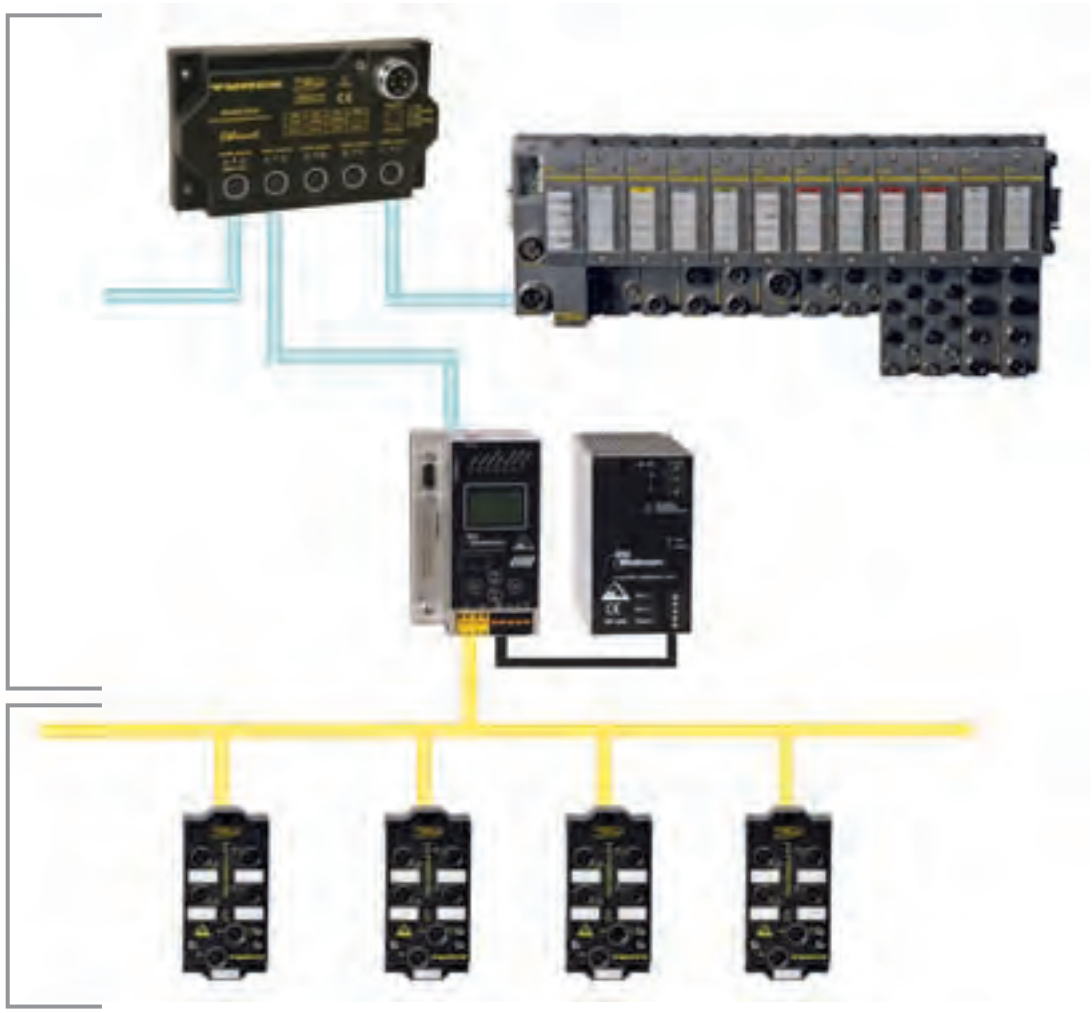
Ethernet to AS-interface® Gateways

AS-I systems can be easily connected to a higher-level network, such as EtherNet/IP™ and Modbus-TCP, through a gateway master. The gateway acts as a master to the AS-I system(s) and a slave to the Ethernet system, mapping all of the AS-I data for Ethernet in a single block.

For AS-I specifications and rating details, see section G of this catalog.

Ethernet System
(Gateway is the Slave)



AS-I System
(Gateway is the Master)

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Addressing

Ethernet stations must have an IP address for communication. The address for AS-i/Ethernet gateways may be set via the on-unit display and push buttons. Please consult the manual for a particular gateway for instruction on the procedure.

Diagnostics

AS-i/Ethernet gateways contain LEDs for diagnosing I/O and communication problems for Ethernet and AS-I. For a detailed description of the LED states, see the Bihl+Wiedemann AS-i/Ethernet Gateway User Manual available for download from www.bihl-wiedemann.com.

Power

Most AS-i/Ethernet gateways draw power from the AS-I power supply. The option to use a separate, non-AS-I power supply is also available. Consult the gateway documentation to ensure the gateway being selected meets the requirements of your system.

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Modbus TCP Gateways in Stainless Steel

ASI-ENG-SS BW1650*
ASI-ENG-SS BW1651*
ASI-ENG-SS BW1652*
ASI-ENG-SS-C1D2 BW1659
ASI-ENG-SS-C1D2 BW1660
ASI-ENG-SS-C1D2 BW1661

* not ETL Listed

- **AS-I v3.0 Supported**
- **Graphical Display**
- **Integrated Ground-Fault Detection**
- **Integrated AS-I Diagnostics**

Electrical

- Operating Current: 200 mA from V_{AS-I} (Power Supply A)
  200 mA from V_{AS-i1}, 70mA from V_{AS-i2} (Power Supply A2)
  250 mA from V_{AUX} (Power Supply E)

Power Distribution

- From AS-I supply for each network (Power Supply A, A2)
- From external supply (Power Supply E)

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material

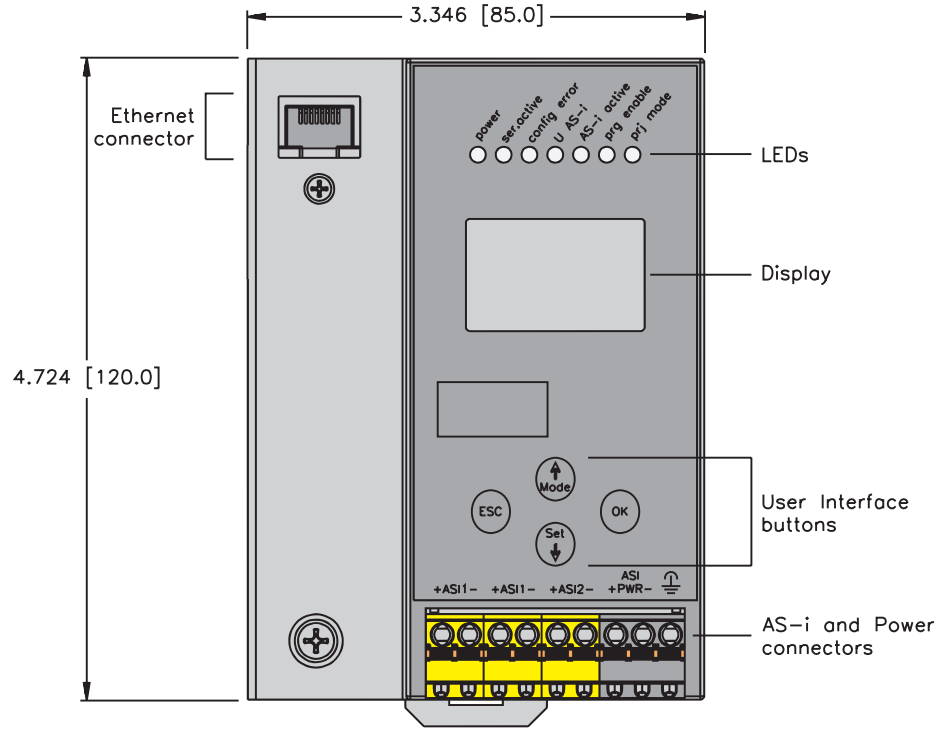
- Housing: Stainless Steel

Diagnostics (Logical)

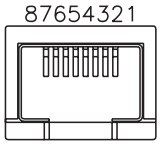
- Health of AS-I network is available via Network interface

Diagnostics (Physical)

- LED to indicate status of network and AS-I communication and power supply



RJ45 Ethernet Standard



1 = WH/or (+TX)
2 = OR (-TX)
3 = WH/GN (+RX)
4 = BU
5 = WH/BU
6 = GN (-RX)
7 = WH/BN
8 = BN

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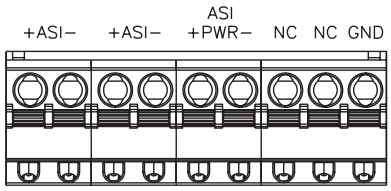
Part Number	Higher Level Network	Power Style	AS-I Version	# of AS-I Masters	Duplicate Address Detection	Programming Interface
ASI-ENG-SS BW1650	ModbusTCP	A	3.0	1	X	X
ASI-ENG-SS BW1651	ModbusTCP	A2	3.0	2	X	X
ASI-ENG-SS BW1652	ModbusTCP	E	3.0	2	X	X
ASI-ENG-SS-C1D2 BW1659*	ModbusTCP	A	3.0	1		
ASI-ENG-SS-C1D2 BW1660*	ModbusTCP	A2	3.0	2		
ASI-ENG-SS-C1D2 BW1661*	ModbusTCP	E	3.0	2		

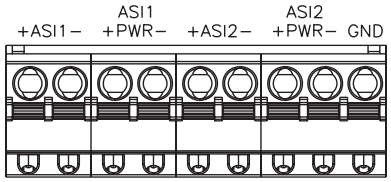
* Approved for use in Class 1, Division 2 areas

Input/Output Connectors

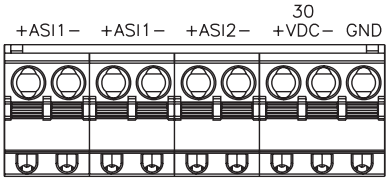
A



A2



E



A - Single AS-I network is powered by and AS-I power supply

A2 - Dual AS-I networks are each powered by their own AS-I power supply

E - Dual AS-I networks are both powered by a single 30 VDC supply, decoupled through the gateway

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AS-I Ethernet/IP Gateways in Stainless Steel

- **AS-I v3.0 Supported**
- **Graphical Display**
- **Integrated Ground-Fault Detection**
- **Integrated AS-I Diagnostics**

ASI-EIPG-SS BW1828*
ASI-EIPG-SS BW1829*
ASI-EIPG-SS BW1833*
ASI-EIPG-SS-C1D2 BW1834
ASI-EIPG-SS-C1D2 BW1835
ASI-EIPG-SS-C1D2 BW1836

* not ETL listed

Electrical

- Operating Current: 300 mA from VAS-$_{I}$ (Power Supply A)
  200 mA from VAS-$_{i1}$, 70mA from VAS-$_{i2}$ (Power Supply A2)
  250 mA from V_{AUX} (Power Supply E)

Power Distribution

- From AS-I supply for each network (Power Supply A, A2)
- From external supply (Power Supply E)

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material

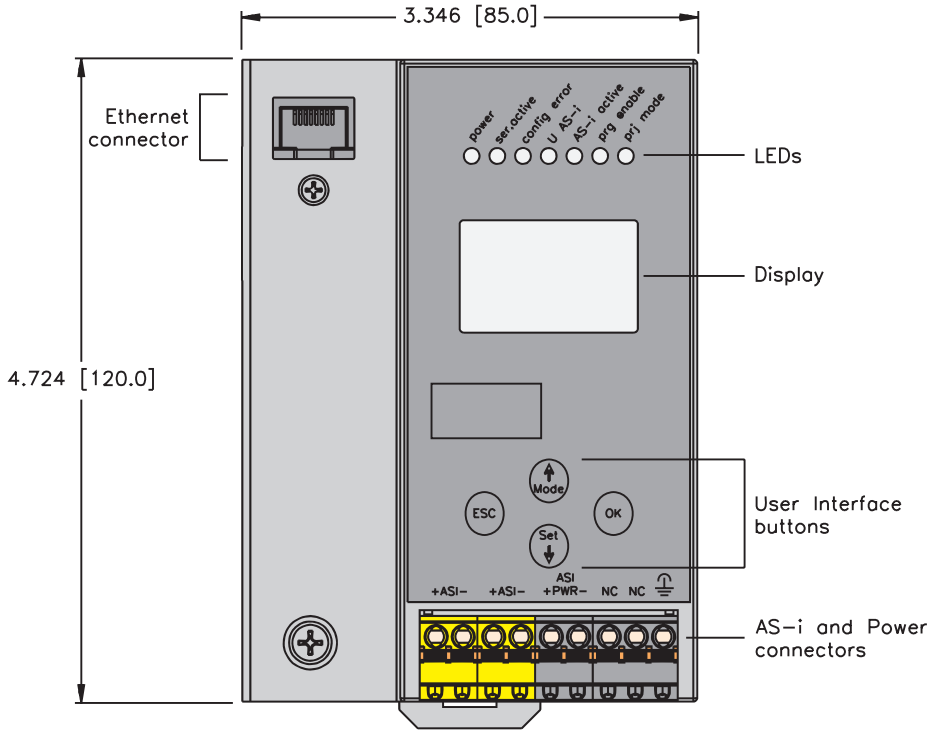
- Housing: Stainless Steel

Diagnostics (Logical)

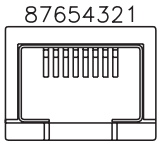
- Health of AS-I network is available via Network interface

Diagnostics (Physical)

- LED to indicate status of network and AS-I communication and power supply



RJ45 Ethernet Standard



1 = WH/or (+TX)
2 = OR (-TX)
3 = WH/GN (+RX)
4 = BU
5 = WH/BU
6 = GN (-RX)
7 = WH/BN
8 = BN

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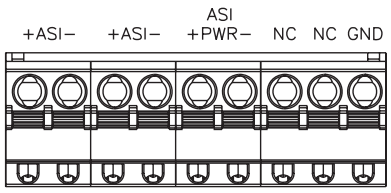
Part Number	Higher Level Network	Power Style	AS-I Version	# of AS-I Masters	Duplicate Address Detection	Programming Interface
ASI-EIPG-SS BW1828	Ethernet/IP	A	3.0	1	X	X
ASI-EIPG-SS BW1829	Ethernet/IP	A2	3.0	2	X	X
ASI-EIPG-SS BW1833	Ethernet/IP	E	3.0	2	X	X
ASI-EIPG-SS-C1D2 BW1834*	Ethernet/IP	A	3.0	1		
ASI-EIPG-SS-C1D2 BW1835*	Ethernet/IP	A2	3.0	2		
ASI-EIPG-SS-C1D2 BW1836*	Ethernet/IP	E	3.0	2		

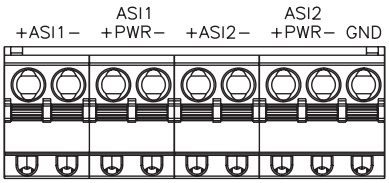
* Approved for use in Class 1, Division 2 areas

Input/Output Connectors

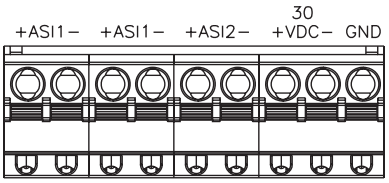
A



A2



E



A - Single AS-I network is powered by and AS-I power supply

A2 - Dual AS-I networks are each powered by their own AS-I power supply

E - Dual AS-I networks are both powered by a single 30 VDC supply, decoupled through the gateway

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AS-I ProfiNET Gateways in Stainless Steel

- **AS-I v3.0 Supported**
- **Graphical Display**
- **Integrated Ground-Fault Detection**
- **Integrated AS-I Diagnostics**

ASI-PNG-SS BW1912

Electrical

- Operating Current: 300 mA from V_{AS-I} (Power Supply A)

Power Distribution

- From AS-I supply

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material

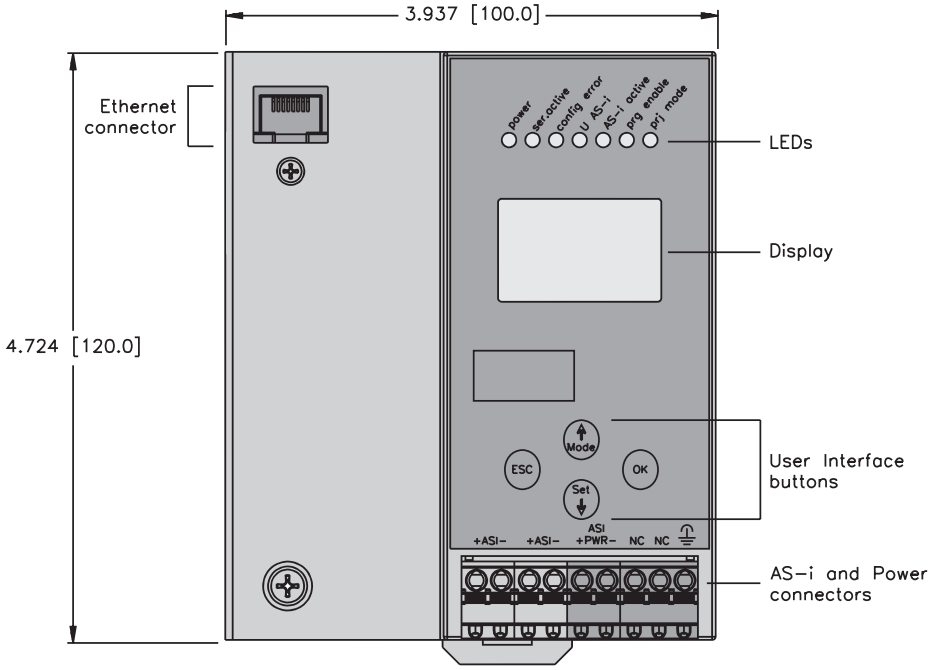
- Housing: Stainless Steel

Diagnostics (Logical)

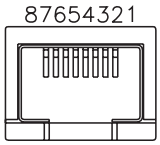
- Health of AS-I network is available via Network interface

Diagnostics (Physical)

- LED to indicate status of network and AS-I communication and power supply



RJ45 Ethernet Standard



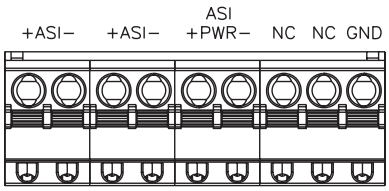
1 = WH/or (+TX)
2 = OR (-TX)
3 = WH/GN (+RX)
4 = BU
5 = WH/BU
6 = GN (-RX)
7 = WH/BN
8 = BN

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Part Number	Higher Level Network	Power Style	AS-I Version	# of AS-I Masters	Duplicate Address Detection	Programming Interface
ASI-PNG-SS BW1912	PROFINET	A	3.0	1	X	X

Input/Output Connectors

A



A - Single AS-I network is powered by and AS-I power supply

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Ethernet, Cable Specifications, 8-wire

- **Cable that Meets the Requirements of TIA/EIA568-B.2 Category 5e Cable for 10 and 100 Base-T Ethernet**
- **Cable is UL Rated for Sunlight and Oil Resistant**

Figure A

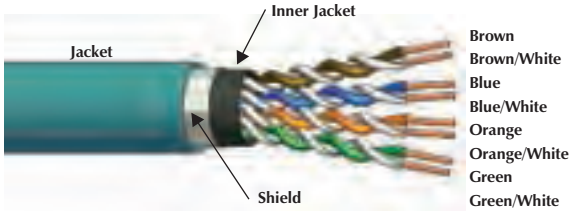
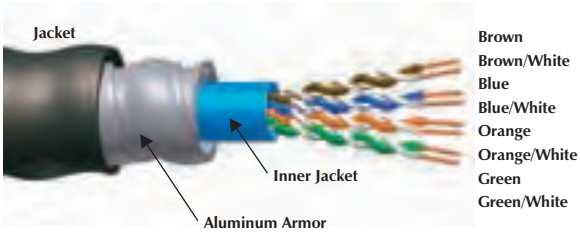


Figure B



Maximum 100 meters of cable of which:

- 90 meters Horizontal Cable (SOLID - 842 or 843)
- 2 x 5 meters Patch Cables (STRANDED - 840 or 841)
- Direct Connect 30 M STRANDED

Type	Approvals	Data Pair		Outer Jacket	Shields	Bulk Cable Part Number / Weight/300 M	Figure
		AWG Color Code	DCR (/1000 feet) Insulation	Material Color Nominal O.D.	Type		
840 75°C 300 Volts	**NEC** CMR (ETL) **CEC** C (ETL)	8/24 AWG Stranded	28.6 Ohms PE	PVC Teal 6.5 mm (.256 in)	None	RB50856-*M 39 lbs. ***flexlife*** ® ††	**A**
841 75°C 300 Volts	**NEC** CMR (ETL) **CEC** C (ETL)	8/24 AWG Stranded	28.6 Ohms PE	PVC Teal 7.3 mm (.286 in)	Foil/Braid	RB50893-*M 50 lbs. ***flexlife*** ††	**A**
842 75°C 100 Volts	**NEC** CMR (ETL) CEC C (ETL)	8/24 AWG Solid	28.6 Ohms PE	PVC Teal 5.9 mm (.231 in)	None	RB50857-*M 39 lbs. ***flexlife*** †	**A**
843 75°C 300 Volts	**NEC** CMR (ETL) CEC C (ETL)	8/24 AWG Solid	28.6 Ohms PE	PVC Teal 7.3 mm (.286 in)	Foil/Braid	RB50894-*M 50 lbs. ***flexlife*** †	**A**
845 50°C 125 Volts	TSB-36 ISO/IEC 11801	8/26 AWG Stranded	37.3 Ohms PE	PUR Teal 6.3 mm (.248 in)	Foil/Braid	RB51305-*M 54 lbs. ***flexlife*** ††† Halogen Free	**A**
849A AWM 444 80°C 300 Volts	**NEC** CMG CEC HL CMG	8/24 AWG Solid	28.6 Ohms PO	PVC Black 15.3 mm (.530 in)	Foil/Braid Armor	RB51100-*M 159 lbs. ***armorfast*** ®	**B**

* Indicates length in meters.
Standard cable lengths are 30, 75, 150, 225 and 300 meters.
† 85 thousand cycles on c-track flexing machine at 1.5" bend radius.
†† 4 million cycles on c-track flexing machine at 1.5" bend radius.
††† 2 million cycles on c-track flexing machine at 1.5" bend radius.

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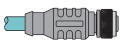
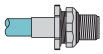
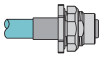
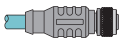
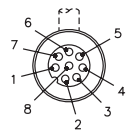
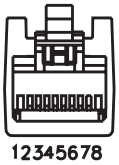
Ethernet, (M12x1) *eurofast*® Cable/Cordset Selection Matrix - Cable Type 840 & 842 Only

			eurofast				
			Pin (Male)	Socket (Female)	Pin (Male)	Socket (Female)	RJ45 Plug
			1 RSC	2  RKC	3  FSFD	4  FKFD	7 RJ45
		Bare	RSC 84x-*M	RKC 84x-*M	FSFD 84x-*M	FKFD 84x-*M	RJ45 84x-*M
eurofast	Pin (Male)	1 RSC	RSC RSC 84x-*M	RSC RKC 84x-*M	RSC FSFD 84x-*M	RSC FKFD 84x-*M	RSC RJ45 84x-*M
	Socket (Female)	2  RKC		RKC RKC 84x-*M	RKC FSFD 84x-*M	RKC FKFD 84x-*M	RKC RJ45 84x-*M
	RJ45 Plug	7 RJ45			RJ45 FSFD 84x-*M	RJ45 FKFD 84x-*M	RJ45 RJ45 84x-*M

See pages F20 - F21 for dimensional drawings.

* Indicates length in meters.
x Indicates cable type.
Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.
Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 meters. Consult factory for other lengths.
For stainless steel coupling nuts change part number RSC … to RSCV, FKFD … to FKFDV.
For cross-over cable, add "CR" to part number RJ45 RJ45 CR 84x-*M.

eurofast	Pinouts	*eurofast*
Male 	1. White/Blue 2. White/Brown 3. Brown 4. Orange 5. White/Green 6. White/Orange 7. Blue 8. Green	Female

Standard Pinout	RJ45 Plug	(CR) Pinout
1. White/Orange 2. Orange 3. White/Green 4. Blue 5. White/Blue 6. Green 7. White/Brown 8. Brown	Male 	1. White/Green 2. Green 3. White/Orange 4. Blue 5. White/Blue 6. Orange 7. White/Brown 8. Brown

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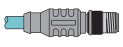
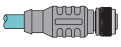
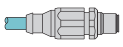
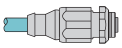
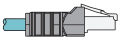
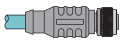
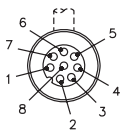
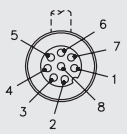
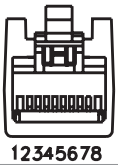
Ethernet, (M12x1) *eurofast*® Cable/Cordset Selection Matrix - Cable Type 841 & 843 Only

			eurofast				
			Pin (Male)	Socket (Female)	Pin (Male)	Socket (Female)	RJ45 Plug
			1  RSS	2  RKS	5  FSSDE	6  FKSDE	7  RJ45S
		Bare	RSS 84x-*M	RKS 84x-*M	FSSDE 84x-*M	FKSDE 84x-*M	RJ45S 84x-*M
eurofast	Pin (Male)	1 RSS	RSS RSS 84x-*M	RSS RKS 84x-*M	RSS FSSDE 84x-*M	RSS FKSDE 84x-*M	RSS RJ45S 84x-*M
	Socket (Female)	2  RKS		RKS RKS 84x-*M	RKSS FSSDE 84x-*M	RKS FKSDE 84-*M	RKS RJ45S 84x-*M
	RJ45 Plug	7 RJ45S			RJ45S FSSDE 84x-*M	RJ45S FKSDE 84x-*M	RJ45S RJ45S 84x-*M

See pages F20 - F21 for dimensional drawings.

* Indicates length in meters.
x Indicates cable type.
Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.
Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 meters. Consult factory for other lengths.
For stainless steel coupling nuts change part number RSS … to RSSV, FKSDE … to FKSDEV.
For cross-over cable, add "CR" to part number RJ45S RJ45S CR 84x-*M.

eurofast	Pinouts	*eurofast*
Male 	1. White/Blue 2. White/Brown 3. Brown 4. Orange 5. White/Green 6. White/Orange 7. Blue 8. Green	**Female** 

Standard Pinout	RJ45 Plug	(CR) Pinout
1. White/Orange 2. Orange 3. White/Green 4. Blue 5. White/Blue 6. Green 7. White/Brown 8. Brown	**Male**  12345678	1. White/Green 2. Green 3. White/Orange 4. Blue 5. White/Blue 6. Orange 7. White/Brown 8. Brown

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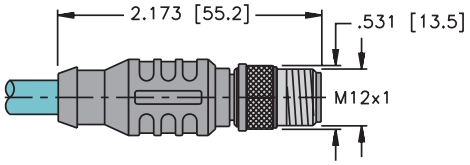
Ethernet, *eurofast*® Cordset Connector Dimensions / Configuration

Specifications

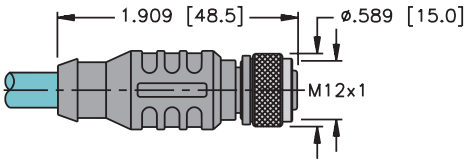
Housing:	PUR (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	60 V
Rated Current:	2 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

1



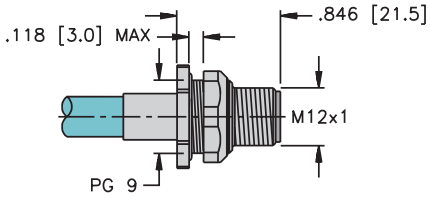
RSC/RSS .. **Pages F18 - F19**

2



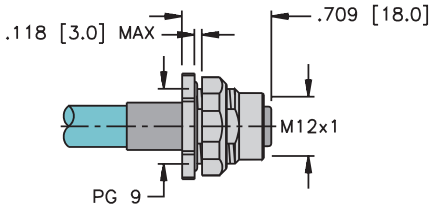
RKC/RKS .. **Pages F18 - F19**

3



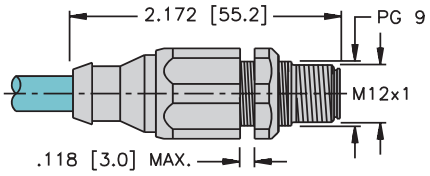
FSFD .. **Pages F18 - F19**

4



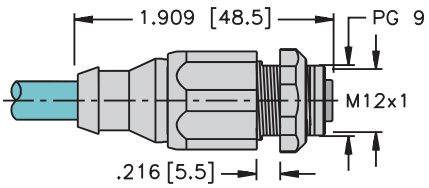
FKFD .. **Pages F18 - F19**

5



FSSDE .. **Pages F18 - F19**

6



FKSDE .. **Pages F18 - F19**

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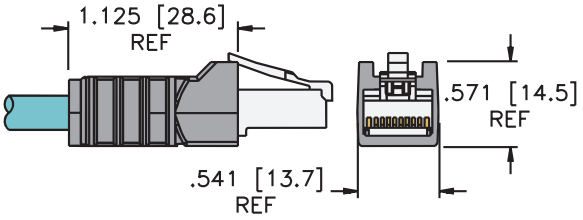
Ethernet, RJ45 Connector Dimensions / Configuration

Specifications

Housing:	Polyolefin
Protection:	NEMA 1 and IEC IP 20
Rated Voltage:	42 V
Rated Current:	1.5 A
Ambient Temperature:	-40° to +80°C (-22° to +176°F)

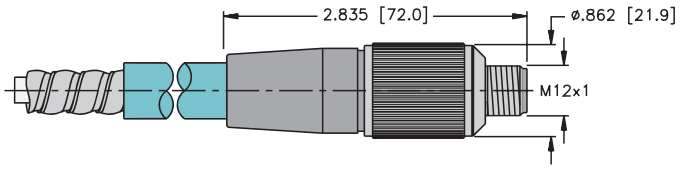
7



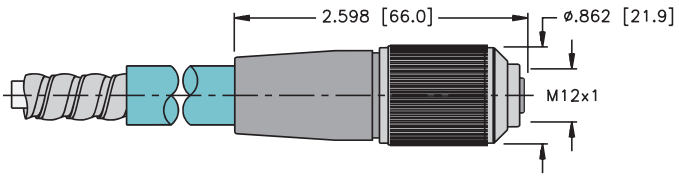
RJ45/RJ45S .. **Page F18 - F19**

Specifications

Housing:	PUR (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	60 V
Rated Current:	2 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)



RSA .. **(*armorfast*® only)**



RKA .. **(*armorfast* only)**

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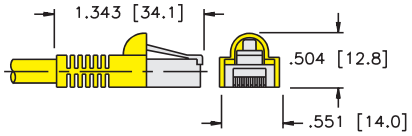
Ethernet, Economy RJ45 to RJ45 Cordsets

- **For "In the Panel" Applications Where Industrial Cordsets are not Needed**
- **Available on Yellow, 3 FT and 7 FT Lengths Only**

	Part Number	Application	Pinout
	RJ45 RJ45 840-3FT/ECON RJ45 RJ45 840-7FT/ECON	• Ethernet patch cordsets for panel connections • Economy, non industrial	Male

RJ45 Plug	Pinout
Male	1. White/Orange 2. Orange 3. White/Green 4. Blue 5. White/Blue 6. Green 7. White/Brown 8. Brown

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Unmanaged Switches

SE-84X-E524
SE-84X-E924
SE-84X4-E524
SE-84X4-E924

CE

- **5 and 9 Ports Available**
- **10/100 Mbps**
- **IP 67 Protection**
- **8-pin Ethernet Connectors**

Electrical

- Power Consumption: 2 W (...-E524), 4 W (...-E924)
- Operating Voltage: 10-30 VDC

Mechanical

- Operating Temperature: -30 to +80°C (-22 to +176°F)
- Protection: NEMA 1,3,4,6,13 and IEC IP 67

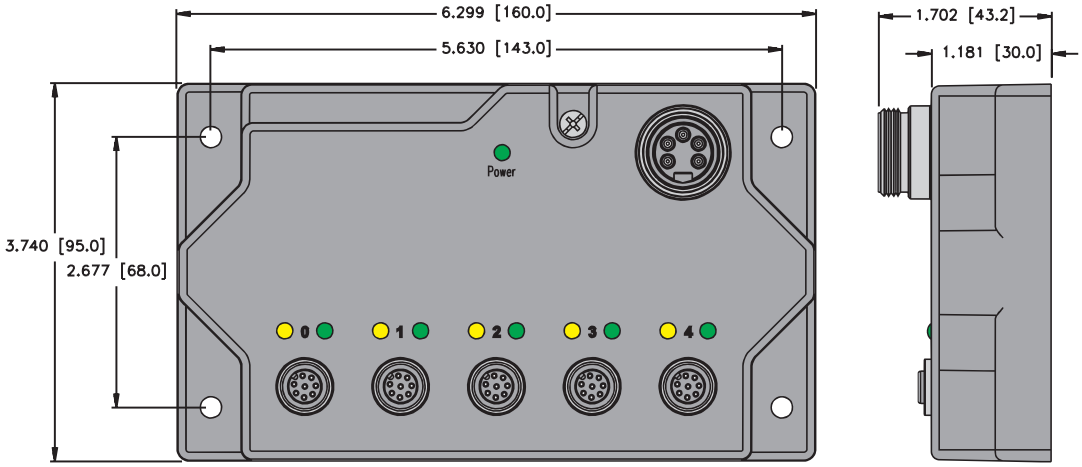
Material

- Housing: Nylon 6 (other materials available on request)
- Connectors: Nickel-plated Brass (other materials available on request)

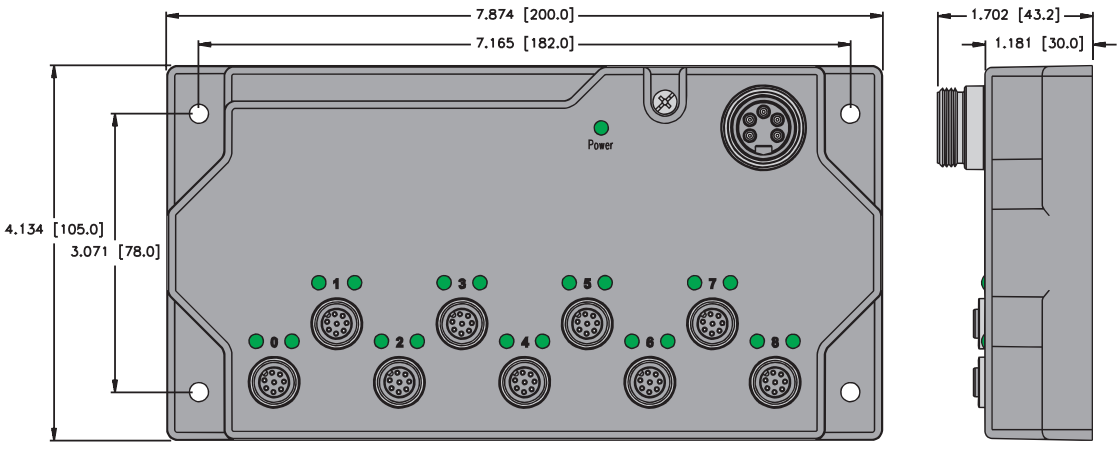
Diagnostics (Physical)

- LEDs to indicate status of Ethernet communication

A



B



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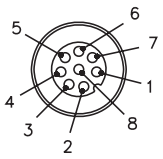
	Inputs			
Part Number	Ports*	Ethernet Pinouts	Power Pinout	Dimensions
SE-84X-E524	5	8E	5M	A
SE-84X-E924	9	8E	5M	B
SE-84X4-E524	5	8E	4M	A
SE-84X4-E924	9	8E	4M	B

* Note: One port for each switch is a dedicated uplink port

Port/Power Connectors

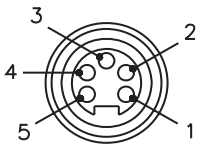
8E



8-pin *eurofast*®

1 = WH/BU
2 = WH/BN
3 = BN
4 = OG (TX-)
5 = WH/GN (RX+)
6 = WH/OG (TX+)
7 = BU
8 = GN (RX-)

5M



5-pin *minifast*® Power

1 = NC
2 = V-
3 = NC
4 = V+
5 = NC

4M

4-pin *minifast* Power

1 = V+
2 = NC
3 = NC
4 = V-

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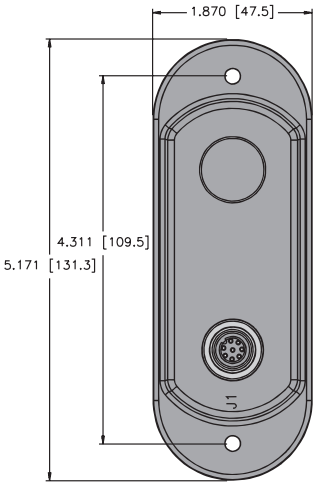
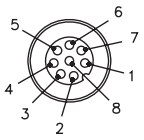
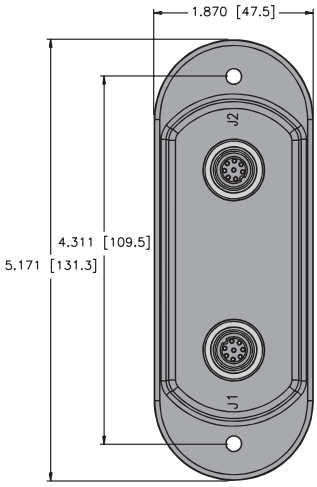
Ethernet, Conduit Adapters, 8-wire

- **Gasket and Mounting Screws Provided**
- **Same Housing Style for Single or Double Port**

Housing	Part Number	Specs	Application	Pinout
	BCA 84-E124	Nylon Housing 60 V, 2 A -40° to +75°C	Attaches to standard conduit body* for transition to 8-wire (M12x1) ***eurofast*** ® connector *Cross Hinds 3/4" Mark 9, Form 8 or Equivalent.	**Female** 
	BCA 84-E224		Attaches to standard conduit body* for transition to 8-wire (M12x1) ***eurofast*** connector *Cross Hinds 3/4" Mark 9, Form 8 or Equivalent.	

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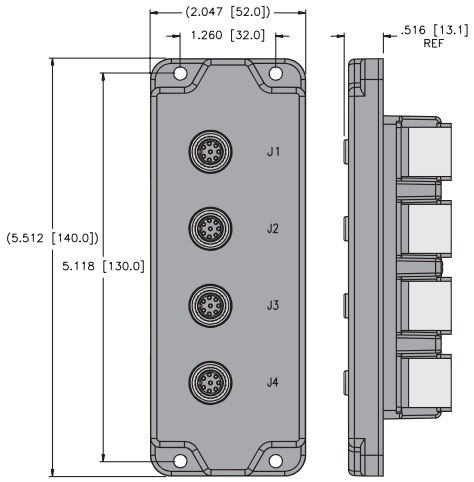
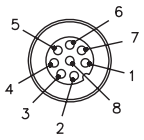
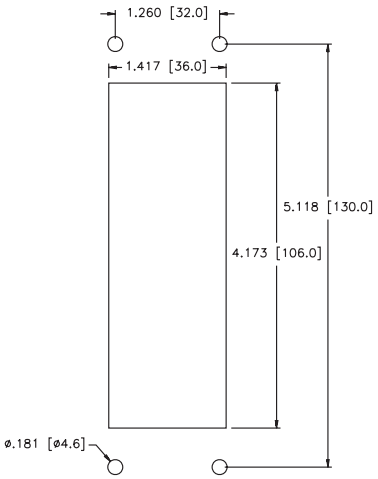
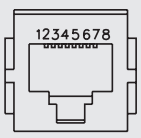
Ethernet, Cabinet Adapter, 8-wire

- **Mounts to any Cabinet for Transition from (M12x1) *eurofast*® 8-Pin Connectors to RJ45 Connectors**
- **Gasket and Mounting Hardware Included (8-32 x 1/2")**

Housing	Part Number	Specs	Application	Pinout
	BIC 84-E424	Nylon Housing 60 V, 2 A -40° to +75°C	Attaches to cabinet for transition to 4-wire (M12x1) ***eurofast*** connector	**Female** 

Panel Dimensions



RJ45 Plug	Pinouts
	1. White/Orange (+TX) 2. Orange (-TX) 3. White/Green (+RX) 4. Blue 5. White/Blue 6. Green (-RX) 7. White/Brown 8. Brown

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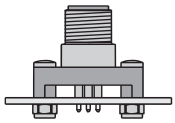
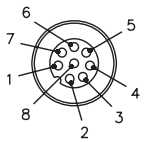
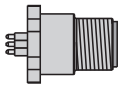
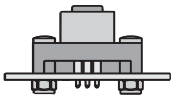
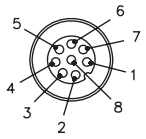
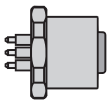
Ethernet, Circuit Board Connectors and OEM Receptacles, 8-wire

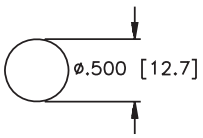
- **Provides (M12x1) *eurofast*® 8-Pin Connection to Field Devices**

Housing	Part Number	Specs	Application	Pinouts	
19 	FS 84 PCB KIT	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +75°C	Male ***eurofast*** with mounting kit	1. WH/BU 2. WH/BN 3. BN 4. OG 5. WH/GN 6. WH/OG 7. BU 8. GN	**Male** 
21 	FS 84 PCB		Male ***eurofast***		
20 	FK 84 PCB KIT		Female ***eurofast*** with mounting kit		**Female** 
22 	FK 84 PCB		Female ***eurofast***		

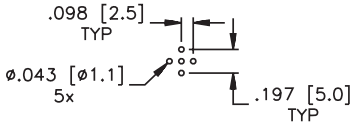
See pages F29 - F30 for dimensional drawings.

Standard housing material is nickel plated brass "FSV .."; "FKV .." indicates 316 stainless steel.

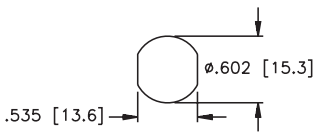
Panel Cutout
FK ... FS



Board Layout (reference only)
FK ... FS



Panel Cutout
FKFD ... FSFD



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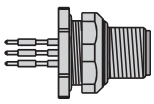
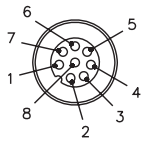
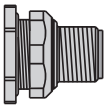
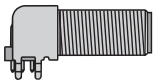
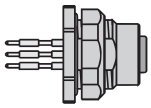
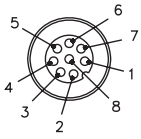
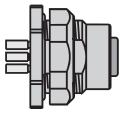
Ethernet, Circuit Board Connectors and OEM Receptacles, 8-wire

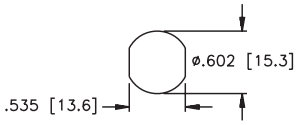
- **Provides (M12x1) *eurofast*® 8-Pin Connection to Field Devices**

Housing	Part Number	Specs	Application	Pinouts	
17 	FSFD 84 PCB	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +75°C	Male ***eurofast*** PCB pins	1. WH/BU 2. WH/BN 3. BN 4. OG 5. WH/GN 6. WH/OG 7. BU 8. GN	Male 
15 	FSFDL 84		Male ***eurofast*** solder cups		
23 	WFS 84 PCB		Male ***eurofast*** right angle PCB pins		
18 	FKFD 84 PCB		Female ***eurofast*** PCB pins		Female 
16 	FKFDL 84		Male ***eurofast*** solder cups		

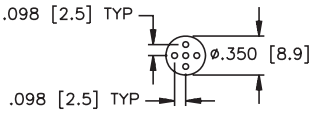
See pages F29 - F30 for dimensional drawings.

Standard housing material is nickel plated brass "FKFD.."; "FKFDV.." indicates 316 stainless steel.

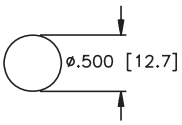
Panel Cutout
FKFD … FSFD



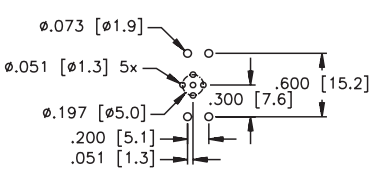
Board Layout (reference only)
FKFD … FSFD



Panel Cutout
WFS



Board Layout (reference only)
WFS



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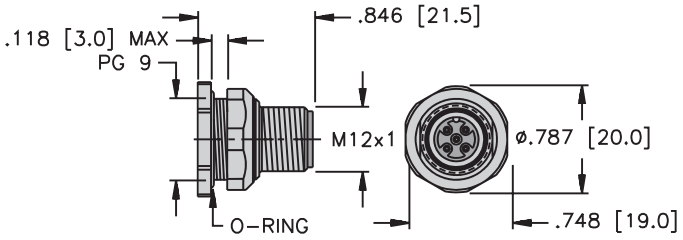
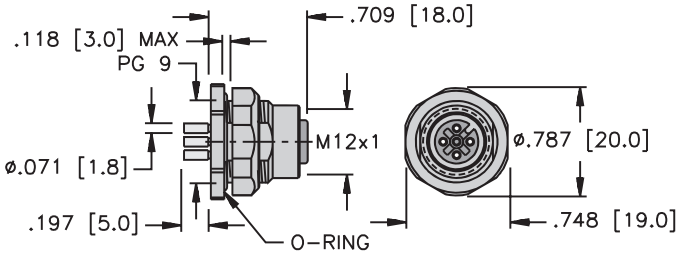
eurofast® PCB Mount Male and Female Receptacles

15



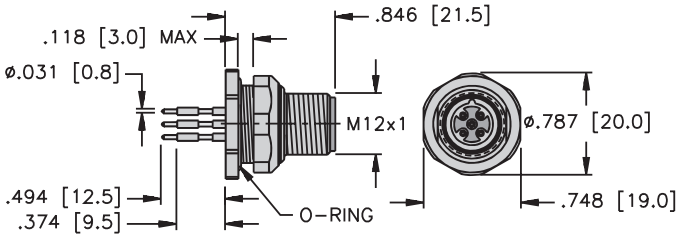
FSFDL .. **Page F28**

16



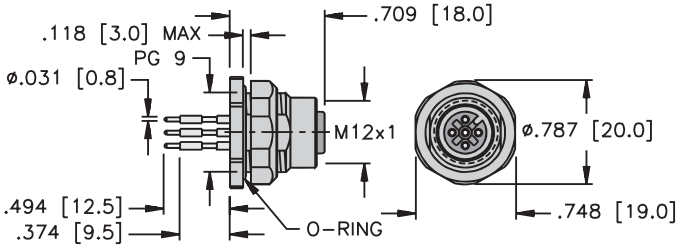
FKFDL .. **Page F28**

17



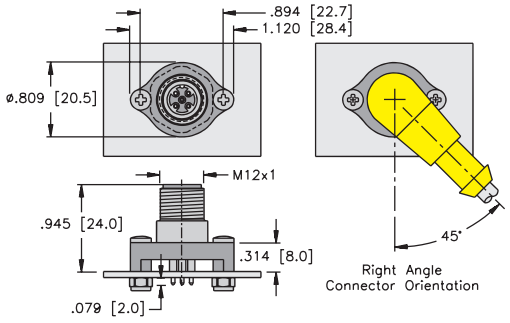
FSFD .. PCB **Page F28**

18



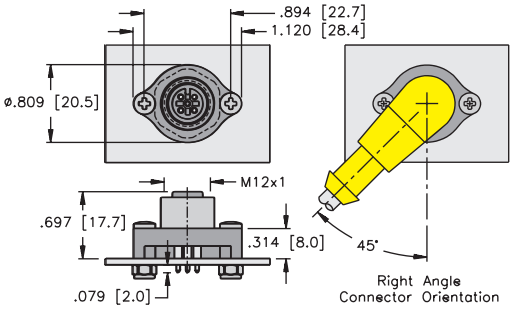
FKFD .. PCB **Page F28**

19



FS .. PCB KIT **Page F27**

20



FK .. PCB KIT **Page F27**

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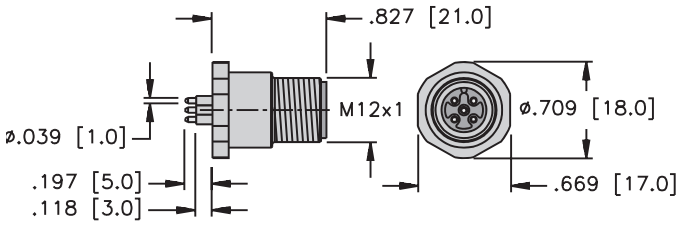
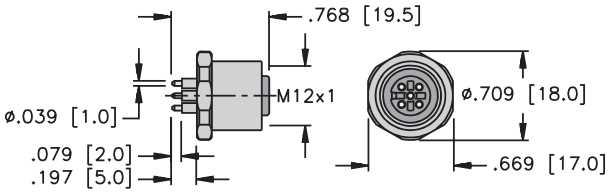
eurofast® PCB Mount Male and Female Receptacles

21



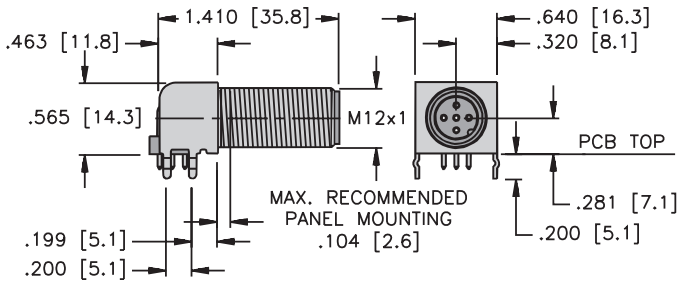
FS .. PCB KIT **Page F27**

22



FK .. PCB KIT **Page F27**

23



WFS .. PCB **Page F28**

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Ethernet, Cable Specifications, 4-wire

- **Cable that Meets the Requirements of TIA/EIA568-B.2 Category 5e Performance Requirements Cable for 10 and 100 Base-T Ethernet**
- **Compliant with Ethernet/IP Standards**
- **Cable is UL Rated for Sunlight and Oil Resistant**

Figure A

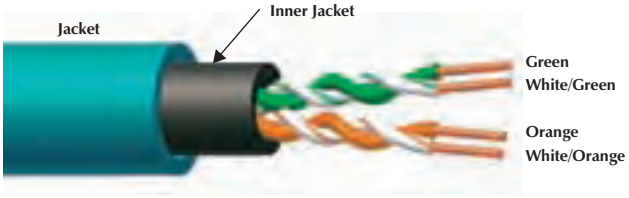
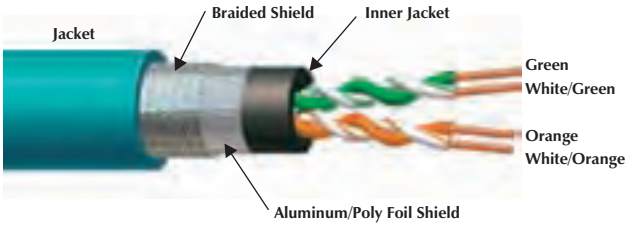


Figure B



Maximum 100 meters of cable of which:

- 90 meters Horizontal Cable (SOLID - 442 or 443)
- 2 x 5 meters Patch Cables (STRANDED - 440 or 441)

Type	Approvals	Data Pair		Outer Jacket	Shields	Bulk Cable Part Number / Weight/300 M	Figure
		AWG Color Code	DCR (/1000 feet) Insulation	Material Color Nominal O.D.	Type		
440 75°C 300 Volts	**NEC** CMR **CEC** C(UL) CMR	4/24 AWG Stranded	28.6 Ohms PO	PVC Teal 6.9 mm (.270 in)	None	RB51210-*M 29 lbs.	**A**
441 75°C 300 Volts	**NEC** CMR **CEC** C(UL) CMR	4/24 AWG Stranded	28.6 Ohms PO	PVC Teal 7.2 mm (.285 in)	Foil/Braid	RB51211-*M 44 lbs.	**B**
442 75°C 100 Volts	**NEC** CMR **CEC** C(UL) CMR	4/24 AWG Solid	28.6 Ohms PO	PVC Teal 6.4 mm (.250 in)	None	RB51212-*M 27 lbs.	**A**
443 75°C 300 Volts	**NEC** CMR **CEC** C(UL) CMR	4/24 AWG Solid	28.6 Ohms PO	PVC Teal 7.1 mm (.280 in)	Foil/Braid	RB51213-*M 49 lbs.	**B**
4410 50°C 124 Volts	TSB-36 ISO/IEC 11801	4/26 AWG Stranded	37.3 Ohms PE	PUR Teal 6.1 mm (.240 in)	Foil/Braid	RB51306-*M 48 lbs. ***flexlife***®† Halogen Free	**A**

* Indicates length in meters.
Standard cable lengths are 30, 75, 150, 225 and 300 meters. Consult factory for other lengths.
† 2.5 million flex motions at 12.5x cable diameter bend radius.

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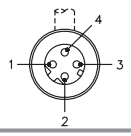
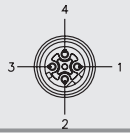
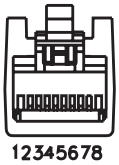
Ethernet, (M12x1) *eurofast*® Cables and Extensions - Cable Type 440 & 442 D-coded

		eurofast				
		Pin (Male)	Socket (Female)	Pin (Male)	Socket (Female)	RJ45 Plug
		8 RSCD	9 RKCD	12 FSFDD	13 FKFDD	14 RJ45
	Bare	RSCD 44x-*M	RKCD 44x-*M	FSFDD 44x-*M	FKFDD 44x-*M	RJ45 44x-*M
eurofast Pin (Male)	8 RSCD	RSCD RSCD 44x-*M	RSCD RKCD 44x-*M	RSCD FSFDD 44x-*M	RSCD FKFDD 44x-*M	RSCD RJ45 44x-*M
eurofast Socket (Female)	9 RKCD		RKCD RKCD 44x-*M	RKCD FSFDD 44x-*M	RKCD FKFDD 44x-*M	RKCD RJ45 44x-*M
eurofast RJ45 Plug	14 RJ45			RJ45 FSFDD 44x-*M	RJ45 FKFDD 44x-*M	RJ45 RJ45 44x-*M

See pages F34 - F35 for dimensional drawings.

* Indicates length in meters.
x Indicates cable type.
Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.
Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 meters. Consult factory for other lengths.
For stainless steel coupling nuts change part number RSCD … RSCDV, FSFDED … FSFDEDV.

eurofast	Pinouts	*eurofast*
Male 	1. White/Orange (+ tx) 2. White/Green (+rx) 3. Orange (-tx) 4. Green (-rx)	**Female** 

RJ45 Pinout	RJ45 Plug	RJ45 (CR) Pinout
1. White/Orange 2. Orange 3. White/Green 4. N/C 5. N/C 6. Green 7. N/C 8. N/C	**Male**  12345678	1. White/Green 2. Green 3. White/Orange 4. N/C 5. N/C 6. Orange 7. N/C 8. N/C

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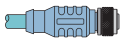
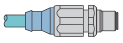
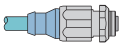
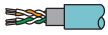
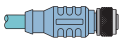
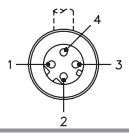
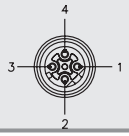
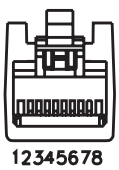
Ethernet, (M12x1) *eurofast*® Cables and Extensions - Cable Type 441 & 443 D-coded

			eurofast				
			Pin (Male)	Socket (Female)	Pin (Male)	Socket (Female)	RJ45 Plug
			8 RSSD	9  RKSD	10  FSSDED	11  FKSDED	14 RJ45S
		 Bare	RSSD 44x-*M	RKSD 44x-*M	FSSDED 44x-*M	FKSDED 44x-*M	RJ45S 44x-*M
eurofast	Pin (Male)	8 RSSD	RSSD RSSD 44x-*M	RSSD RKSD 44x-*M	RSSD FSSDED 44x-*M	RSSD FKSDED 44x-*M	RSSD RJ45S 44x-*M
	Socket (Female)	9  RKSD		RKSD RKSD 44x-*M	RKSD FSSDED 44x-*M	RKSD FKSDED 44x-*M	RKSD RJ45S 44x-*M
	RJ45 Plug	14 RJ45S			RJ45S FSSDED 44x-*M	RJ45S FKSDED 44x-*M	RJ45S RJ45S 44x-*M

See pages F34 - F35 for dimensional drawings.

* Indicates length in meters.
x Indicates cable type.
Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.
Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 meters. Consult factory for other lengths.
For stainless steel coupling nuts change part number RSSD … RSSDV, FSSDED … FSSDEDV.

eurofast	Pinouts	*eurofast*
Male 	1. White/Orange (+ tx) 2. White/Green (+rx) 3. Orange (-tx) 4. Green (-rx)	Female 

RJ45 Pinout	RJ45 Plug	RJ45 (CR) Pinout
1. White/Orange 2. Orange 3. White/Green 4. N/C 5. N/C 6. Green 7. N/C 8. N/C	Male  12345678	1. White/Green 2. Green 3. White/Orange 4. N/C 5. N/C 6. Orange 7. N/C 8. N/C

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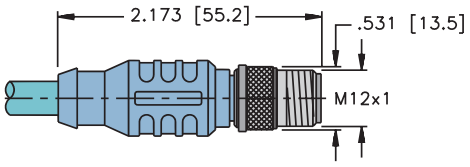
Ethernet, *eurofast*® Cordset Connector Dimensions / Configuration

Specifications

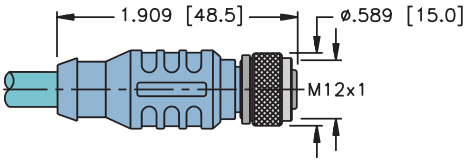
Housing:	TPU (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

8



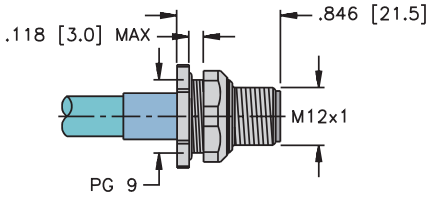
RSCD/RSSD .. **Pages F32 - F33**

9



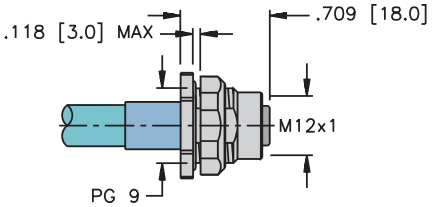
RKCD/RKSD .. **Pages F32 - F33**

10



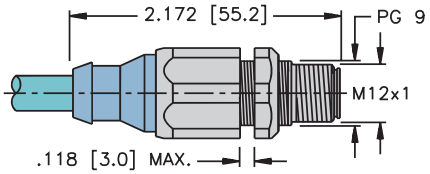
FSFDD .. **Pages F32 - F33**

11



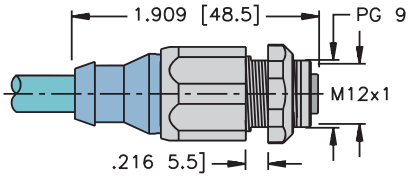
FKFDD .. **Pages F32 - F33**

12



FSSDED .. **Pages F32 - F33**

13



FKSDED .. **Pages F32 - F33**

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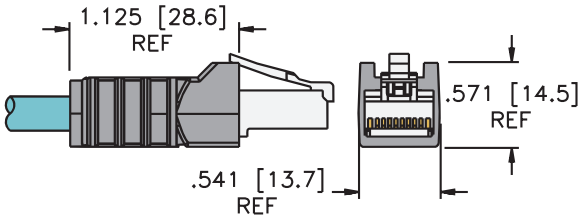
Ethernet, RJ45 Connector Dimensions / Configuration

Specifications

Housing:	Polyolefin
Protection:	NEMA 1, 3, 4, 6P and IEC IP 20
Rated Voltage:	42 V
Rated Current:	1.5 A
Ambient Temperature:	-40° to +80°C (-22° to +176°F)

14



RJ45/RJ45S ..

Pages F32 - F33

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Notes:

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Unmanaged Switches

SE-44X-E524
SE-44X-E924
SE-44X4-E524
SE-44X4-E924

- **5 and 9 Ports Available**
- **10/100 Mbps**
- **IP 67 Protection**
- **4-pin Ethernet Connectors**

Electrical

- Power Consumption: 2 W (...-E524), 4 W (...-E924)
- Operating Voltage: 10-30 VDC

Mechanical

- Operating Temperature: -30 to +80°C (-22 to +176°F)
- Protection: NEMA 1,3,4,6,13 and IEC IP 67

Material

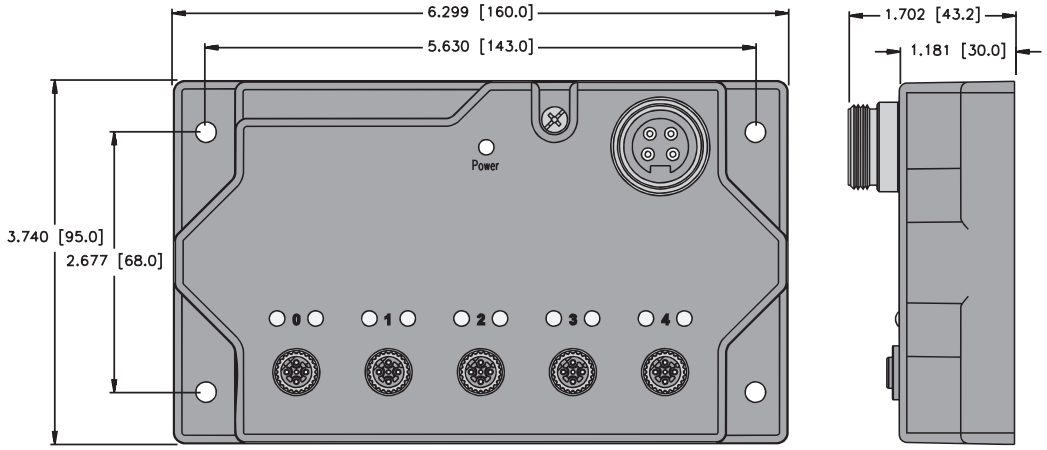
- Housing: Nylon 6 (other materials available on request)
- Connectors: Nickel-plated Brass (other materials available on request)

Diagnostics (Physical)

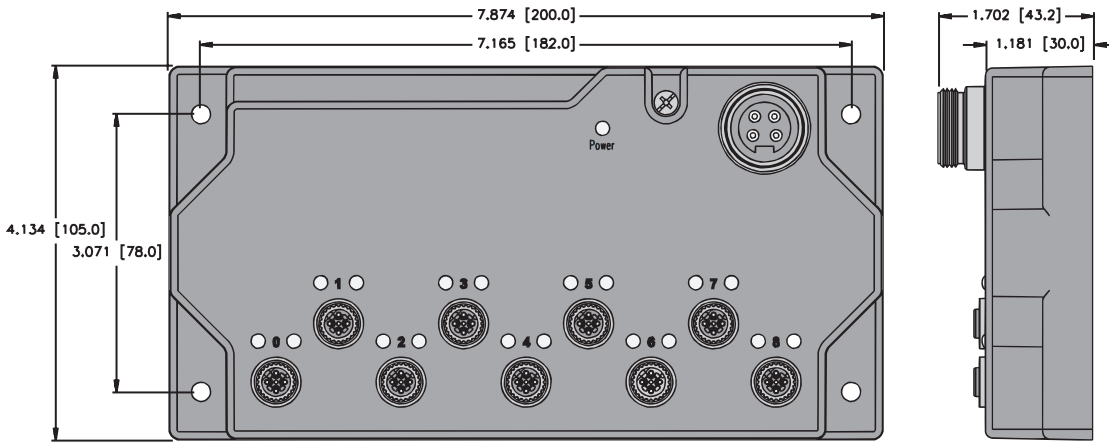
- LEDs to indicate status of Ethernet communication

CE

A



B



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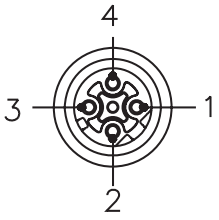
Part Number	Ports*	Ethernet Pinouts	Power Pinout	Dimensions
SE-44X-E524	5	4E	5M	A
SE-44X-E924	9	4E	5M	B
SE-44X4-E524	5	4E	4M	A
SE-44X4-E924	9	4E	4M	B

* Note: One port for each switch is a dedicated uplink port

Input/Output Connectors

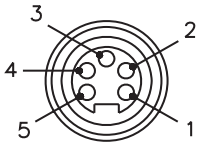
4E



4-pin *eurofast*® Female

1 = WH/OG (TX+)
2 = WH/GN (RX+)
3 = OG (TX-)
4 = GN (RX-)

5M



5-pin *minifast*® Power

1 = NC
2 = V-
3 = NC
4 = V+
5 = NC

4M

4-pin *minifast* Power

1 = V+
2 = NC
3 = NC
4 = V-

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Unmanaged switches

- **Molded Cords for Panel Mounting**
- **10/100 Mbps**
- **IP 67 Protection**
- **8-pin Ethernet Connectors**

SE-84ST-E524/C1165
SE-84ST-E924/C1165
SE-84ST-E924/C1190

Electrical

- Power Consumption: 2 W (...-E524), 4 W (...-E924)
- Operating Voltage: 10-30 VDC

Mechanical

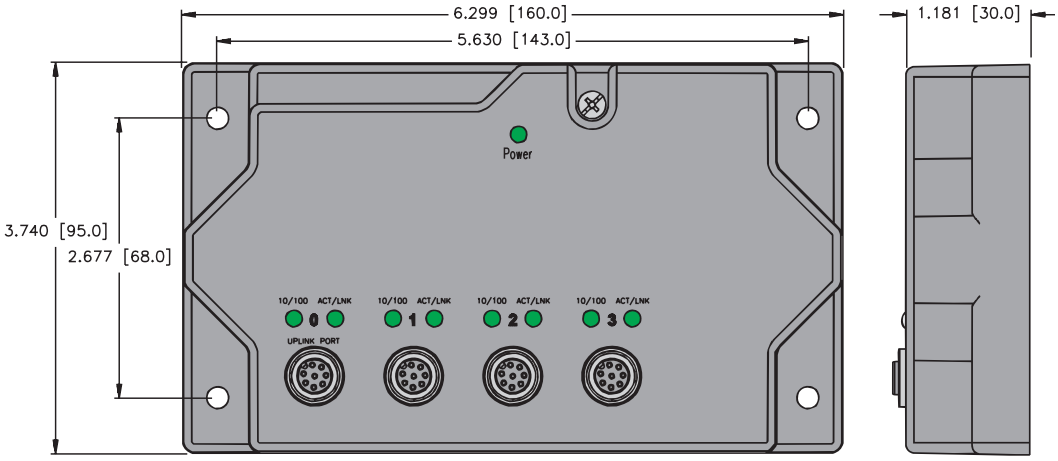
- Operating Temperature: -30 to +80 °C (-22 to +176 °F)
- Protection: NEMA 1,3,4,6,13 and IEC IP 67

Material

- Housing: Nylon 6 (other materials available on request)
- Connectors: Nickel-plated Brass (other materials available on request)

Diagnostics (Physical)

- LEDs to indicate status of Ethernet communication



In-Cabinet Ethernet Connector

1 = WH/or (+TX)
2 = OR (-TX)
3 = WH/GN (+RX)
4 = BU
5 = WH/BU
6 = GN (-RX)
7 = WH/BN
8 = BN

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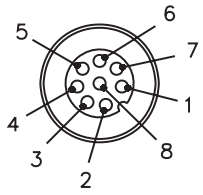
Part Number	Ports*	Ethernet Pinout	Power Pinout	Dimensions
SE-84ST-E524/C1165	5	8E	2Wire	A
SE-84ST-E924/C1165	9	8E	2Wire	B
SE-84ST-E924/C1190	9	8E	2Wire	B

Notes:
* One port for each switch is a dedicated uplink port.
…/C1165 have one port in the cabinet; …/C1190 has two ports in the cabinet.

Input/Output Connectors

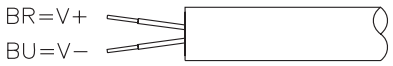
8E



8-pin *eurofast*®

1 = WH/BU
2 = WH/BN
3 = BN
4 = OG (TX-)
5 = WH/GN (RX+)
6 = WH/OG (TX+)
7 = BU
8 = GN (RX-)

2-Wire



Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Managed switches

- **8 Ports Available**
- **Configuration Port**
- **IP 67 Protection**
- **4-pin Ethernet Connectors**

SE-44M-E924

Electrical

- Power Consumption: 4 W
- Operating Voltage: 10-30 VDC

Mechanical

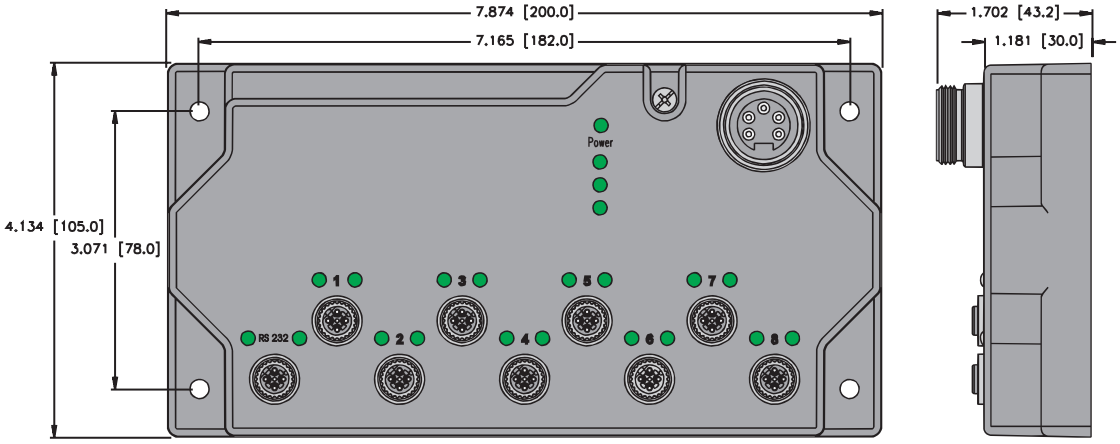
- Operating Temperature: -30 to +80 °C (-22 to +176 °F)
- Protection: NEMA 1,3,4,6,13 and IEC IP 67

Material

- Housing: Nylon 6 (other materials available on request)
- Connectors: Nickel-plated Brass (other materials available on request)

Diagnostics (Physical)

- LEDs to indicate status of Ethernet communication



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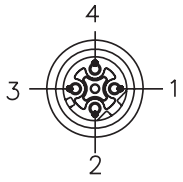
Inputs

Part Number	Ports*	Ethernet Pinout	Power Pinout	Dimensions
SE-44M-E924	8	4E	5M-2	A

* Note: 8 Ethernet ports plus one RS232 configuration port

Port/Power Connectors

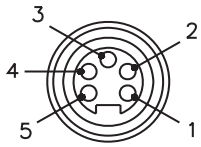
4E



4-pin *eurofast*® Female

1 = WH/OG (TX+)
2 = WH/GN (RX+)
3 = OG (TX-)
4 = GN (RX-)

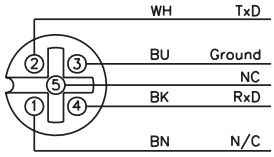
5M-2



5-pin *minifast*® Power

1 = Gnd
2 = Gnd
3 = Ok
4 = V_1+
5 = V_2+

Configuration Port 232



Mating cordset:
RK 4.4T-*-RS 4.4T

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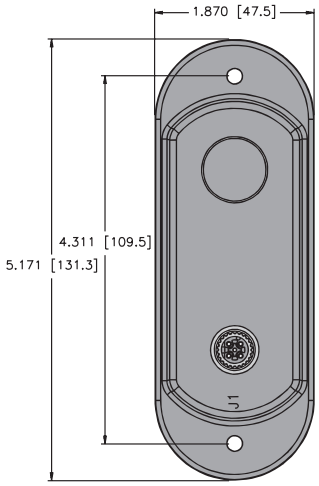
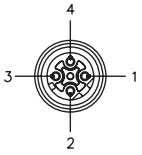
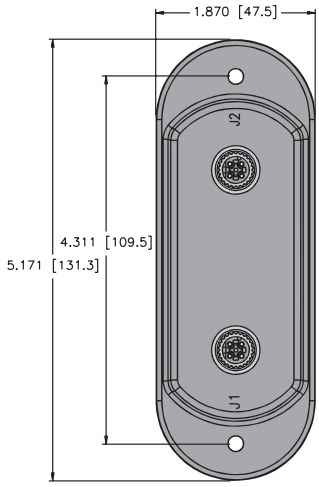
Ethernet, Conduit Adapters, 4-wire

- **Gasket and Mounting Screws Provided**
- **Same Housing Style for Single or Double Port**

Housing	Part Number	Specs	Application	Pinout
	BCA 44-E123	Nylon Housing 250 V, 9A -40° to +75°C	Attaches to standard conduit body* for transition to 4-wire (M12x1) ***eurofast*** ® connector *Cross Hinds 3/4" Mark 9, Form 8 or Equivalent.	**Female** 
	BCA 44-E223		Attaches to standard conduit body* for transition to 4-wire (M12x1) ***eurofast*** connector *Cross Hinds 3/4" Mark 9, Form 8 or Equivalent.	

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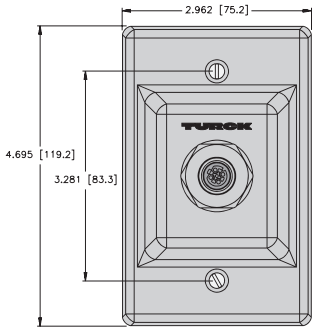
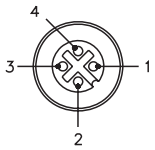
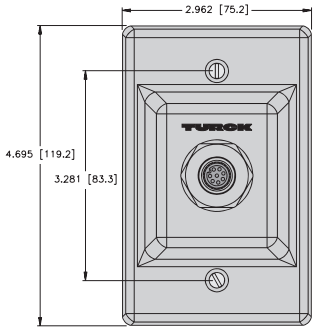
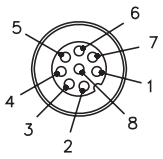
Ethernet, Wall Plate Adapters, 4 and 8-wire

- **Gasket and Mounting Screws Provided**
- **For Use with a Single Gang Electrical Box**

Housing	Part Number	Specs	Application	Pinouts
	BPA-44-E113	Stainless Steel 30 VAC/36 VDC, 1.5 A -40 to +70°C (-40 to +158°F)	Attaches to standard single gang electrical box for transition to 4-wire (7/8-16UN) ***eurofast*** connector w/punch-down blocks	
	BPA-84-E113		Attaches to standard single gang electrical box for transition to 8-wire (M12x1) ***eurofast*** connector w/punch-down blocks	

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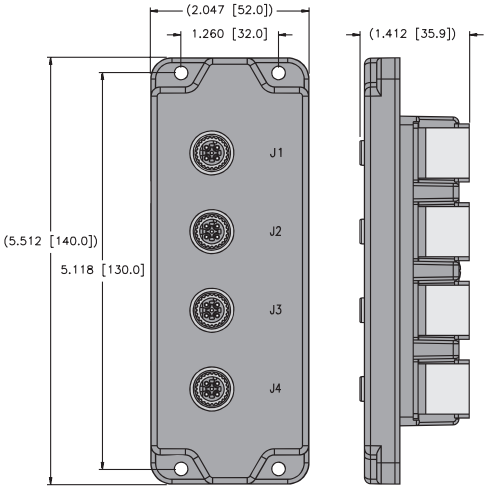
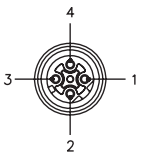
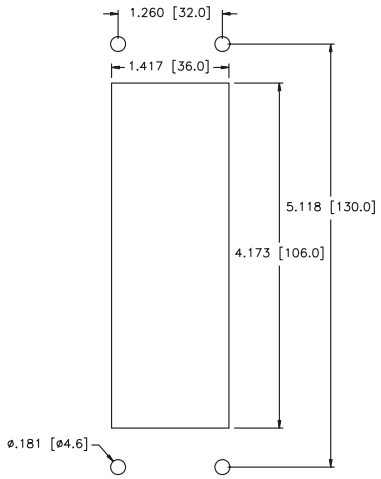
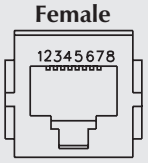
Ethernet, Cabinet Adapter, 4-wire

- **Mounts to Any Cabinet for Transition from (M12x1) *eurofast*® 4-Pin Connectors to RJ45 Connectors**
- **Gasket and Mounting Hardware Included (8-32 x 1/2")**

Housing	Part Number	Specs	Application	Pinout
	BIC 44-E424	Nylon Housing 250 V, 4 A -40° to +75°C	Attaches to cabinet for transition to 4-wire (M12x1) ***eurofast*** connector	**Female** 

Panel Dimensions



RJ45 Receptacle	Pinout
Female 	1. White/Orange (+TX) 2. Orange (-TX) 3. White/Green (+RX) 4. N/C 5. N/C 6. Green (-RX) 7. N/C 8. N/C

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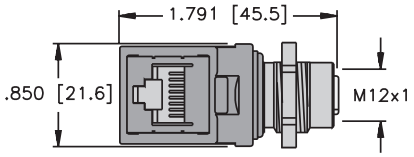
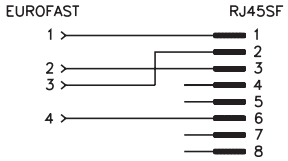
Ethernet, Receptacle

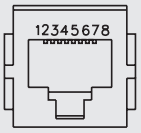
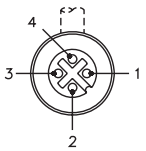
- **Transitions from a RJ45 Connector to a 4-wire *eurofast*® Connector**

Housing	Part Number	Application
	FKSDD RJ45SF 44	Polyurethane PUR Overmold 42 V, 1.5 A -40° to +75°C

Panel mounting clearance hole 19/32" (15 mm). Panel thickness: .060-.120" (1.5-3 mm)

Wiring Diagram



RJ45 Receptacle	Pinouts	*eurofast* Female
Female 	1. White/Orange (+TX) 2. Orange (-TX) 3. White/Green (+RX) 4. N/C 5. N/C 6. Green (-RX) 7. N/C 8. N/C	Female 

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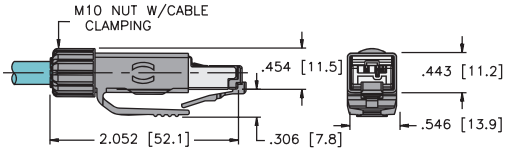
Ethernet, RJ45 Field Wireable

- Allows for Quick Connections in the Field
- Fully Shielded
- Includes Assembly Instructions

Housing	Part Number	Application	Pinout
	Connector, RJ45S IDC	*RJ45 4-wire field wireable*	Male

RJ45 Plug	Pinout
Male	1. White/Orange (+TX) 2. Orange (-TX) 3. White/Green (+RX) 4. N/C 5. N/C 6. Green (-RX) 7. N/C 8. N/C

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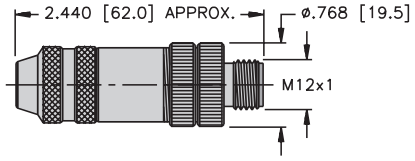
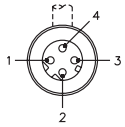
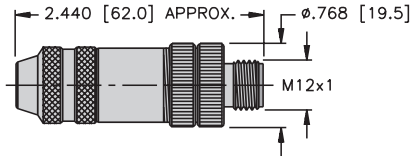
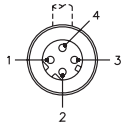
Ethernet, 4-Pin D-coded Field Wireables

- Allows for Quick Connections when Pre-Molded Cables are not Available
- Available in Male, Straight and Right Angle Connector Configurations

Housing	Part Number	Application	Pinout
	CMBSD 8141-0/PG9	*Mates with female 4-pin D-coded eurofast® cordsets and receptacles*	Male 
	CMBSD 8241-0/PG9		Male 

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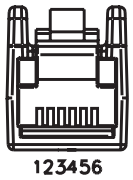
Ethernet®, RJ11 Cordsets

- **Double Ended**
- **Available in 1, 2, 5 Meter Extended Lengths**

Part Number	Specs	Application	Pinouts	
RJ11S RJ11S 4412-*M	PVC 1.5 A 42 V -40° to +75°C	Industrial phone connection RJ11 connector	1. N/C 2. White/Orange (+TX) 3. Orange (-TX) 4. White/Green (+RX) 5. Green (-RX) 6. N/C	

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AS-interface Selection Guide

Higher-Level Masters	Pages
Allen-Bradley	G11
DeviceNet	G13
Ethernet	G15 - G18
ProfiNET	G19
PROFIBUS-DP	G20 - G24
CANopen	G25
Modbus	G27
Modbus Plus	G29
CC-Link	G31
RS232	G33
PCI	G35
ISA	G35

Power	Pages
Supplies, Decoupled	G93 - G94
Supplies, Non-Decoupled	G95 - G96
Extenders	G97
Decoupler	G98
Safety Monitors	G99

Repeater	Tuner	Couplers
G75, G77	G79	G103

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AS-interface Selection Guide

AIM	Pages
Discrete Input	G37
Discrete Output	G45
Discrete Input & Output	G39 - G43

Conduit Body	Pages
Discrete Input & Output	G47

IP 20 Slice	Pages
Analog Input	G49 - G55
Analog Output	G57 - G61

IP 65 Block	Pages
Analog Input	G63 - G67
Analog Output	G69
Special Function, Code Block	G73
Special Function, Counter	G71

OEM	Pages
PC-Boards	G81 - G91
Safety Input & Output	G101

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AS-interface Selection Guide

Cables
G112 - G116

Junctions
G117 - G136

Conduit Adapters
G137 - G138

Tees
G139

Gender Changers
G140, G153

Field Wireable Tees
G141

Flat Cable and Adapters
G142

Receptacles
G143 - G150

Field Wireable Connectors
G151 - G152

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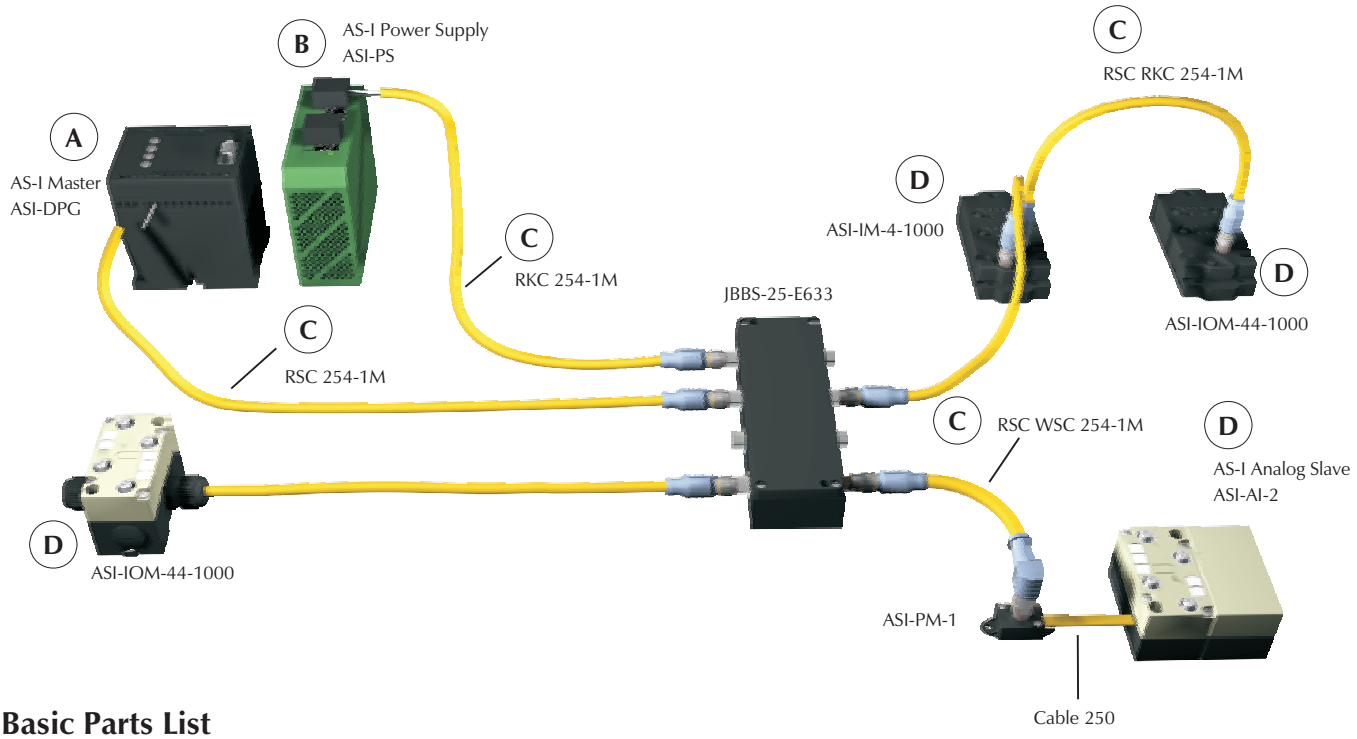
AS-interface® System Description

AS-interface (commonly referred to as AS-I) is a low-level I/O interface system. It was originally intended to be a simple, low cost system that would be easy to install and maintain. With that philosophy in mind, the original developers designed AS-I as a discrete-only two-wire system. It incorporated features like automatic station addressing, and power and data were carried on a single untwisted pair of wires.

As the demand for AS-I grew, so did the demand for more complex devices. The next major version of AS-I, v2.1, extended the protocol to include seamless transfer of analog data, transmission of simple diagnostic data and an extended addressing up to a 62 node scheme that effectively doubled the number of stations allowed on the network. The newest version of AS-I, v3.0, has gone even further, allowing more options for analog data and much more detailed diagnostic information to be communicated. New versions of AS-I are backward compatible and support slaves from earlier versions. Additionally, AS-I was one of the first network systems to incorporate a safety protocol, allowing emergency-stop and machine-stop systems to be seamlessly integrated with the network.

AS-I can be used as a stand alone network or can be connected to a higher level system, such as DeviceNet™ or PROFIBUS®-DP, through a gateway. The gateway acts as a slave to the higher system and a master to the AS-I system.

Typical System Configuration



Basic Parts List

A typical AS-I system consists of the following parts:

A = Master
B = AS-I Power Supply
C = AS-I Cable
D = AS-I I/O Modules (or Slaves)

AS-I stations require a network master (also called a scanner) to interface the stations to the host controller. In some cases the scanner and controller are packaged as a single unit; in other cases the scanner acts as a gateway to a higher level network or to a PLC. **TURCK** AS-I stations are designed to be fully compatible with AS-I equipment from other manufacturers.

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TURCK & Bihl+Wiedemann

Bihl+Wiedemann, considered the "AS-I masters", is the leading supplier of AS-I master and gateway products. Their broad product range enables users to select from a wide variety of higher level fieldbuses or PC/PLC control solutions. Additionally, Bihl+Wiedemann provides a wide variety of analog AS-I slaves, PC-board level devices for OEMs and sophisticated AS-I accessory products. **TURCK** has partnered with Bihl+Wiedemann to distribute and support their products in North America.

Cordsets

TURCK offers a complete line of molded AS-I cordsets to facilitate network installation, resulting in a faster start-up and fewer wiring errors. The bus and drop cables are specially designed foil-shielded, high-flex cables with very low inductance and capacitance to minimize propagation delay time. AS-I cables consist of a single untwisted and unshielded wire pair that carries both 30 VDC power and the network data. AS-I was originally designed for use with flat cable using an insulation displacement connection technology, but the use of round cables with sealed connectors has become more common. **TURCK** provides both cable options.

Diagnostics

AS-I has limited field diagnostic capability, due to the limited amount of data transferred in each message. Although with v2.1, a peripheral fault bit can be reported by an AS-I station to indicate a fault with a field device. This allows the user to easily determine the location of a system fault down to the station level. AS-I v3.0 has even more diagnostic capabilities, allowing asynchronous "mailbox" messaging to receive more detailed error information.

Bihl+Wiedemann AS-I masters provide comprehensive information about the status of each station on the network by using register based tables to display each occupied network address.

Addressing

The original AS-I system allowed only 4 bits of data to be transferred in each message for a fast and efficient data transfer system. Slaves could be addressed from one to 31, but with the growth of the network more than 31 stations were often required. Beginning with AS-I v2.1 stations were available with "AB" addressing. This scheme allows the station to be addressed from 1A to 31A or 1B to 31B, with 62 total slaves with four discrete inputs and three discrete outputs each. The extended address range (and the three outputs) is achieved by using one output bit as an AB address.

When both A and B addressed slaves are on the same network, they are scanned on alternating cycles (first all the A slaves are scanned, then all the B slaves). Both AB and single-address slaves can be on the same network. In this case the single-address (non AB style) slaves are scanned every cycle. It's important to note that not all v2.1 slaves use this addressing scheme, although it is often referred to as v2.1 addressing.

Analog Data

Although the original AS-I version only allowed discrete data transfer, v2.1 and higher support seamless analog data transfer. This is accomplished by sending a portion of the analog data on each of several consecutive network cycles; for example, a 16-bit word of data requires seven network cycles. Further, AS-I v3.0 allows analog data to be transferred in a single cycle by consuming more than one address for the analog slave.

Communication Rate/Cycle Time

AS-I communicates at a fixed data rate of 167 kbps. The system's cycle time is very predictable because of the simple communication scheme and fixed data rate. For example, a network with 31 slaves will have a cycle time of less than 5 ms. A network with 62 slaves (all A and B addresses used) will have a cycle time of less than 10 ms. If analog slaves are being used, the cycle time will change to account for the fact that an analog word takes multiple network cycles to transmit.

Maximum Ratings

The AS-I system uses a freeform layout topology. Up to 100 m of cable can be used on a segment before a repeater or tuner needs to be installed to allow the network to be extended beyond the 100 m limit. No terminating resistors are required.

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Notes:

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AS-interface® Masters and Gateways

TURCK offers a wide variety of AS-I masters and gateways manufactured by Bihl+Wiedemann. These devices control communication on the AS-I network and provide a logical connection from the slave and I/O devices in the field to the host. The terms "master" and "gateway" as used here differ in the following way: A master is an AS-I controller that provides a direct link to the host (PLC, PC, DCS etc.); a gateway is an AS-I master, while also being a slave to a higher-level system (such as DeviceNet™, PROFIBUS®-DP or Ethernet). In the case of a gateway, the AS-I information is compiled by the AS-I master and communicated through the higher-level system as a standard slave data map.

AS-I masters and gateways are available in several different designs. The latest gateway versions incorporate stainless steel housing, support DeviceNet, EtherNet/IP™, Modbus-TCP, PROFIBUS-DP, CANopen and Modbus as higher-level networks, and are available with one or two AS-I masters. These gateways also feature AS-I v3.0 software, and a graphical display for configuration and maintenance with no need for a PC. Other new features include a direct serial connection to the AS-I Control Tools software (requires a connection cable that can be ordered with the software: part number ASI-CT-SS BW1602), ground fault detection and duplicate address detection.

Gateways for some higher-level systems are also available with nylon housing. Some of these feature a graphical display, while others contain a two-digit display for configuration. These gateways may be connected to the AS-I Control Tools software through the higher-level network interface by using a "master simulator".

Masters are available as cards for Allen-Bradley® ControlLogix®, CompactLogix and MicroLogix 1500 PLCs, as well as in several different PC control form factors. Stand-alone masters with RS232, RS485 and RS422 serial connections are also available.

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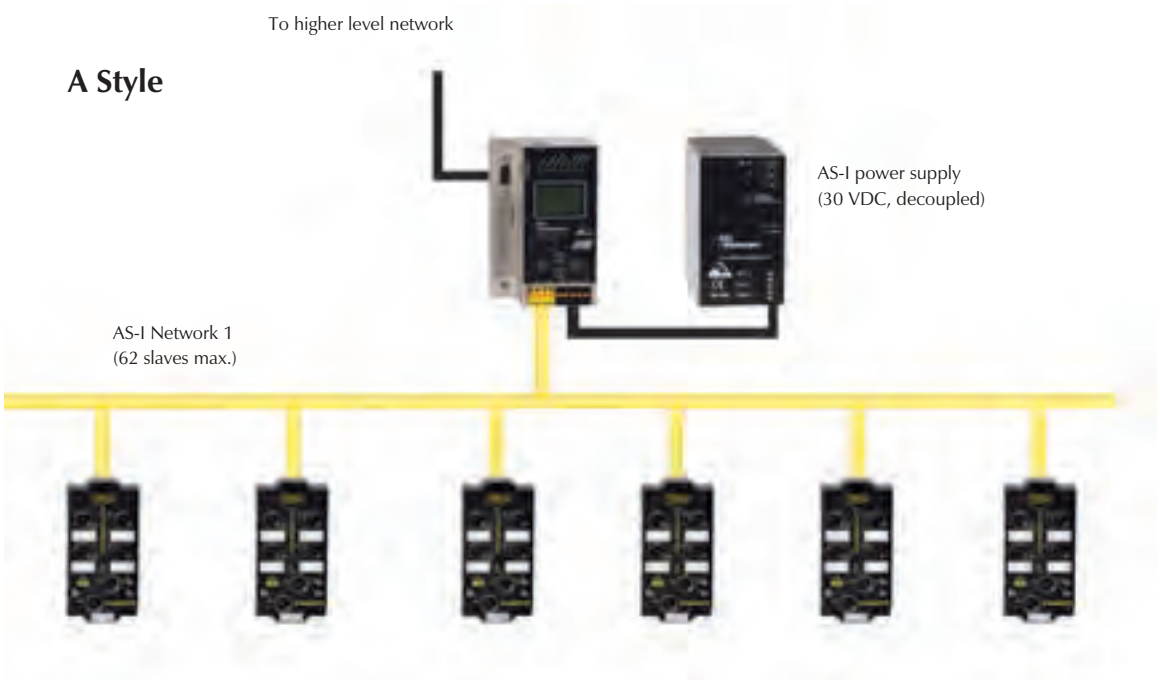
Features

AS-I masters and gateways are available with one or two supported AS-I networks, referred to as “single masters” and “double masters”. Double masters can be used to save cost and cabinet space where the system being installed is too large (physically or due to the number of slaves) for one AS-I network. The master and power supply may be connected anywhere along the network, but should be located next to each other. Slaves and repeaters should not be connected between the master and the power supply, as doing so disables some diagnostic features (such as duplicate address detection and ground fault detection). An example of a system with the “A-style” power supply (gateway is powered from the AS-I power supply) is shown here.



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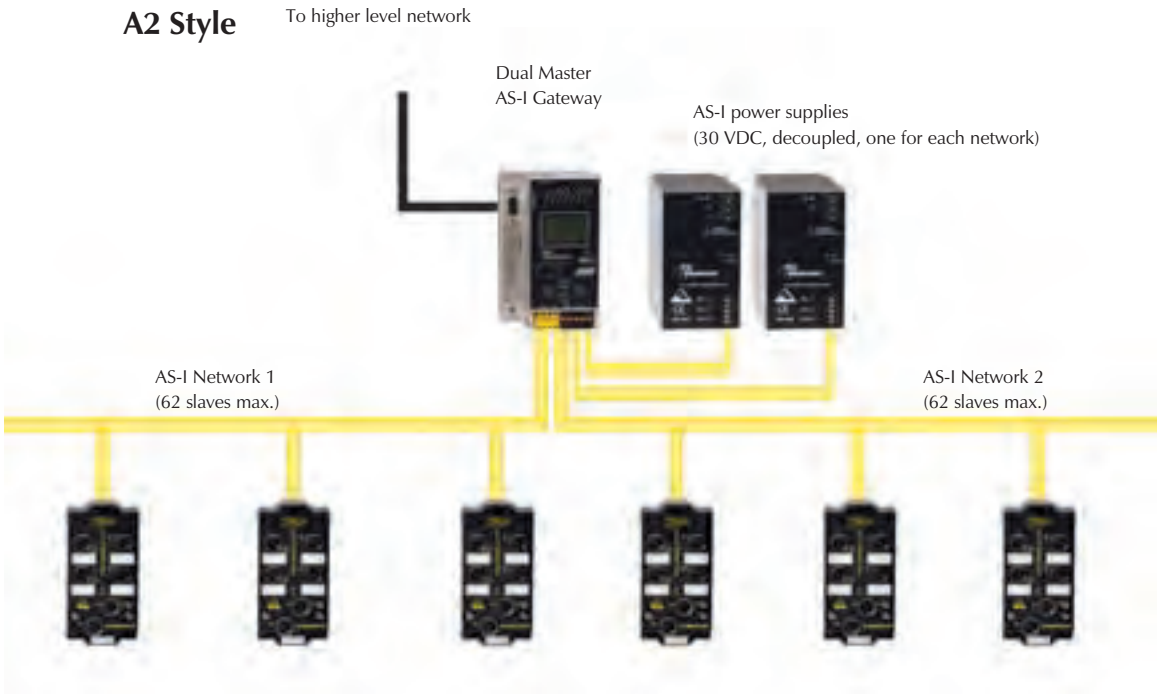
Alternatively, two AS-I networks could be connected to one dual master, as shown. The dual master consists of two AS-I masters and one connection to the higher-level system (or backplane). Note that each AS-I network has its own power supply, but combining the two masters into one unit conserves cabinet space. This is the "A2" power supply configuration (gateway is powered from the AS-I supplies for each network).

A2 Style



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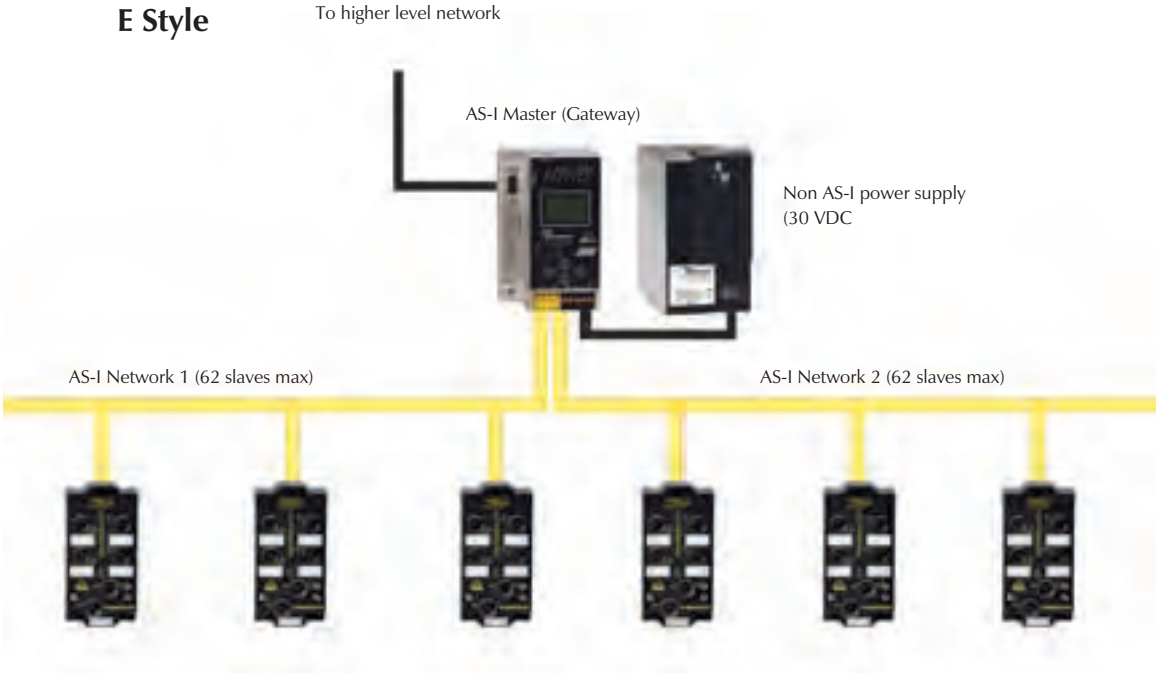
A third option is to use a dual master with a single power supply (E-style power configuration). In this case, the master contains the necessary AS-I power supply decoupling circuit for each network. Therefore one 30 VDC power supply can be used for both networks saving even more space and product cost. More than one of these double masters can be supplied from the same 30 VDC source.

E Style



Addressing

Network addresses for all AS-I gateways are programmed via the push buttons on the face of the gateway. For more details, please consult the user manual for the specific gateway in question. Manuals can be downloaded from www.turck.com.

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AS-I Masters for AB PLCs

ASI-SCAN-AB-BW1488
ASI-SCAN-AB BW1416
ASI-SCAN-AB/ACT BW1610
ASI-SCAN-AB/ACT BW1611

- **PLC AS-I Masters**
- **Fit Standard Allen-Bradley Backplanes**
- **Analog and Discrete Data Support**
- **Integrated AS-I Diagnostics**

Electrical

- Operating Current: 70 mA from each AS-I supply, 390 mA from 5.1 V backplane supply, 150 mA from 24 V backplane supply (BW1488, BW1611) 100 mA from AS-I supply, 450 mA from 5 V backplane supply (BW1416, BW1610)

Power Distribution

- Power is drawn both from AS-I and the backplane

Mechanical

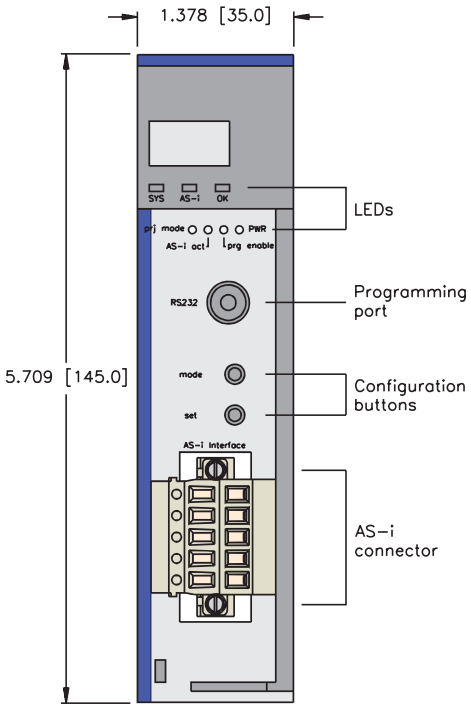
- Operating Temperature: 0 to +55 °C (+32 to +131°F)
- Protection: IP 20

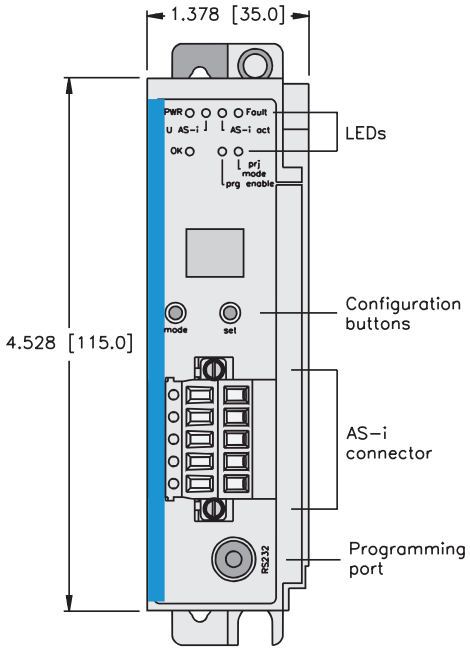
Diagnostics (Logical)

- AS-I I/O faults are reported via the peripheral fault bit for each slave (v2.1 and higher)

Diagnostics (Physical)

- LEDs to indicate status of AS-I and backplane communication and power supply





Note: BW1610 is BW1416 with configuration software. BW1611 is BW1488 with configuration software.

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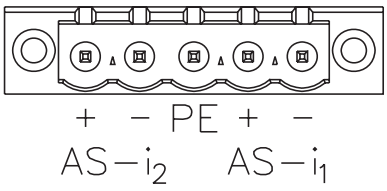
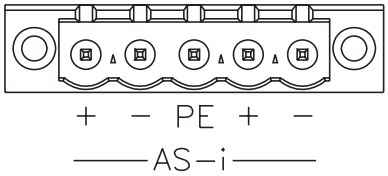
Part Number	PLC Format	AS-I Version	Connection Diagram	# of AS-I Masters	Included Software
ASI-SCAN-AB-BW1488	ControlLogix	2.1	A	2	
ASI-SCAN-AB BW1416	CompactLogix/MicroLogix1500	2.1	B	1	
ASI-SCAN-AB/ACT BW1610	CompactLogix/MicroLogix1500	2.1	B	1	X
ASI-SCAN-AB/ACT BW1611	ControlLogix	2.1	A	2	X

Input/Output Connectors

A



B



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AS-I Gateways in Stainless Steel

ASI-DNG-SS BW1818*
ASI-DNG-SS BW1819*
ASI-DNG-SS BW1820*
ASI-DNG-SS-C1D2 BW1824
ASI-DNG-SS-C1D2 BW1825
ASI-DNG-SS-C1D2 BW1826

* not ETL Listed

- **AS-I v3.0 Supported**
- **Graphical Display**
- **Integrated Ground-Fault Detection**
- **Integrated AS-I Diagnostics**

Electrical

- Operating Current: 200 mA from V_{AS-I} (Power Supply A)
  200 mA from V_{AS-i1}, 70mA from V_{AS-i2} (Power Supply A2)
  250 mA from V_{AUX} (Power Supply E)

Power Distribution

- From AS-I supply for each network (Power Supply A, A2)
- From external supply (Power Supply E)

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20
- Vibration: According to EN 61131-2

Material

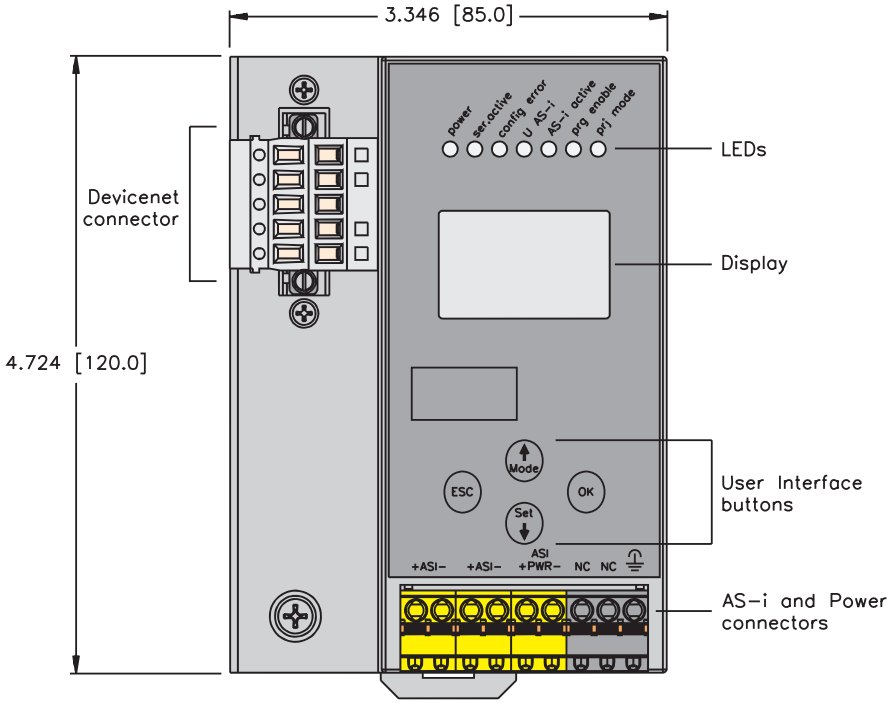
- Housing: Stainless Steel

Diagnostics (Logical)

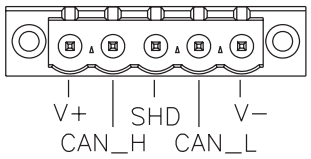
- AS-I diagnostic data is available via Network interface

Diagnostics (Physical)

- LEDs to indicate status of network and AS-I communication and power supply



DeviceNet Connector



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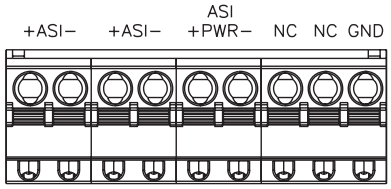
Part Number	Higher Level Network	Power Style	AS-I Version	Connection Diagram	# of AS-I Masters
ASI-DNG-SS BW1818	DeviceNet	A	3.0	A	1
ASI-DNG-SS BW1819	DeviceNet	A2	3.0	A2	2
ASI-DNG-SS BW1820	DeviceNet	E	3.0	E	2
ASI-DNG-SS-C1D2 BW1824*	DeviceNet	A	3.0	A	1
ASI-DNG-SS-C1D2 BW1825*	DeviceNet	A2	3.0	A2	2
ASI-DNG-SS-C1D2 BW1826*	DeviceNet	E	3.0	E	2

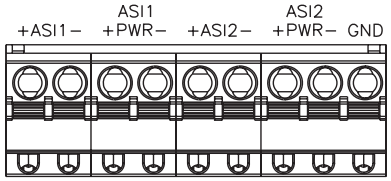
* Approved for use in Class 1, Division 2 areas

Input/Output Connectors

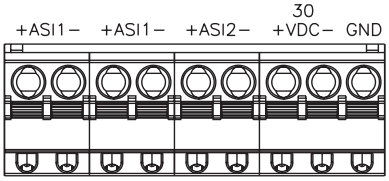
A



A2



E



A - Single AS-I network is powered by and AS-I power supply

A2 - Dual AS-I networks are each powered by their own AS-I power supply

E - Dual AS-I networks are both powered by a single 30 VDC supply, decoupled through the gateway

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Modbus TCP Gateways in Stainless Steel

ASI-ENG-SS BW1650*
ASI-ENG-SS BW1651*
ASI-ENG-SS BW1652*
ASI-ENG-SS-C1D2 BW1659
ASI-ENG-SS-C1D2 BW1660
ASI-ENG-SS-C1D2 BW1661

* not ETL Listed

- **AS-I v3.0 Supported**
- **Graphical Display**
- **Integrated Ground-Fault Detection**
- **Integrated AS-I Diagnostics**

Electrical

- Operating Current: 200 mA from V_{AS-I} (Power Supply A)
  200 mA from V_{AS-i1}, 70mA from V_{AS-i2} (Power Supply A2)
  250 mA from V_{AUX} (Power Supply E)

Power Distribution

- From AS-I supply for each network (Power Supply A, A2)
- From external supply (Power Supply E)

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material

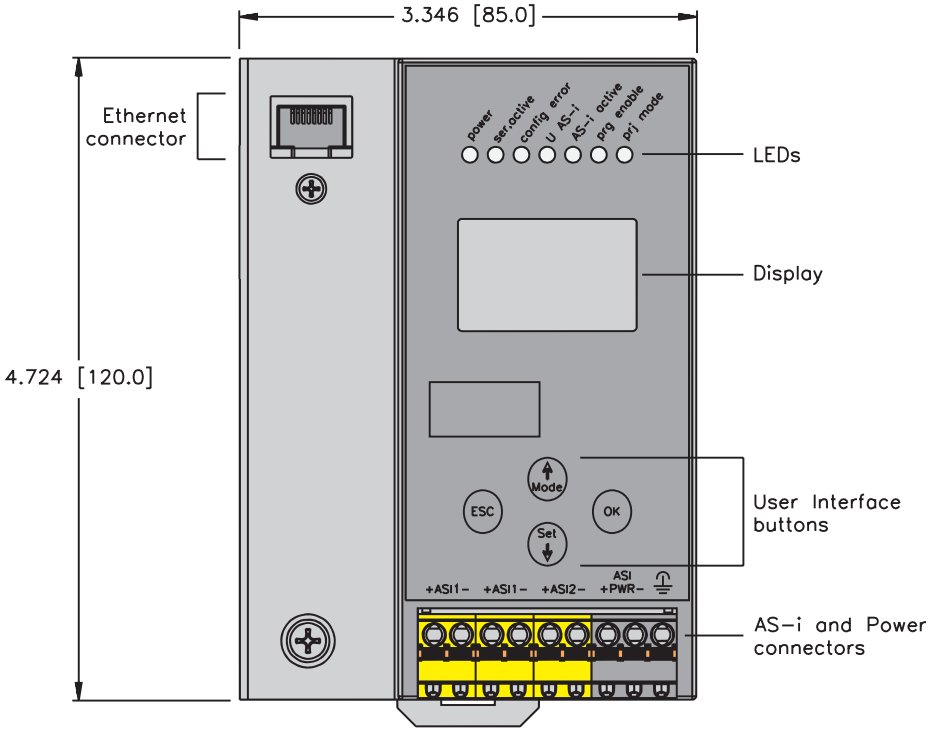
- Housing: Stainless Steel

Diagnostics (Logical)

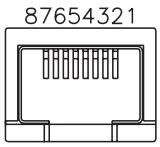
- Health of AS-I network is available via Network interface

Diagnostics (Physical)

- LED to indicate status of network and AS-I communication and power supply



RJ45 Ethernet Standard



1 = WH/or (+TX)
2 = OR (-TX)
3 = WH/GN (+RX)
4 = BU
5 = WH/BU
6 = GN (-RX)
7 = WH/BN
8 = BN

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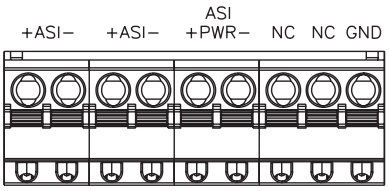
Part Number	Higher Level Network	Power Style	AS-I Version	# of AS-I Masters	Duplicate Address Detection	Programming Interface
ASI-ENG-SS BW1650	ModbusTCP	A	3.0	1	X	X
ASI-ENG-SS BW1651	ModbusTCP	A2	3.0	2	X	X
ASI-ENG-SS BW1652	ModbusTCP	E	3.0	2	X	X
ASI-ENG-SS-C1D2 BW1659*	ModbusTCP	A	3.0	1		
ASI-ENG-SS-C1D2 BW1660*	ModbusTCP	A2	3.0	2		
ASI-ENG-SS-C1D2 BW1661*	ModbusTCP	E	3.0	2		

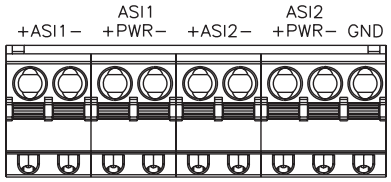
* Approved for use in Class 1, Division 2 areas

Input/Output Connectors

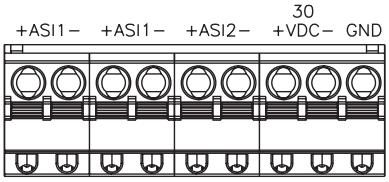
A



A2



E



A - Single AS-I network is powered by and AS-I power supply

A2 - Dual AS-I networks are each powered by their own AS-I power supply

E - Dual AS-I networks are both powered by a single 30 VDC supply, decoupled through the gateway

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AS-I Ethernet/IP Gateways in Stainless Steel

- **AS-I v3.0 Supported**
- **Graphical Display**
- **Integrated Ground-Fault Detection**
- **Integrated AS-I Diagnostics**

ASI-EIPG-SS BW1828*
ASI-EIPG-SS BW1829*
ASI-EIPG-SS BW1833*
ASI-EIPG-SS-C1D2 BW1834
ASI-EIPG-SS-C1D2 BW1835
ASI-EIPG-SS-C1D2 BW1836

* not ETL listed

Electrical

- Operating Current: 300 mA from VAS-$_{I}$ (Power Supply A)
  200 mA from VAS-$_{i1}$, 70mA from VAS-$_{i2}$ (Power Supply A2)
  250 mA from V_{AUX} (Power Supply E)

Power Distribution

- From AS-I supply for each network (Power Supply A, A2)
- From external supply (Power Supply E)

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material

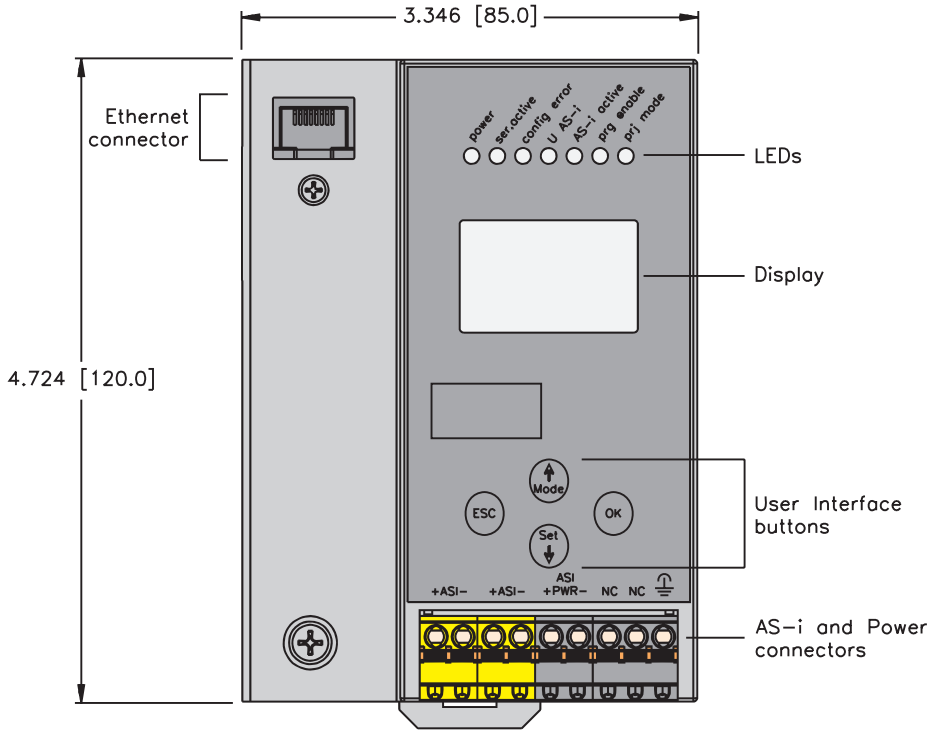
- Housing: Stainless Steel

Diagnostics (Logical)

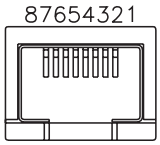
- Health of AS-I network is available via Network interface

Diagnostics (Physical)

- LED to indicate status of network and AS-I communication and power supply



RJ45 Ethernet Standard



1 = WH/or (+TX)
2 = OR (-TX)
3 = WH/GN (+RX)
4 = BU
5 = WH/BU
6 = GN (-RX)
7 = WH/BN
8 = BN

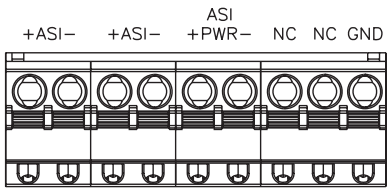
Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Part Number	Higher Level Network	Power Style	AS-I Version	# of AS-I Masters	Duplicate Address Detection	Programming Interface
ASI-EIPG-SS BW1828	Ethernet/IP	A	3.0	1	X	X
ASI-EIPG-SS BW1829	Ethernet/IP	A2	3.0	2	X	X
ASI-EIPG-SS BW1833	Ethernet/IP	E	3.0	2	X	X
ASI-EIPG-SS-C1D2 BW1834*	Ethernet/IP	A	3.0	1		
ASI-EIPG-SS-C1D2 BW1835*	Ethernet/IP	A2	3.0	2		
ASI-EIPG-SS-C1D2 BW1836*	Ethernet/IP	E	3.0	2		

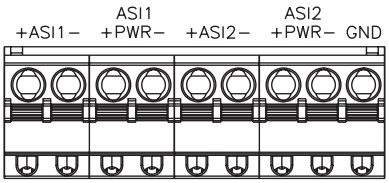
Approved for use in Class 1, Division 2 areas

Input/Output Connectors

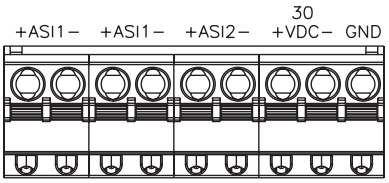
A



A2



E



A - Single AS-I network is powered by and AS-I power supply

A2 - Dual AS-I networks are each powered by their own AS-I power supply

E - Dual AS-I networks are both powered by a single 30 VDC supply, decoupled through the gateway

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

AS-I ProfiNET Gateways in Stainless Steel

- **AS-I v3.0 Supported**
- **Graphical Display**
- **Integrated Ground-Fault Detection**
- **Integrated AS-I Diagnostics**

ASI-PNG-SS BW1912

Electrical

- Operating Current: 300 mA from V_{AS-i} (Power Supply A)

Power Distribution

- From AS-I supply

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material

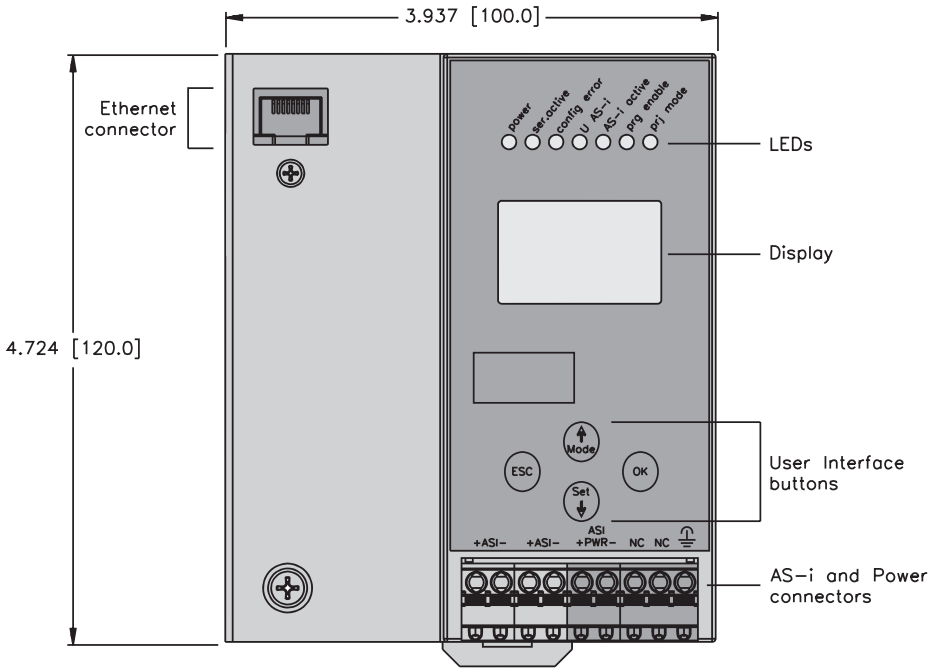
- Housing: Stainless Steel

Diagnostics (Logical)

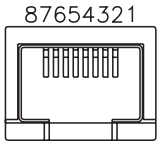
- Health of AS-I network is available via Network interface

Diagnostics (Physical)

- LED to indicate status of network and AS-I communication and power supply



RJ45 Ethernet Standard



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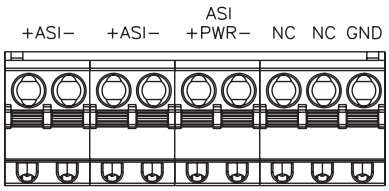
3 = WH/GN (+RX)
4 = BU
5 = WH/BU
6 = GN (-RX)
7 = WH/BN
8 = BN

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Part Number	Higher Level Network	Power Style	AS-I Version	# of AS-I Masters	Duplicate Address Detection	Programming Interface
ASI-PNG-SS BW1912	PROFINET	A	3.0	1	X	X

Input/Output Connectors

A



A - Single AS-I network is powered by and AS-I power supply

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

AS-I Profibus-DP Gateways in Stainless Steel

ASI-DPG-SS BW1567*
ASI-DPG-SS BW1568*
ASI-DPG-SS BW1569*
ASI-DPG-SS-SE BW1773*
ASI-DPG-SS-SE BW1774*
ASI-DPG-SS-C1D2 BW1653
ASI-DPG-SS-C1D2 BW1654
ASI-DPG-SS-C1D2 BW1655

* Not ETL Listed

- **AS-I v3.0 Supported**
- **Graphical Display**
- **Integrated Ground-Fault Detection**
- **Integrated AS-I Diagnostics**

Electrical

- Operating Current: 200 mA from V_{AS-I} (Power Supply A)
  200 mA from V_{AS-i1}, 70mA from V_{AS-i2} (Power Supply A2)
  250 mA from V_{AUX} (Power Supply E)

Power Distribution

- From AS-I supply for each network (Power Supply A, A2)
- From external supply (Power Supply E)

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material

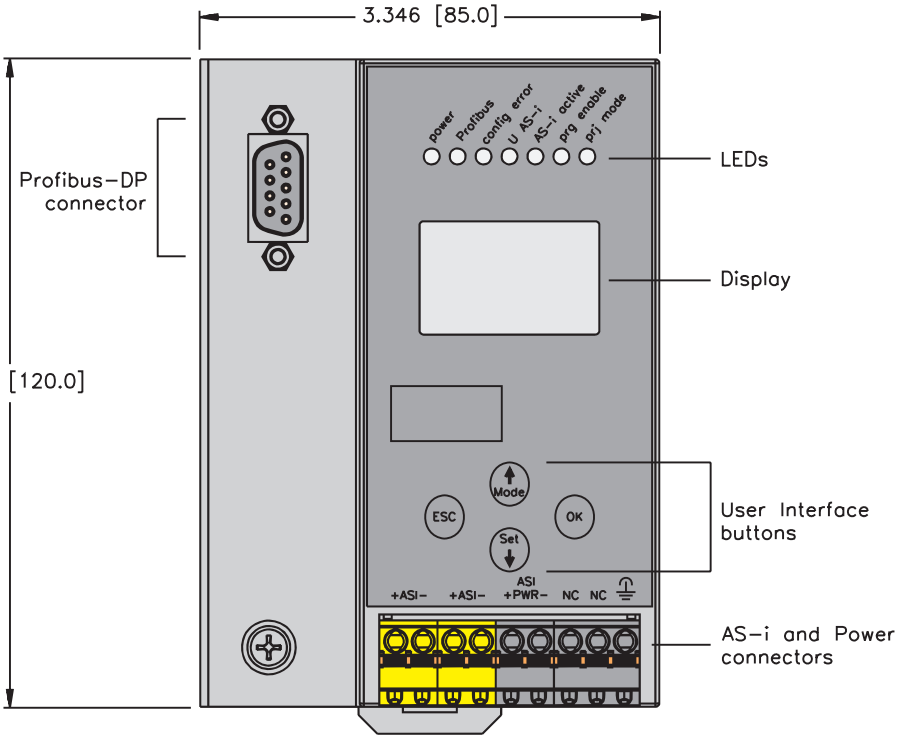
- Housing: Stainless Steel

Diagnostics (Logical)

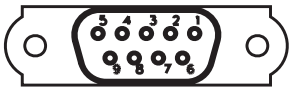
- Health of AS-I network is available via Proximus-DP interface

Diagnostics (Physical)

- LED to indicate status of network and AS-I communication and power supply



PROFIBUS-DP Connector



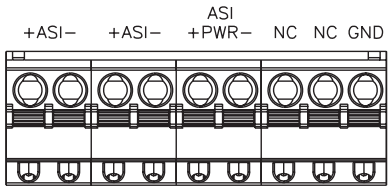
1 = Shield
3 = BUS_B
5 = DGnd
6 = +5 VDC
8 = BUS_A

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

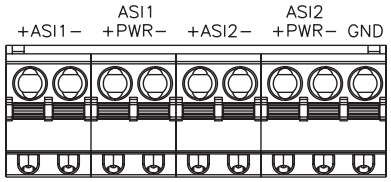
Part Number	Higher Level Network	Power Style	AS-I Version	# of AS-I Masters	Duplicate Address Detection	Programming Interface
ASI-DPG-SS BW1567	PROFIBUS-DP	A	2.1	1	X	X
ASI-DPG-SS BW1568	PROFIBUS-DP	A2	2.1	2	X	X
ASI-DPG-SS BW1569	PROFIBUS-DP	E	2.1	2	X	X
ASI-DPG-SS-SE BW1773	PROFIBUS-DP	A	2.1	1		
ASI-DPG-SS-SE BW1774	PROFIBUS-DP	A2	2.1	2		
ASI-DPG-SS-C1D2 BW1653*	PROFIBUS-DP	A	3.0	1		
ASI-DPG-SS-C1D2 BW1654*	PROFIBUS-DP	A2	3.0	2		
ASI-DPG-SS-C1D2 BW1655*	PROFIBUS-DP	E	3.0	2		

* Approved for use in Class 1, Division 2 areas

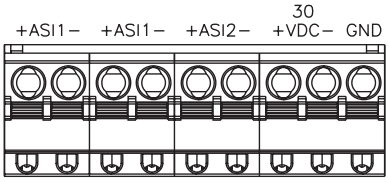
A



A2



E



A - Single AS-I network is powered by and AS-I power supply

A2 - Dual AS-I networks are each powered by their own AS-I power supply

E - Dual AS-I networks are both powered by a single 30 VDC supply, decoupled through the gateway

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AS-I PROFIBUS-D Economy Gateways

ASI-DPG-SS-B BW1746

- **AS-I v3.0 Supported**
- **LED Display**
- **PROFIBUS-DP Support**
- **Integrated AS-I Diagnostics**

Electrical

- Operating Current: <300 mA from AS-I

Power Distribution

- From AS-I supply

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material

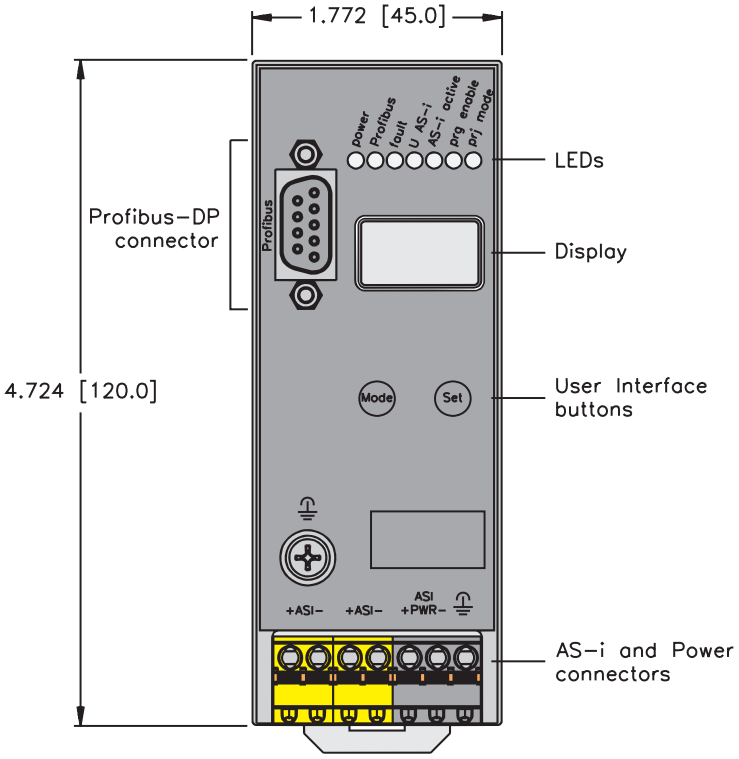
- Housing: Stainless Steel

Diagnostics (Logical)

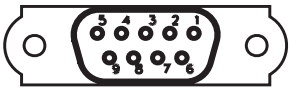
- AS-I diagnostic data is available via Network interface

Diagnostics (Physical)

- LEDs to indicate status of network and AS-I communication and power supply



PROFIBUS-DP Connector



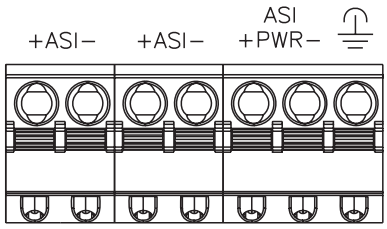
1 = Shield
3 = BUS_B
5 = Gnd
6 = +5VDC
8 = BUS_A

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Part Number	Higher Level Network	Power Style	AS-I Version	Connection Diagram	# of AS-I Masters
ASI-DPB-SS BW1746	PROFIBUS-DP	A	2.1	A	1

Input/Output Connectors

A



Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

AS-I CANopen Gateways in Stainless Steel

ASI-COG-SS BW1821
ASI-COG-SS BW1822
ASI-COG-SS BW1823

- **AS-I v3.0 Supported**
- **Graphical Display**
- **Integrated Ground-Fault Detection**
- **Integrated AS-I Diagnostics**

Electrical

- Operating Current: 200 mA from V_{AS-I} (Power Supply A)
  200 mA from V_{AS-i1}, 70mA from V_{AS-i2} (Power Supply A2)
  250 mA from V_{AUX} (Power Supply E)

Power Distribution

- From AS-I supply for each network (Power Supply A, A2)
  From external supply (Power Supply E)

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material

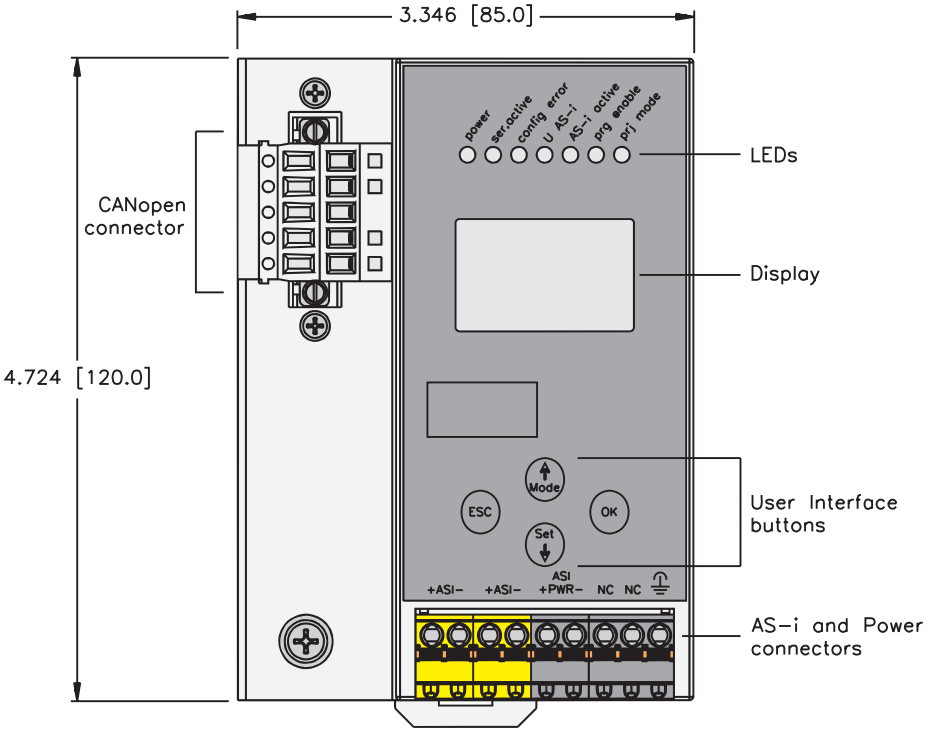
- Housing: Stainless Steel

Diagnostics (Logical)

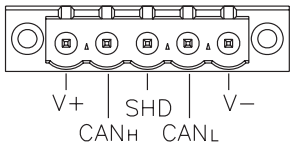
- Health of AS-I network is available via CANopen interface

Diagnostics (Physical)

- LED to indicate status of network and AS-I communication and power supply



CANopen Connector

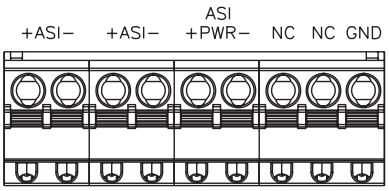


Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

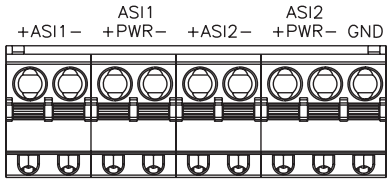
Part Number	Higher Level Network	Power Style	AS-I Version	# of AS-I Masters	Duplicate Address Detection	Programming Interface
ASI-COG-SS BW1821	CANopen	A	3.0	1	X	X
ASI-COG-SS BW1822	CANopen	A2	3.0	2	X	X
ASI-COG-SS BW1823	CANopen	E	3.0	2	X	X

Input/Output Connectors

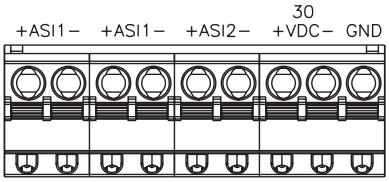
A



A2



E



A - Single AS-I network is powered by and AS-I power supply

A2 - Dual AS-I networks are each powered by their own AS-I power supply

E - Dual AS-I networks are both powered by a single 30 VDC supply, decoupled through the gateway

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AS-I Modbus Gateways in Stainless Steel

ASI-MBG-SS BW1641*
ASI-MBG-SS BW1642*
ASI-MBG-SS BW1643*
ASI-MBG-SS-C1D2 BW1656
ASI-MBG-SS-C1D2 BW1657
ASI-MBG-SS-C1D2 BW1658

* not ETL listed

- **AS-I v3.0 Supported**
- **Graphical Display**
- **Integrated Ground-Fault Detection**
- **Integrated AS-I Diagnostics**

Electrical

- Operating Current: 200 mA from V_{AS-I} (Power Supply A)
  200 mA from V_{AS-i1}, 70mA from V_{AS-i2} (Power Supply A2)
  250 mA from V_{AUX} (Power Supply E)

Power Distribution

- From AS-I supply for each network (Power Supply A, A2)
  From external supply (Power Supply E)

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material

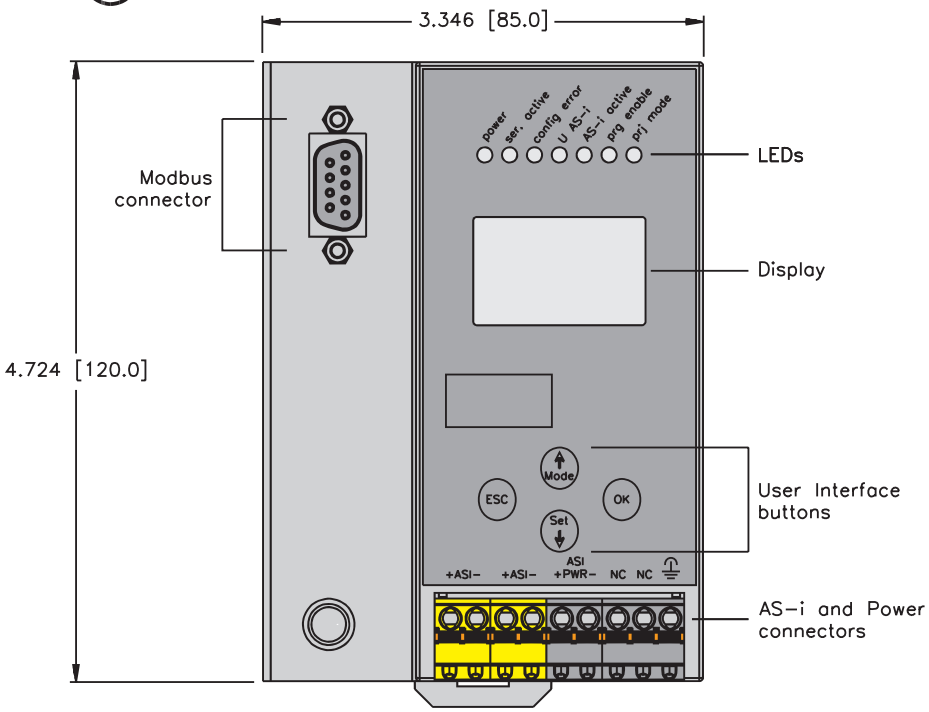
- Housing: Stainless Steel

Diagnostics (Logical)

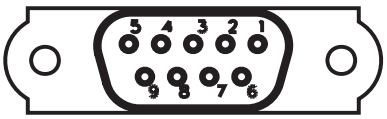
- Health of AS-I network is available via Modbus interface

Diagnostics (Physical)

- LED to indicate status of network and AS-I communication and power supply



RS485 Connector



3 = BUS_A
8 = BUS_B

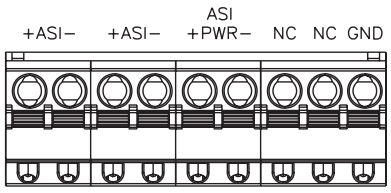
Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Part Number	Higher Level Network	Power Style	AS-I Version	# of AS-I Masters	Duplicate Address Detection	Programming Interface
ASI-MBG-SS BW1641	Modbus	A	3.0	1	X	X
ASI-MBG-SS BW1642	Modbus	A2	3.0	2	X	X
ASI-MBG-SS BW1643	Modbus	E	3.0	2	X	X
ASI-MBG-SS-C1D2 BW1656*	Modbus	A	3.0	1		
ASI-MBG-SS-C1D2 BW1657*	Modbus	A2	3.0	2		
ASI-MBG-SS-C1D2 BW1658*	Modbus	E	3.0	2		

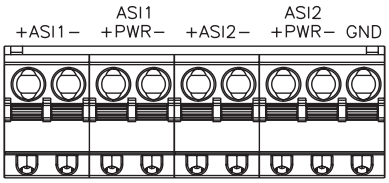
* Approved for use in Class 1, Division 2 areas

Input/Output Connectors

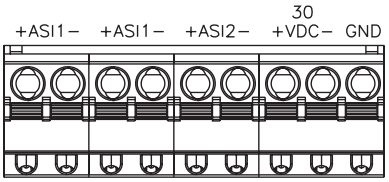
A



A2



E



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E - Dual AS-I networks are both powered by a single 30 VDC supply, decoupled through the gateway

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

AS-I Gateways

ASI-MBPG BW1583

- **Connect to Higher-Level Network**
- **Multiple Networks Supported**
- **2-Digit Display**
- **Integrated AS-I Diagnostics**

Electrical

- Operating Current: 200 mA from V_{AS-i} (Power Supply A)

Power Distribution

- From AS-I supply for each network

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material

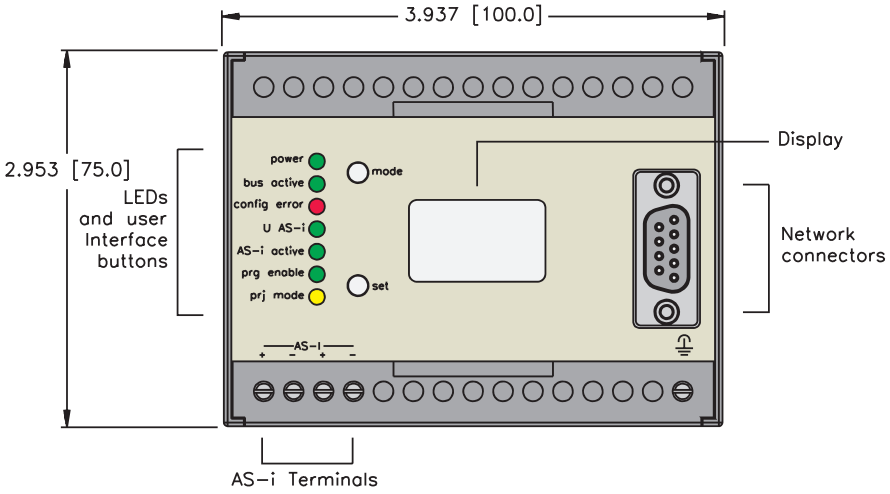
- Housing: Plastic

Diagnostics (Logical)

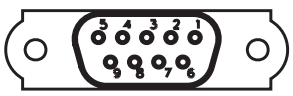
- Health of AS-I network is available via Network interface

Diagnostics (Physical)

- LEDs to indicate status of network and AS-I communication and power supply



Modbus Plus Connector



1 = Shield
2 = Data
3 = Data

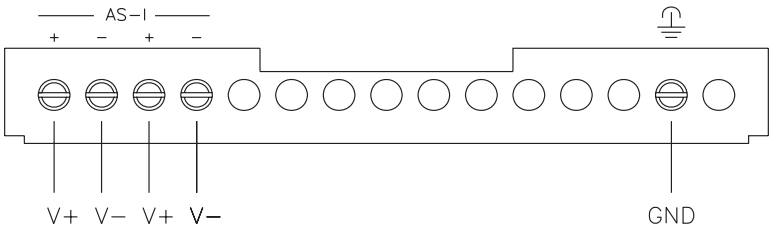
ASI-MBPG BW1583

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Part Number	Higher Level Network	Power Style	AS-I Version	# of AS-I Masters	Duplicate Address Detection	Programming Interface
ASI-MBPG BW1583	Modbus Plus	A	2.1	1		

AS-I Connectors

A



A - Single AS-I network is powered by and AS-I power supply

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

AS-I Gateways

ASI-DPG BW1253
ASI-DPG BW1371
ASI-CCG BW1435

- **AS-I v2.1 Supported**
- **2-Digit Display**
- **IP 65 Protection**
- **Integrated AS-I Diagnostics**

Electrical

- Operating Current: 200 mA from V_{AS-I}

Power Distribution

- From AS-I supply for each network

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 65

Material

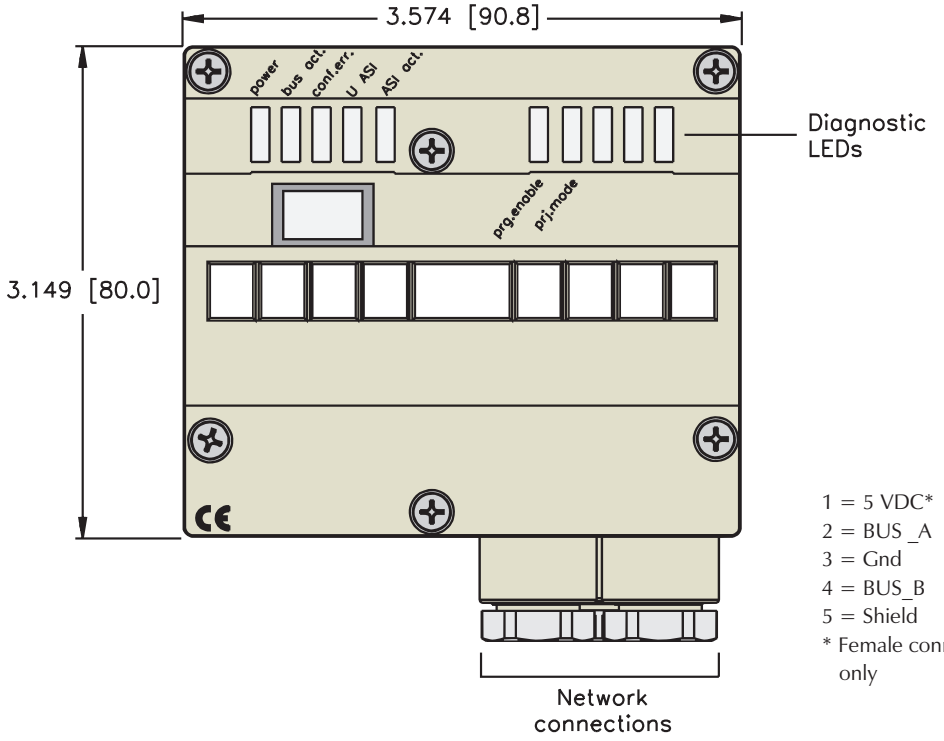
- Housing: Plastic

Diagnostics (Logical)

- Health of AS-I network is available via Network interface

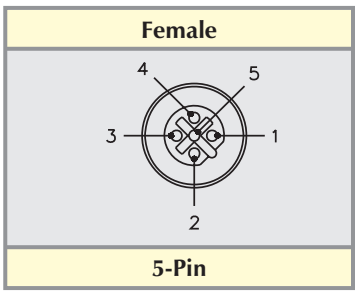
Diagnostics (Physical)

- LEDs to indicate status of network and AS-I communication and power supply



1 = 5 VDC*
2 = BUS _A
3 = Gnd
4 = BUS_B
5 = Shield
* Female connector only

PROFIBUS *eurofast*® Pinouts



ASI-DPG BW1371 only

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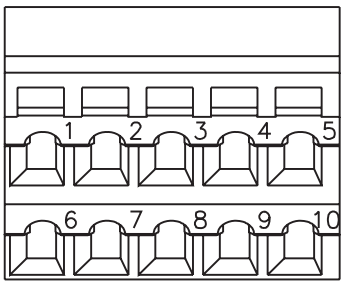
Part Number	Higher Level Network	Power Style	AS-I Version	Connection Diagram	# of AS-I Masters	Duplicate Address Detection	Programming Interface
ASI-DPG BW1253	PROFIBUS-DP	A	2.1	1	1		
ASI-DPG BW1371	PROFIBUS-DP	A	2.1	1	1		
ASI-CCG BW1435	CC-Link	A	2.1	2	1		

A - Single AS-I network is powered by and AS-I power supply

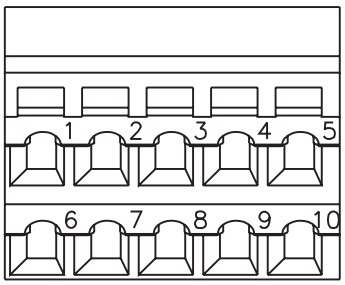
Input/Output Connectors

1



1	BUS_A
2	BUS_B
3	BUS_A
4	BUS_B
5	0V
6	Shield
7	FG (Function Gnd)
8	FG (Function Gnd)
9	Shield
10	+5V

2



1	FG (Function Gnd)
2	Shield
3	DG
4	DA
5	DB
6	FG (Function Gnd)
7	Shield
8	DG
9	DA
10	DB

Note: AS-I connections are made via standard AS-I base modules ASI-BM BW1180 or ASI-BM BW1182 (see pages E105-106).

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AS-i Masters

- **AS-I v3.0 Supported**
- **Graphical Display**
- **Integrated Ground-Fault Detection**
- **Integrated AS-I Diagnostics**

ASI-MM232-SS BW1955
ASI-MM232-SS BW1944
ASI-MM232-SS-CTL BW1986

Electrical

- Operating Current: 200 mA from V_{AS-I} (Power Supply A)
  200 mA from V_{AS-i1}, 70mA from V_{AS-i2} (Power Supply A2)

Power Distribution

- From AS-I supply for each network

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material

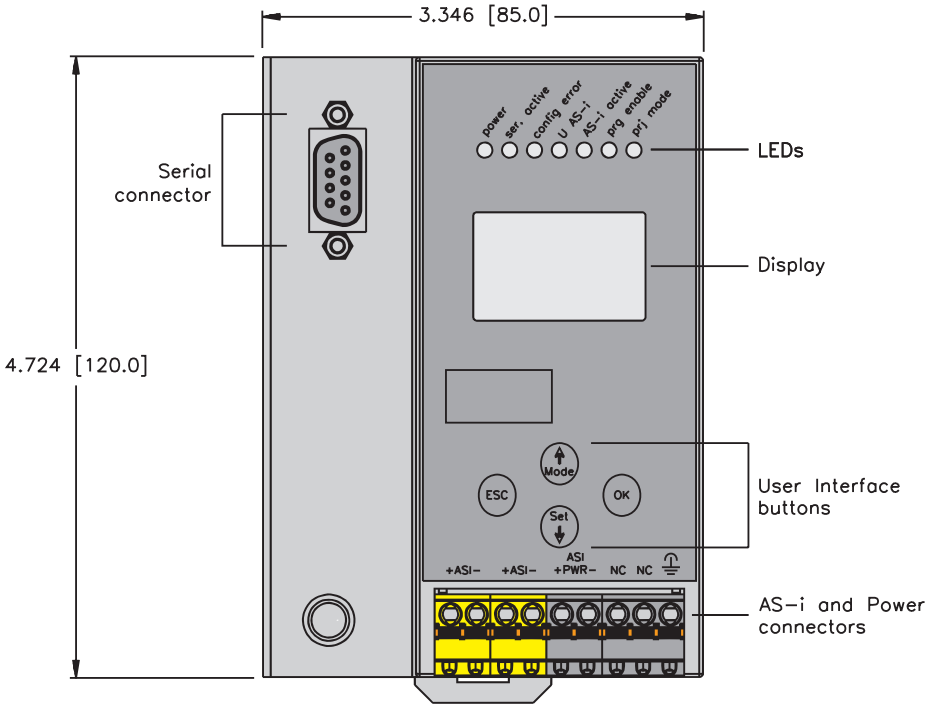
- Housing: Stainless Steel

Diagnostics (Logical)

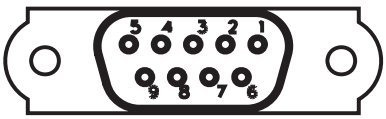
- Health of AS-I network is available via serial interface

Diagnostics (Physical)

- LED to indicate status of serial and AS-I communication and power supply



RS232 Connector



2 = RxD
3 = TxD
5 = Gnd

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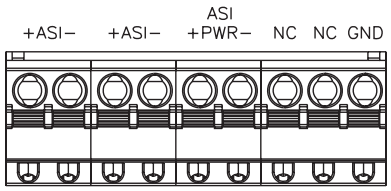
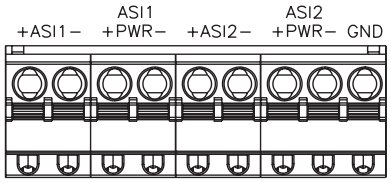
Part Number	Higher Level Network	Power Style	AS-I Version	# of AS-I Masters	Duplicate Address Detection	Programming Interface	Mini PLC
ASI-MM232-SS BW1955	RS232	A	3.0	1	X	X	
ASI-MM232-SS BW1944	RS232	A2	3.0	2	X	X	
ASI-MM232-SS-CTL BW1986	RS232	A	3.0	1	X	X	X

Input/Output Connectors

A



A2



A - Single AS-I network is powered by and AS-I power supply
A2 - Dual AS-I networks are each powered by their own AS-I power supply

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AS-I Masters for PC Control

ASI-MMPCI BW1195 shown

ASI-MMPCI-V3 BW1922
ASI-MMPCI-V3 BW1911
ASI-MMPCI BW1195
ASI-MMISA BW1228
ASI-MMPC104 BW1229

- **AS-I v2.1, 3.0 Supported**
- **Masters for PC Control**
- **Selection of Form Factors**
- **Integrated AS-I Diagnostics**

Electrical

- Operating Current: 200 mA from PC (except BW1922 draws 300 mA @ 5 V, 100 mA @ 3.3 V)

Power Distribution

- From AS-I supply for each network
  From PC power supply

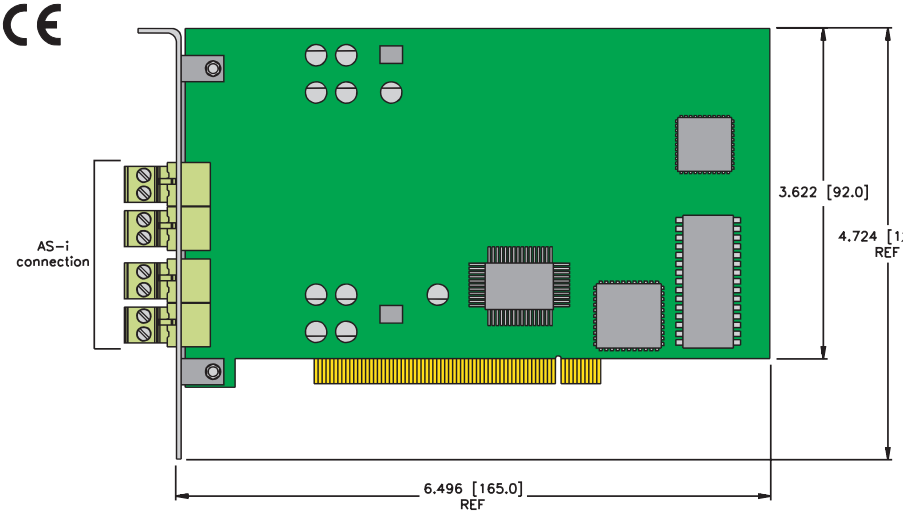
Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)

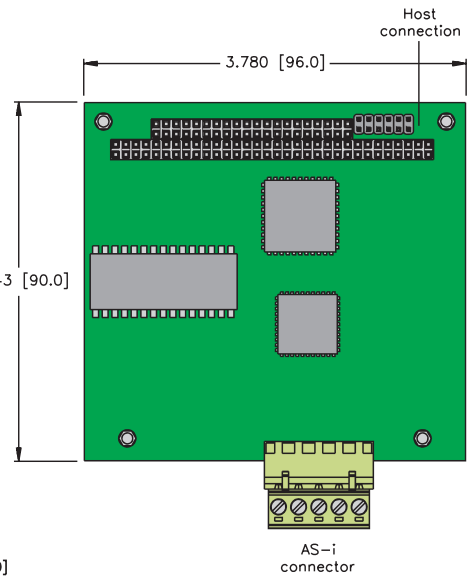
Diagnostics (Logical)

- Health of AS-I network is available via PC interface

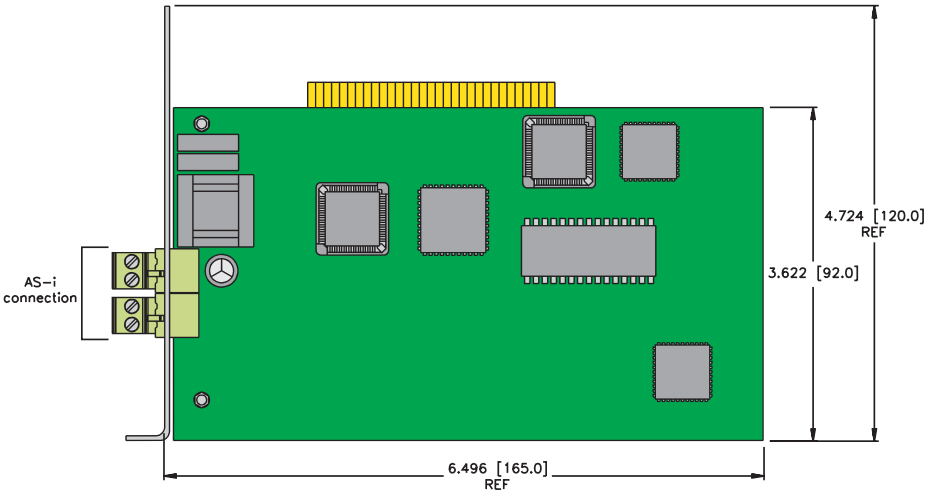
PCI



PC/104



ISA



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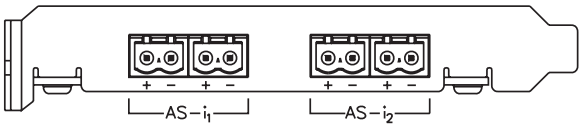
Part Number	Higher Level Network	Power Style	AS-I Version	Connection Diagram	# of AS-I Masters	Duplicate Address Detection	Ground Fault Detection
ASI-MMPCI-V3 BW1922	PCI	PC	3.0	4	2	X	
ASI-MMPCI-V3 BW1911	Compact PCI	PC	3.0	1	2		
ASI-MMPCI BW1195	PCI	PC	2.1	1	2		
ASI-MMISA BW1228	ISA	PC	2.1	2	1		
ASI-MMPC104 BW1229	PC/104	PC	2.1	3	1		

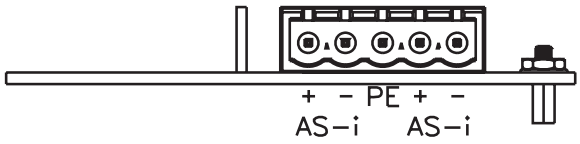
Input/Output Connectors

1

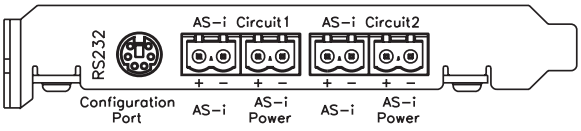


2

3



4



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Input Station

FAS4-S0400

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Flat and Round Cable Support**
- **AS-I Version 2.1**

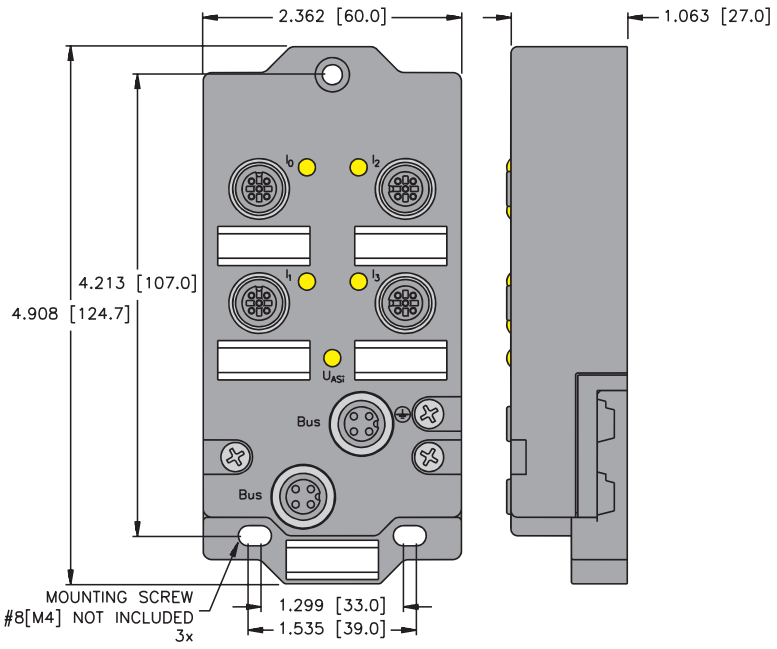
Electrical
- Operating Current: <75 mA plus input currents (from AS-I)
- Sensor Current: <200 mA sum of all inputs (from AS-I)

Power Distribution
- Inputs: AS-I power supply

Mechanical
- Operating Temperature: -25 to +70°C (-25 to +158°F)
- Protection: IEC IP 67
- Vibration: 50 g @ 10-500 Hz

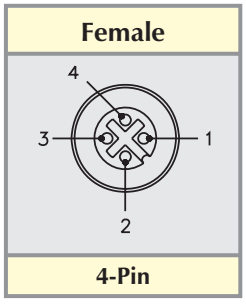
Material
- Connectors: Nickel-plated brass
- Housing: Nylon 6

Diagnostics (Logical)
- I/O faults are reported via the AS-I peripheral fault bit.



1. = AS-I+
2. = NC
3. = AS-I
4. = NC

AS-I *eurofast*® Pinout



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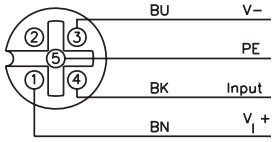
			Inputs									Data
Part Number	AS-I Version	Addressing Style	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Slave Profile	
FAS4-S0400	2.1	AB	4	0-3	S	1	PNP	X			0.A-E	

Input/Output Connectors

S



Mating cordset:
RK 4.4T-*-RS 4.4T

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Input/Output Stations

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Flat and Round Cable Support**
- **AS-I Version 2.1**

FAS4-CSG44
FAS4-CSG43*
* Not UL

Electrical

- Operating Current: <50 mA plus I/O currents (from AS-I)
- I/O Current: <200 mA sum of all inputs and outputs(from AS-I) (FAS4-CSG43) <400 mA sum of all inputs and outputs from AS-I (FAS4-CSG44)

Power Distribution

- Inputs: AS-I power supply
- Outputs: AS-I power supply

Mechanical

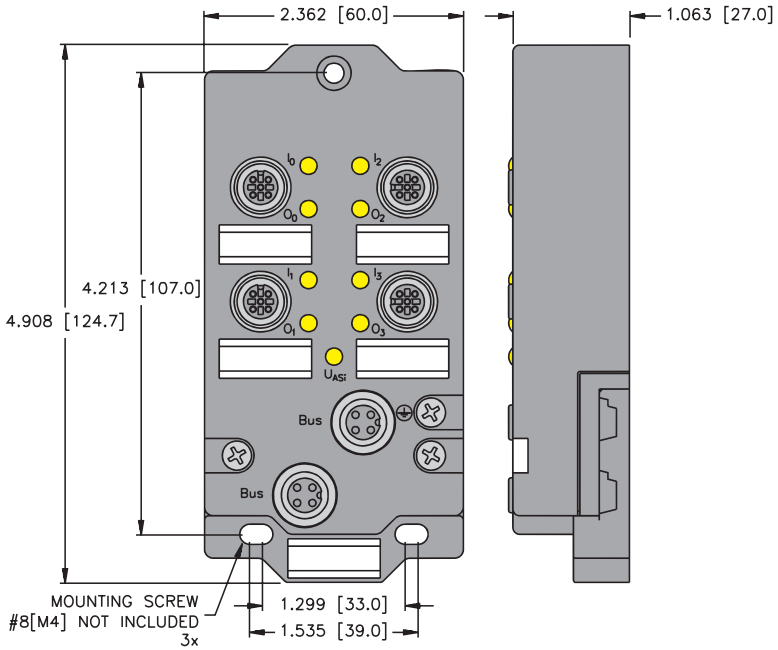
- Operating Temperature: -25 to +70 °C (-25 to +158°F)
- Protection:IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Material

- Connectors: Nickel-plated brass
- Housing: Nylon 6

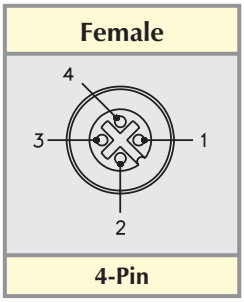
Diagnostics (Logical)

- I/O faults are reported via the AS-I peripheral fault bit



AS-I *eurofast*® Pinout

1 = AS-I+
2 = NC
3 = AS-I
4 = NC



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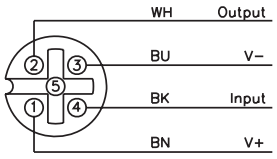
			Inputs								Outputs					Data
Part	AS-I Version	Addressing Style	In Count	Connector	Pinout	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output	Pinout	Current	Individual Diagnostics	Wire-Break Detection	Slave Profile
FAS4-CSG44	2.1	Single	4		CS	PNP	X			4	CS	0.4 A *			7.F-E
FAS4-CSG43	2.1	AB	4		CS	PNP	X			3	CS	0.2 A *			7.A-E

* Total current is shared by all I/O on station

Input/Output Connectors

CS



Mating cordset:
RK 4.4T-*-RS 4.4T

Splitter:
VB2-RS 4.4T-1/2RK 4.4T-*/*/S651

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Input/Output Stations

FAS4-CSG44-A
FAS4-CSG43-A*

* Not UL

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Auxiliary Powered Outputs**
- **AS-I Version 2.1**

Electrical

- Operating Current: <50 mA plus Input currents (from AS-I)
- I/O Current: <200 mA sum of all inputs from AS-I (FAS4-CSG43-A)
  <400 mA sum of all inputs from AS-I Power (FAS4-CSG44-A)
- Output Current: <700 mA per output (from Aux. power)

Power Distribution

- Inputs: AS-I power supply
- Outputs: AS-I power supply

Mechanical

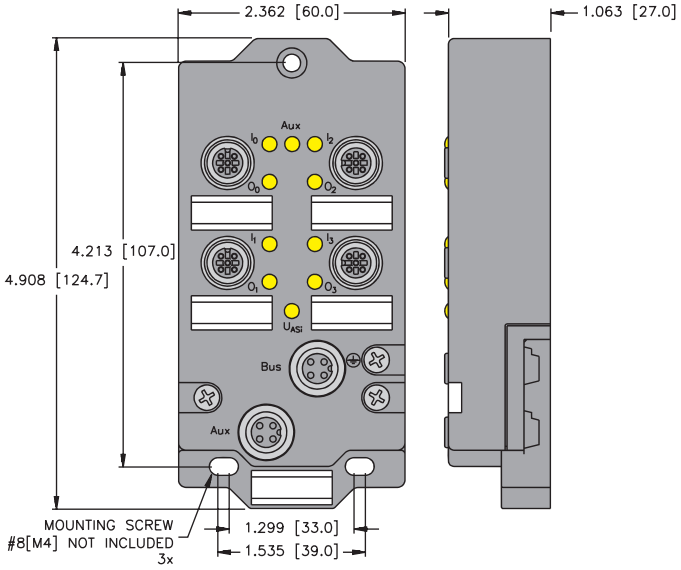
- Operating Temperature: -25 to +70 °C (-25 to +158°F)
- Protection: IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Material

- Connectors: Nickel-plated brass
- Housing: Nylon 6

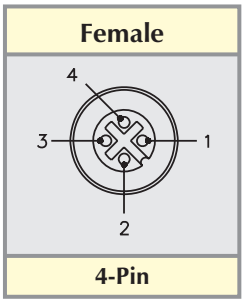
Diagnostics (Logical)

- I/O faults are reported via the AS-I peripheral fault bit



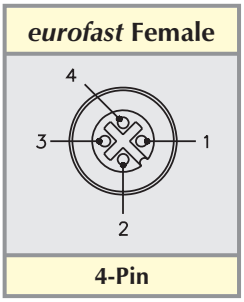
AS-I *eurofast*® Pinout

1. = AS-I+
2. = NC
3. = AS-I
4. = NC



Aux. Power Pinout

1. = V_{AUX}+
2. = NC
3. = V_{AUX}-
4. = NC



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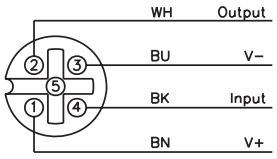
			Inputs							Outputs						Data
Part Number	AS-I Version	Addressing Style	In Count	Connectors	Pinout	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output	Connectors	Pinout	Current	Individual Diagnostics	Wire-Break Detection	Slave Profile
FAS4-CSG44-A	2.1	Single	4	0-3	CS	PNP	X			4	0-3	CS	0.7 A			7.F-E
FAS4-CSG43-A	2.1	AB	4	0-2	CS	PNP	X			3	0-2	CS	0.7 A			7.A-E

Input/Output Connectors

CS



Mating cordset:
RK 4.4T-*-RS 4.4T

Splitter:
VB2-RS 4.4T-1/2RK 4.4T-*/*/S651

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Input/Output Stations

FAS4-S0202G-A

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Auxiliary Powered Outputs**
- **AS-I Version 2.1**

Electrical

- Operating Current: <50 mA plus Input currents (from AS-I)
- Input Current: <200 mA sum of all inputs (from AS-I)
- Output Current: <400 mA sum of all outputs (from Aux. power)

Power Distribution

- Inputs: AS-I power supply
- Outputs: AS-I power supply

Mechanical

- Operating Temperature: -25 to +70°C (-25 to +158°F)
- Protection: IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Power Distribution

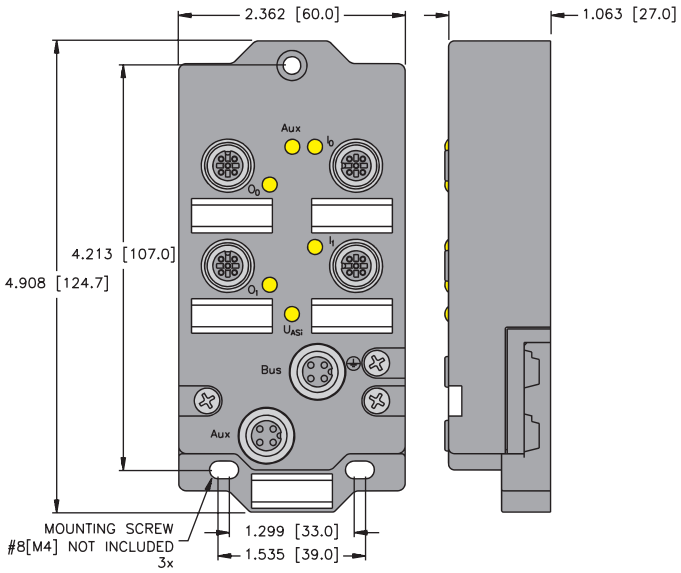
-

Material

- Connectors: Nickel-plated brass
- Housing: Nylon 6

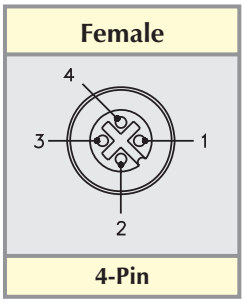
Diagnostics (Logical)

- I/O faults are reported via the AS-I peripheral fault bit



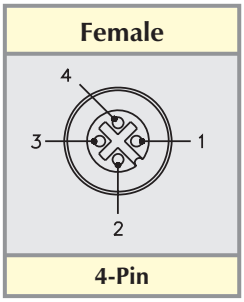
AS-I *eurofast*® Pinout

1 = AS-I+
2 = NC
3 = AS-I
4 = NC



Aux. Power *eurofast* Pinout

1 = V_{AUX}+
2 = NC
3 = V_{AUX}-
4 = NC



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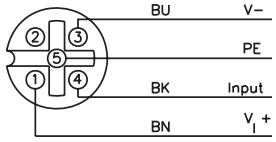
	Inputs										Outputs						Data
Part Number	AS-I Version	Addressing Style	In Count	Connectors	Pinout	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output	Connectors	Pinout	Current	Individual Diagnostics	Wire-Break Detection	Slave Profile
FAS4-S0202G-A	2.1	AB	2	2-3	S	PNP	X			2	0-1	G	0.4 A			B.A-E

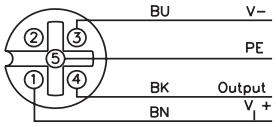
Input/Output Connectors

S



Mating cordset:
RK 4.4T-*-RS 4.4T

G



Mating cordset:
RK 4.4T-*-RS 4.4T

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Output Station

FAS4-S0003G-A

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Auxiliary Powered Outputs**
- **AS-I Version 2.1**

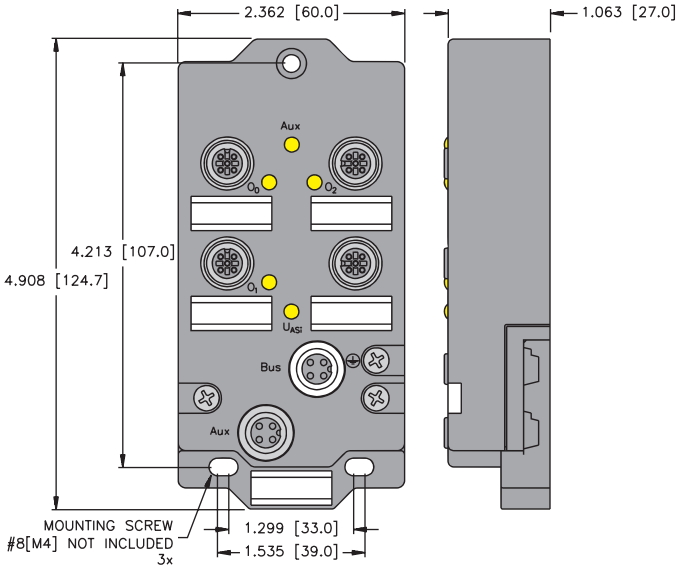
Electrical
- Operating Current: <50 mA (from AS-I)
- Output Current: <700 mA per output (from Aux. power)

Power Distribution
- Outputs: Auxiliary power supply

Mechanical
- Operating Temperature: -25 to +70°C (-25 to +158°F)
- Protection: IEC IP 67
- Vibration: 50 g @ 10-500 Hz

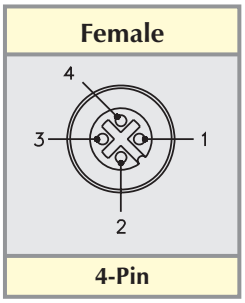
Material
- Connectors: Nickel-plated brass
- Housing: Nylon 6

Diagnostics (Logical)
- I/O faults are reported via the AS-I peripheral fault bit



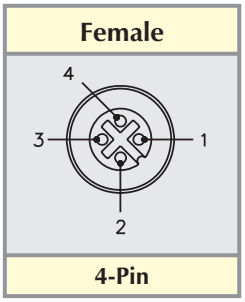
AS-I *eurofast*® Pinout

1 = AS-I+
2 = NC
3 = AS-I
4 = NC



Aux. Power *eurofast* Pinout

1 = V_{AUX}+
2 = NC
3 = V_{AUX}-
4 = NC



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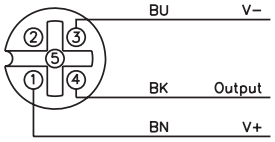
			Outputs						Data
Part Number	AS-I Version	Addressing Style	Output Count	Connectors	Pinout	Current	Individual Diagnostics	Wire-Break Detection	Slave Profile
FAS4-S0003G-A	2.1	AB	3	0-2	GS	0.7 A			8.A-E

Output Connectors

GS



Mating cordset:
RK 4.4T-*-RS 4.4T

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AS-I Conduit Adapter Slave

- **Slave Right in Conduit**
- **Fits Crouse-Hinds Bodies**
- **Ideal Where Conduit Is Required**
- **Bus Powered I/O**

BCS-ASI-CSG22

Electrical

- Operating Current: <200 mA including all I/O current (from AS-I)
- Output Current: <80 mA sum of all outputs (from AS-I)

Power Distribution

- Inputs: AS-I power supply
- Outputs: AS-I power supply

Mechanical

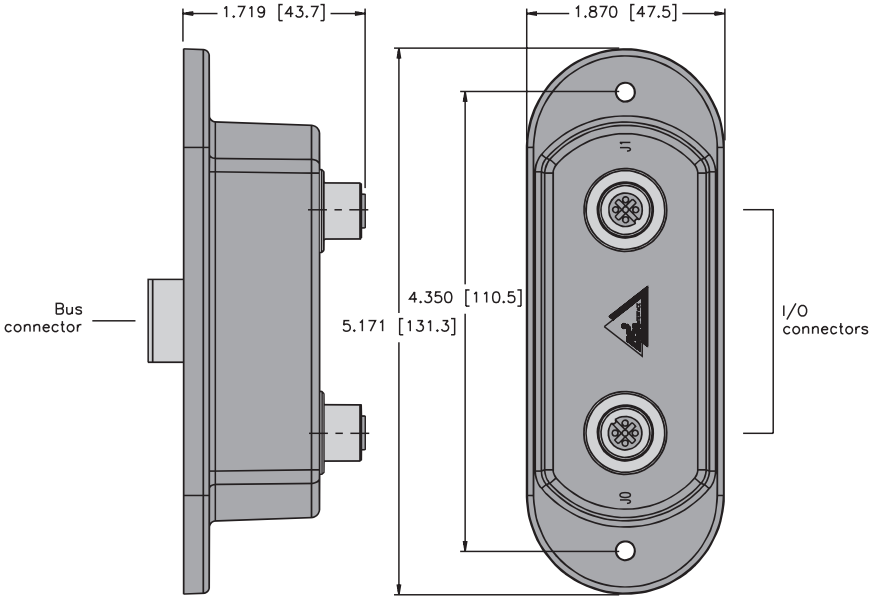
- Operating Temperature: -25 to +70°C (-25 to +158°F)
- Protection:IEC IP 67

Material

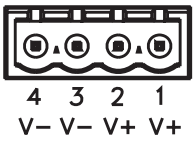
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon (other materials available on request)

Diagnostics (Logical)

- I/O faults are reported via the AS-I peripheral fault bit



AS-I Connector



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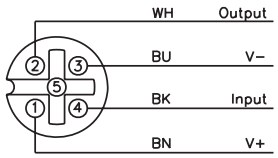
	Inputs										Outputs						Data
Part Number	AS-I Version	Addressing Style	Input Count	Connectors	Pinout	Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Current	Individual Diagnostics	OCD	Slave Profile
BCS-ASI-CSG22	2.1	AB	2	0-1	CS	PNP	X			2	0-1	CS	80 mA			B.A-E

Input/Output Connectors

CS



Mating cordset:
RK 4.4T-*-RS 4.4T

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Analog Input Stations

ASI-AI-2 BW1345
ASI-AI-2 BW1447
ASI-AI-2A BW1726

- **Analog on AS-I**
- **IP 20 for In-the-Cabinet**
- **Powered by AS-I or Auxiliary Supply**

Electrical

- Operating Current: <80 mA (from AS-I)
- Sensor Current: <40 mA per input

Power Distribution

- Inputs: AS-I or Auxiliary supply, selectable by user
  BW1345, BW1447 default sensor current from AS-I
  BW1726 default sensor current from auxiliary supply

Mechanical

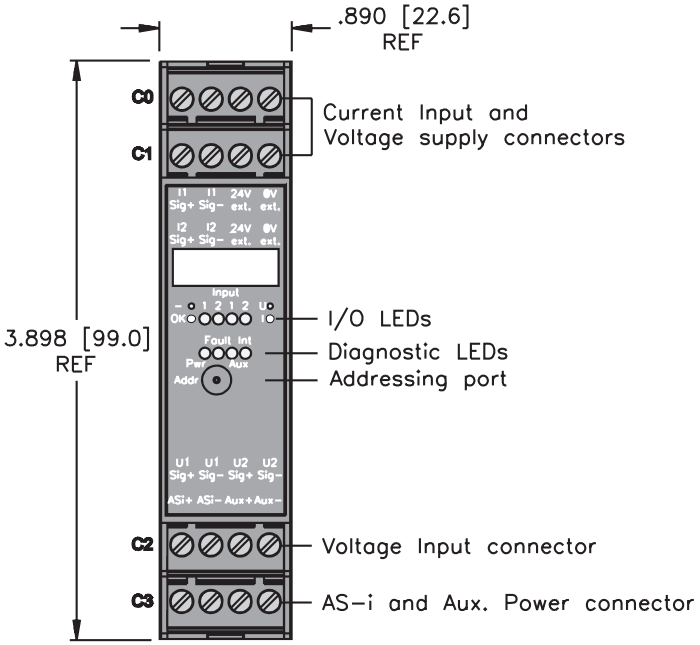
- Operating Temperature: 0 to +70°C (+32 to +158°F)
- Protection: IP 20

Diagnostics (Logical)

- I/O errors are indicated by the AS-I peripheral fault bit (v2.1 and higher)

Diagnostic (Physical)

- One LED indicates an I/O fault (over or under-range for each channel)
- LEDs to indicate status of AS-I communication and power supply



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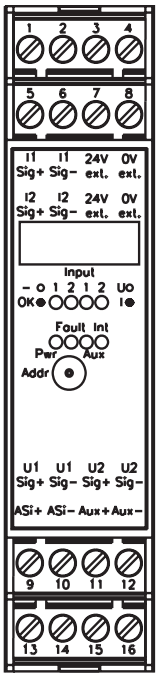
			Inputs						Data	
Part Number	AS-I Version	Addressing Style	In Count	Style	Group Diagnostics	Individual Diagnostics	OCD	Slave Profile	Map
ASI-AI-2 BW1345	2.1	Single	2	4 to 20 mA/0 to 10 V	X	X	X	7.3-D	1
ASI-AI-2 BW1447	2.1	Single	2	4 to 20 mA/0 to 10 V	X	X	X	7.3-D	1
ASI-AI-2A BW1726	2.1	Single	2	4 to 20 mA/0 to 10 V	X	X	X	7.3-D	1

Input/Output Connectors



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	Analog Value (LSB)							
	1	Analog Value (MSB)							

* Notes: Data map applies to each channel of analog data used. Resolution is 1 uA/bit in current mode and 1 mV/bit in voltage mode.
BW1345 and BW1726 use range of 4000...20000 for current and 0...10000 for voltage inputs.
BW1447 uses range of 0...27648 (0x0000...0x6C00) for compatibility with existing Siemens based programs.

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Analog Input Stations

- **Analog on AS-I**
- **IP 65 Protection**
- **Powered by AS-I or Auxiliary Supply**

ASI-AI-2 BW1232
ASI-AI-2 BW1233

Electrical

- Operating Current: <80 mA from AS-I
- Sensor Current: <40 mA per input

Power Distribution

- Inputs: AS-I or Auxiliary supply, selectable by user

Mechanical

- Operating Temperature: 0 to +70°C (+32 to +158°F)
- Protection: IP 65
- Connections: Cage clamp block through gland fittings

Material

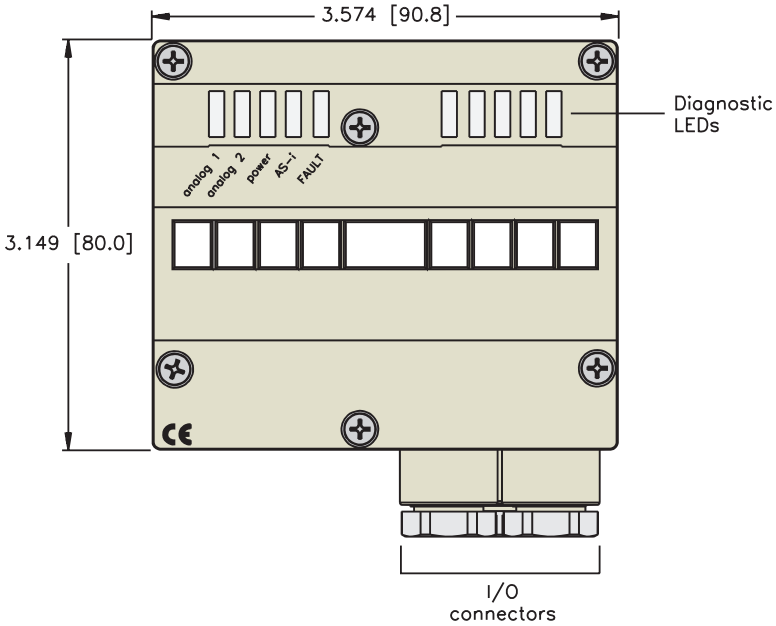
- Housing: Plastic

Diagnostics (Logical)

- I/O errors are indicated by the AS-I peripheral fault bit (v2.1 and higher)

Diagnostics (Physical)

- LEDs indicate I/O faults (over- and under-current or voltage for each channel)
- LEDs to indicate status of AS-I communication and power supply



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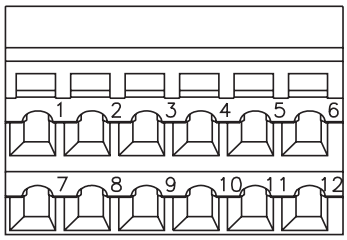
			Inputs					Data	
Part Number	AS-I Version	Addressing Style	In Count	Style	Group Diagnostics	Individual Diagnostics	OCD	Slave Profile	Map
ASI-AI-2 BW1232	2.1	Single	2	4 to 20 mA	X	X	X	7.3-D	1
ASI-AI-2 BW1233	2.1	Single	2	0 to 10 V	X	X	X	7.3-D	1

Input/Output Connectors

1



1	V_{AUX}+
2	Signal1+
3	V_{AUX}-
4	Signal1-
5	Shield
6	Shield
7	V_{AUX}+
8	Signal0+
9	V_{AUX}-
10	Signal0-
11	FG (Function Gnd)
12	FG (Function Gnd)

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	Analog Value (LSB)							
	1	Analog Value (MSB)							

Note: Data map applies to each channel of analog data used. Resolution is 1 uA/bit in current mode and 1 mV/bit in voltage mode. BW1232 range of values is 4000-20000. BW1233 range of values is 0-10000.

AS-I connections are made via standard AS-I base modules (ASI-BM BW1180, ASI-BM BW1182) if I/O is powered by AS-I or auxiliary supply base modules (ASI-BM BW1181, ASI-BM BW1183) if I/O is powered by auxiliary power (see pages E105-106).

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Analog Input Stations

ASI-AI-4 BW1364
ASI-AI-4 BW1365
ASI-AI-4PT100 BW1368

- **Analog on AS-I**
- **IP 20 for In-The-Cabinet**
- **Powered by AS-I or Auxiliary Supply**
- **Voltage, Current or Temperature Inputs**

Electrical

- Operating Current: <80 mA from AS-I
- Sensor Current: <40 mA per input (BW1364 and BW1365)

Power Distribution

- Inputs: AS-I or Auxiliary supply

Mechanical

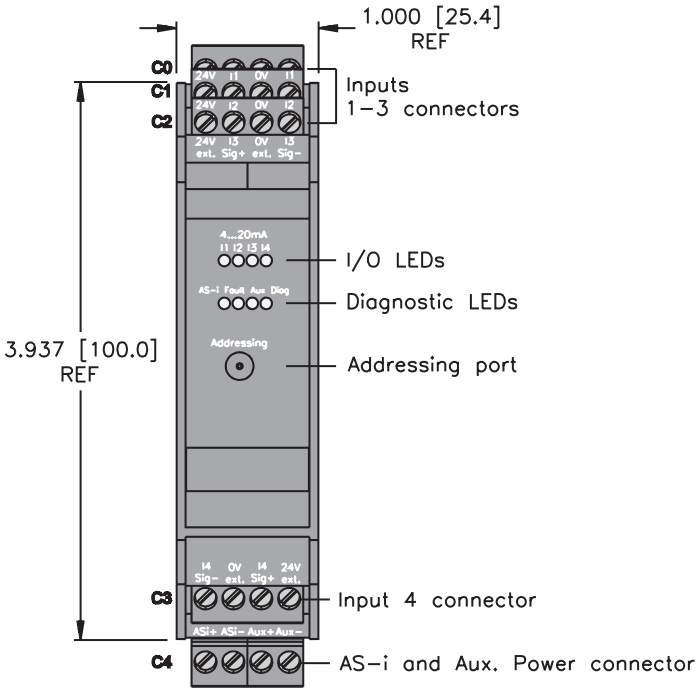
- Operating Temperature: 0 to +70°C (+32 to +158°F)
- Protection: IP 20

Diagnostics (Logical)

- I/O errors are indicated by the AS-I peripheral fault bit (v2.1 and higher)

Diagnostics (Physical)

- LEDs indicate faults for each input
- LEDs to indicate status of AS-I communication and power supply



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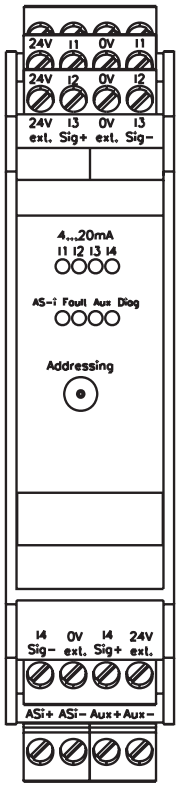
			Inputs						Data	
Part Number	AS-I Version	Addressing Style	In Count	Pinout	Style	Group Diagnostics	Individual Diagnostics	OCD	Slave Profile	Map
ASI-AI-4 BW1364	2.1	Single	4	1	4 to 20 mA	X	X	X	7.3-E	1
ASI-AI-4 BW1365	2.1	Single	4	1	0 to 10 V	X	X	X	7.3-E	1
ASI-AI-4PT100 BW1368	2.1	Single	4	2	RTD	X	X	X	7.3-5	1

Input/Output Connectors



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	Analog Value (LSB)							
	1	Analog Value (MSB)							

Note: Data map applies to each channel of analog data used. Resolution is 1 uA/bit in current mode, 1 mV/bit in voltage mode and 0.1 °C in temperature mode (range is -200 to +850°C).

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Temperature Input Stations

ASI-AI-4PT100 BW1254
ASI-AI/DO-2RTD/2R BW1552

- **Analog on AS-I**
- **IP 20 for In-The-Cabinet**
- **Powered by AS-I or Auxiliary Supply**
- **Relay Output Option**

Electrical

- Operating Current: <80 mA from AS-I

Power Distribution

- Inputs: AS-I or Auxiliary supply (BW1368 is only powered from AS-I)

Mechanical

- Operating Temperature: 0 to +70°C (+32 to +158°F)
- Protection: IP 65
- Connections: Cage clamp block through gland fittings

Material

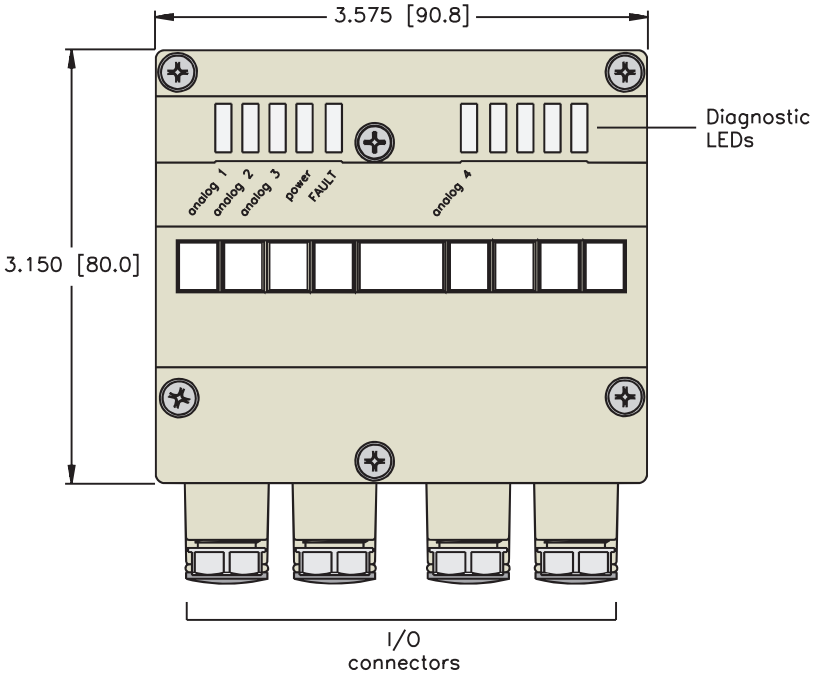
- Housing: Plastic

Diagnostics (Logical)

- I/O errors are indicated by the AS-I peripheral fault bit (v2.1 and higher)

Diagnostics (Physical)

- LEDs indicate faults for each input
- LEDs to indicate status of AS-I communication and power supply



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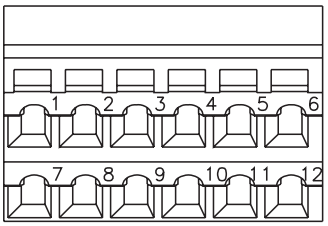
			Inputs						Outputs				Data	
Part Number	AS-I Version	Addressing Style	In Count	Pinout	Style	Group Diagnostics	Individual Diagnostics	OCD	Out Count	Pinout	Current	Individual Diagnostics	Slave Profile	Map
ASI-AI-4PT100 BW1254	2.1	Single	4	1	RTD	X	X	X	0				7.3-E	1
ASI-AI/DO-2RTD/2R BW1552	2.1	Single	2	2	RTD	X	X	X	2	2	0.5 A		7.3-D	1

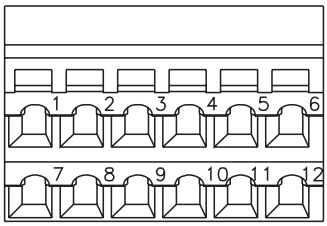
Input/Output Connectors

1



1	V+
2	$Signal_0$-
3	V0-
4	V+
5	$Signal_1$-
6	V_1-
7	V+
8	$Signal_2$-
9	V_2-
10	V+
11	$Signal_3$-
12	V_3-

2



1	V+
2	$Signal_0$-
3	V0-
4	V+
5	$Signal_1$-
6	V_1-
7	O_0 (NO)
8	O_0-
9	O_0 (NC)
10	O_1 (NO)
11	O_1-
12	O_1 (NC)

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	Analog Value (LSB)							
	1	Analog Value (MSB)							

Note: Data map applies to each channel of analog data used. Resolution is 0.1 °C/bit in RTD mode (range is -200 to +850 C).

For BW1552 relay outputs are set via parameter bits 2 and 3.

AS-I connections are made via standard AS-I base modules (ASI-BM BW1180, ASI-BM BW1182) if I/O is powered by AS-I or auxiliary supply base modules (ASI-BM BW1181, ASI-BM BW1183) if I/O is powered by auxiliary power (see pages E105-106).

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Analog Output Stations

ASI-AO-2 BW1412
ASI-AO-2A BW1727

- **Analog on AS-I**
- **IP 20 for In-The-Cabinet**
- **Powered by AS-I or Auxiliary Supply**
- **Voltage and Current Outputs**

Electrical

- Operating Current: <80 mA from AS-I

Power Distribution

- Outputs: AS-I or Auxiliary supply, selectable by switch inside housing
  BW1412 default from AS-I
  BW1727 default from auxiliary supply

Mechanical

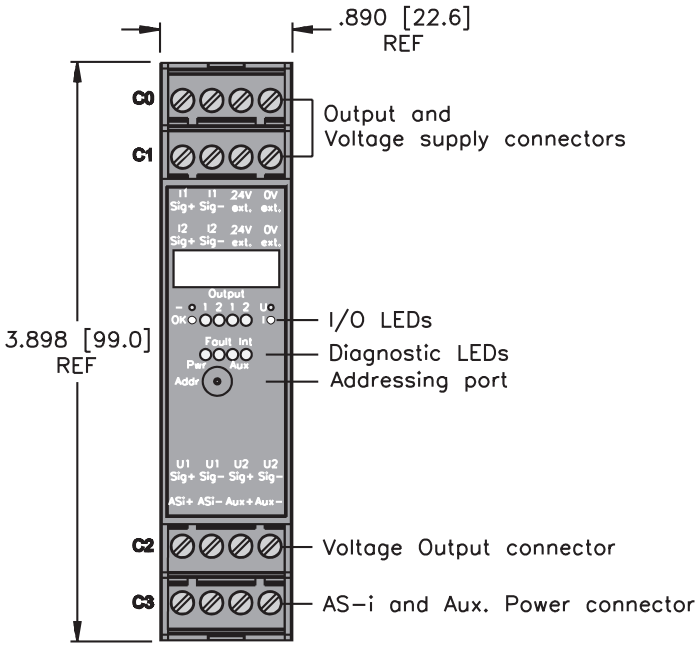
- Operating Temperature: 0 to +70°C (+32 to +158°F)
- Protection: IP 20

Diagnostics (Logical)

- I/O errors are indicated by the AS-I peripheral fault bit (v2.1 and higher)

Diagnostics (Physical)

- LEDs indicates an I/O fault (over- or under-range for each channel)
- LEDs to indicate status of AS-I communication and power supply



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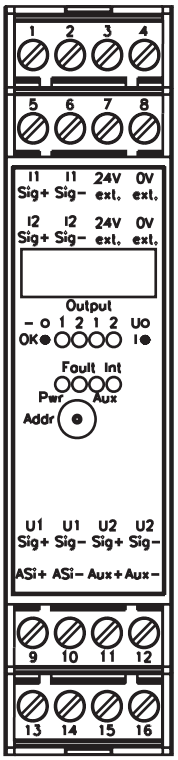
			Outputs					Data	
Part Number	AS-I Version	Addressing	Output Count	Style	Individual Diagnostics	OCD	Slave Profile	Map
ASI-AO-2 BW1412	2.1	Single	2	0 to 20 mA/0 to 10 V	X	X	7.3-5	1
ASI-AO-2A BW1727	2.1	Single	2	0 to 20 mA/0 to 10 V	X	X	7.3-5	1

Input/Output Connectors



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	0	Analog Value (LSB)							
	1	Analog Value (MSB)							

Note: Data map applies to each channel of analog data used. Resolution is 1 uA/bit (0-20000 in current mode and 1 mV/bit (0-10000) in voltage mode.

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Analog Output Stations

- **Analog on AS-I**
- **IP 65 Protection**
- **Powered by AS-I or Auxiliary Supply**
- **Voltage or Current Outputs**

ASI-AO-2 BW1234
ASI-AO-2 BW1235

Electrical

- Operating Current: <80 mA from AS-I

Power Distribution

- Outputs: AS-I or Auxiliary supply, selectable by internal jumpers

Mechanical

- Operating Temperature: 0 to +70°C (+32 to +158°F)
- Protection: IP 65
- Connections: Cage clamp block through gland fittings

Material

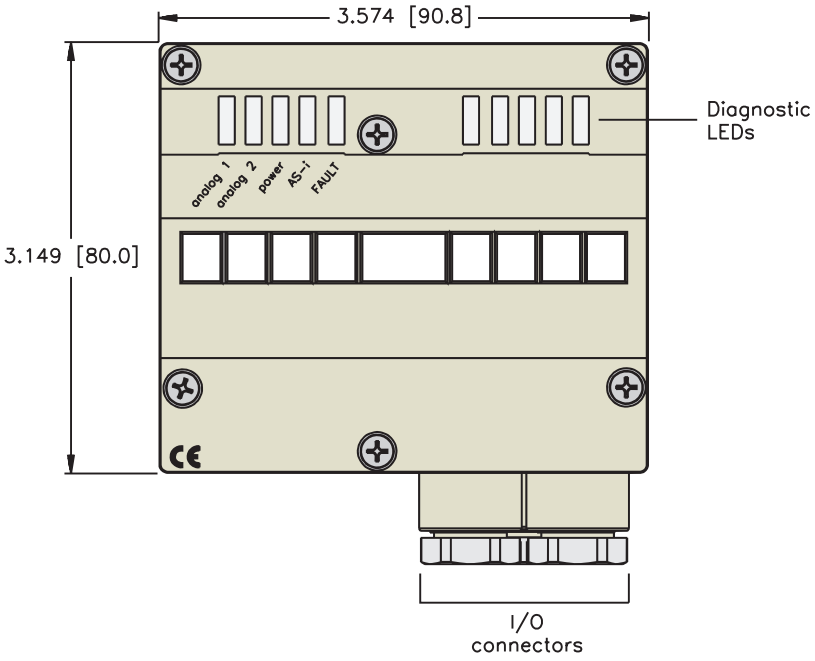
- Housing: Plastic

Diagnostics (Logical)

- I/O errors are indicated by the AS-I peripheral fault bit (v2.1 and higher)

Diagnostics (Physical)

- LEDs indicates an I/O fault (over- or under-range for each channel)
- LEDs to indicate status of AS-I communication and power supply



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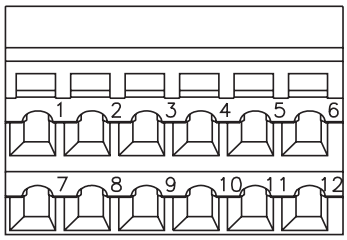
			Outputs				Data	
Part Number	AS-I Version	Addressing Style	Output Count	Style	Individual Diagnostics	OCD	Slave Profile	Map
ASI-AO-2 BW1234	2.1	Single	2	0 to 20 mA	X	X	7.3-5	1
ASI-AO-2 BW1235	2.1	Single	2	0 to 10 V	X	X	7.3-5	1

Input/Output Connectors

1



1	V_{AUX}+
2	Signal1+
3	V_{AUX}-
4	Signal1-
5	Shield
6	Shield
7	V_{AUX}+
8	Signal0+
9	V_{AUX}-
10	Signal0-
11	FG (Function Gnd)
12	FG (Function Gnd)

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	Analog Value (LSB)							
	1	Analog Value (MSB)							

Note: Data map applies to each channel of analog data used. Resolution is 1 uA/bit in current mode and 1 mV/bit in voltage mode. BW1234 range of values is 0-20000. BW1235 range of values is 0-10000.

AS-I connections are made via standard AS-I base modules (ASI-BM BW1180, ASI-BM BW1182) if I/O is powered by AS-I or auxiliary supply base modules (ASI-BM BW1181, ASI-BM BW1183) if I/O is powered by auxiliary power (see pages E105-106).

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Analog Output Stations

ASI-AO-4 BW1366
ASI-AO-4 BW1367

- **Analog on AS-I**
- **IP 20 Protection**
- **Powered by AS-I or Auxiliary Supply**
- **Voltage or Current Outputs**

Electrical

- Operating Current: <80 mA from AS-I

Power Distribution

- Outputs: AS-I or Auxiliary supply

Mechanical

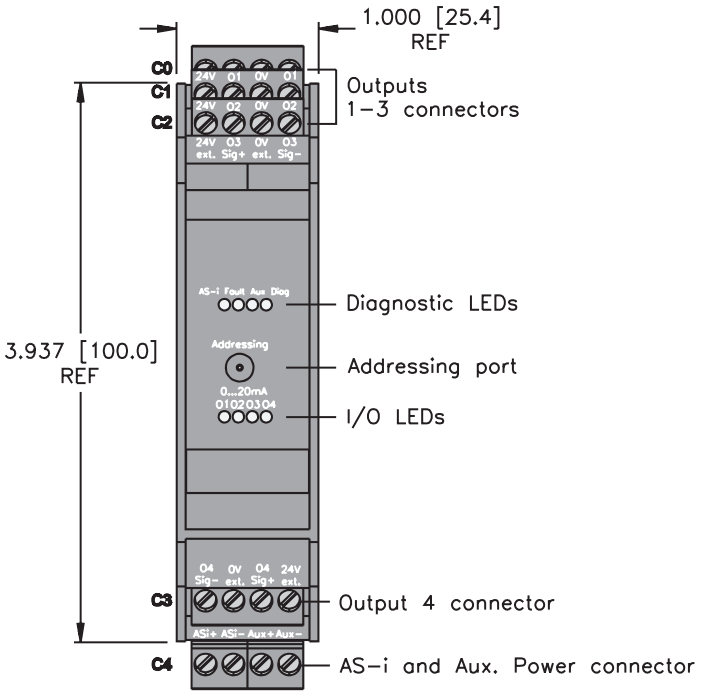
- Operating Temperature: 0 to +70°C (+32 to +158°F)
- Protection: IP 20

Diagnostics (Logical)

- I/O errors are indicated by the AS-I peripheral fault bit (v2.1 and higher)

Diagnostics (Physical)

- LEDs indicates an I/O fault (over- or under-range for each channel)
- LEDs to indicate status of AS-I communication and power supply



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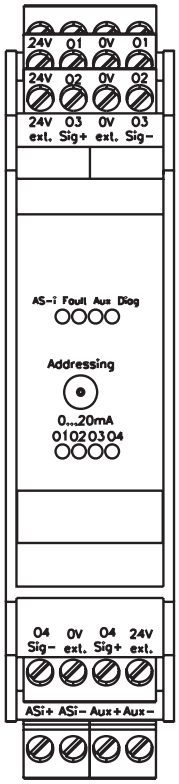
			Outputs				Data	
Part Number	Input Count	Addressing Style	Output Count	Style	Individual Diagnostics	OCD	Slave Profile	Map
ASI-AO-4 BW1366	2.1	Single	4	0 to 20 mA	X	X	7.3-6	1
ASI-AO-4 BW1367	2.1	Single	4	0 to 10 V	X	X	7.3-6	1

Input/Output Connectors



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	Analog Value (LSB)							
	1	Analog Value (MSB)							

Note: Data map applies to each channel of analog data used. Resolution is 1 uA/bit in current mode and 1 mV/bit in voltage mode. BW1366 range of values is 4000-20000. BW1367 range of values is 0-10000.

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Scale Input Station

- **Analog on AS-I**
- **Power from AS-I**
- **IP 65 Protection**
- **Unique I/O Configurations**

ASI-AI-1SCALE BW1465

CE

Note: This station is designed for connecting a load cell to AS-I.

Electrical

- Operating Current: <80 mA from AS-I

Power Distribution

- Inputs: AS-I power supply

Mechanical

- Operating Temperature: 0 to +70°C (+32 to +158°F)
- Protection: IP 65
- Connections: Cage clamp block through gland fittings

Material

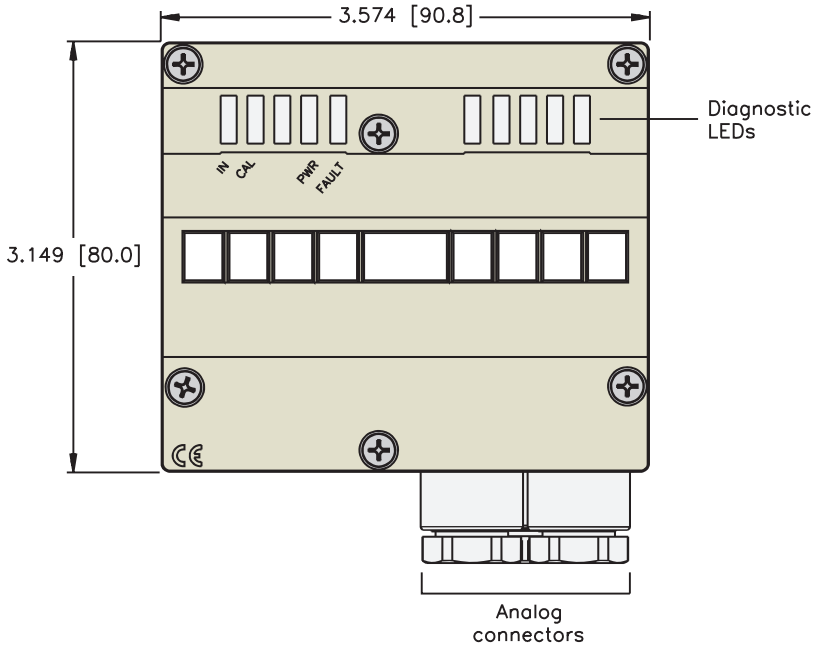
- Housing: Plastic

Diagnostics (Logical)

- I/O errors are indicated by the AS-I peripheral fault bit (v2.1 and higher)

Diagnostics (Physical)

- LEDs indicate I/O faults
- LEDs to indicate status of AS-I communication and power supply



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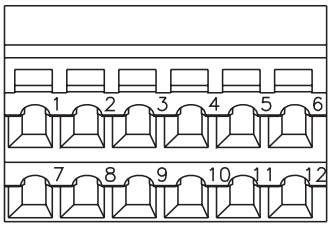
			Inputs					Data	
Part Number	AS-I Version	Addressing Style	In Count	Style	Group Diagnostics	Individual Diagnostics	OCD	Slave Profile	Map
ASI-AI-1SCALE BW1465	2.1	Single	1	Scale		X		7.3-C	1

Input/Output Connectors



1, 7	V+
2, 8	Signal1+
3, 9	Output+
4, 10	Output-
5, 11	Signal-
6, 12	V-

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	Analog Value (LSB)							
	1	Analog Value (MSB)							

Note: Resolution is 16 bits.
Calibration is done via Windows software and the special BW1260 master.
AS-I connections are made via standard AS-I base modules (ASI-BM BW1180, ASI-BM BW1182) (see pages E105-106).

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Analog Input Stations

ASI-AI-02-M12-V3 BW1893
ASI-AI-02-M12 BW1894
ASI-AI-02RTD-M12-V3 BW1895

- **Analog on AS-I**
- **Power from AS-I**
- **IP 65 Protection**
- **Current or PT100 Inputs**

Electrical

- Operating Current: <200 mA (BW1893, BW1894) or <80 mA (BW1895) from AS-I
- Sensor Current: <40 mA per input (BW1893, BW1894)

Power Distribution

- Outputs: AS-I power supply

Mechanical

- Operating Temperature: 0 to +70°C (+32 to +158°F)
- Protection: IP 65

Material

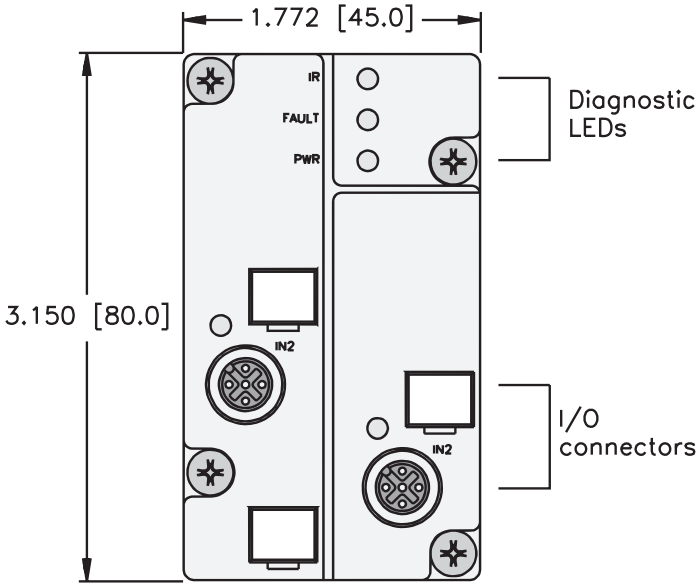
- Housing: Plastic

Diagnostics (Logical)

- I/O errors are indicated by the AS-I peripheral fault bit (v2.1 and higher)

Diagnostics (Physical)

- LEDs indicate an I/O fault (over- or under-range for each channel)
- LEDs to indicate status of AS-I communication and power supply



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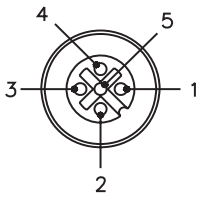
			Inputs							Data
Part Number	AS-I Version	Addressing Style	In Count	Pinout	Style	Group Diagnostics	Individual Diagnostics	OCD	Slave Profile	Map
ASI-AI-O2-M12-V3 BW1893	3.0	AB	2	1	4 to 20 mA	X	X	X	7.A-9	1
ASI-AI-O2-M12 BW1894	2.1	Single	2	1	4 to 20 mA	X	X	X	7.3-D	1
ASI-AI-O2RTD-M12-V3 BW1895	3.0	AB	2	2	RTD	X	X	X	7.A-9	1

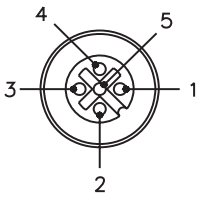
Input/Output Connectors

1



1 = V+
2 = Signal +
3 = 0 V
4 = 0 V
5 = Shield

2



1 = E+
2 = Signal +
3 = E -
4 = Signal -
5 = Shield

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	Analog Value (LSB)							
	0	Analog Value (MSB)							

Note: Data map applies to each channel of analog data used. Resolution is 1 uA/bit in current mode and 0.1 dC/bit in RTD mode.

BW1893 and BW1894 default range of values is 4000-20000 (can be configured for 0-27648). BW1895 default range of values is -200...+850 C (can be configured for -120 to +130 C).

AS-I connections are made via standard AS-I base modules (ASI-BM BW1180, ASI-BM BW1182) (see pages E105-106).

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Analog Input Stations

- **Analog on AS-I**
- **IP 65 Protection**
- **Current, Voltage or PT100 Inputs**
- **Powered by AS-I or Auxiliary Supply**

ASI-AI-4-M12 BW1359
ASI-AI-4-M12 BW1360
ASI-AI-4-M12 BW1742
ASI-AI-4PT100-M12 BW1363

Electrical

- Operating Current: <200 mA (except BW1363 is <80 mA) from AS-I
- Sensor Current: <40 mA per input (BW1359, BW1360, BW1742)

Power Distribution

- Inputs: AS-I or Auxiliary power supply

Mechanical

- Operating Temperature: 0 to +70°C (+32 to +158°F)
  (except BW1742 is -20 to +70° C) (-4 to +158°F)
- Protection: IP 65

Material

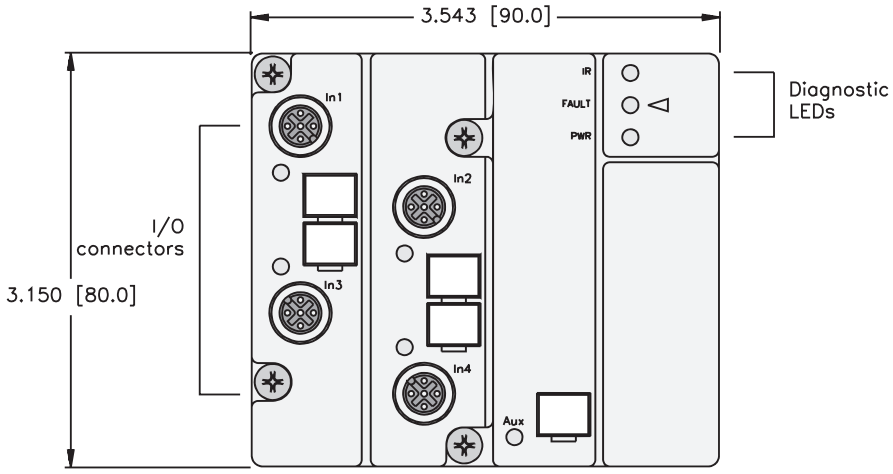
- Housing: Nylon

Diagnostics (Logical)

- I/O errors are indicated by the AS-I peripheral fault bit (v2.1 and higher)

Diagnostics (Physical)

- LEDs indicates an I/O fault (over or under-range for each channel)
- LEDs to indicate status of AS-I communication and power supply



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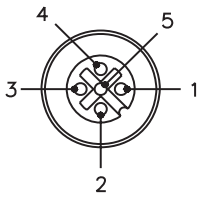
			Inputs							Data
Part Number	AS-I Version	Addressing Style	In Count	Pinout	Style	Group Diagnostics	Individual Diagnostics	OCD	Slave Profile	Map
ASI-AI-4-M12 BW1359	2.1	Single	4	1	4 to 20 mA	X	X	X	7.3-E	1
ASI-AI-4-M12 BW1360	2.1	Single	4	1	0 to 10 V	X	X	X	7.3-E	1
ASI-AI-4-M12 BW1742	2.1	Single	4	1	0 to 10 V	X	X	X	7.3-E	1
ASI-AI-4PT100-M12 BW1363	2.1	Single	4	2	RTD	X	X	X	7.3-E	1

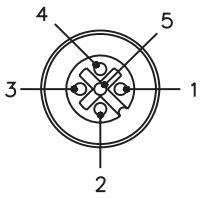
Input/Output Connectors

1



1 = V+
2 = Signal +
3 = 0 V-
4 = Signal -
5 = Shield

2



1 = E+
2 = Signal +
3 = E -
4 = Signal -
5 = Shield

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	Analog Value (LSB)							
	1	Analog Value (MSB)							

Note: Data map applies to each channel of analog data used. Resolution is 1 uA/bit in current mode, 1 mV/bit in voltage mode and 0.1 C/bit in temperature mode.

BW1359 range of values is 4000-20000. BW1360, BW1742 range of values is 0-10000. BW1363 range is -200 to +850 C.

AS-I connections are made via standard AS-I base modules (ASI-BM BW1180, ASI-BM BW1182) if I/O is powered by AS-I or auxiliary supply base modules (ASI-BM BW1181, ASI-BM BW1183) if I/O is powered by auxiliary power (see pages E105-106).

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Analog Output Stations

- **Analog on AS-I**
- **IP 65 Protection**
- **Voltage or Current Outputs**
- **Powered by AS-I or Auxiliary Supply**

ASI-AO-4-M12 BW1361
ASI-AO-4-M12 BW1362
ASI-AO-4-M12 BW1722
ASI-AO-4-M12 BW1736

Electrical

- Operating Current: <200 mA (except BW1722 is <100 mA) from AS-I
- Output Current: 1.1 A per output from auxiliary power (BW1722 only)

Power Distribution

- Outputs: AS-I power supply (except BW1722 is auxiliary power supply)

Mechanical

- Operating Temperature: 0 to +70°C (+32 to +158°F)
  (except BW1736 is -20 to +70°C) (-4 to +158°F)
- Protection: IP 65

Material

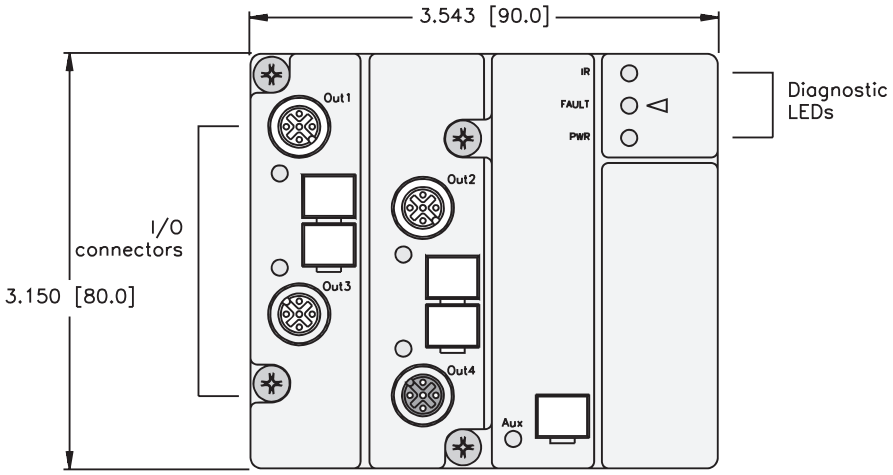
- Housing: Plastic

Diagnostics (Logical)

- I/O errors are indicated by the AS-I peripheral fault bit (v2.1 and higher)

Diagnostics (Physical)

- LEDs indicate an I/O fault for each channel
- LEDs to indicate status of AS-I communication and power supply



Note: ASI-AO-4-M12 BW1722 supplies up to 1.1 A for powering output devices.

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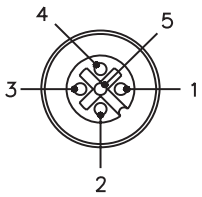
			Outputs				Data	
Part Number	AS-I Version	Addressing Style	Out Count	Style	Pinout	OCD	Slave Profile	Map
ASI-AO-4-M12 BW1361	2.1	Single	4	0 to 20 mA	1	X	7.3-6	1
ASI-AO-4-M12 BW1362	2.1	Single	4	0 to 10 V	1	X	7.3-6	1
ASI-AO-4A-M12 BW1722	2.1	Single	4	0 to 20 mA	2	X	7.3-6	1
ASI-AO-4-M12 BW1736	2.1	Single	4	0 to 10 V	1	X	7.3-6	1

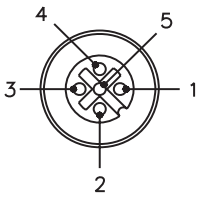
Input/Output Connectors

1



1 = Signal+
2 = NC
3 = Signal -
4 = NC
5 = Shield

2



1 = Signal +
2 = V+
3 = Signal -/V-
4 = NC
5 = Shield

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	Analog Value (LSB)							
	1	Analog Value (MSB)							

Note: Data map applies to each channel of analog data used. Resolution is 1 uA/bit in current mode and 1 mV/bit in voltage mode.

BW1361, BW1722 range of values is 0-20000. BW1362, BW1736 range of values is 0-10000.

AS-I connections are made via standard AS-I base modules (ASI-BM BW1180, ASI-BM BW1182) if I/O is powered by AS-I or auxiliary supply base modules (ASI-BM BW1181, ASI-BM BW1183) if I/O is powered by auxiliary power (see pages E105-106).

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AS-I Counter Stations

ASI-AI-2C BW1574
ASI-AI-4C BW1710
ASI-AI-1C BW1723*
ASI-AI-1C BW1711*

* Not UL

- **Count Signals Over AS-I**
- **1 to 4 Channels**
- **IP 65 Protection**
- **Powered by AS-I or Auxiliary Supply**

Electrical

- Operating Current: <200 mA (from U_B)
- Sensor Current: <150 mA from AS-I (except BW1723 is <700 mA from aux. supply)

Power Distribution

- Inputs: AS-I supply (except BW1723 from auxiliary supply)

Mechanical

- Operating Temperature: 0 to +70°C (+32 to +158°F)
- Protection: IP 65

Material

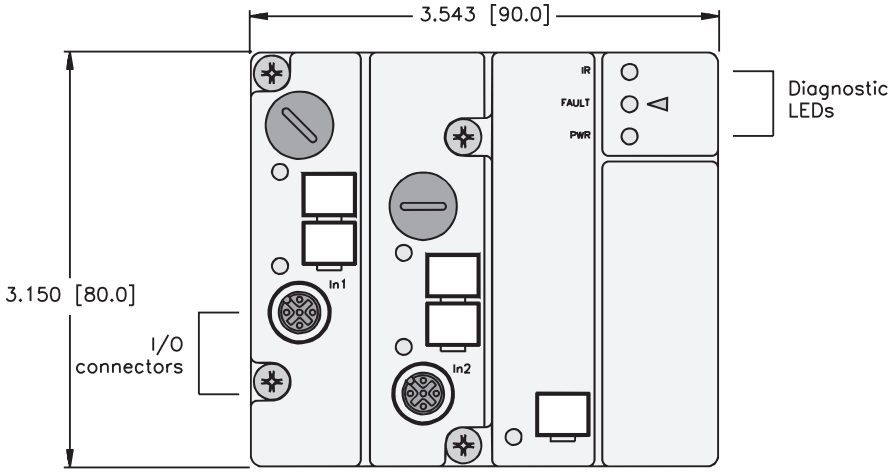
- Housing: Plastic

Diagnostics (Logical)

- Overflow and underflow errors are reported via the AS-I peripheral fault bit (except BW1711)

Diagnostics (Physical)

- LEDs indicate the status of each I/O point
- LEDs to indicate status of AS-I communication and power supply



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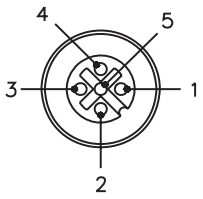
			Inputs				Data	
Part Number	AS-I Version	Addressing Style	In Count	Pinout	Style	Resolution	Slave Profile	Map
ASI-AI-2C BW1574	2.1	Single	2	1	Counter	16-bit	7.3-C	1
ASI-AI-4C BW1710	2.1	Single	4	2	Counter	16-bit	7.3-D	1
ASI-AI-1C BW1723	2.1	Single	1	3	Counter	16-bit	7.3-C	1
ASI-AI-1C BW1711	2.1	Single	1	4	Counter	4-bit	0.F-F-E	2

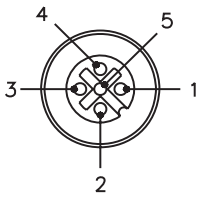
Input/Output Connectors

1



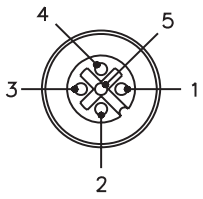
1 = V+
2 = Channel 1
3 = 0 V
4 = Channel 2
5 = NC

2



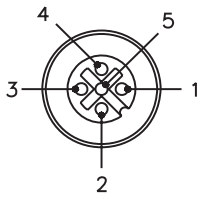
1 = V+
2 = Channel 1, 3
3 = 0 V
4 = Channel 2, 4
5 = NC

3



1 = V+
2 = Input
3 = 0 V
4 = Status In
5 = NC

4



1 = V+
2 = Input
3 = 0 V
4 = NC
5 = NC

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	Count Value (LSB)							
	1	Count Value (MSB)							

Note: Data map applies to each counter channel.
Range is -32768…+32767.

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0					Count Value			

Note: Range is 0…15.

AS-I connections are made via standard AS-I base modules (ASI-BM BW1180, ASI-BM BW1182) if I/O is powered by AS-I or auxiliary supply base modules (ASI-BM BW1181, ASI-BM BW1183) if I/O is powered by auxiliary power (BW1723 only) (see pages E105-106).

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AS-I Code Block

ASI-CODEBLK BW1527

- **Provides a Fixed Value**
- **IP 67 Protection**
- **Use to Code Tools or Machine Components**
- **Powered by AS-I**

Electrical

- Operating Current: <50 mA from AS-I

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 65

Material

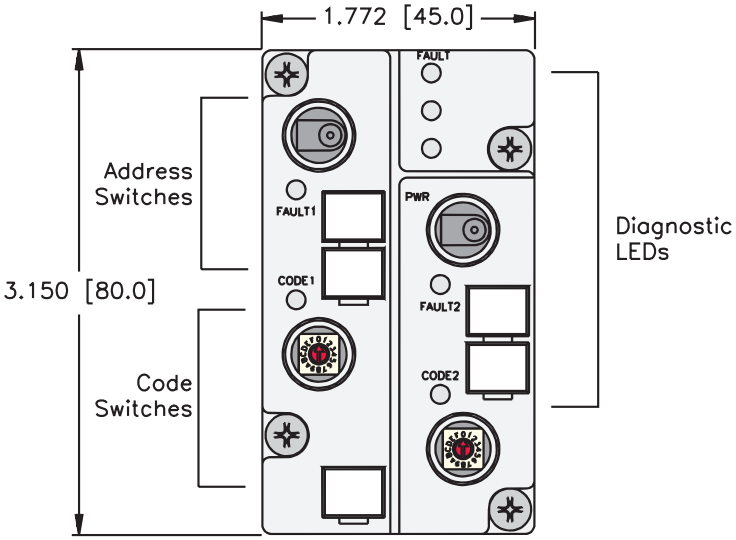
- Housing: Plastic

Diagnostics (Logical)

- Faults are reported via the AS-I peripheral fault bit (v2.1 and higher)

Diagnostics (Physical)

- LEDs indicate I/O faults
- LEDs to indicate status of AS-I communication and power supply



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			Inputs					Data
Part Number	AS-I Version	Addressing Style	In Count	# Addresses Occupied	Style	Range	Slave Profile	Map
ASI-CODEBLK BW1527	2.1	AB	8 bits	2	Code	0 to 255	0.A-F-E	1

Note: This station occupies two AS-I addresses, each with four inputs. The input values are fixed by two rotary switches to proved a code value

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	Code (High Nibble)				Code (Low Nibble)			

AS-I connections are made via standard AS-I base modules (ASI-BM BW1180, ASI-BM BW1182) (see pages E105-106).

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AS-I Repeaters

REP-ASI BW1855

- **Extend AS-I Network Length**
- **Isolate AS-I Power Segments**
- **IP 20 for In-The-Cabinet**
- **Fault LED Aids in Diagnostics**

Electrical

- Operating Current: <60 mA from each AS-I segment (<120 mA total)

Power Distribution

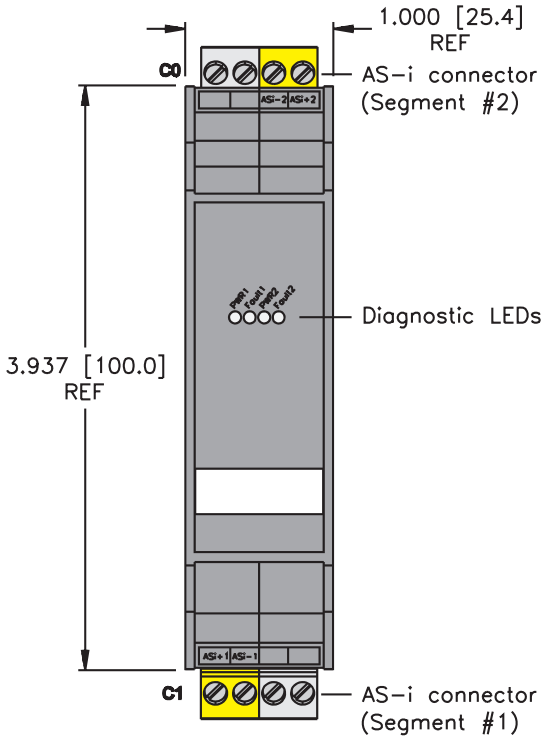
- Each isolated segment is powered from it's respective AS-I power supply

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Diagnostics (Physical)

- LEDs to indicate status of AS-I communication and power supply



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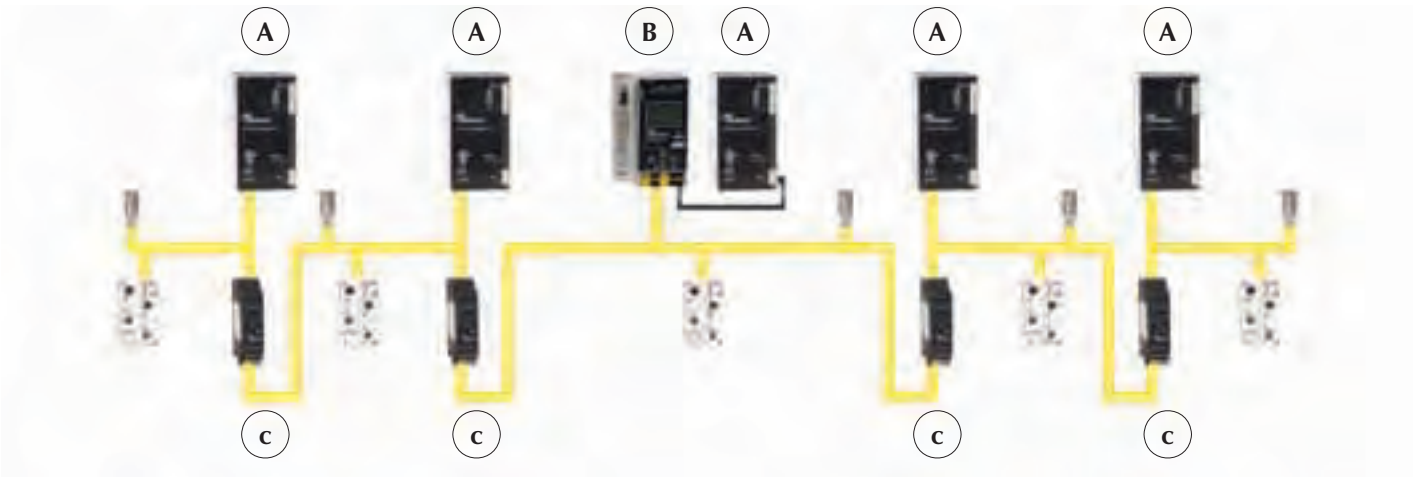
Enclosure Mounted AS-interface Repeater

The **REP-ASI BW1855** is an IP 20, DIN-rail mountable repeater for use an enclosure mounted AS-I extension solution. Network segments attached by a repeater are considered separate physical networks (trunk and drop lengths for each segment are determined as if the other segments are not present), but one logical network (addresses cannot be duplicated; the scanner and configuration tools work as a single network).

The repeater does not consume an address and is invisible to all the other devices on the network. The repeater supports a network extension of one full segment (an additional 100 m of AS-I cable). The REP-ASI BW1855 can be used in conjunction with an AS-I Tuner (ASI-TUNER BW1648 or ASI-TUNER-DIAG BW1843) to extend the network with segment lengths greater than 100 m. Repeaters can also be used to isolate power supplies on networks with multiple supplies, allowing greater than 8 A on the entire AS-I system (no individual segment may carry more than 8 A).

Up to two repeaters are allowed between any slave and the master. Placing the master in the middle of the system allows a maximum linear system of 500 m (if standard repeaters are used) or potentially 1000 m (if terminators and advanced repeaters are used), as shown in the diagram below.

A = Power supply
B = Master
C = Repeaters



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AS-I Repeater

- **Extend AS-I Network Length**
- **Isolate AS-I Power Segments**
- **IP65 Protection**
- **Fault LED Aids in Diagnostics**

REP-ASI BW1273*
REP-ASI-C1D2 BW1712
* Not ETL listed

Electrical

- Operating Current: <60 mA from each segment (<120 mA total)

Power Distribution

- Each isolated segment is powered from it's respective AS-I power supply

Mechanical

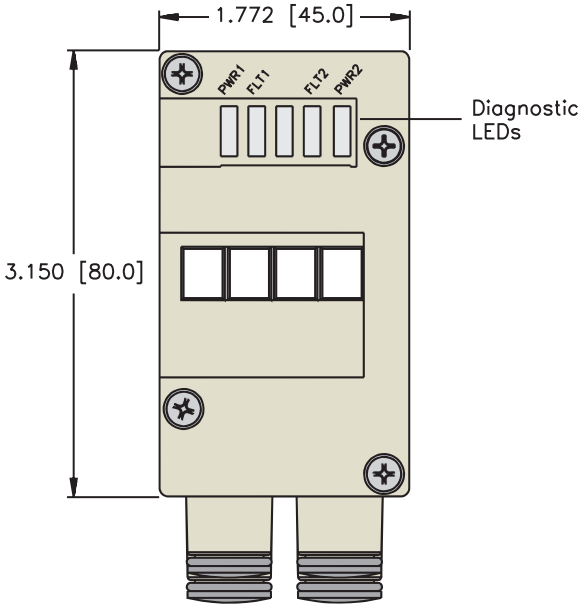
- Operating Temperature: -10 to +55°C (+14 to +131°F)
- Protection:IP65
- Connection: Via standard AS-I base module (flat or round cable)

Material

- Housing: Plastic

Diagnostics (Physical)

- LEDs to indicate status of AS-I communication and power supply



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Machine Mounted AS-interface ® Repeater

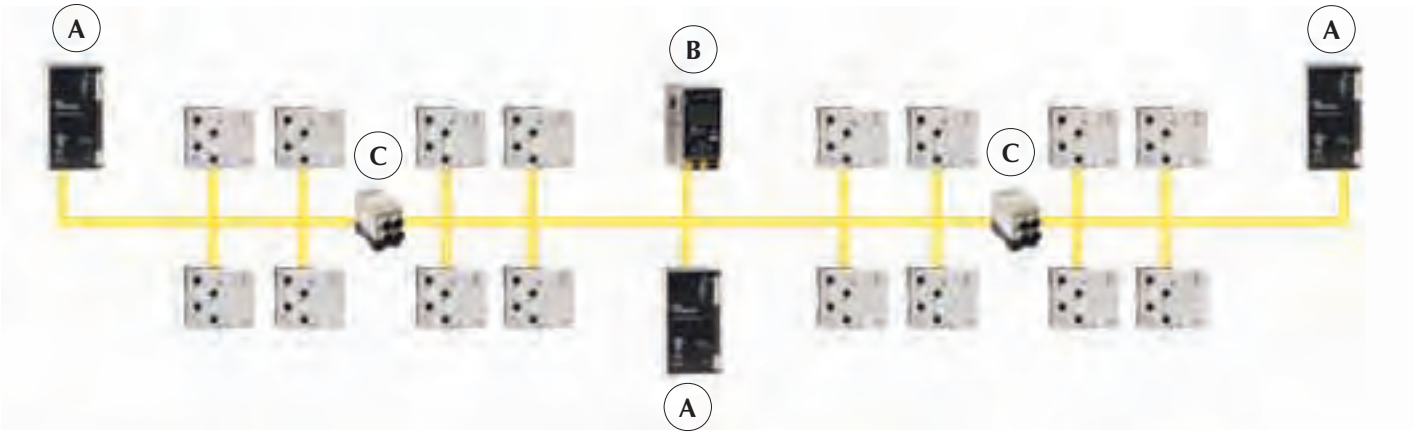
The **REP-ASI BW1273** is an IP 65 repeater for machine mounted AS-I extensions. Network segments attached by a repeater are considered separate physical networks (trunk and drop lengths for each segment are determined as if the other segments are not present), but one logical network (addresses cannot be duplicated; the scanner and configuration tools work as a single network).

The repeater does not consume an address and is invisible to all the other devices on the network. The **REP-ASI BW1273** supports a network extension of one full segment (an additional 100 m of AS-I cable). Repeaters can also be used to isolate power supplies on networks with multiple supplies, allowing greater than 8 A on the entire AS-I system (no individual segment may carry more than 8 A).

Up to two repeaters are allowed between any slave and the master. Placing the master in the middle of the system allows a maximum linear system of 500 m.

The **REP-ASI BW1273** physical wiring connections are made via standard AS-I base modules with two isolated ports (ASI-BM BW1181 for flat cable or ASI-BM BW1183 for round cable with screw terminal connections).

A = Power supplies
B = Master
C = Repeaters



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AS-I Tuners

- **Extend AS-I Network Length**
- **IP65 Protection**
- **Correct AS-I Communication Problems**
- **Extended Diagnostics Available**

ASI-TUNER BW1648*
ASI-TUNER-DIAG BW1843*
ASI-TUNER-C1D2 BW1715

* Not ETL listed

Electrical

- Operating Current: <60 mA (from AS-I)

Power Distribution

- AS-I Power supply

Mechanical

- Operating Temperature: 0 to +55 °C (+32 to +131°F)
- Protection:IP65

Material

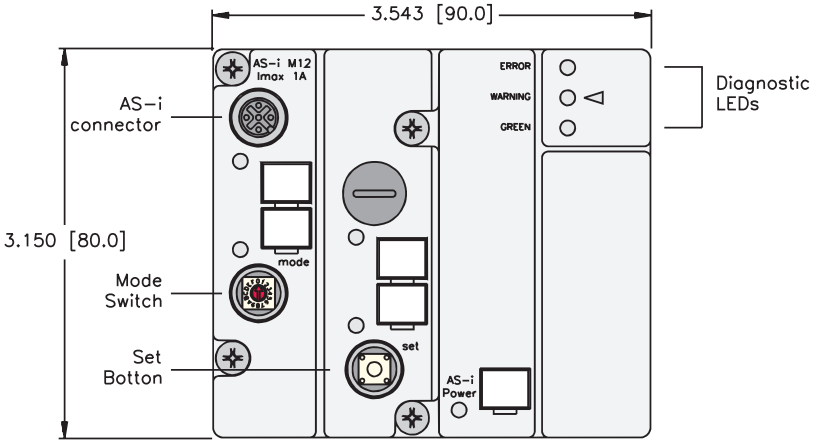
- Housing: Plastic

Diagnostics (Logical)

- BW1843 can be configured to be a slave on the AS-I network and report system and station health

Diagnostics (Physical)

- LEDs to indicate status of AS-I communication and power supply



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Machine Mounted AS-interface ® Tuners

The **ASI-TUNER BW1648** and **ASI-TUNER-DIAG BW1843** are IP 65 tuners for machine mounted AS-I extension solutions. Tuners are active circuits designed to affect the impedance of an AS-I network so the system can communicate without errors at lengths longer than 100 m. The tuners are configured for the system by placing them in a "teach" mode where they "listen to" AS-I network traffic. In this mode, tuners cycle through LRC impedance values to find the setting where the errors are minimized. Once this value is found, tuners operate in the "run" mode. The tuners also provide a green/yellow/red LED indicating network status, so potential errors can be found early and corrected before they become critical.

The **ASI-TUNER BW1648** does not consume an address and is invisible to all the other devices on the network. The **ASI-TUNER-DIAG BW1843** may be configured as an AS-I slave to allow more detailed diagnostic information to be available as standard I/O data, as well as mailbox information per the AS-I v3.0 specification. The status of all AS-I slaves on the system, as well as the voltage level at the tuner, can be obtained in this mode. Tuners can be used to extend the network length up to 300 m for a single segment (without the need for a repeater). Ideal placement of the tuner on the network is at the furthest point from the power supply.

Tuners connect to the network via standard AS-I base modules (ASI-BM BW1180 for flat cable and ASI-BM BW1182 for round cable with screw terminal connections).

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AS-I Masters for OEM Applications

- **Board-level Masters**
- **Advanced AS-I Diagnostics**
- **8-bit Host Interface**
- **Small Form Factor**

ASI-MM-PCB BW1670
ASI-MM-PCB BW1588
ASI-MMPCB BW1554 (shown)

CE

Electrical

- Operating Current: <70 mA from AS-I, 100 mA from external supply (5 VDC)

Power Distribution

- AS-I and external supplies

Mechanical

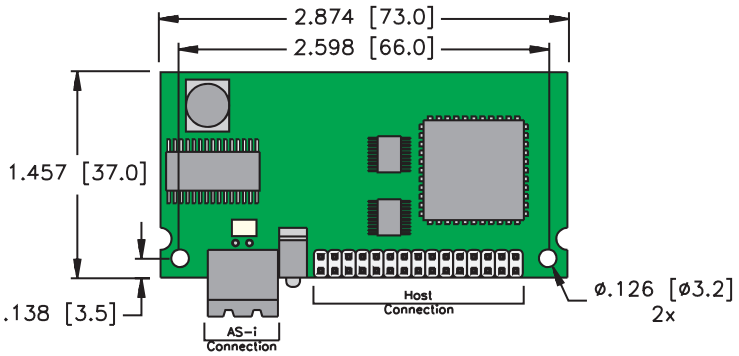
- Operating Temperature: 0 to +55 °C (+32 to +131°F)

Diagnostics (Logical)

- AS-I I/O errors can be reported via the peripheral fault bit for each slave (v2.1 and higher)

Diagnostics (Physical)

- LEDs to indicate status of AS-I communication and power supply (BW1554 only)



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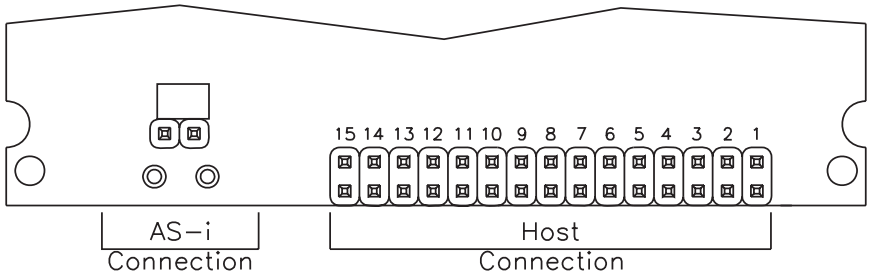
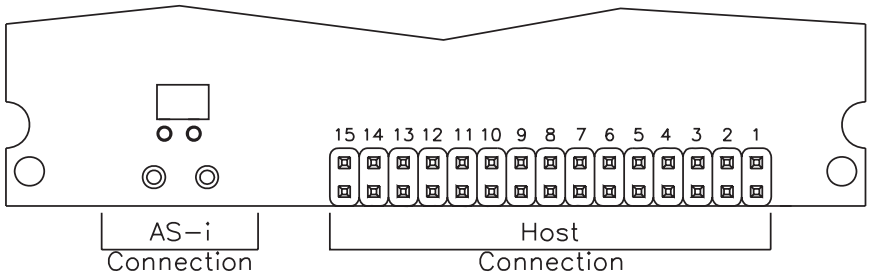
Part Number	AS-I Version	AS-I Connection	Diagram	# of AS-I Masters
ASI-MM-PCB BW1670*	2.1	Solder	A	1
ASI-MM-PCB BW1588	2.1	Solder	B	1
ASI-MM-PCB BW1554	2.1	Connector	C	1

A



B



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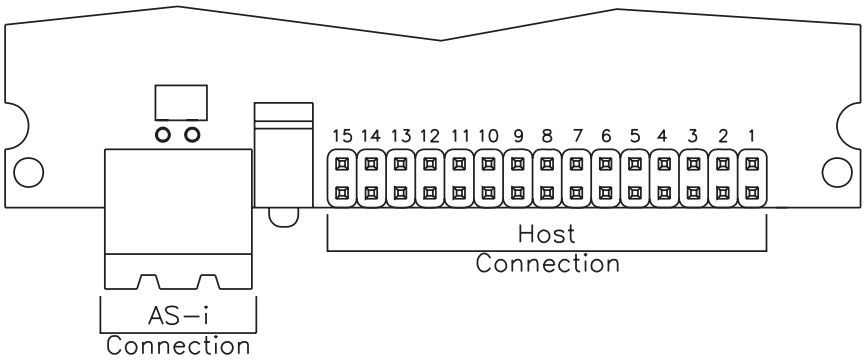

*Note: ASI-MM-PCB BW1670 is intended for use with the evaluation kit ASI-EVAL-KIT BW1565 (M108).

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OEM AS-I Slaves

- **PC-board Level Slaves**
- **Connection Options**
- **Various I/O Configurations**
- **Powered by AS-I**

ASI-IOM-0202-PCB BW1421 shown

Electrical

- Operating Current: <200 mA from AS-I (including all I/O)

Power Distribution

- Inputs: AS-I supply
- Outputs: AS-I supply

Mechanical

- Operating Temperature: -25 to +70°C (-13 to +158°F)
- Vibration: 15 g @ 10...55 Hz

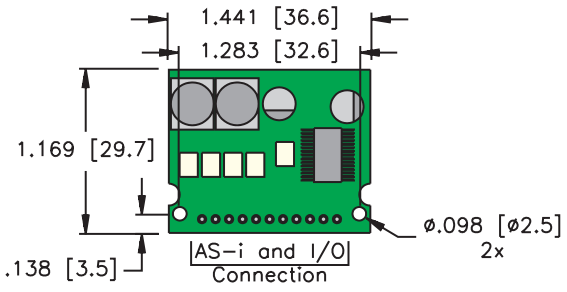
Diagnostics (Logical)

- I/O faults are indicated by the peripheral fault bit

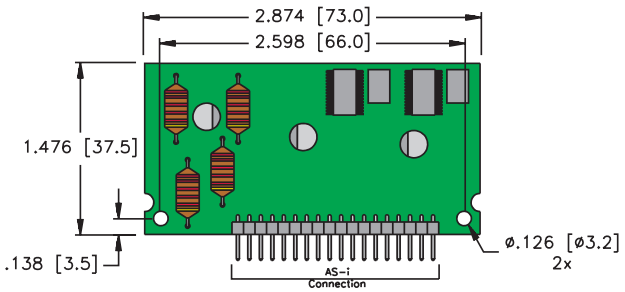
Diagnostics (Physical)

- One LED indicates an I/O fault for the slave

S



L



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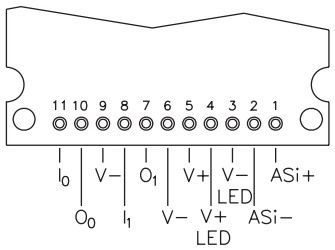
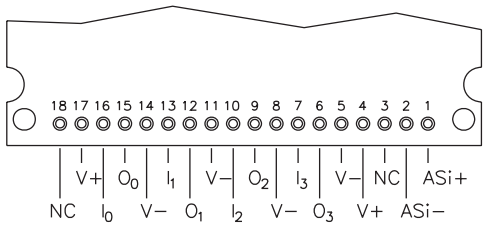
Part Number	Input Count	Output Count	Output Current (per Output)	Output Current (sum of all Outputs)	I/O Power	LEDs	Connector	A/B Address	Addresses	Slave Profile	Drawing	Pinout
ASI-IOM-0202-PCB BW1421	2	2	80 mA	80 mA	AS-I		NONE	Y	1	B.A-E	S	A
ASI-IOM-0202-PCB BW1443	2	2	80 mA	80 mA	AS-I		SCR	Y	1	B.A-E	S	A
ASI-IOM-0202-PCB BW1444	2	2	80 mA	80 mA	AS-I		PIN	Y	1	B.A-E	S	A
ASI-IOM-0403-PCB BW1386	4	3	80 mA	80 mA	AS-I		PIN	Y	1	7.A-E	L	C
ASI-IOM-0403-PCB BW1387	4	3	80 mA	80 mA	AS-I		SCR	Y	1	7.A-E	L	C
ASI-IOM-0404-PCB BW1218	4	4	100 mA	18 0mA	AS-I		PIN	N	1	7.0-F	L	B
ASI-IOM-0404-PCB BW1219	4	4	100 mA	180 mA	AS-I		SCR	N	1	7.0-F	L	B
ASI-IOM-0404-PCB-L BW1470	4	4	100 mA	180 mA	AS-I	X	SCR	N	1	7.0-F	L	B
ASI-IOM-0006-PCB BW1627	0	6	100 mA	180 mA	AS-I		SCR	Y	2	8.A-0	L	E
ASI-IOM-0800-PCB BW1351	8	0	-	-	AS-I		PIN	Y	2	0.A-2	L	D
ASI-IOM-0800-PCB BW1352	8	0	-	-	AS-I		SCR	Y	2	0.A-2	L	D

Note: SCR=Screw Terminal connection; PIN=Edge Pin connection

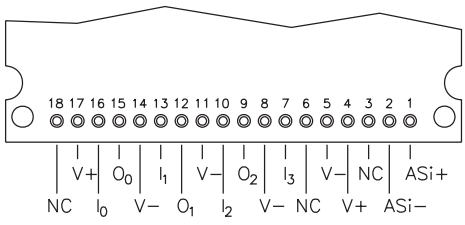
A



B



C



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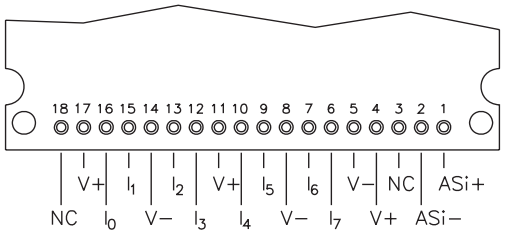

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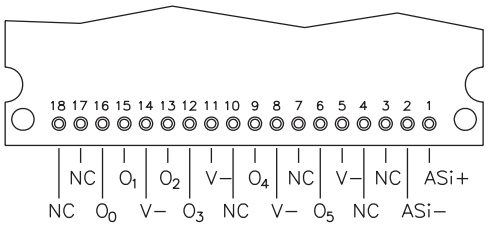

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OEM AS-I Slaves

- **PC-board Level Slaves**
- **Connection Options**
- **A/B Address Support**
- **Powered by Auxiliary Power**

Electrical

- Operating Current: <20 mA from AS-I
- Input Current: <180 mA from AS-I (BW1628 only)
- Output Current: see table on facing page

Power Distribution

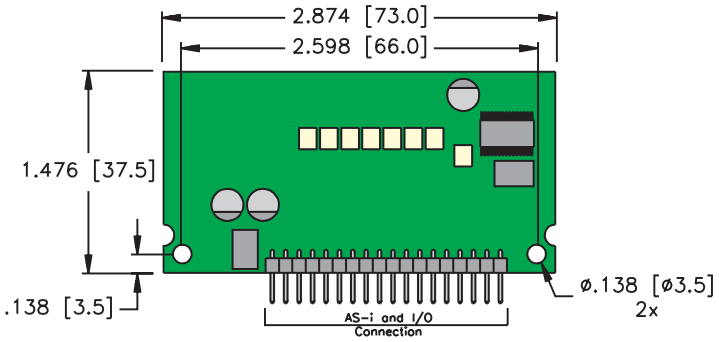
- Inputs: AS-I supply (BW1628)
  Auxiliary supply (BW1388, BW1389)
- Outputs: Auxiliary supply

Mechanical

- Operating Temperature: -25 to +70°C (-13 to +158°F)
- Vibration: 15 g @ 10 to 55 Hz

Diagnostics (Logical)

- I/O faults are indicated by the peripheral fault bit



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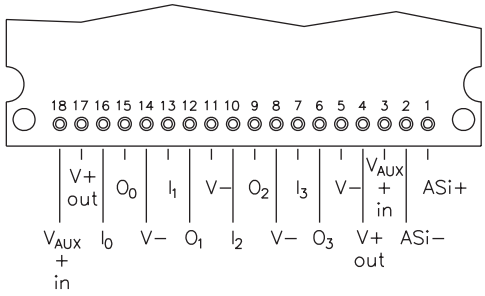
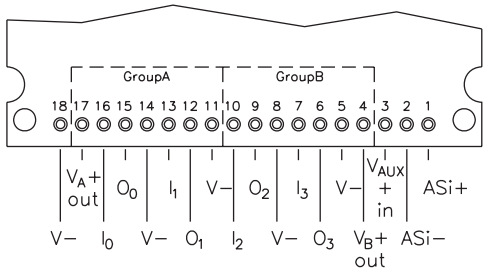
Part Number	Input Count	Output	Output Current (per	Output Current (sum of all Outputs)	I/O Power Source	LEDs	Connector	A/B Address	Addresses	Slave Profile	Drawing	Pinout
ASI-IOM-0404A-PCB-L-BW1628	4	4	150 mA	500 mA	AS-i/Aux	X	SCR	N	1	7.0-E	L	F
ASI-IOM-0404A-PCB-BW1388	4	4	100 mA	200 mA	Aux		PIN	N	1	7.0-F	L	G
ASI-IOM-0404A-PCB-BW1389	4	4	100 mA	200 mA	Aux		SCR	N	1	7.0-F	L	G

Note: SCR=Screw Terminal connection; PIN=Edge Pin connection

F



G



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OEM AS-I Slaves

- **PC-board Level Slaves**
- **Multiple Slaves on One Board**
- **I/O Count Choices**
- **Powered by AS-I**

ASI-IOM-0808-PCB BW1898 shown

ASI-IOM-0808-PCB -BW1898
ASI-IOM-0808-PCB-V3-BW1899
ASI-IOM-1616-PCB-BW1900
ASI-IOM-1616-PCB-V3-BW1901

Electrical

- Operating Current: <400 mA (BW1898, BW1899), <500 mA (BW1900, BW1901) from AS-I (including all I/O)

Power Distribution

- Inputs: AS-I supply
- Outputs: AS-I supply

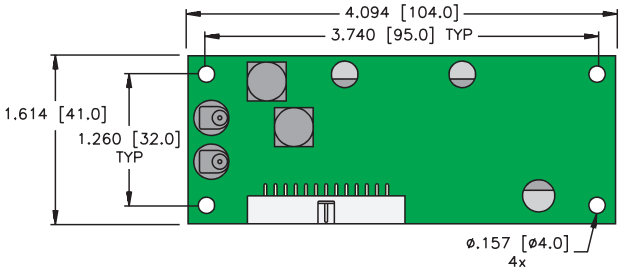
Mechanical

- Operating Temperature: -25 to +70°C (-13 to +158°F)
- Vibration: 15 g @ 10 to 55 Hz

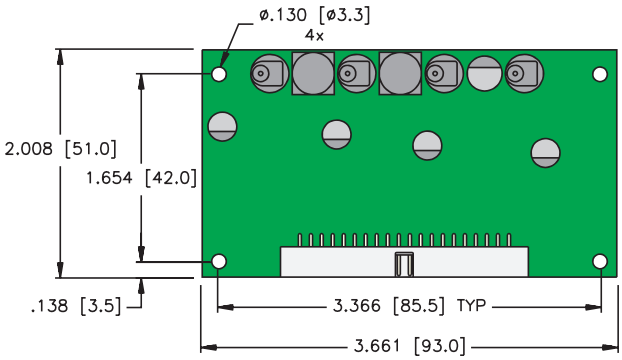
Diagnostics (Logical)

- I/O faults are indicated by the peripheral fault bit

M



M2



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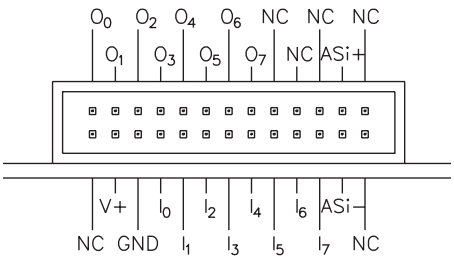
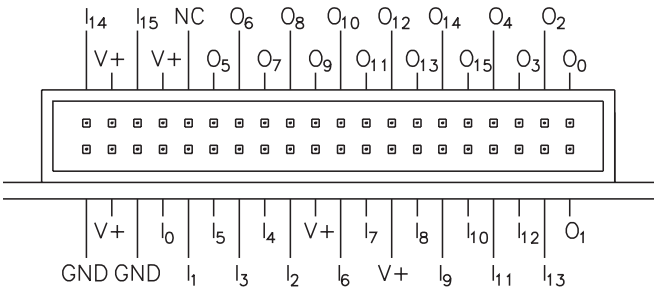
Part Number	Input Count	Output Count	Output Current (per Output)	Output Current (sum of all Outputs)	I/O Power	LEDs	Connector	A/B Address	Addresses	Slave Profile	Drawing	Pinout
ASI-IOM-0808-PCB -BW1898	8	8	70	200 mA	AS-I		CON	N	2	7.F-F-E	M	H
ASI-IOM-0808-PCB-V3-BW1899	8	8	70	200 mA	AS-I		CON	Y	2	7.A-7-7	M	H
ASI-IOM-1616-PCB-BW1900	16	16	70	200 mA	AS-I		CON	N	4	7.F-F-E	M2	I
ASI-IOM-1616-PCB-V3-BW1901	16	16	70	200 mA	AS-I		CON	Y	4	7.A-7-7	M2	I

Note: CON=Plug In connection

H



I



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OEM AS-I Slaves

- **PC-board Level Slave**
- **Relay Outputs**
- **For AC Control**
- **Powered by AS-I**

Electrical

- Operating Current: <85 mA from AS-I (including all I/O)
- Output Current: <10 A total (through relays)

Power Distribution

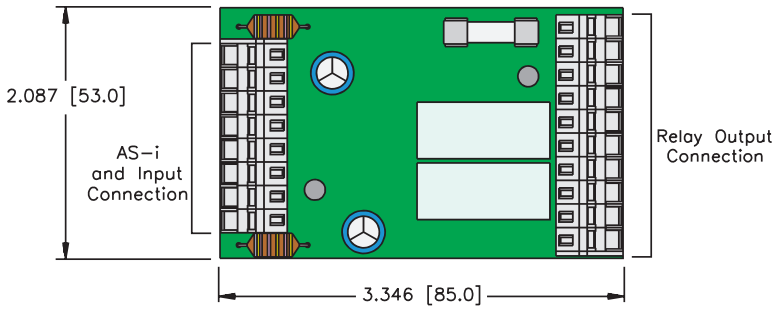
- Inputs: AS-I supply
- Outputs: AS-I supply (switching)

Mechanical

- Operating Temperature: 0 to +60°C (+32 to +140°F)

ASI-IOM-0202R-PCB BW1101

CE



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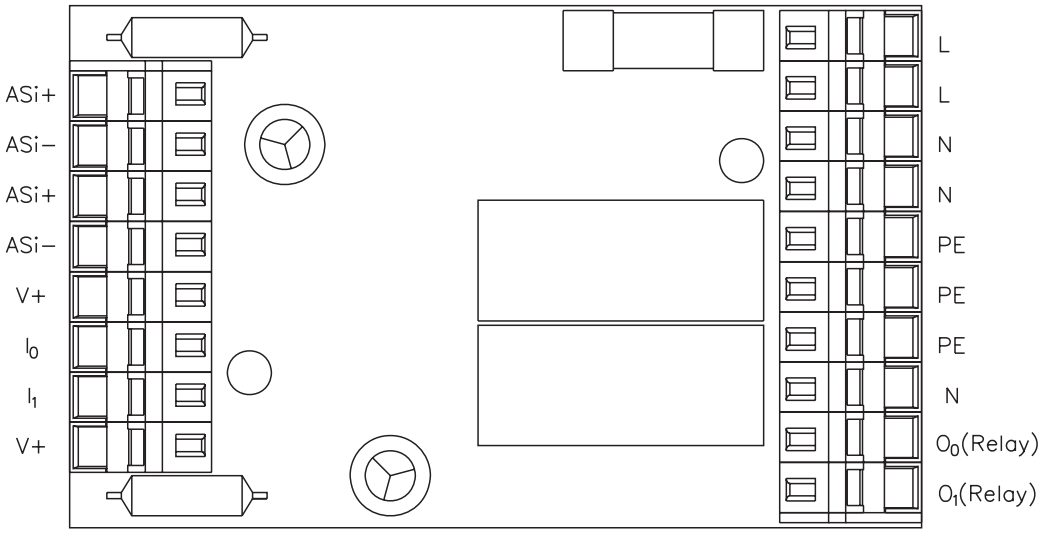
Part Number	Input Count	Output Count	Output Current (sum of all	I/O Power Source	LEDs	Connector	A/B Address	Addresses Consumed	Slave Profile	Drawing	Pinout
ASI-IOM-0202R-PCB BW1101	2	2	10 A	AS-I		CAG	N	1	B.F	R	J

Note: CAG=Cage Clamp connection

J



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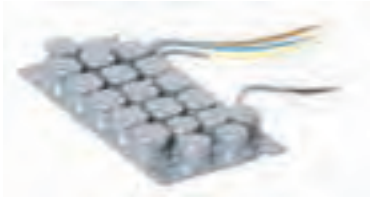
OEM Power Converter

- **Coated PC-board**
- **Aux. Power From AS-I**
- **Can Eliminate the Need for a Separate Auxiliary Supply**



ASI-OEM-PWR BW1485

Electrical

- Operating Voltage: 20 to 30 VDC (from AS-I)
- Output Current: <1.5 A

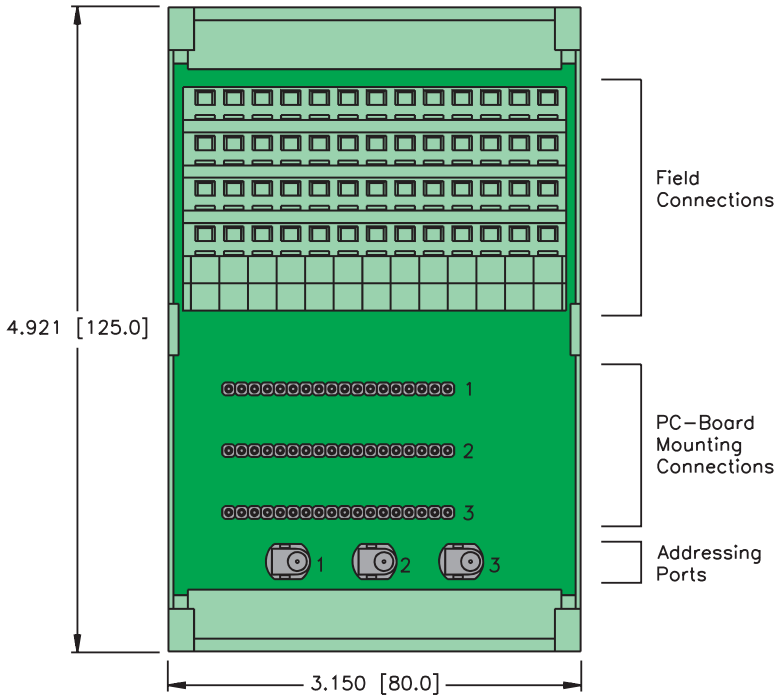
Mechanical

- Operating Temperature: -25 to +70°C (-13 to +158°F)
- Vibration: 15 g @ 10 to 55 Hz

OEM AS-I Accessories

- **Carrier of OEM Slaves**
- **Holds Up To 3 Boards**
- **Supports Wiring Pin Connections**

ASI-PCB-CARRIER BW1484



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Notes:

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AS-I Power Supply

- **Provide Decoupled Power to AS-I**
- **DIN-rail Mounting**
- **Status LEDs**
- **Maximum 4 A to AS-I**

Electrical

- Input Voltage: 90 to 265 VAC (BW1649)
  115 VAC or 230 VAC, switchable (BW1997)
- Input Current: ~0.6 A @ 230 VAC (BW1649)
  ~1.2 A @ 230 VAC (BW1997)
- Output Current: 4 A (BW1649)
  8 A (BW1997)

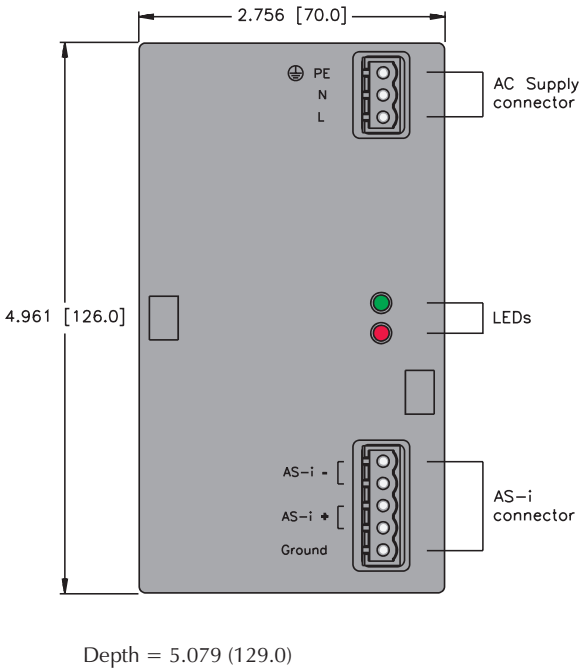
Mechanical

- Operating Temperature: -10 to +55°C (-13 to +131°F)
- Protection: IP 20

ASI-PS BW1649
ASI-PS-8A BW1997*

* Not UL listed

BW1649



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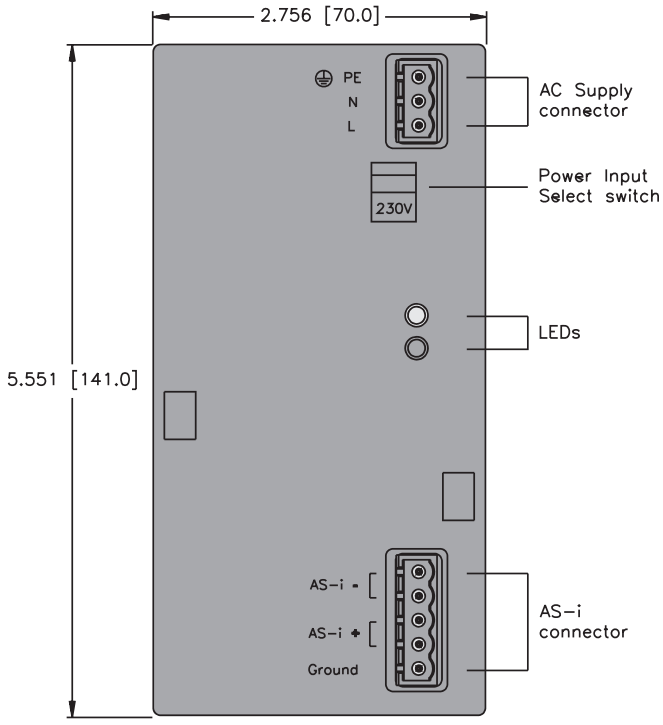
BW1997



Depth = 5.945 (151.0)

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AS-I Power Supply

- **Provide Decoupled Power to AS-I**
- **DIN-rail Mounting**
- **Status LEDs**
- **Power from 24VDC Supply**

Electrical

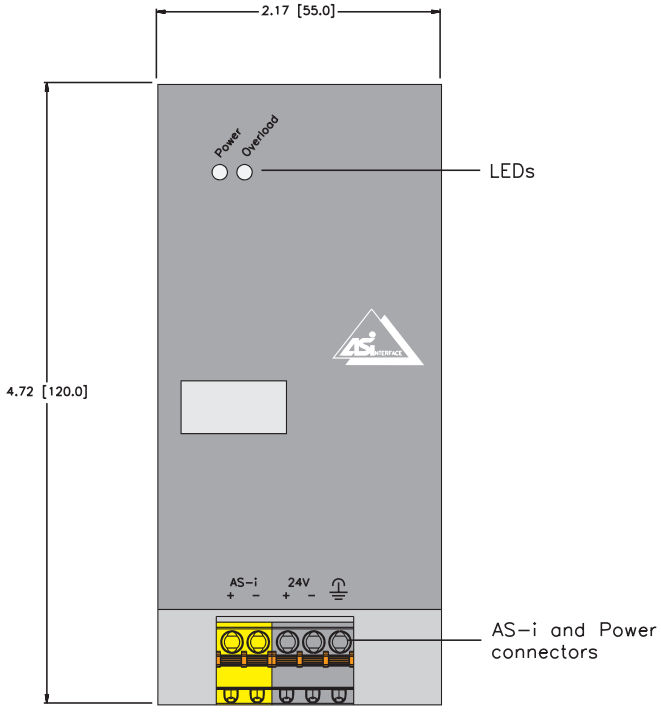
- Input Voltage: 20 to 32 VDC (24 VDC nominal)
- Input Current: <6.3 A (fused internally)
- Output Voltage: 29.5 to 31.6 VDC, AS-I decoupled
- Output Current: 2 A

Mechanical

- Operating Temperature: 0 to +55°C (32 to +131°F)
- Protection: IP 20

ASI-PS-24/30VDC-2A BW1760

CE



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DC Power Supplies

- **For Use With Stainless Steel AS-I Gateways**
- **30 VDC Supplies**
- **Power One or More AS-I Networks with One Supply**

Electrical

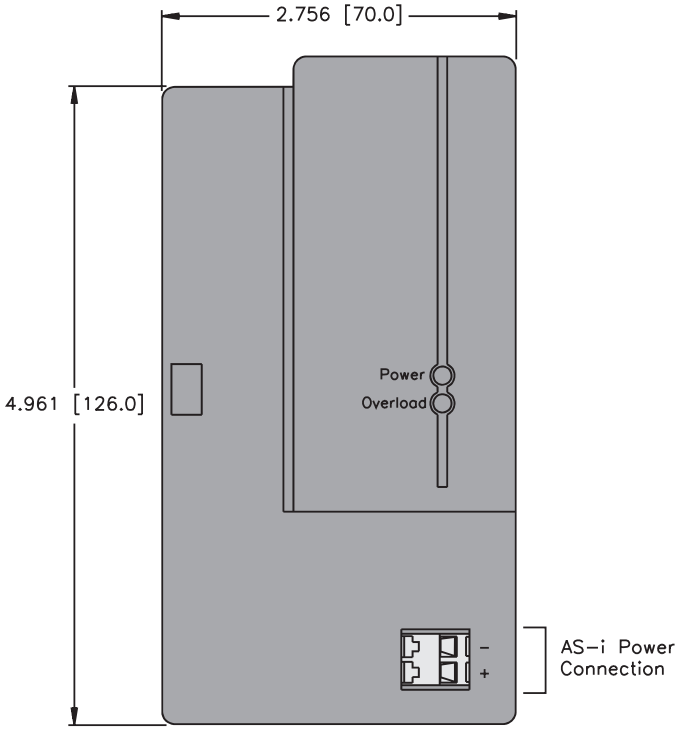
- Input Voltage: 93 to 132 VAC / 187 to 265 VAC
- Input Current: 0.9 A @ 230 VAC / 2.2 A @ 115 VAC (BW1597)
  1.8 A @ 230 VAC / 4.2 A @ 115 VAC (BW1593, BW1598)
- Output Current: 4 A, limited at 6 A (BW1597)
  8 A, limited at 12 A (BW1593, BW1598)

Mechanical

- Operating Temperature: 0 to +60°C (+32 to +140°F)

PS-30VDC-8A BW1593
PS-30VDC-4A-C1D2 BW1597*
PS-30VDC-8A-C1D2 BW1598*

* Not UL



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3-Phase Power Supply

PS-30VDC-3PH BW1676

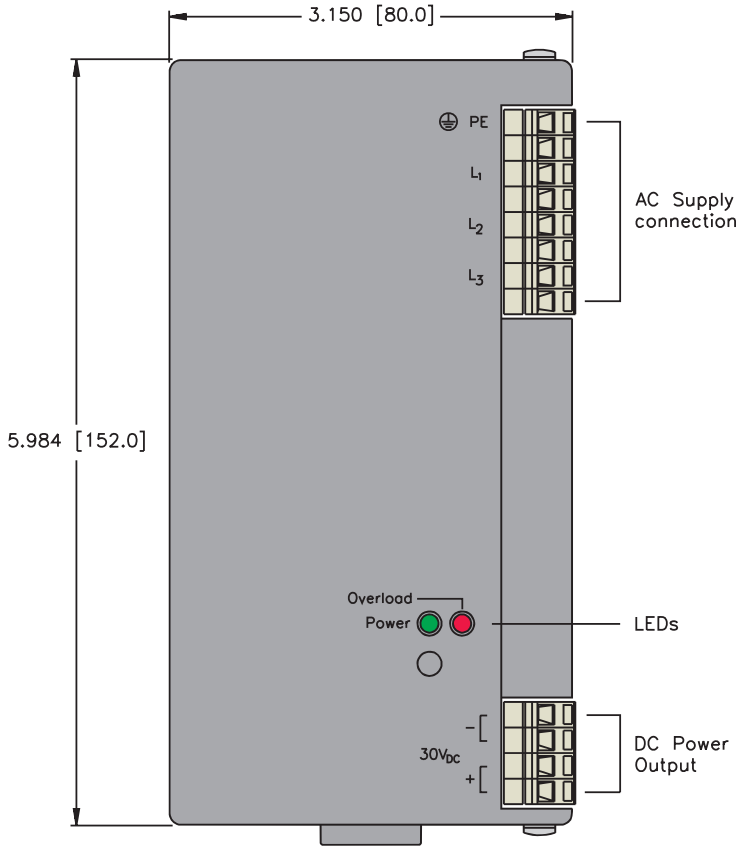
- **For Use with AS-I Decoupling Products**
- **30 VDC Output**
- **Power One or More AS-I Networks with One Supply**

Electrical

- Input Voltage: 3 x 340 to 550 VAC (3-phase)
- Input Current: 3 x 0.7 A @ 400 VAC
- Output Current: <8 A (DC)

Mechanical

- Operating Temperature: 0 to +55°C (32 to +131°F)



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AS-I Power Extenders

- **Convert Standard Power to AS-I**
- **2.8 or 4 A Available**
- **IP 65 Protection**
- **Use One Supply for Multiple Segments**

ASI-PE BW1197*
ASI-PE BW1477*
ASI-PE-2.8A-C1D2 BW1713
ASI-PE-4A-C1D2 BW1714

* Not ETL Listed

Electrical

- Input Voltage: 30 VDC
- Output Voltage: 30 VDC
- Output Current: 2.8 A, limited to 3 A (BW1197, BW1713)
  4 A, limited to 6 A (BW1477, BW1714)

Mechanical

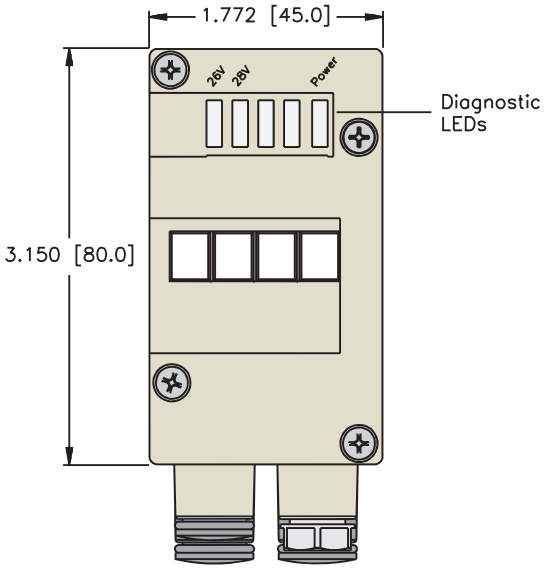
- Operating Temperature: 0 to +70°C (+32 to +158°F)
- Protection: IP 65

Material

- Housing: Plastic

Diagnostics (Physical)

- LEDs to indicate power supply status



Note: AS-I and power connections are made via standard AS-I base modules with two isolated ports (ASI-BM BW1181 for flat cable, ASI-BM BW1183 for round cable with screw terminals). See pages E105-106.

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AS-I Power Decoupler

ASI-PE-2 BW1943

- **Convert Standard Power to AS-I**
- **4 A per Network**
- **IP 20 Protection**
- **Use One Supply for Multiple Segments**

Electrical

- Input Voltage: 30 VDC
- Output Voltage: 30 VDC
- Output Current: 4 A max. For each of up to 2 isolated AS-I networks

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

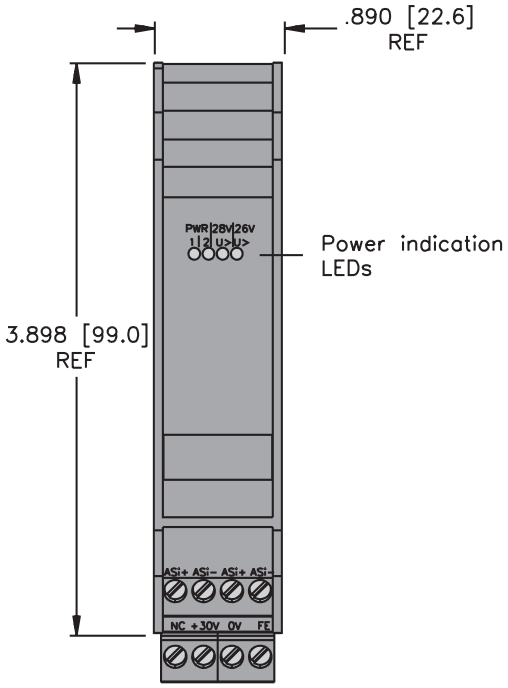
Material

- Housing: Plastic

Diagnostics (Physical)

- LEDs to indicate power supply status

CE



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AS-I Safety Monitors

- **AS-I Safety-at-Work**
- **1 or 2 Safety Circuits**
- **Emergency Stop System over AS-I**
- **Fast Diagnosis of E-Stops**

ASI-SM-1 BW1764
ASI-SM-2 BW1765

CE

Electrical

- Operating Current: ~45 mA from AS-I
- ~150 mA (BW1764), ~200 mA (BW1765) from separate power
- Response Delay: <40 ms

Mechanical

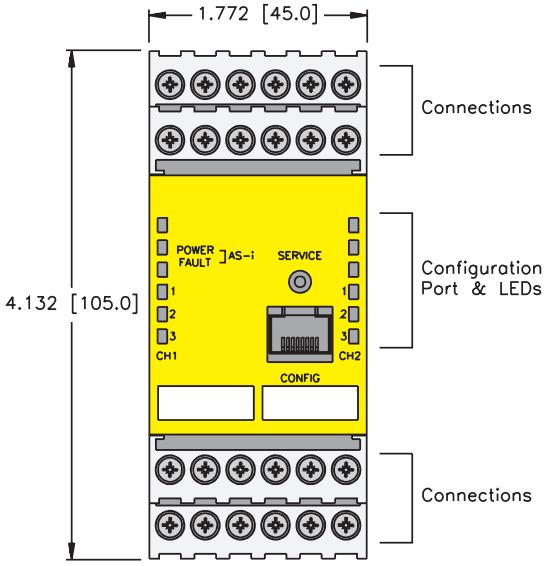
- Operating Temperature: -20 to +60°C (+32 to +131°F)
- Protection: IP 20

Diagnostics (Logical)

- E-stop fault information is transmitted via the AS-I master

Diagnostics (Physical)

- LEDs to indicate status of AS-I communication and e-stop system



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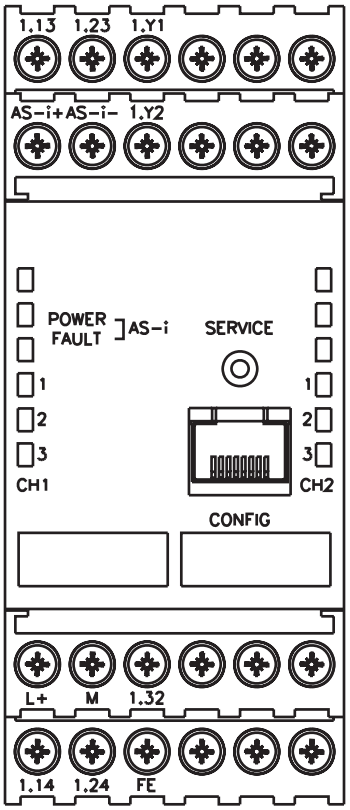
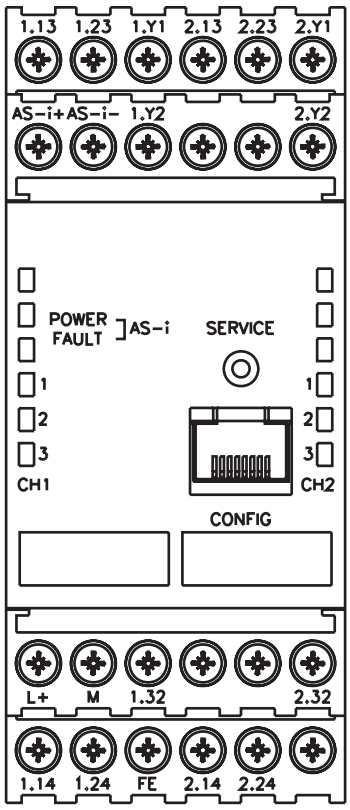
Part Number	Number of Safety Circuits	Connection Diagram	Configuration Port
ASI-SM-1 BW1764	1	A	X
ASI-SM-2 BW1765	2	B	X

A



L+ = +24 VDC
M = Ref. Gnd
FE = Earth Gnd
1.Y1 = EDM 1
1.Y2 = Start 1
1.13/1.14 = Output 1
1.23/1.24 = Output 2
1.32 = Indicator Output

B



L+ = +24 VDC
M = Ref. Gnd
FE = Earth Gnd
1.Y1 = EDM 1
1.Y2 = Start 1
1.13/1.14 = Output 1 (Circuit 1)
1.23/1.24 = Output 2 (Circuit 1)
1.32 = Indicator Output (Circuit 1)
2.Y1 = EDM 2
2.Y2 = Start 2
2.13/2.14 = Output 1 (Circuit 2)
2.23/2.24 = Output 2 (Circuit 2)
2.32 = Indicator Output (Circuit 2)

Note: AS-I safety monitors are programmed via the ASIMON BW1770 software (sold separately).

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OEM AS-I Safety Slaves

ASI-IOM-E0202A-PCB-ES BW1896
ASI-IOM-E0202A-PCB-ES BW1751
ASI-IOM-E0202A-PCB-ES BW1801

CE

- **PC-board Slaves**
- **AS-I Safety-at-Work**
- **Emergency Stop System Over AS-I**
- **Ideal for Push Button Stations**

Electrical

- Operating Current: <80 mA from AS-I
- Output Current: <100 mA per output from aux. power

Power Distribution

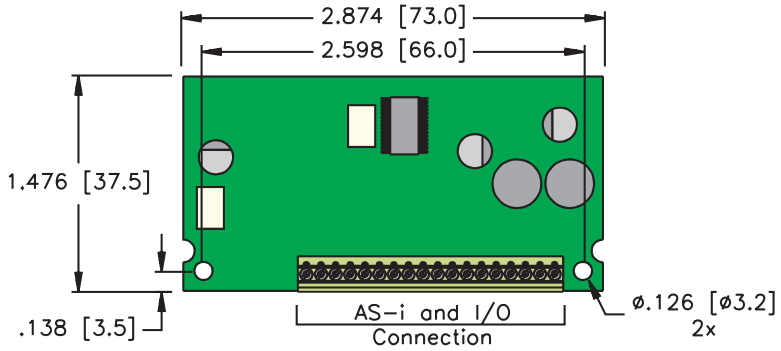
- Inputs: AS-I supply
- Outputs: Auxiliary supply

Mechanical

- Operating Temperature: 0 to +70°C (+32 to +158°F)
- Vibration: 15 g @ 10 to 55 Hz

Diagnostics (Logical)

- AS-I safety information can be accessed from the safety monitor



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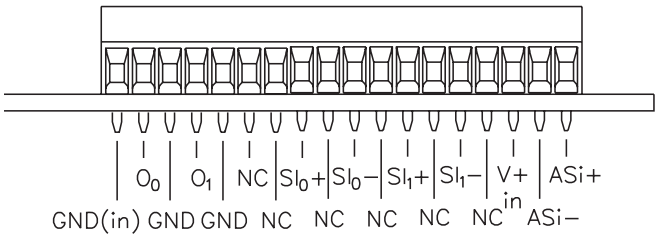
Part Number	Input Count	Output Count	Output Current (sum of all	I/O Power Source	LEDs	Connector	A/B Address	Addresses Consumed	Slave Profile	Drawing	Pinout
ASI-IOM-E0202A-PCB-ES BW1896	2	2	100 mA	AS-i/Aux		REM	N	1	7.B-0	S	K
ASI-IOM-E0202A-PCB-ES BW1751	2	2	100 mA	AS-i/Aux		SCR	N	1	7.B-0	S	K
ASI-IOM-E0202A-PCB-ES BW1801	2	2	100 mA	AS-i/Aux		PIN	N	1	7.B-0	S	K

Note: REM=Pull-out COMBICON style connection; SCR=Screw Terminal connection; PIN=Edge Pin connection

K



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AS-I Couplers

- **Connect 2 AS-I Networks Together**
- **Communicate Via Internal Slaves**

ASI-CPL BW1187
ASI-CPL BW1280

CE

Electrical

- Operating Current: <80 mA per AS-I Network

Power Distribution

- From each AS-I network

Mechanical

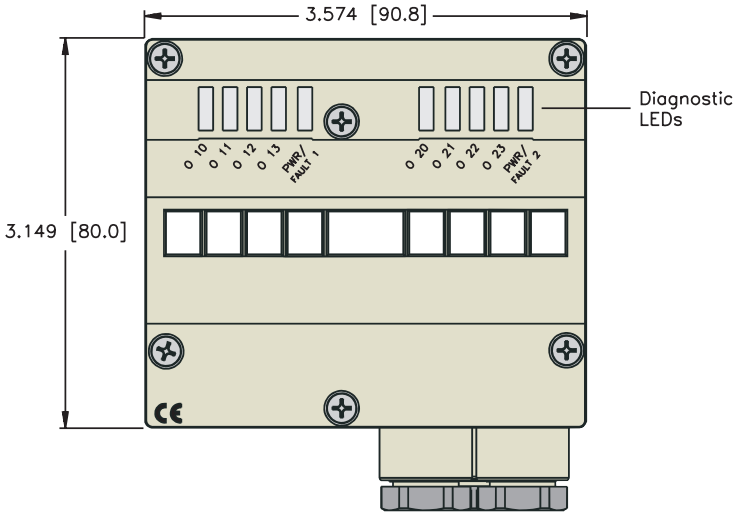
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20 (BW1187), IP65 (BW1280)

Material

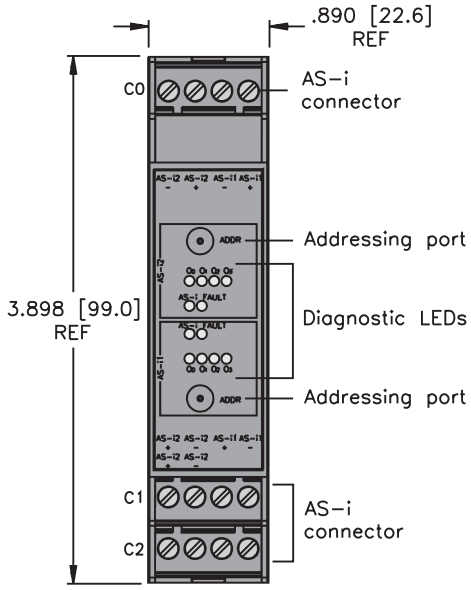
- Housing: Plastic

Diagnostics (Physical)

- LEDs to indicate status of AS-I communication and power supply



ASI-CPL BW1280



ASI-CPL BW1187

Note: ASI-CPL BW1280 makes connections to each AS-I network via standard base modules with two isolated ports (ASI-BM BW1181 for flat cable, ASI-BM BW1183 for round cable with screw terminals). See pages 105-106.

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AS-interface® Couplers

AS-I Couplers provide a means to route data between two PLC's using AS-i. The couplers (similar to a DeviceNet™ spanner) directly connect AS-I networks, eliminating the need for a high level control network pyramid. This simple approach is extremely powerful and economical. It is simple because the coupler appears as a standard AS-I slave to each PLC; any AS-I scanner can send I/O data to the coupler without additional software or complex configuration procedures. It is economical because it replaces the high level control network, eliminating two control cards, wiring, conduit and programming.

Theory of Operation

A coupler transfers data between PLC A and PLC B by appearing as I/O to each PLC. The coupler immediately copies the output data from PLC A to the input data for PLC B. Similarly, PLC B's output data is copied to PLC A's input data. The data transfer may be four bits in each direction (the maximum allowable data size for one slave on one AS-I scan cycle).

Electrically

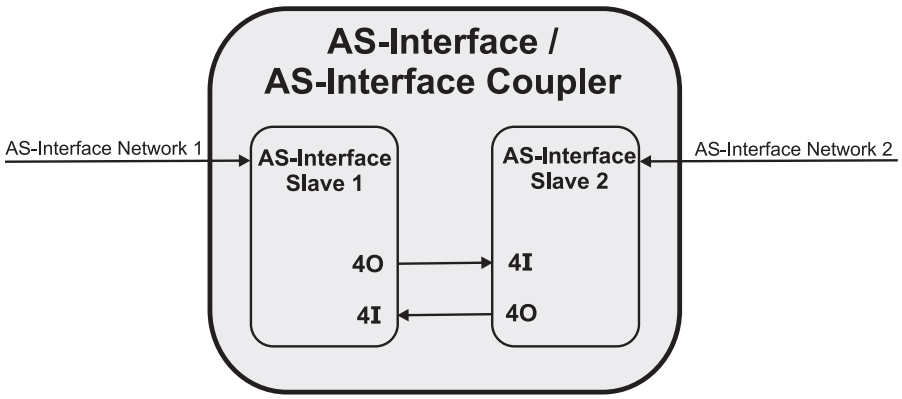
The coupler optically isolates network A from network B; the networks do not interact electrically in any way. The coupler is powered internally by the AS-I power supply for the two connected networks.

Addressing

Because the coupler is essentially two AS-I devices, one on network A and one on network B, it must be addressed as a slave on each network. The addresses for the two networks are independent of each other and do not need to be set to the same value.

Coupler Topology

The coupler is typically used to correct and coordinate multiple work cells.



Note: Physical AS-I connections are made via standard dual isolated port AS-I base modules (ASI-BM BW1181 for flat cable or ASI-BM BW1183 for round cable with screw terminal connections) on pages E105-106.

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Network Master Simulators

- **Connect AS-I Gateways to PC for Configuration and Troubleshooting**
- **Test and Troubleshoot Network Devices**

MS-DP BW1131

MS-DP BW1131 is a PROFIBUS®-DP Master Simulator designed to connect PROFIBUS stations to a PC via the serial port. It is ideal for testing, troubleshooting and demonstrating PROFIBUS products. It communicates at rates up to 19.2 kbaud.

MS-DP BW1257

MS-DP BW1257 is a PROFIBUS-DP Master Simulator designed to connect PROFIBUS stations to a PC via the serial port. It features DPV1 communication capability. It is ideal for testing, troubleshooting and demonstrating PROFIBUS products. It communicates at rates up to 19.2 kbaud.

MS-DP BW1258

MS-DP BW1258 is a PROFIBUS-DP Master Simulator designed to connect PROFIBUS stations to a PC via the serial port. It features DPV1 communication capability. It is ideal for testing, troubleshooting and demonstrating PROFIBUS products. This version is powered from a separate 24 VDC supply, and communicates at rates up to 1.5 Mbaud.

IC-232-485 BW1094

IC-232-485 BW1094 is an interface converter that allows RS-485 devices to be connected to a PC RS232 serial port. It is used for connecting the RS-485 AS-I masters to the AS-I Control Tools software for configuration and maintenance.

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MS-DN BW1420

MS-DN BW1420 is a DeviceNet™ Master Simulator designed to connect DeviceNet stations to a PC via the USB port. It is ideal for testing, troubleshooting and demonstrating DeviceNet products.

MS-DN BW1625

MS-DN BW1625 is a DeviceNet Master Simulator designed to connect DeviceNet stations to a PC via the PCI backplane. It is ideal for testing and troubleshooting DeviceNet products.

MS-CO BW1453

MS-CO BW1453 is a CANopen Master Simulator designed to connect CANopen stations to a PC via the USB port. It is ideal for testing, troubleshooting and demonstrating CANopen products.

CORD-DSUB BW1097

CORD-DSUB BW1097 is an RS-485 compatible cord that connects IP 65 masters and gateways (i.e. ASI-DPG BW1253) to a PC for commissioning and programming.

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CORD-DSUB BW1058

CORD-DSUB BW1058 is a serial 9-in DSUB extension cord that connects masters and gateways to a PC for commissioning and programming.

CORD-DSUB BW1226

CORD-DSUB BW1226 is a CAN compatible cord that connects DeviceNet™ and CANopen gateways to the DeviceNet master simulators (BW1420, BW1625) for commissioning and programming.

ASI-PD BW1646

ASI-PD BW1646 is a handheld addressing tool for AS-I. It also allows the user to test I/O and slave functionality.

ASI-ANALYZER BW1415

The **ASI-ANALYZER BW1415** is a diagnostic and troubleshooting tool for AS-I systems. The analyzer displays the status of each slave on the network, as well as other details (such as power supply level), and can be used to provide diagnostics for low level AS-I messages. It allows the user to track and observe potential communication failures before they become real problems.

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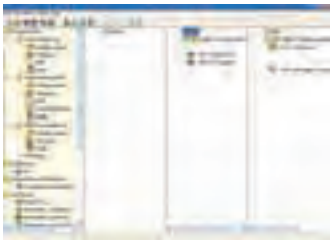
ASI-MON BW1770



ASI-MON BW1770 is a Windows program for use in configuring and diagnosing AS-I Safety at Work systems using the AS-I Safety Monitors. Connection to the safety monitors is made via the PC serial port.

ASI-SIM-SW BW1902

ASI-SIM-SW BE1902 is a MS Windows program that allows simulation and download of AS-I control programs for supported AS-I masters (masters with mini PLC capability). The package includes the ASI-SIM software, ASI-CT BW1203 AS-I Control Tools program and a cable to connect to the stainless steel programming port.

ASI-CT-SS BW1602
ASI-CT-AB BW1563
ASI-CT BW1203

AS-I Control Tools is a MS Windows program for commissioning and programming Bihl+Wiedemann AS-I masters and gateways. The program allows the user to set addresses of slaves, test and manipulate I/O and view diagnostic information.

The **BW1602** package includes a cable to connect gateways in the stainless steel housing to a PC serial port.

The **BW1563** package includes a cable to connect the ASI-SCAN-AB BW1416 and ASI-SCAN-AB BW1488 PLC cards to a PC serial port.

ASI-EVAL-KIT BW1565

The **ASI-EVAL-KIT BW1565** enables easy commissioning of the AS-I OEM master module (ASI-MM-PCB BW1670, p. E79-80). The carrier board has a 5 V controller and an RS232 converter to communicate with the OEM module via the AS-I Control Tools software. The board also has a terminal connector for connection to the AS-I system.

The kit is designed to aid users in developing applications for the OEM AS-I masters.

ASI-TERM BW1644

ASI-TERM BW1644 is an AS-I terminator designed to allow an AS-I segment to be extended up to 200 m. It includes an LED for basic system diagnostic information. It is a passive device, used in a similar manner to the active AS-I tuner (pages E69-70).

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AS-I Standard Base Modules

- **Connect IP 65 Stations to AS-I and Power**
- **Round or Flat Cable Supported**

ASI-BM BW1180

Standard AS-I base module with two AS-I flat cable ports.

ASI-BM BW1181

Standard AS-I base module with one AS-I flat cable port and one isolated flat cable port. For use with AS-I devices requiring two separate connections (i.e. repeaters, power extenders, couplers, slaves with auxiliary powered I/O).

ASI-BM BW1438

Standard AS-I base module with two AS-I flat cable ports. Includes addressing port for handheld device.

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ASI-BM BW1182

Standard AS-I base module with two AS-I round cable ports. Connections are made via screw terminals.

ASI-BM BW1183

Standard AS-I base module with one AS-I round cable port and one isolated round cable port. For use with AS-I devices requiring two separate connections (i.e. repeaters, power extenders, couplers, slaves with auxiliary powered I/O). Connections are made via screw terminals.

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Notes:

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AS-interface®, Cable Specifications

- **AS-interface Cable that Meets the Requirements of EN50295e for Communication up to 167 Kbaud**
- **Maximum Cable Length per Segment is 100 Meters**

Figure A

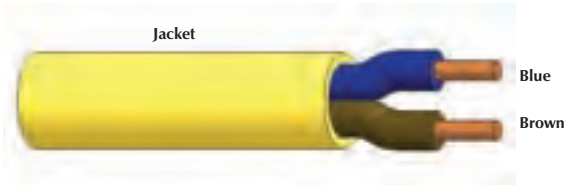
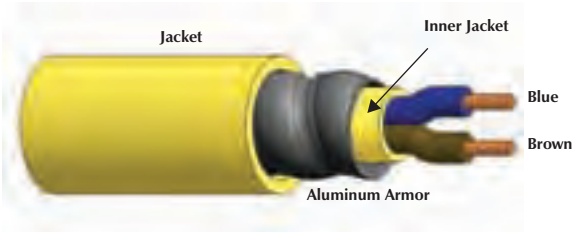


Figure B



Type	Approvals	Data Pair		Outer Jacket	Bulk Cable Part Number / Weight/300 M	Figure
		AWG Color Code	DCR (/1000 feet) Insulation	Material Color Nominal O.D.		
252BK AWM 2517 105°C 300 Volts	**NEC ITC** PLTC **CEC** [CMG]	2/18 AWG BU/BN	6.6 Ohms PVC	PVC Black 6.0 mm (.235 in)	RB50791-*M 34.4 lbs.	**A**
254 AWM 2517 105°C 300 Volts	**NEC ITC** PLTC Open Wiring Direct Burial **CEC** [CMG]	2/16 AWG BU/BN	4.1 Ohms PVC/Nylon	PVC Yellow 7.3 mm (.285 in)	RB50852-*M 53 lbs.	**A**
254B AWM 2517 105°C 300 Volts	**NEC ITC** PLTC Open Wiring Direct Burial **CEC** [CMG]	2/16 AWG BU/BN	4.1 Ohms PVC/Nylon	PVC Blue 7.3 mm (.285 in)	RB50962-*M 53 lbs.	**A**
255A 105°C 300 Volts	**NEC ITC** PLTC **CEC** [CMG] HL BCD	2/16 AWG BU/BN	4.1 Ohms PVC	Armor PVC Yellow 13.5 mm (.530 in)	RB50966-*M 105 lbs. ***armorfast*** ®	**B**
256 AWM 21002 105°C 600 Volts	**NEC** AWM **CEC** AWM I/II A/B FT1	2/16 AWG BU/BN	4.5 Ohms PE	TPE Yellow 6.2 mm (.244 in)	RB51179-*M 36 lbs. ***flexlife-10*** ®	**A**
257 AWM 21002 105°C 300 Volts	**NEC** PLTC/ITC **CEC** AWM I/II A/B FT4	2/16 AWG BU/BN	4.1 Ohms PE	PUR Yellow 7.3 mm (.285 in)	RB51178-*M 53 lbs.	**A**

* Indicates length in meters.
Standard cable lengths are 30, 75, 150, 225 and 300 meters.

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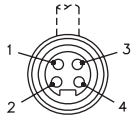
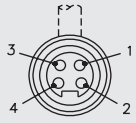
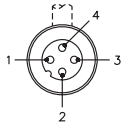
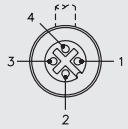
AS-interface®, Cable and Cordset Selection Matrix

			minifast ®				*eurofast* ®
			Pin (Male)		Socket (Female)		Pin (Male)
			1 RSM	2 WSM	3 RKM	4 WKM	5 RSC
		Bare	RSM 25x-*M	WSM 25x-*M	RKM 25x-*M	WKM 25x-*M	RSC 25x-*M
minifast	Pin (Male)	1 RSM	RSM RSM 25x-*M	RSM WSM 25x-*M	RSM RKM 25x-*M	RSM WKM 25x-*M	RSM RSC 25x-*M
		2 WSM		WSM WSM 25x-*M	WSM RKM 25x-*M	WSM WKM 25x-*M	WSM RSC 25x-*M
	Socket (Female)	3 RKM			RKM RKM 25x-*M	RKM WKM 25x-*M	RKM RSC 25x-*M
		4 WKM				WKM WKM 25x-*M	WKM RSC 25x-*M
eurofast	Pin (Male)	5 RSC					RSC RSC 25x-*M
		6 WSC					
	Socket (Female)	7 RKC					
		8 WKC					

See pages G115 - G116 for dimensional drawings.

* Indicates length in meters.
x Indicates cable type.
Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.
Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 Meters. Consult factory for other lengths.
For stainless steel coupling nuts change part number RSM... to RSV, WSM... to WSV. For ***eurofast armorfast*** ® change part number RSC... to RSA.

minifast		Pinouts	*eurofast*	
Male	Female		Male	Female
		1. Brown (+ Voltage) 2. N/C 3. Blue (- Voltage) 4. N/C		

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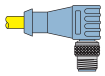
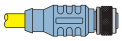
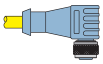
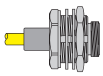
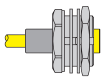
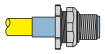
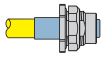
AS-interface®, Cable and Cordset Selection Matrix

eurofast®			*minifast*® Bulkhead		*eurofast* Bulkhead	
Pin (Male)	Socket (Female)		Pin (Male)	Socket (Female)	Pin (Male)	Socket (Female)
6  WSC	7  RKC	8  WKC	9  RSFP	10  RKFP	11  FSFD	12  FKFD
WSC 25x-*M	RKC 25x-*M	WKC 25x-*M	RSFP 25x-*M	RKFP 25x-*M	FSFD 25x-*M	FKFD 25x-*M
RSM WSC 25x-*M	RSM RKC 25x-*M	RSM WKC 25x-*M	RSM RSFP 25x-*M	RSM RKFP 25x-*M	RSM FSFD 25x-*M	RSM FKFD 25x-*M
WSM WSC 25x-*M	WSM RKC 25x-*M	WSM WKC 25x-*M	WSM RSFP 25x-*M	WSM RKFP 25x-*M	WSM FSFD 25x-*M	WSM FKFD 25x-*M
RKM WSC 25x-*M	RKM RKC 25x-*M	RKM WKC 25x-*M	RKM RSFP 25x-*M	RKM RKFP 25x-*M	RKM FSFD 25x-*M	RKM FKFD 25x-*M
WKM WSC 25x-*M	WKM RKC 25x-*M	WKM WKC 25x-*M	WKM RSFP 25x-*M	WKM RKFP 25x-*M	WKM FSFD 25x-*M	WKM FKFD 25x-*M
RSC WSC 25x-*M	RSC RKC 25x-*M	RSC WKC 25x-*M	RSC RSFP 25x-*M	RSC RKFP 25x-*M	RSC FSFD 25x-*M	RSC FKFD 25x-*M
WSC WSC 25x-*M	WSC RKC 25x-*M	WSC WKC 25x-*M	WSC RSFP 25x-*M	WSC RKFP 25x-*M	WSC FSFD 25x-*M	WSC FKFD 25x-*M
	RKC RKC 25x-*M	RKC WKC 25x-*M	RKC RSFP 25x-*M	RKC RKFP 25x-*M	RKC FSFD 25x-*M	RKC FKFD 25x-*M
		WKC WKC 25x-*M	WKC RSFP 25x-*M	WKC RKFP 25x-*M	WKC FSFD 25x-*M	WKC FKFD 25x-*M

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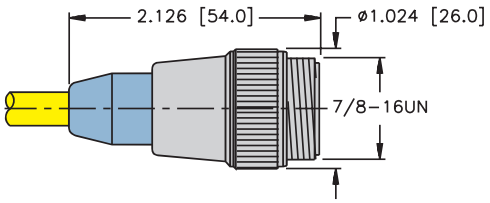
AS-interface®, *minifast*® Cordset and Receptacle Connector Dimensions

Specifications

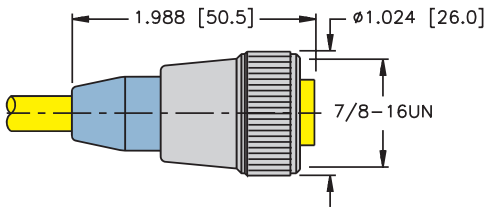
Housing:	PUR (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67
Rated Voltage:	300 V
Rated Current:	9 A
Ambient Temperature:	-40° to +105°C (-40° to +221°F)

1



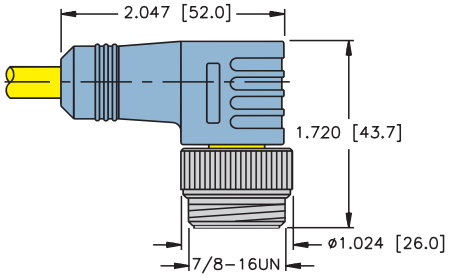
RSM .. **Pages G113 - G114**

3



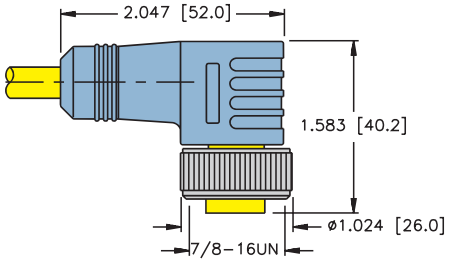
RKM .. **Pages G113 - G114**

2



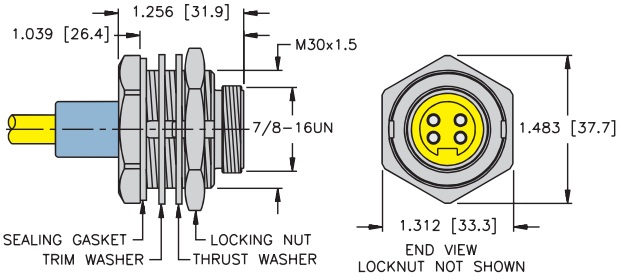
WSM .. **Pages G113 - G114**

4



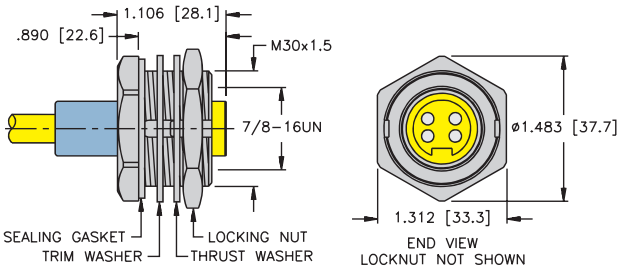
WKM .. **Pages G113 - G114**

9



RSFP .. **Pages G113 - G114**

10



RKFP .. **Pages G113 - G114**

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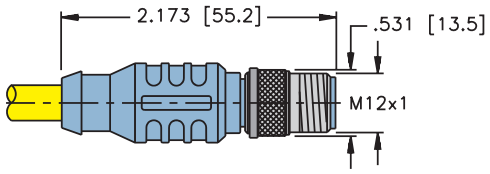
AS-interface®, *eurofast*® Cordset Connector Dimensions / Configuration

Specifications

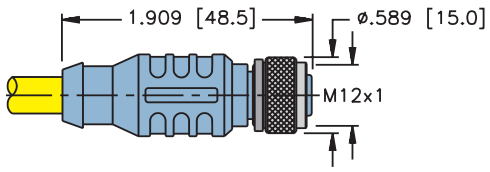
Housing:	PUR (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40°C to +105°C (-40° to +221°F)

5



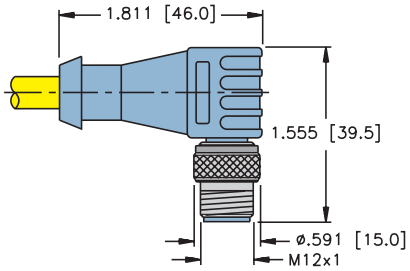
RSC .. **Pages G113 - G114**

7



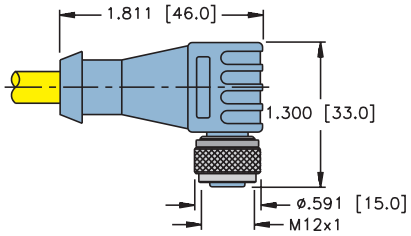
RKC .. **Pages G113 - G114**

6



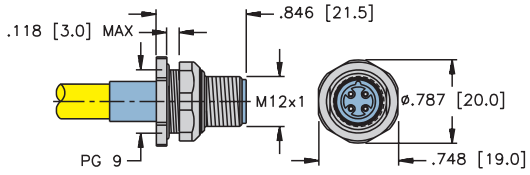
WSC .. **Pages G113 - G114**

8



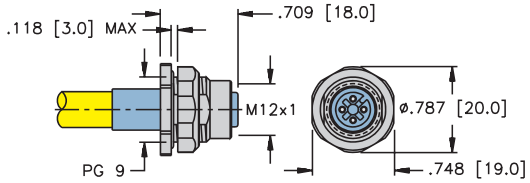
WKC .. **Pages G113 - G114**

11



FSFD .. **Pages G113 - G114**

12



FKFD .. **Pages G113 - G114**

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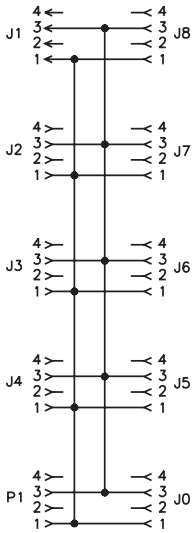
AS-interface®, *minifast*® to *eurofast*® Passive Multiport Junction (Brick)

- For Connecting I/O in Concentrated Areas
- Available in Standard and With Short-Circuit Protection

Part Number	Application	Wiring Diagram
JBBS-25-E812	8 port Junction Tee • (7/8-16UN) ***minifast*** bus-in/bus-out connections • Eight (M12x1) ***eurofast*** device ports	

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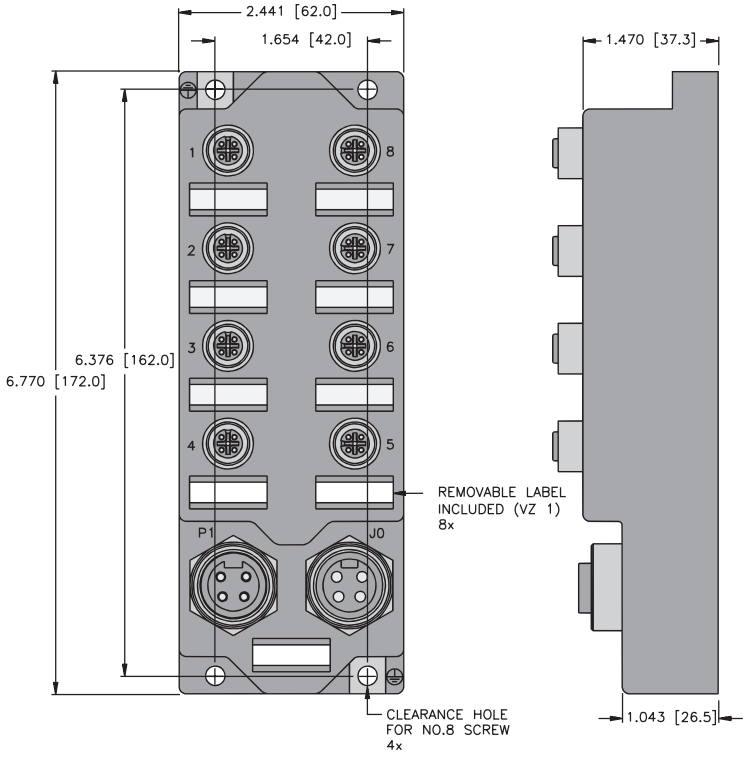
Specifications

Housing:	POM (Nylon)
Coupling Nut:	Nickel Plated CuZn
Contact Carrier:	Nylon
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

8-port



Pinouts

minifast				*eurofast*	
Male	1 = Voltage+ 2 = N/C 3 = Voltage- 4 = N/C	**Female**	1 = Voltage+ 2 = N/C 3 = Voltage- 4 = N/C	**Female**	1 = Voltage+ 2 = N/C 3 = Voltage- 4 = N/C

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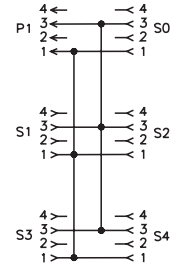
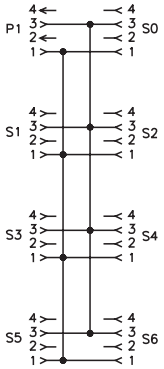
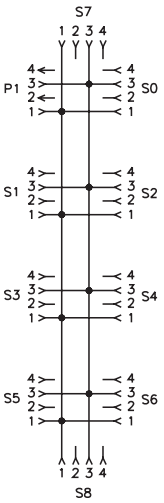
AS-interface®, *minifast*® Passive Multiport Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Suitable for Outdoor Applications**

Part Number	Specs	Application	Wiring Diagrams
JBBS-25-M414	No short-circuit protection	4-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Four ***minifast*** connectors for field devices	
JBBS-25-M613 JBBS-25-M614	No short-circuit protection	6-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Six ***minifast*** connectors for field devices	
JBBS-25-M814	No short-circuit protection	8-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Eight ***minifast*** connectors for field devices	

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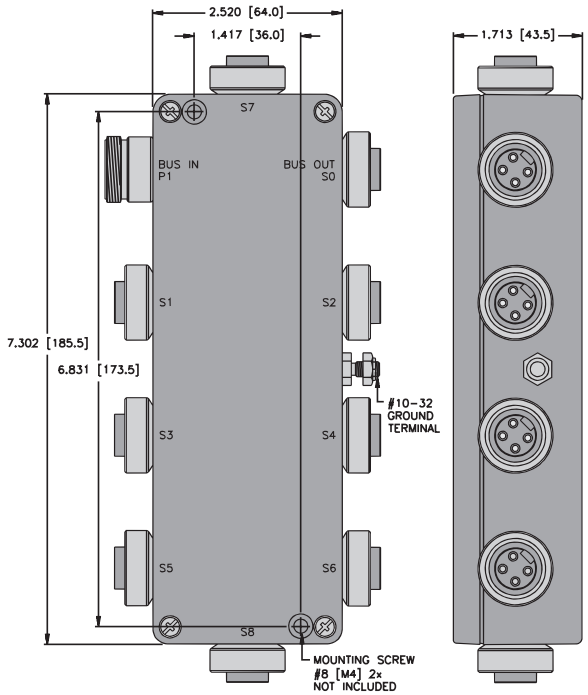
Specifications

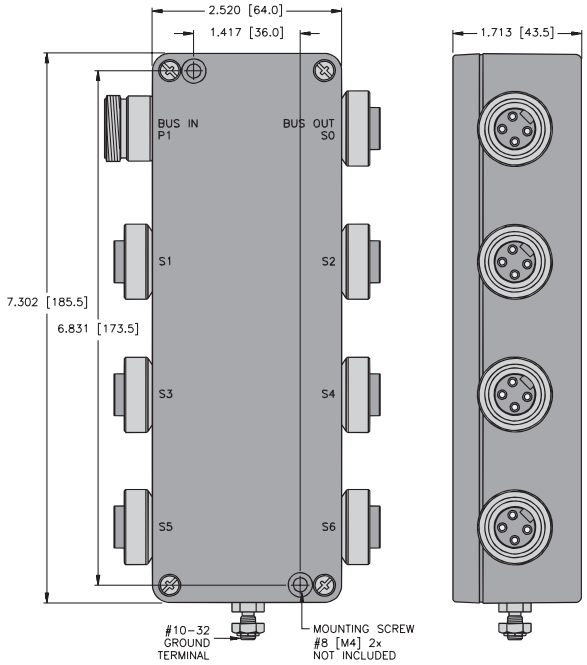
Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	36 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

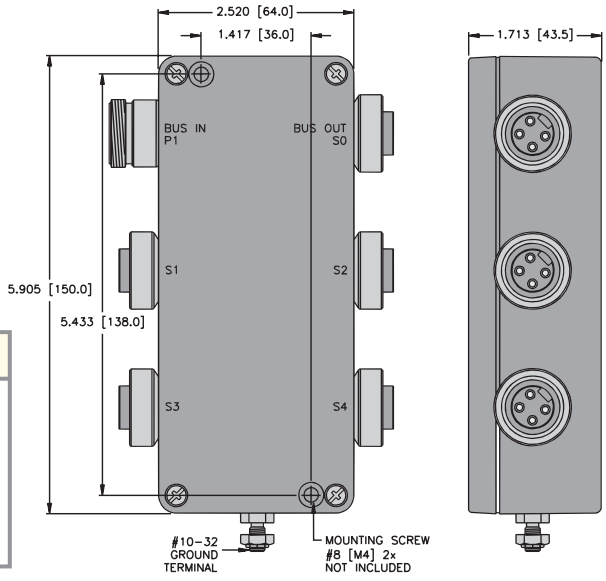
8-Port



6-Port



4-Port



Pinouts

minifast			
Male	1 = Voltage+ 2 = N/C 3 = Voltage- 4 = N/C	**Female**	1 = Voltage+ 2 = N/C 3 = Voltage- 4 = N/C

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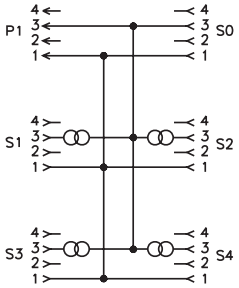
AS-interface®, *minifast*® Passive Multiport Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Suitable for Outdoor Applications**

Part Number	Specs	Application	Wiring Diagrams
JBBS-25SC-M413	**Electrical** • Short-circuit protection: 280 mA (Isc) • Open circuit voltage: 33 VDC • Current consumption: 11 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted	4-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** Four ***minifast*** connectors for field devices	

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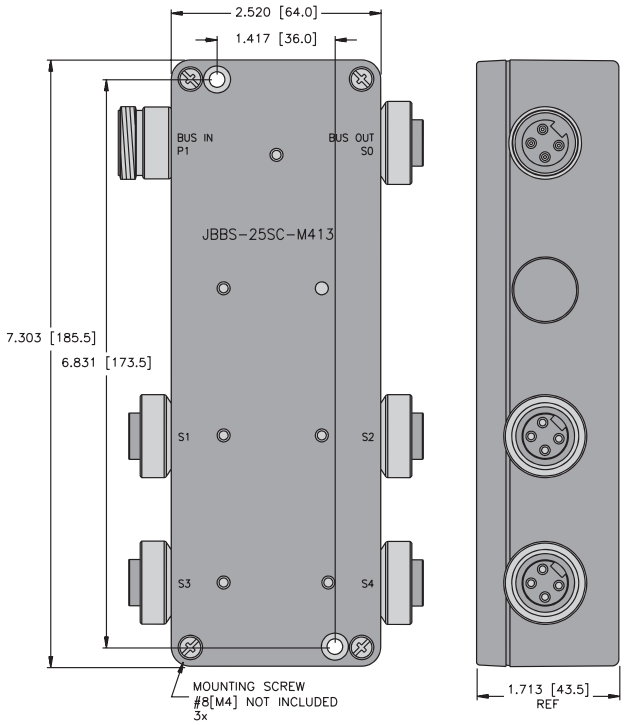
Specifications

Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	36 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

4-Port



Pinouts

minifast			
Male	1 = BN (Voltage+) 2 = N/C 3 = BU (Voltage-) 4 = N/C	**Female**	1 = BN (Voltage+) 2 = N/C 3 = BU (Voltage-) 4 = N/C

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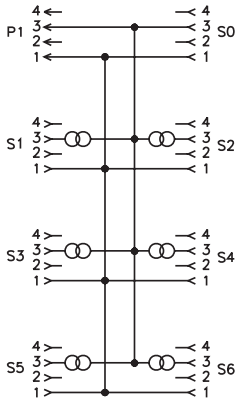
AS-interface®, *minifast*® Passive Multiport Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Suitable for Outdoor Applications**

Part Number	Specs	Application	Wiring Diagrams
JBBS-25SC-M613	**Electrical** • Short-circuit protection: 280 mA (Isc) • Open circuit voltage: 33 VDC • Current consumption: 11 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted	6-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** Six ***minifast*** connectors for field devices	

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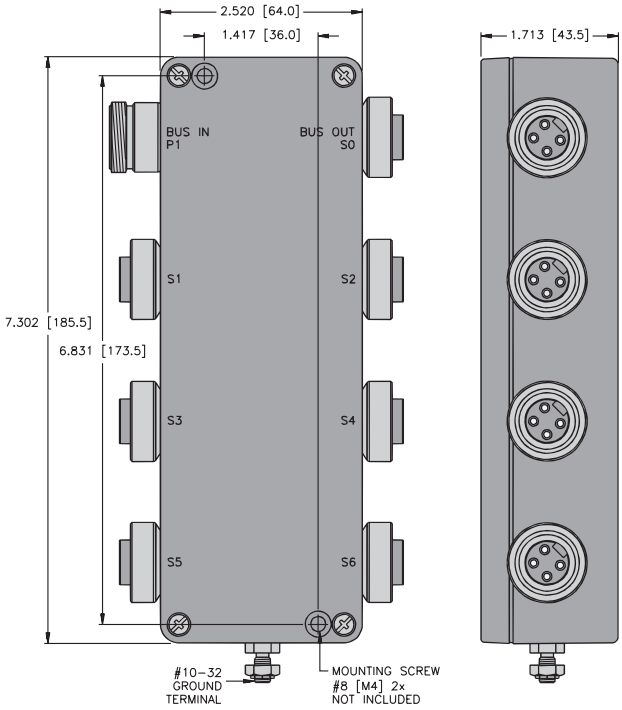
Specifications

Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	36 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

6-Port



Pinouts

minifast			
Male	1 = BN (Voltage+) 2 = N/C 3 = BU (Voltage-) 4 = N/C	**Female**	1 = BN (Voltage+) 2 = N/C 3 = BU (Voltage-) 4 = N/C

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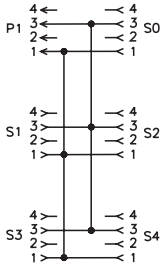
AS-interface®, *eurofast*® Passive Multiport Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Suitable for Outdoor Applications**

Part Number	Specs	Application	Wiring Diagrams
JBBS-25-E413	No short-circuit protection	4-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Four ***eurofast*** connectors for field devices	

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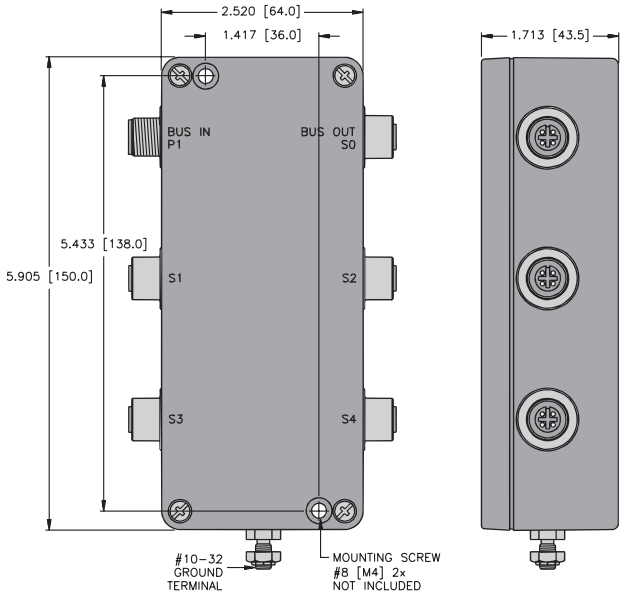
Specifications

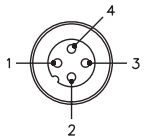
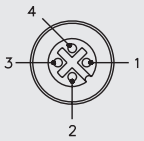
Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	36 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

4-Port



Pinouts

eurofast			
Male		**Female**	
	1 = Voltage+ 2 = N/C 3 = Voltage- 4 = N/C		1 = Voltage+ 2 = N/C 3 = Voltage- 4 = N/C

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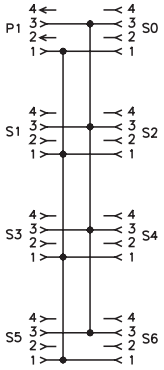
AS-interface®, *eurofast*® Passive Multiport Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Suitable for Outdoor Applications**

Part Number	Specs	Application	Wiring Diagrams
JBBS-25-E613	No short-circuit protection	6-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Six ***eurofast*** connectors for field devices	

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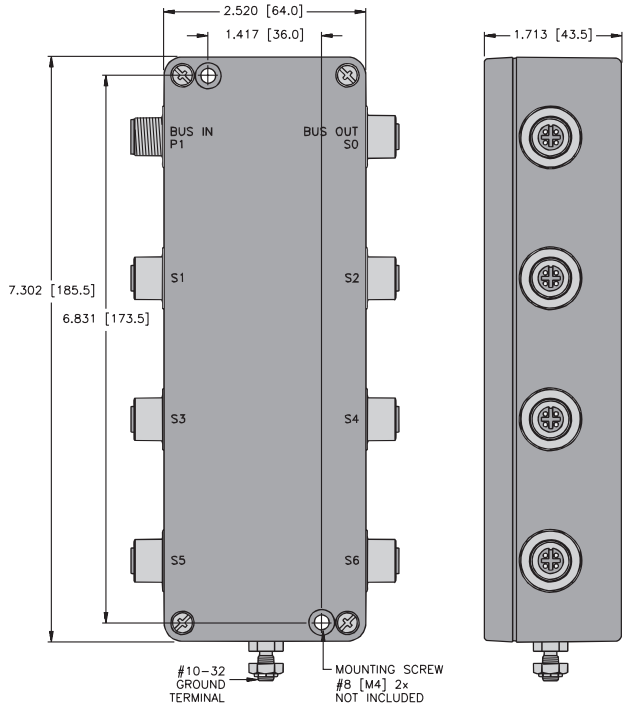
Specifications

Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	36 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

6-Port



Pinouts

eurofast			
Male	1 = Voltage+ 2 = N/C 3 = Voltage- 4 = N/C	**Female**	1 = Voltage+ 2 = N/C 3 = Voltage- 4 = N/C

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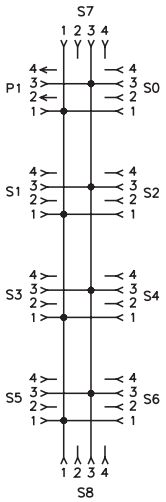
AS-interface®, *eurofast*® Passive Multiport Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Suitable for Outdoor Applications**

Part Number	Specs	Application	Wiring Diagrams
JBBS-25-E813	No short-circuit protection	8-port junction • bus in/bus out connections (M12x1) ***eurofast*** • eight ***eurofast*** connectors for field devices	

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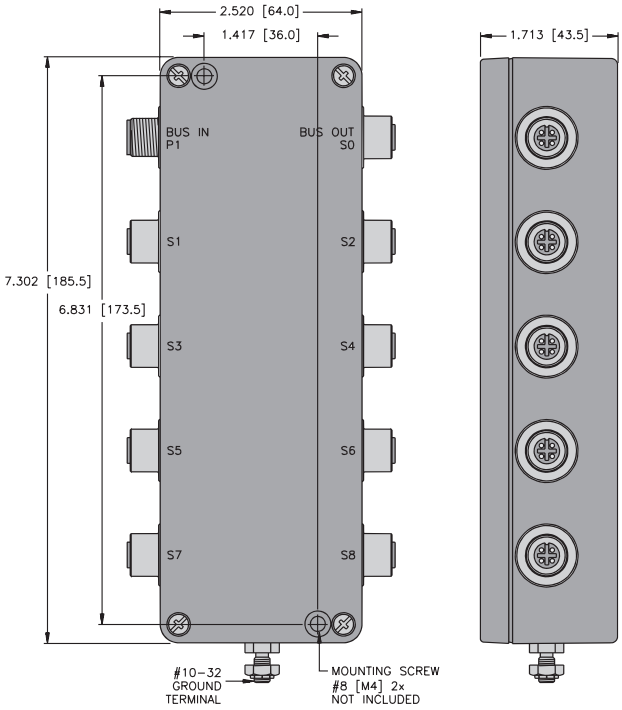
Specifications

Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	36 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

8-Port



Pinouts

eurofast			
Male	1 = Voltage+ 2 = N/C 3 = Voltage- 4 = N/C	**Female**	1 = Voltage+ 2 = N/C 3 = Voltage- 4 = N/C

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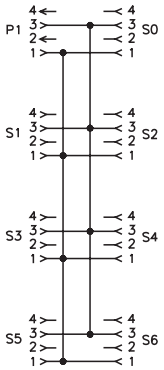
- **For Connecting I/O in Concentrated Areas**
- **Suitable for Outdoor Applications**

Part Number	Specs	Application	Wiring Diagrams
JBBS-25-E623	No short-circuit protection	6-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Six ***eurofast*** connectors for field devices	

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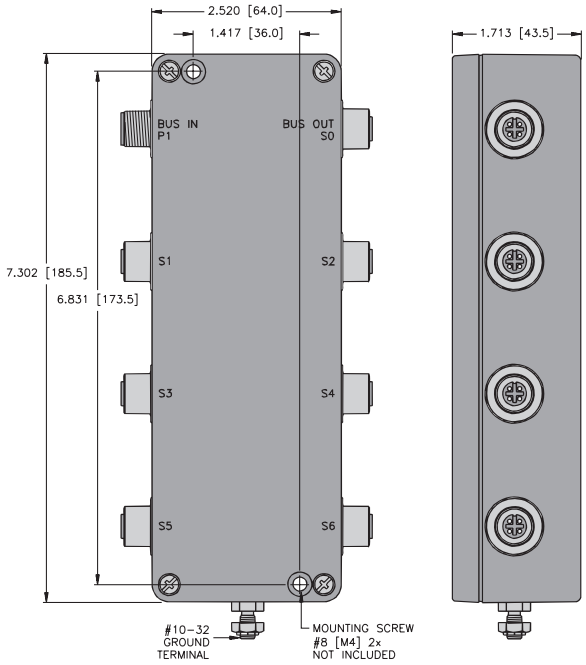
Specifications

Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	36 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

6-Port



Pinouts

eurofast			
Male	1 = Voltage+ 2 = N/C 3 = Voltage- 4 = N/C	**Female**	1 = Voltage+ 2 = N/C 3 = Voltage- 4 = N/C

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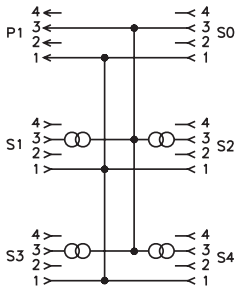
AS-interface®, *eurofast*® Passive Multiport Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Suitable for Outdoor Applications**

Part Number	Specs	Application	Wiring Diagrams
JBBS-25SC-E413	**Electrical** • Short-circuit protection: 280 mA (Isc) • Open circuit voltage: 33 VDC • Current consumption: 11 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted	4-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** Four ***minifast*** connectors for field devices	

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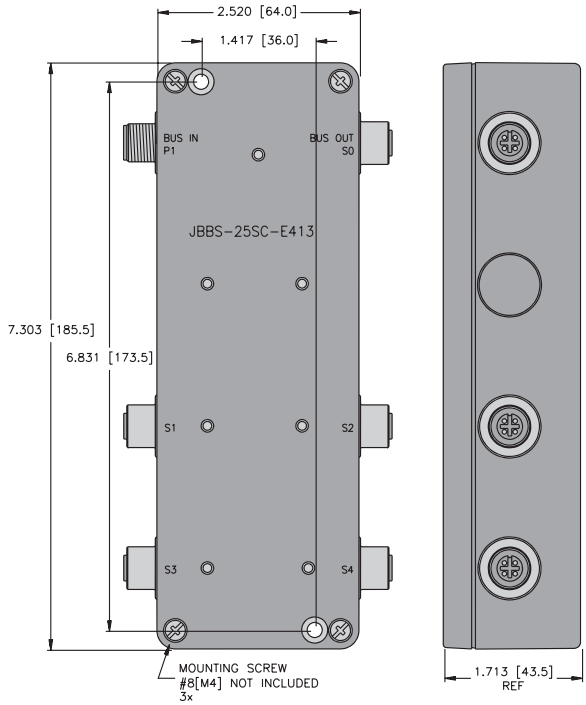
Specifications

Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	36 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

4-Port



Pinouts

minifast			
Male	1 = BN (Voltage+) 2 = N/C 3 = BU (Voltage-) 4 = N/C	**Female**	1 = BN (Voltage+) 2 = N/C 3 = BU (Voltage-) 4 = N/C

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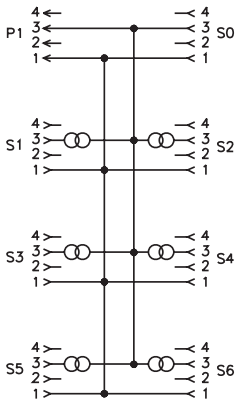
AS-interface®, *eurofast*® Passive Multiport Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Suitable for Outdoor Applications**

Part Number	Specs	Application	Wiring Diagrams
JBBS-25SC-E613	**Electrical** • Short-circuit protection: 280 mA (Isc) • Open circuit voltage: 33 VDC • Current consumption: 11 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted	6-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** Six ***minifast*** connectors for field devices	

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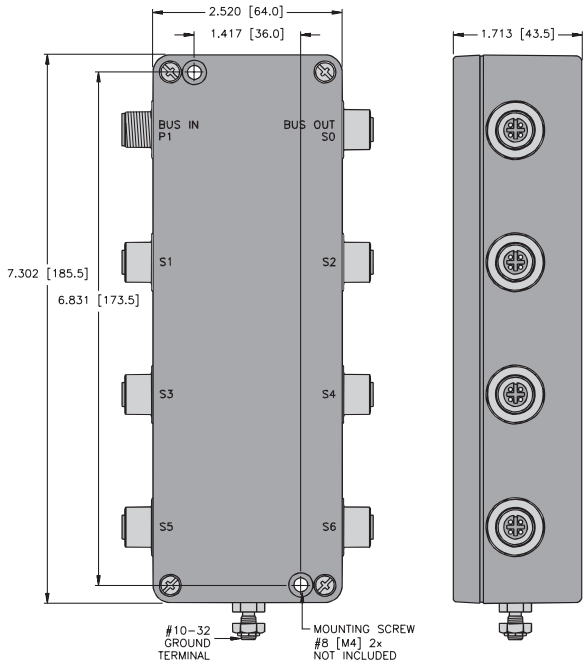
Specifications

Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	36 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

6-Port



Pinouts

minifast			
Male	1 = BN (Voltage+) 2 = N/C 3 = BU (Voltage-) 4 = N/C	**Female**	1 = BN (Voltage+) 2 = N/C 3 = BU (Voltage-) 4 = N/C

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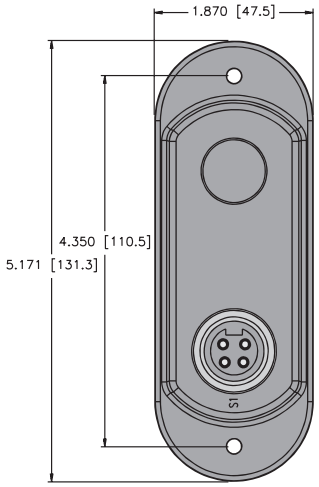
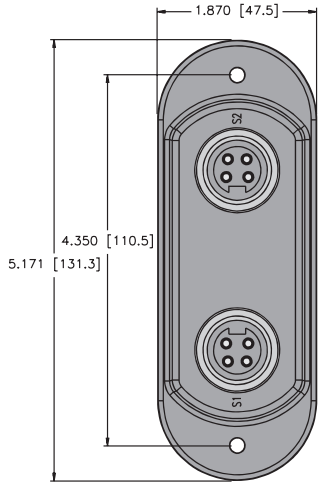
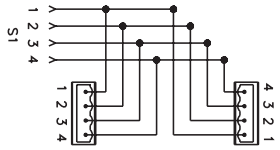
AS-interface®, *minifast*® Conduit Adapters

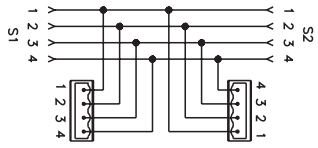
- **Gasket and Mounting Screws Provided**
- **Same Housing Style for Single or Double Port**

Housing	Part Number	Specs	Application	Pinout
	BCA 25-M123	Nylon Housing 300 V, 9 A -40° to +75°C	Attaches to standard conduit body* for transition to 4-wire (7/8-16UN) ***minifast*** connector *Crouse Hinds 3/4" Form 8, Mark 9 or equivalent	**Female**
	BCA 25-M223	Nylon Housing 300 V, 9 A -40° to +75°C		

1-port Wiring Diagram



2-port Wiring Diagram



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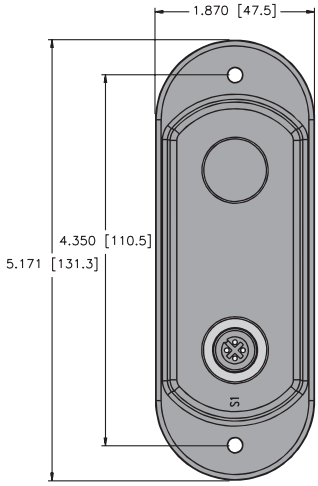
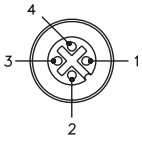
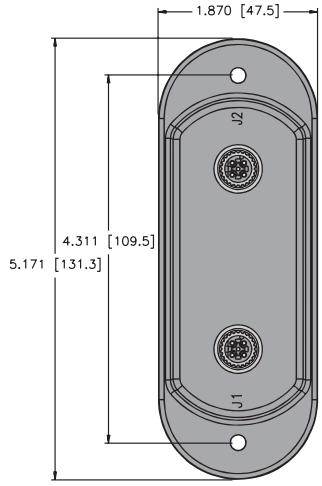
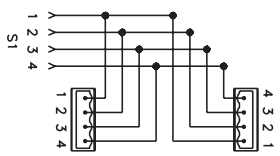
AS-interface®, *eurofast*® Conduit Adapters

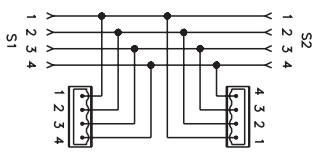
- **Gasket and Mounting Screws Provided**
- **Same Housing Style for Single or Double Port**

Housing	Part Number	Specs	Application	Pinout
	BCA 25-E123	Nylon Housing 250 V, 4 A -40° to +75°C	Attaches to standard conduit body* for transition to 4-wire (M12x1) ***eurofast*** connector *Crouse Hinds 3/4" Form 8, Mark 9 or equivalent	**Female** 
	BCA 25SC-E123	**Electrical** • Short-circuit protection: 280 mA • Open circuit voltage: 33 VDC • Current consumption: 11 mA **Diagnostics** • LED indicators Power: Green = On Short-circuit: Red = Shorted		
	BCA 25-E223	Nylon Housing 250 V, 4 A -40°C to +75°C		
	BCA 25SC-E223	**Electrical** • Short-circuit protection: 280 mA • Open circuit voltage: 33 VDC • Current consumption: 11 mA **Diagnostics** • LED indicators Power: Green = On Short-circuit: Red = Shorted		

1-port Wiring Diagram



2-port Wiring Diagram



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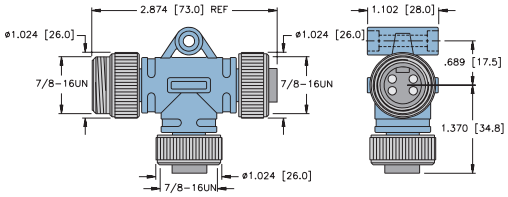
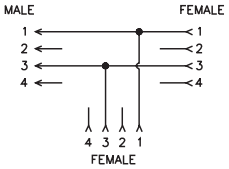
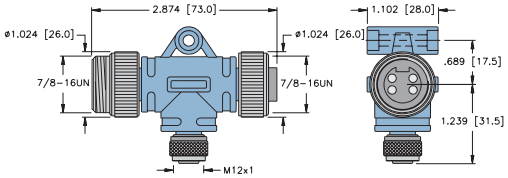
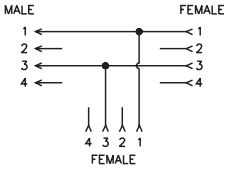
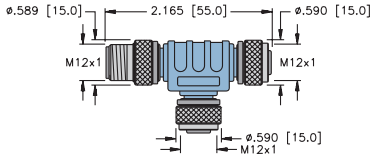
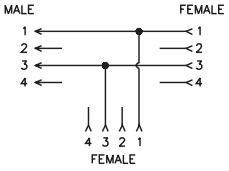
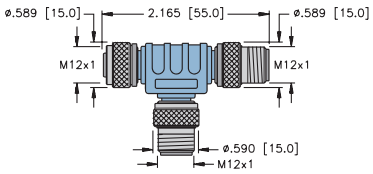
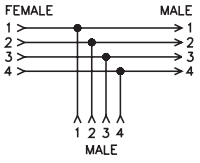
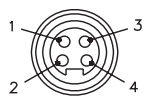
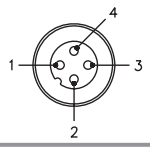
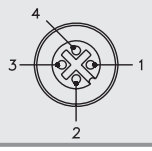
AS-interface®, Tees

- Creates a Drop or Branch from the Main Bus Line
- Available in *minifast*® or *eurofast*® Bus or Drop Lines

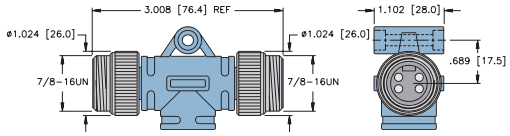
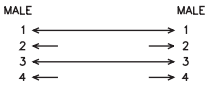
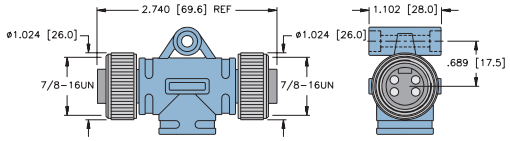
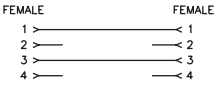
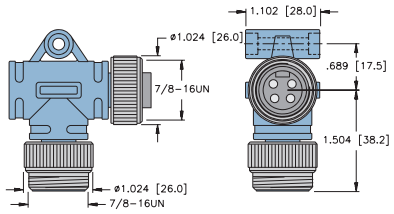
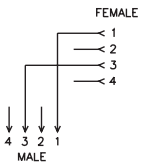
Housing	Part Number	Specs	Application	Wiring Diagrams
	RSV 2RKV 25	TPU (Polyurethane) Stainless Steel 250 V, 4 A (***eurofast***), 9 A (***minifast***) -40° to +75°C	***minifast*** Tee • ***minifast*** drop connector	
	RSV FKV RKV 25		***minifast*** Tee • ***eurofast*** drop connector	
	RSCV 2RKCV 25		***eurofast*** Tee • ***eurofast*** female drop connector	
	RKC 2RSC 25		***eurofast*** Tee • ***eurofast*** male drop connector	

minifast		Pinouts	*eurofast*	
Male	Female		Male	Female
		1. Brown (+ Voltage) 2. N/C 3. Blue (- Voltage) 4. N/C		

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

AS-interface®, Gender Changers and Elbow Connectors

- **Allows Quick and Easy Change from Male to Female *minifast*® Connectors**

Housing	Part Number	Specs	Application	Wiring Diagrams
	RSM RSM 25	TPU (Polyurethane) 250 V, 4 A -40° to +75°C	***minifast*** Male Gender Changer • Female cordset to male receptacle	
	RKM RKM 25		***minifast*** Female Gender Changer • Male cordset to female receptacle	
	WSM RKM 25		***minifast*** Elbow • Right angle male to female connector	

minifast	Pinouts	*minifast*
Male 	1. Brown (+ Voltage) 2. N/C 3. Blue (- Voltage) 4. N/C	**Female**

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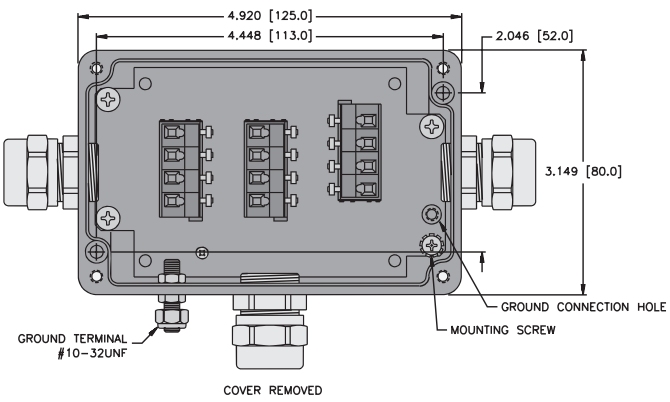
AS-interface®, Field Wireable Tees

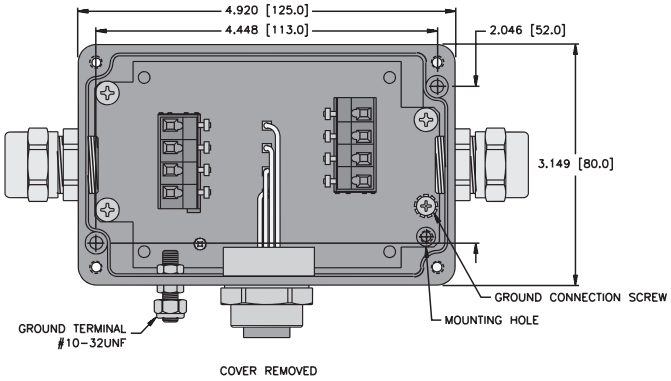
- **A Hybrid Connection System Offering Reliable Connections on the Short Drops and Ease of Installation on the Long Trunk Runs**
- **Features Standard *minifast*® Connector for the Drop Connection and Terminal Connectors on the Trunk Connections**

Housing	Part Number	Specs	Application	Pinout
See Drawing 1	SPTT1-A25	Anodized Aluminum 300 V, 9 A -40° to +75°C NEMA 1, 3, 4, 6P and IEC IP 68	Field wireable terminals and (7/8-16UN) ***minifast*** connector on drop connection	**Female**
See Drawing 2	SPTTM13-A25			

1



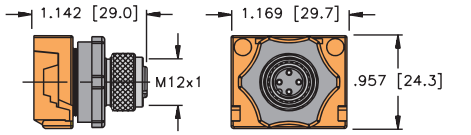
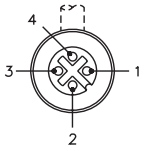
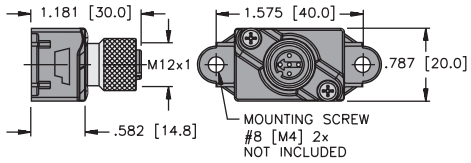
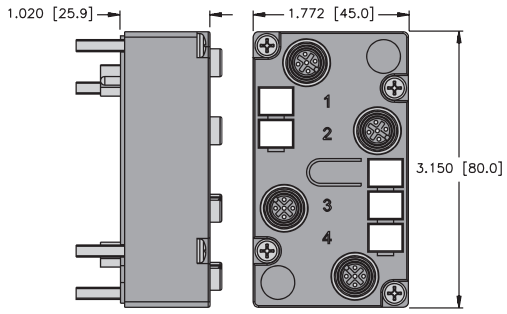
2



Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

AS-interface®, *eurofast*® Flat Cable Adapter

- **Allows the Mixing of Standard AS-i Flat Cable with *eurofast* Round Cable in Same System**
- **May be Needed when Going from a Dry to a Wet Environment or an Area Where Better Sealing and Rugged Connectors are Required**

Housing	Part Number	Specs	Pinout
	ASI-PM-1 BW1238	TPU (Polyurethane) 250 V, 4 A -40° to +75°C	**Female** 
	ASI-PM-1 BW1239		
	ASI-PM 41		

	Type	Approvals	Data Pair		Outer Jacket	Bulk Cable Part Number / Weight/300 M
			AWG Color Code	DCR (/1000 feet) Insulation	Material Color Nominal O.D.	
	250 105°C 300 Volts		2/18 AWG BU/BN	6.5 Ohms TPE-S	TPE Yellow Flat	RB21603-*M 40 lbs.
	251 105°C 300 Volts		2/18 AWG BU/BN	6.5 Ohms TPE-S	TPE Black Flat	RB21605-*M 40 lbs.
	253 105°C 300 Volts	**NEC ITC** PLTC **CEC** [CMG]	2/18 AWG BU/BN	6.5 Ohms PVC	PVC Light Grey Flat	RB50782-*M 42 lbs.
	253G 105°C 300 Volts	**NEC** PLTC **CEC** AWM I/II A/B FT4	16 AWG BU/BN	4.1 Ohms PVC	TPE Grey Flat	RB51240-*M 42 lbs.
	253BK 105°C 300 Volts	NEC PLTC **CEC** AWM I/II A/B FT4	16 AWG BU/BN	4.1 Ohms PVC	TPE Black Flat	RB51241-*M 42 lbs.
	253Y 105°C 300 Volts	NEC PLTC **CEC** AWM I/II A/B FT4	16 AWG BU/BN	4.1 Ohms PVC	TPE Yellow Flat	RB51242-*M 42 lbs.

* Indicates length in meters.
Standard cable lengths are 30, 75, 150, 225 and 300 meters.

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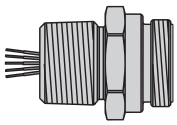
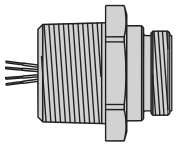
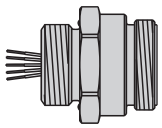
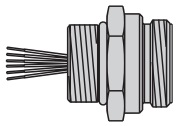
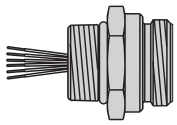
AS-interface®, *minifast*® Male Receptacles

- **Provides Quick Connection to Field Devices or Enclosures**
- **Available for 1/2-14NPT, 1/2-14NPSM, 3/4-14NPT and M20 Threads**
- **(7/8-16UN) *minifast* Connection**

Housing	Part Number	Specs	Application	Pinouts	
13 	RSF 25-*M/14.5	Nickel Plated CuZn or Stainless Steel 300 V, 9 A -40° to +105°C	1/2-14NPT full length threads	1. BN 2. N/C 3. BU 4. N/C	Male
15 	RSF 25-*M/14.75		3/4-14NPT full length threads		
14 	RSF 25-*M/M20		M20x1.5 threads		
16 	RSF 25-*M		1/2-14NPSM threads		
17 	RSF 25-*M/NPT		1/2-14NPT modified length threads		

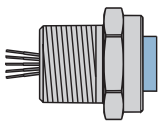
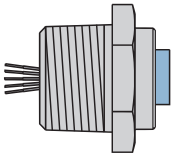
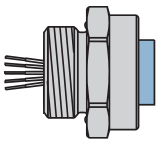
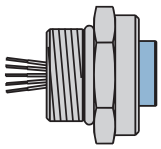
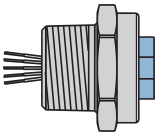
See page G147 for dimensional drawings.

Standard cable length is 0.3 meters. Consult factory for other lengths.
Receptacles require a 13/16" (21 mm) clearance hole for panel mounting.
Standard housing material is nickel plated brass. "RKF .."; "RKFV .." indicates 316 stainless steel housing.
For locknuts to be included, add "W/LN" to the end of the part number.

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

AS-interface®, *minifast*® Female Receptacles

- **Provides Quick Connection to Field Devices or Enclosures**
- **Available for 1/2-14NPT, 1/2-14NPSM, 3/4-14NPT and M20 Threads**
- **(7/8-16UN) *minifast* Connection**

Housing	Part Number	Specs	Application	Pinouts	
18 	RKF 25-*M/14.5	Nickel Plated CuZn or Stainless Steel 300 V, 9 A -40° to +105°C	1/2-14NPT full length threads	1. BN 2. N/C 3. BU 4. N/C	Female
20 	RKF 25-*M/14.75		3/4-14NPT full length threads		
19 	RKF 25-*M/M20		M20x1.5 threads		
21 	RKF 25-*M		1/2-14NPSM threads		
22 	RKF 25-*M/NPT		1/2-14NPT modified length threads		

See page G148 for dimensional drawings.

Standard cable length is 0.3 meters. Consult factory for other lengths.
Receptacles require a 13/16" (21 mm) clearance hole for panel mounting.
Standard housing material is nickel plated brass. "RKF .."; "RKFV .." indicates 316 stainless steel housing.
For locknuts to be included, add "W/LN" to the end of the part number.

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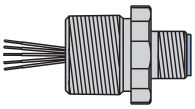
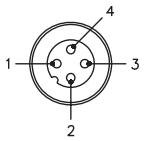
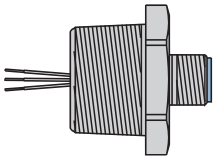
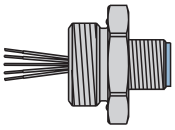
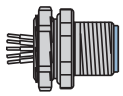
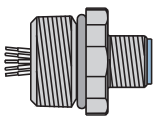
AS-interface®, *eurofast*® Male Receptacles

- **Mounted for Quick Connection to Enclosures**
- **(M12x1) *eurofast* Connectors**

Housing	Part Number	Specs	Application	Pinout	
23 	FS 25-*M/14.5	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +105°C	1/2-14NPT full length threads	1. BN 2. N/C 3. BU 4. N/C	Male 
25 	FS 25-*M/14.75		3/4-14NPT full length threads		
24 	FS 25-*M/M20		M20x1.5 threads		
26 	FS 25-*M		PG 9 threads		
27 	FS 25-*M/NPT		1/2-14NPT modified length threads		

See page G149 for dimensional drawings.

Standard cable length is 0.3 meters. Consult factory for other lengths.
Receptacles require a 13/16" (21 mm) clearance hole for panel mounting.
Standard housing material is nickel plated brass. "RKF .."; "RKFV .." indicates 316 stainless steel housing.

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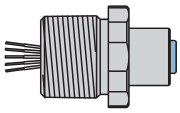
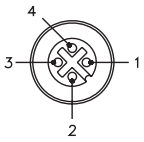
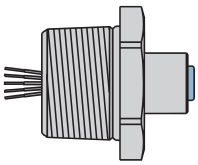
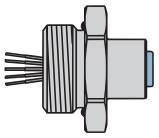
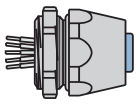
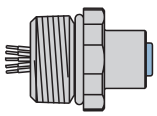
AS-interface®, *eurofast*® Female Receptacles

- **Mounted for Quick Connection to Enclosures**
- **(M12x1) *eurofast* Connectors**

Housing	Part Number	Specs	Application	Pinouts	
28 	FK 25-*M/14.5	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +105°C	1/2-14NPT full length threads	1. BN 2. N/C 3. BU 4. N/C	Female 
30 	FK 25-*M/14.75		3/4-14NPT full length threads		
29 	FK 25-*M/M20		M20x1.5 threads		
31 	FK 25-*M		PG 9 threads		
32 	FK 25-*M/NPT		1/2-14NPT modified length threads		

See page G150 for dimensional drawings.

Standard cable length is 0.3 meters. Consult factory for other lengths.
Receptacles require a 13/16" (21 mm) clearance hole for panel mounting.
Standard housing material is nickel plated brass. "RKF .."; "RKFV .." indicates 316 stainless steel housing.

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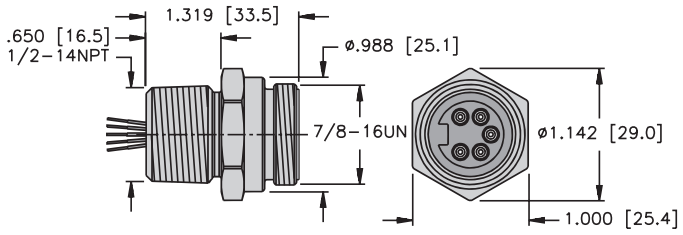
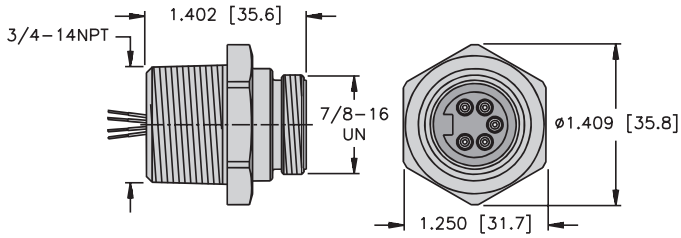
minifast® Male Receptacles

13



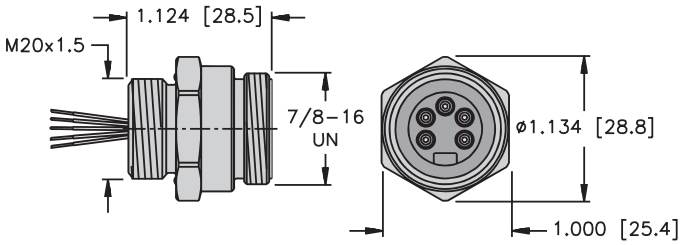
RSF .. 14.5 **Page G143**

15



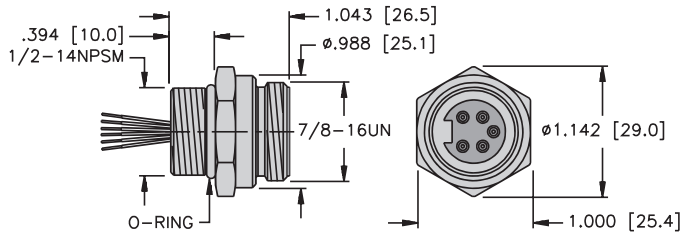
RSF .. 14.75 **Page G143**

14



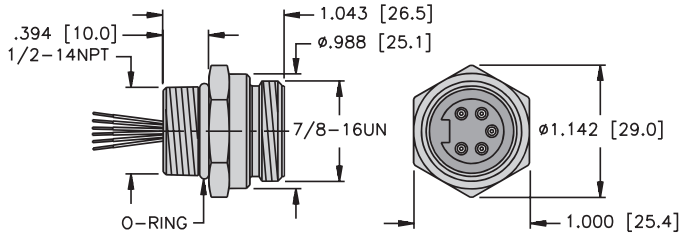
RSF .. M20 **Page G143**

16



RSF .. **Page G143**

17



RSF .. NPT **Page G143**

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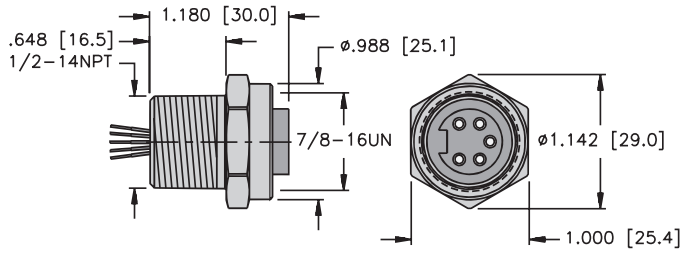
minifast® Female Receptacles

18



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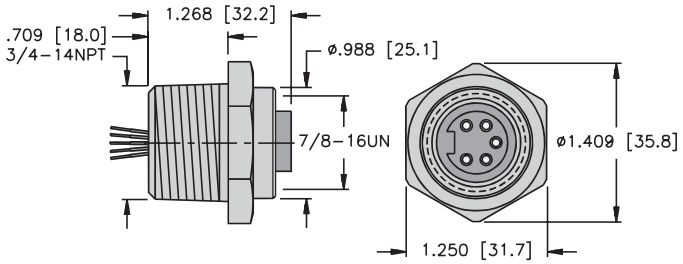
20



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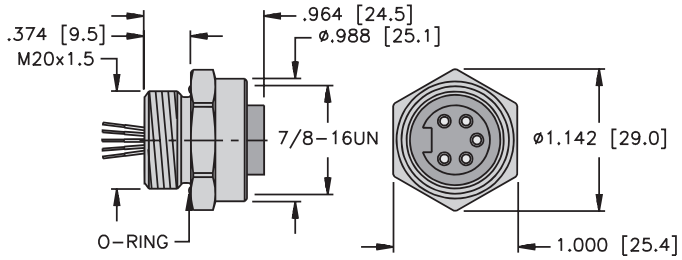
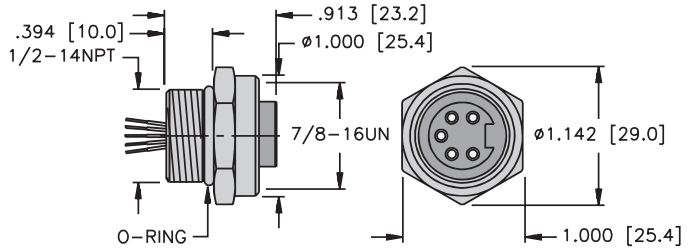
19



RKF .. M20 **Page G144**

21



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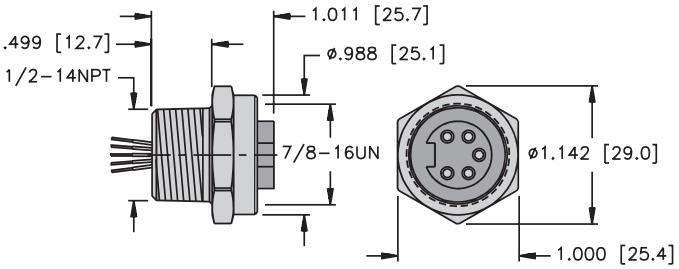
22



RKF .. NPT **Page G144**

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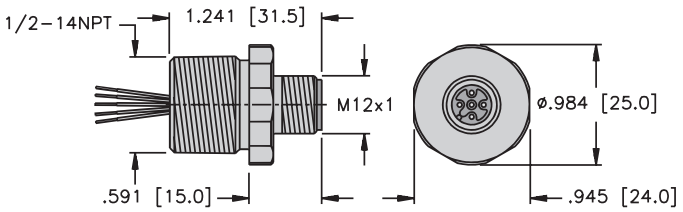
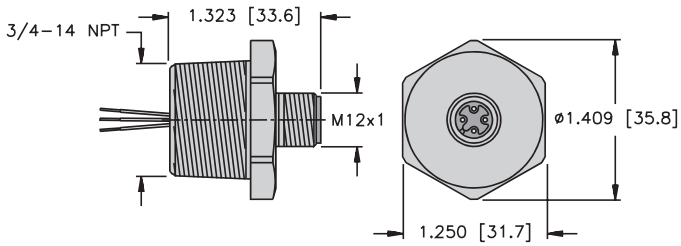
eurofast® Male Receptacles

23



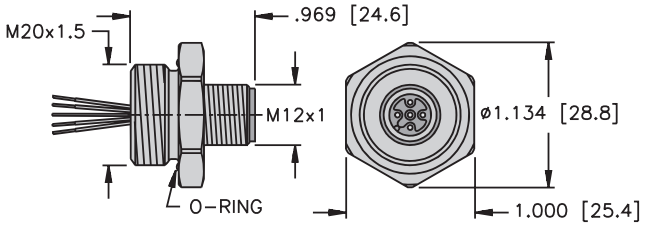
FS .. 14.5 **Page G145**

25



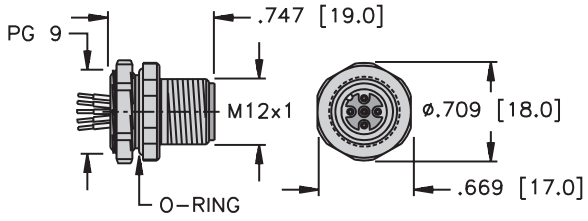
FS .. 14.75 **Page G145**

24



FS .. M20 **Page G145**

26



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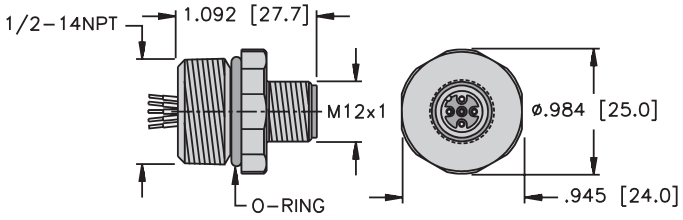
27



FS .. NPT **Page G145**

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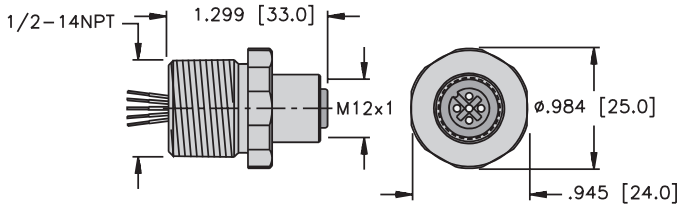
eurofast® Female Receptacles

28



FK .. 14.5 **Page G146**

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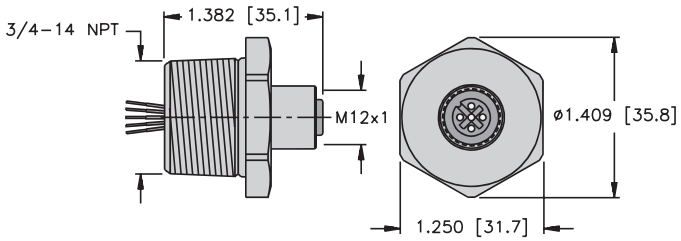
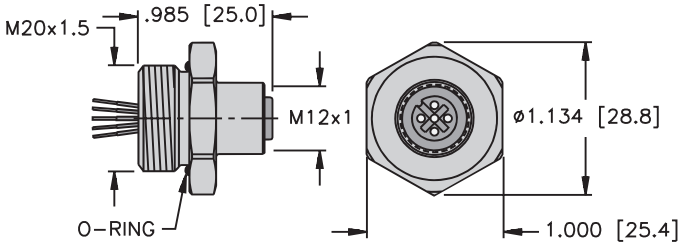


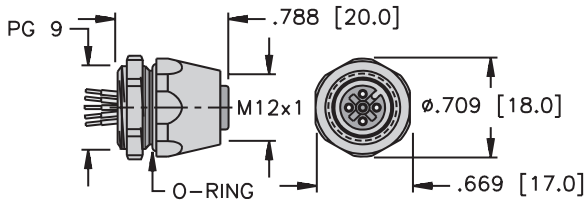
FK .. 14.75 **Page G146**

29



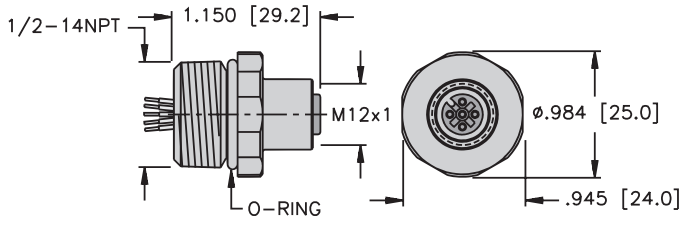
FK .. M20 **Page G146**

31



FK .. **Page G146**

32



FK .. NPT **Page G146**

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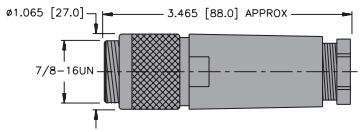
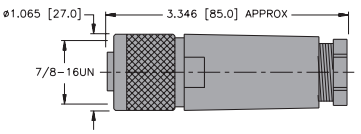
AS-interface®, *minifast*® Field Wireable Connectors

- **Screw Terminals Accept up to 16 AWG Conductors**

Housing	Part Number	Specs	Application	Pinouts
	BS 4149-0/9	Glass filled nylon PG 9 cable gland, accepts 6-8 mm cable diameter 85°C 250 V, 9 A	Mates with all 4-pin ***minifast*** cordsets and receptacles	**Male**
	BS 4149-0/13.5	Glass filled nylon PG 13.5 cable gland accepts 10-12 mm cable diameter 85°C 250 V, 9 A		
	B 4149-0/9	Glass filled nylon PG 9 cable gland, accepts 6-8 mm cable diameter 85°C 250 V, 9 A		**Female**
	B 4149-0/13.5	Glass filled nylon PG 13.5 cable gland accepts 10-12 mm cable diameter 85°C 250 V, 9 A		

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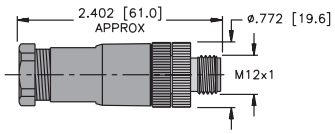
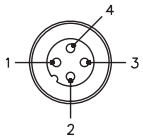
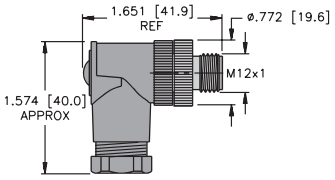
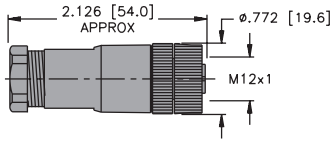
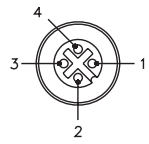
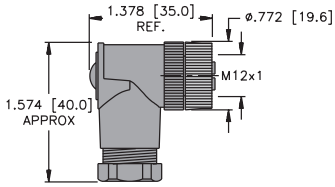
AS-interface®, *eurofast*® Field Wireable Connectors

- **Screw Terminals Accept up to 18 AWG Conductors**

Housing	Part Number	Specs	Application	Pinouts
	BS 8141-0/PG9	PBT, Black PG 7 cable gland accepts 6-8 mm cable diameter 85°C 125 V, 4 A	Mates with 4-pin ***eurofast*** cordsets and receptacles	**Male** 
	BS 8241-0/PG9	PBT, Black PG 7 cable gland accepts 6-8 mm cable diameter 85°C 125 V, 4 A		
	B 8141-0/PG9	PBT, Black PG 7 cable gland accepts 6-8 mm cable diameter 85°C 250 V, 4 A		**Female** 
	B 8241-0/PG9	PBT, Black PG 7 cable gland accepts 6-8 mm cable diameter 85°C 250 V, 4 A		

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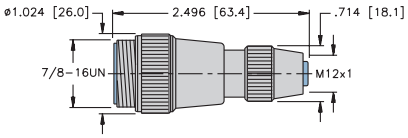
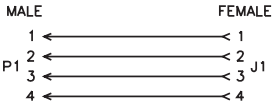
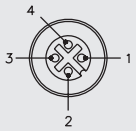
AS-interface®, Gender Changer

- **Allows Quick and Easy Change from Male to Female and (7/8-16UN) *minifast*® to (M12x1) *eurofast*® Connectors**

Housing	Part Number	Specs	Application	Wiring Diagram
	RSM 25-FK 4.5	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40°C to +75°C	Female ***eurofast***, male ***minifast***, 4-pin	

Pinouts

minifast	*eurofast*
Male	**Female** 

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PROFIBUS®-DP Selection Guide

AIM	Page
Discrete Input	H11
Discrete Output	H17
Discrete Input & Ouput	H21

FDP20	Repeater	AS-I
H33	H37	H39

BL67	BL20	Cables	Terminating Resistors
H47	H49	H52	H60

Feed Through Receptacles	Bus Tees	Field Wireable Connectors	Receptacles
H61	H62	H63	H64

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PROFIBUS®-PA Selection Guide

Cables	Terminating Resistors	Feed Through Connectors	Junctions
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Conduit Adapters	Tees	Gender Changers	Surge Suppressor
H89	H91	H92	H93

Field Wireable Tees	Receptacles	Field Wireable Connectors
H94	H95	H103

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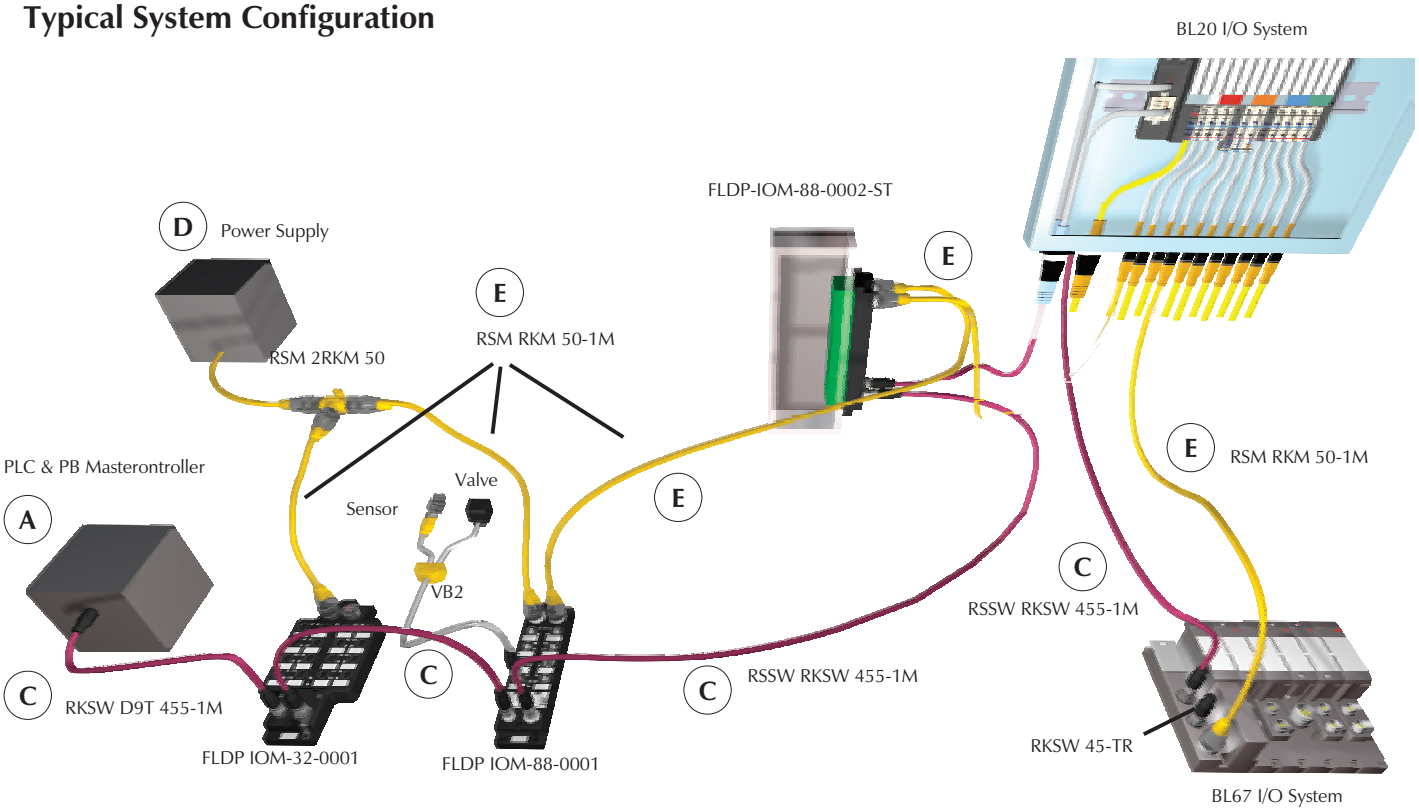
PROFIBUS®-DP System Description

PROFIBUS-DP is an industrial network protocol that connects field I/O devices in order to eliminate hard wiring. The network connection increases device-level diagnostic capabilities, while also providing high-speed communication between devices.

PROFIBUS-DP is based on the RS-485 serial data transfer standard. In most cases, the termination and physical media rules for PROFIBUS-DP are the same as those required for RS-485 communication. A PROFIBUS-DP network supports up to 126 nodes and virtually an unlimited amount of I/O. The bus uses a trunkline/dropline topology. Power and communication are provided via separate cables, allowing easy segmentation of the power structure to avoid overloading.

PROFIBUS-DP is capable of running at data rates as high as 12 Mbaud. When used at high data rates, the cable drop length from the trunk to a node is severely limited. For example, when used at 12 Mbaud, nodes must be directly connected to the trunk, with no drop length allowed.

Typical System Configuration



Basic Parts List

A typical PROFIBUS-DP system consists of the following parts:

- A - Master
- B - Slaves
- C - Communication cable
- D - Power supply
- E - Power cable

PROFIBUS-DP stations require a network master (also called a scanner) to interface the stations to the host controller. **TURCK** PROFIBUS-DP stations are designed to be fully compatible with PROFIBUS-DP equipment from other manufacturers.

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Cordsets

TURCK offers a complete line of molded PROFIBUS-DP cordsets to facilitate network installation, resulting in a faster start-up and fewer wiring errors. The bus and drop cables are specially designed foil-shielded, high-flex cables with very low inductance and capacitance to minimize propagation delay time. PROFIBUS-DP cables consist of a shielded and twisted data pair with a bare drain wire.

In most cases, connections of the bus cable to the stations are made using 5-pin reverse-key ***eurofast*** ® (M12) connectors. A variety of stations are also available that support D9 type connections. Power for most stations is provided through one or two 5-pin ***minifast*** ® (7/8-16UN) connectors.

TURCK cordsets for the PROFIBUS-DP system are available in standard lengths. Please contact your local sales representative to order custom lengths.

Diagnostics

TURCK network stations provide increased diagnostics over using traditional hard-wired I/O systems. **TURCK** stations also serve as a buffer between I/O devices and the PROFIBUS-DP network by detecting short circuits without disrupting communication.

The PROFIBUS-DP system includes a provision for special diagnostic data messages. These messages are triggered when a fault occurs at the station (for example a short circuit on a sensor). When the master asks the station for data, the station responds and includes a flag to indicate that diagnostic data is present. The master then asks for the diagnostic data, which is mapped to a special location in the controller's memory.

Addressing

The valid range of PROFIBUS-DP node addresses is 0 to 125. **TURCK** station's addresses are usually set via rotary dials or switches on the node. Changes to the address settings take effect when the station power is cycled or when the station receives a software reset. Care must be taken to prevent the same address from being assigned to more than one node in a system. Bihl+Wiedemann PROFIBUS-DP to AS-I gateways addresses are set in software using the on-unit display.

Communication Rate/Cycle Time

PROFIBUS-DP specifications define multiple transmission speeds ranging from 9.6 kbaud to 12 Mbaud. All nodes on a network must communicate at the same rate.

The complete cycle time of a PROFIBUS-DP system is affected by several factors:

- Number of nodes being scanned
- Amount of data produced and consumed by the nodes
- Network communication rate
- Cycle time of the control program

All of these factors must be considered when calculating the cycle time of a particular network.

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GSD Files

GSD files contain detailed information about a PROFIBUS-DP device, including I/O data size and the devices configurable parameters. The information in an GSD file, when used with a PROFIBUS-DP configuration tool, guides a user through the steps necessary to configure a device. GSD files are available on the **TURCK** website (www.turck.com).

Maximum Ratings

The PROFIBUS-DP bus uses a trunkline/dropline topology. The trunk is the main communication cable and requires the appropriate RS-485 termination at both ends of the trunk. Terminating resistors are available as plug-in ***eurofast*** ® modules or can be built into the D9 connectors. The length of the trunk depends on the communication rate. Drops or branches off the trunk are allowed, but are greatly limited as the communication rate increases. The table shows the maximum ratings for a trunk at different communication rates.

Communication Rate	Max. Segment Length
9.6 kbps	1200 m
19.2 kbps	1200 m
93.75 kbps	1200 m
187.5 kbps	1000 m
500 kbps	400 m
1.5 Mbps	200 m
12 Mbps	100 m

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PROFIBUS-DP AIM™ Stations

TURCK's Advanced I/O Module (AIM) PROFIBUS stations are extremely rugged stations designed for machine mounting. These stations allow easy connection of standard I/O devices such as sensors, limit switches, valves and pilot lights to a PROFIBUS network, typically without a protective enclosure. This is made possible by epoxy-filled station housings, all-metal connectors and visible rotary address switches, among other things.

Mechanical Specifications

TURCK PROFIBUS AIM stations are designed for machine mounting with no separate enclosure or housing necessary. Quick-disconnect capability, combined with an epoxy-filled housing, creates an extremely durable station that can be mounted in most industrial environments. Detailed environmental specifications are as follows:

- Housing material: Nylon 6
- Connector material: Nickel-plated brass
- Protection level: NEMA 1,3,4,12,13; IEC IP 67
- Operating temperature: FLDP style 0° to +55°C (-40° to +158°F)
- FXDP style -25° to +55°C (-40° to +158°F)
- Vibration: 50 g @ 10 to 500 Hz

Other housing and connector materials available upon request.

The station's components are identified in the following figure.

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Connectors

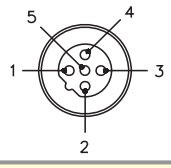
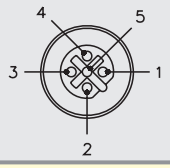
PROFIBUS® AIM™ stations provide connections for the bus, I/O and auxiliary power.

Bus Connectors

***eurofast*®** (M12) (reverse keyed) is the standard bus connector for PROFIBUS AIM stations.

PROFIBUS *eurofast* Pinouts

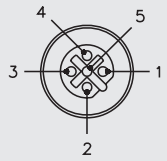
1 = 5 VDC*
2 = BUS _A
3 = Gnd
4 = BUS_B
5 = Shield
* Female connector only

Male	Female
	
5-Pin	5-Pin

Different I/O connector pinouts are used for different station types. Stations are available with one or two inputs per connector, one or two outputs per connector, or one input and one output per connector. The pin assignments for these styles are:

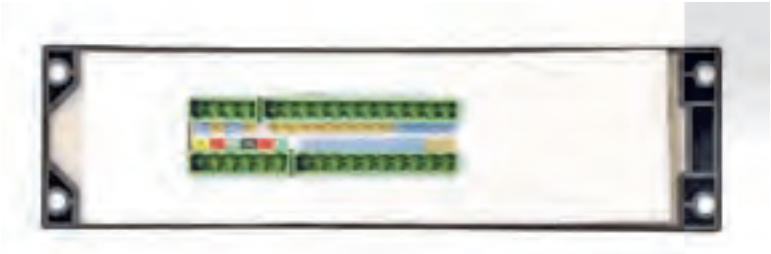
***eurofast* Pinouts**

1 - V+ (24 VDC)
2 - Signal B (Odd numbered input)
3 - V- (0 VDC)
4 - Signal A (Even numbered input)
5 - N/C

Female

5-Pin

Screw Terminal I/O Connection

AIM stations with part numbers ending in "ST" support screw terminal I/O and bus connections. The screw terminals for these stations are located on the back of the station. The back of the station is also fitted with a foam gasket to allow the station to be mounted to the outside of a cabinet or field I/O box (i.e. motor control center).



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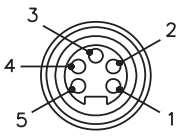
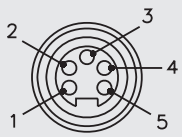
Auxiliary Power Connectors

PROFIBUS® AIM™ stations accept one or two 24 VDC power supplies via the ***minifast***® (7/8-16UN) connectors located at the top of the station. Stations with only inputs require the U_B supply to power station electronics and I/O. Stations with both inputs and outputs need both supplies (U_B and U_L) to be connected. In this case, UB powers the station electronics and the inputs, while U_L powers the outputs. For further details, see the individual station entries in this catalog.

***minifast* Power Pinouts**

1 = Gnd
2 = Gnd
3 = PE
4 = U_B
5 = U_L

Male	Female
	
5-Pin	5-Pin

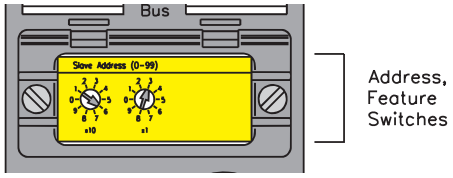
Power

Common power ratings for AIM stations include:

- Voltage: 18-30 VDC (both U_B and U_L)
- Input Voltage: 18-30 VDC (From U_B)
- Input Signal Current (each input): OFF < 2 mA; ON 4 mA (@ nominal 24 VDC)
- Input Delay: 2.5 ms

Addressing

PROFIBUS AIM stations must have a network address for communication. The address for AIM stations may be set via the visible rotary switches under the clear plastic cover on the front of the station.



The pair of switches represents the address as a decimal number; the left switch being the 10's multiplier and the right switch the 1's multiplier. To program the station, rotate the switches with a small slotted screwdriver until the arrows on the switch point to the appropriate numbers for the chosen address. Some stations (with outputs) have a third switch. This switch is used to enable auxiliary power diagnostics. If the switch is on, the loss of output power (U_L) will trigger a PROFIBUS diagnostic message.

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Diagnostics

AIM™ stations provide two LEDs for diagnosing communication and power problems.

Bus

- Green: Working properly
- Red: No communication

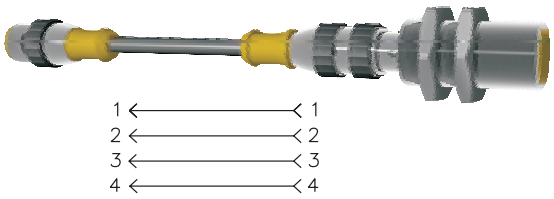
Power

- Off: No power
- Green: Power present
- Red: U_B present, but U_L missing (stations with outputs only)

There is an additional LED for each I/O point on the station. This LED indicates:

- Off: Point is off
- Green: Point is on
- Red: Point is in short-circuit state (advanced diagnostic stations only)

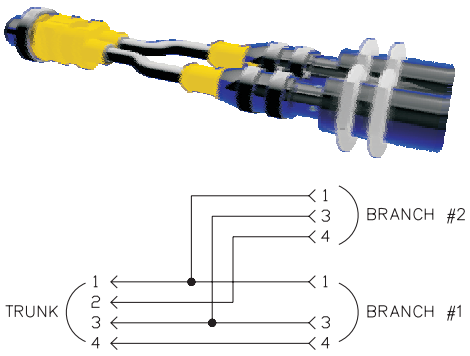
Abbreviations Used in Diagnostic Data Maps	
V_I	Missing input supply voltage
V_O	Missing output supply voltage
SC	Short circuit at the station (or at the particular I/O point if specified)



Connecting Devices to an AIM Station

AIM stations typically provide a ***eurofast***® (M12) connection for each I/O point. Standard **TURCK** I/O cordsets can be used to connect physical devices in the field to the AIM station. Some AIM stations, specifically those with I/O counts greater than eight total points, connect two signals to each connector. If the signals being connected are on the same physical device (for example a sensor with two outputs), a simple four or five-wire cordset can be used for connection.

If the signals are on two separate devices, a splitter can be used to separate the AIM I/O connector into two individual ***eurofast*** connectors. The recommended splitter is wired such that the second signal pin on the AIM station (pin 2) is wired to the default signal pin (pin 4) on the second splitter arm - requiring no special wiring by the user. The splitter is simply plugged into the AIM I/O connector and each arm is plugged into the appropriate I/O devices, as shown:



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Standard Input Stations

FLDP-IM 8-0001
FLDP-IM 16-0001

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Rotary Address Switches**
- **Automatic Baud Rate Sensing**

Electrical
- Operating Current: <110 mA plus sum of input currents (from U_B)
- Sensor Current: <500 mA per four inputs (from U_B)

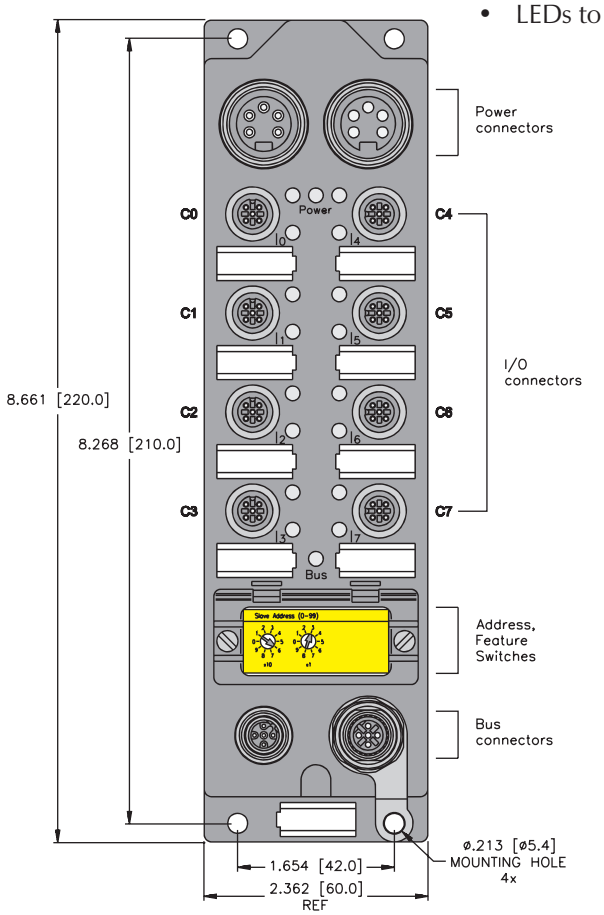
Power Distribution
- Inputs: U_B power supply

Mechanical
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Material
- Connectors: Nickel-plated brass
- Housing: Nylon 6

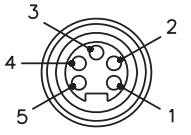
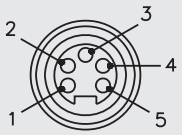
Diagnostics (Logical)
- Input short-circuit and power supply status mapped to PROFIBUS diagnostic table, one bit indicating each fault for the entire station

Diagnostics (Physical)
- One (...IM 8-0001) or two (...IM 16-0001) LEDs indicates short-circuit for I/O groups
- LEDs to indicate status of PROFIBUS communication and power supply



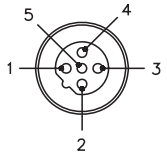
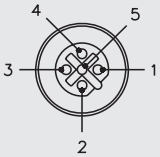
minifast® Power Pinouts

1 = Gnd
2 = Gnd
3 = PE
4 = U_B
5 = NC

Male	Female
	
5-Pin	5-Pin

1 = 5 VDC*
2 = BUS _A
3 = Gnd
4 = BUS_B
5 = Shield
* Female connector only

PROFIBUS _eurofast_® Pinouts

Male	Female
	
5-Pin	5-Pin

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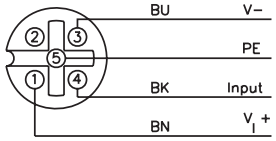
	Inputs									Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
FLDP-IM 8-0001	8	0-7	S	1	PNP	X			1
FLDP-IM 16-0001	16	0-7	2S	2	PNP	X			2

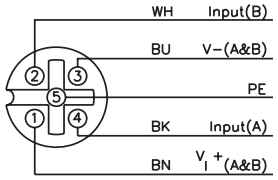
Input Connectors

S



Mating cordset:
RK 4.4T-*-RS 4.4T

2S



Mating cordset:
RK 4.4T-*-RS 4.4T

Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

In	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
Diagnosis									
Status	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	-	-	-	-	-	V_I	-	SC

I/O Data Map 2

In	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
Diagnosis									
Status	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	-	-	-	-	-	V_I	-	SC

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Standard Input Station

FLDP-IM 32-0001

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Rotary Address Switches**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <110 mA plus sum of input currents (from U_B)
- Sensor Current: <500 mA per eight inputs (from U_B)

Power Distribution

- Inputs: U_B power supply

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Material

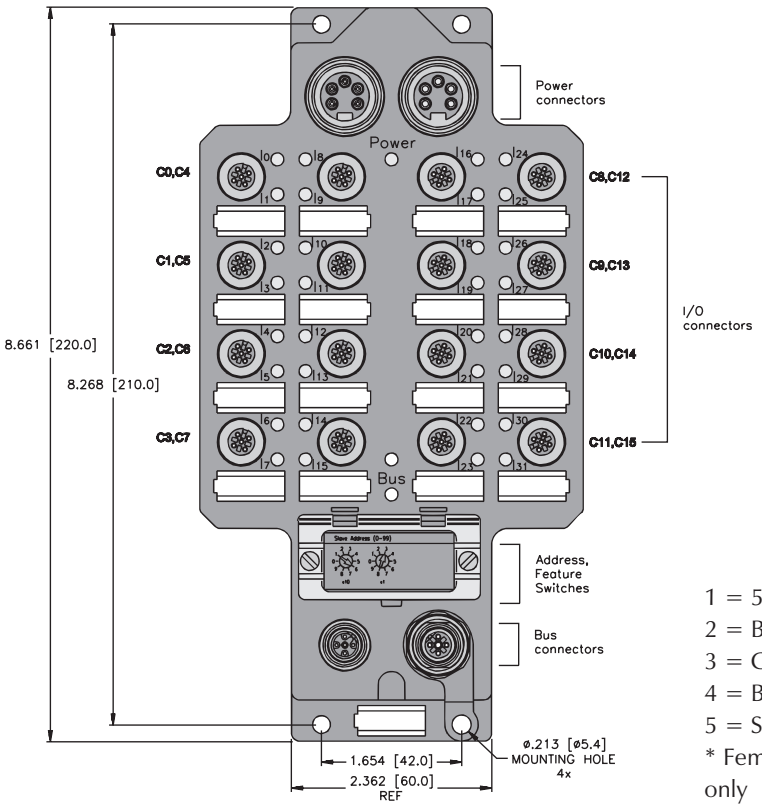
- Connectors: Nickel-plated brass
- Housing: Nylon 6

Diagnostics (Logical)

- Input short-circuit and power supply status mapped to PROFIBUS diagnostic table, one bit indicating each fault for the entire station

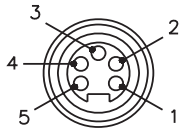
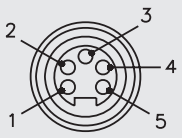
Diagnostics (Physical)

- Four LED short-circuits for I/O (groups of eight inputs)
- LEDs to indicate status of PROFIBUS communication and power supply



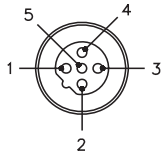
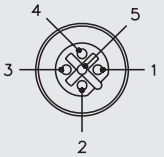
minifast® Power Pinouts

1 = Gnd
2 = Gnd
3 = PE
4 = U_B
5 = NC

Male	Female
	
5-Pin	5-Pin

PROFIBUS eurofast® Pinouts

1 = 5 VDC*
2 = BUS _A
3 = Gnd
4 = BUS_B
5 = Shield
* Female connector only

Male	Female
	
5-Pin	5-Pin

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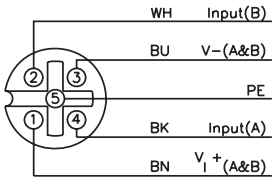
Inputs									Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
FLDP-IM 32-0001	32	0-15	2S	2	PNP	X			1

Input Connectors

2S



Mating cordset:
RK 4.4T-*-RS 4.4T

Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
	2	I-23	I-22	I-21	I-20	I-19	I-18	I-17	I-16
	3	I-31	I-30	I-29	I-28	I-27	I-26	I-25	I-24
Diagnosis									
Status	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	-	-	-	-	-	V_I	-	SC

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Deluxe Input Stations

FXDP-IM 8-0001
FXDP-IM 16-0001

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Rotary Address Switches**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <70 mA plus sum of input currents (from U_B)
- Sensor Current: <120 mA per connector (input or pair of inputs) (from U_B)

Power Distribution

- Inputs: U_B power supply

Mechanical

- Operating Temperature: -25 to +55°C (-13 to +131°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Material

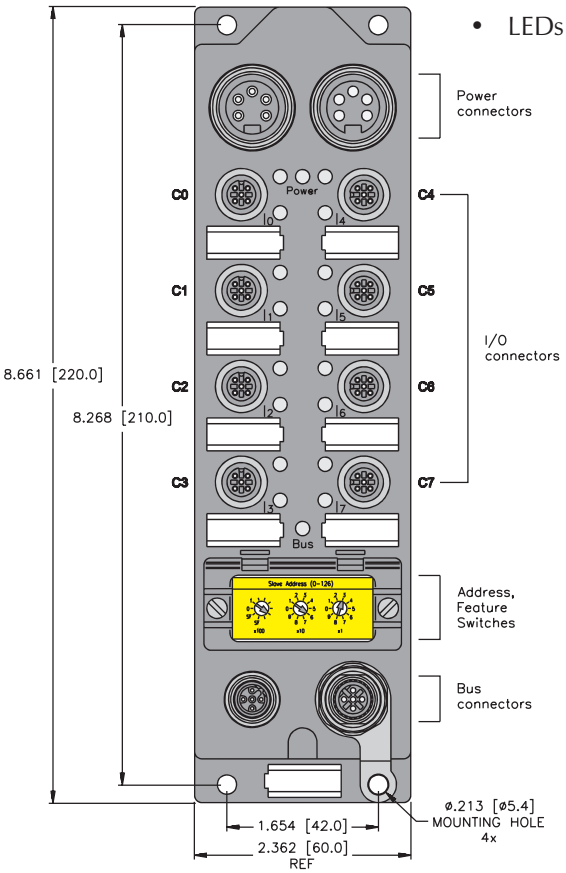
- Connectors: Nickel-plated brass
- Housing: Nylon 6

Diagnostics (Logical)

- Input short-circuit mapped to PROFIBUS diagnostic table, one bit indicating a fault for each connector (input or pair of inputs)
- One bit is mapped to PROFIBUS diagnostic table indicating the status of the power supply

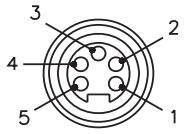
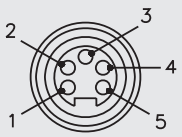
Diagnostics (Physical)

- One LED indicates short-circuit for each I/O point
- LEDs to indicate status of PROFIBUS communication and power supply



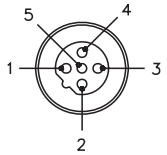
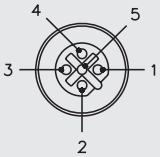
minifast® Power Pinouts

1 = Gnd
2 = Gnd
3 = PE
4 = U_B
5 = NC

Male	Female
	
5-Pin	5-Pin

PROFIBUS _eurofast_® Pinouts

1 = 5 VDC*
2 = BUS _A
3 = Gnd
4 = BUS_B
5 = Shield
* Female connector only

Male	Female
	
5-Pin	5-Pin

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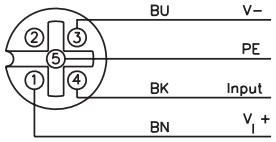
	Inputs								Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
FXDP-IM 8-0001	8	0-7	S	1	PNP	X	X		1
FXDP-IM 16-0001	16	0-7	2S	2	PNP	X	X		2

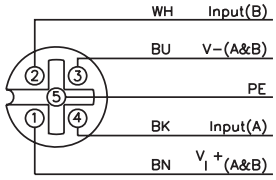
Input Connectors

S



Mating cordset:
RK 4.4T-*-RS 4.4T

2S



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Diag	0	-	-	-	-	-	V_I	-	SC
	1	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-
	3	SC-7	SC-6	SC-5	SC-4	SC-3	SC-2	SC-1	SC-0

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Diag	0	-	-	-	-	-	V_I	-	SC
	1	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-
	3	SC-15, 14	SC-13, 12	SC-11, 10	SC-9, 8	SC-7, 6	SC-5, 4	SC-3, 2	SC-1, 0

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Standard Output Stations

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Rotary Address Switches**
- **Automatic Baud Rate Sensing**

FLDP-OM 8-0001
FLDP-OM 8-0002
FLDP-OM 16-0001

Electrical

- Operating Current: <150 mA (from U_B)
- Output Current: <500 mA per output (...0001) or 2 A per output (...0002) (from U_L)

Power Distribution

- Outputs: U_L power supply

Mechanical

- Operating Temperature: 0 to +55 °C (-13 to +131°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Material

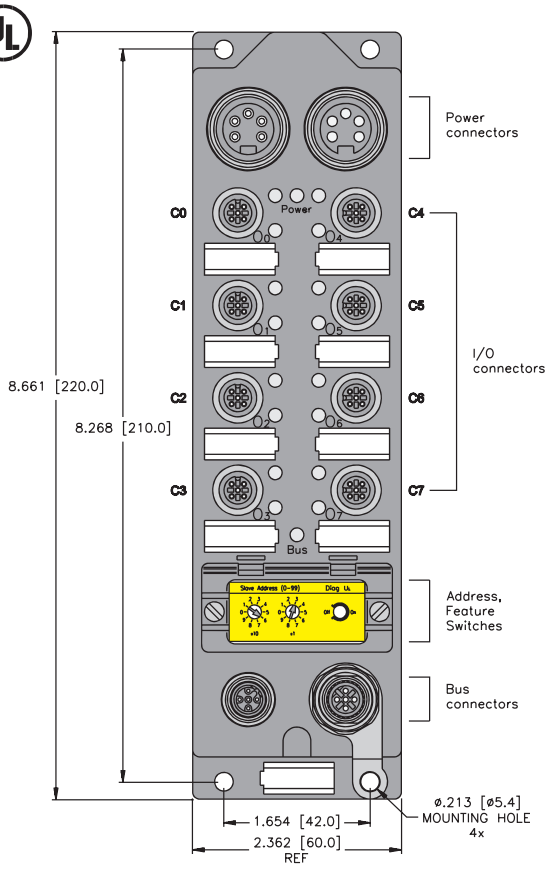
- Connectors: Nickel-plated brass
- Housing: Nylon 6

Diagnostics (Logical)

- U_B and U_L power supply status mapped to PROFIBUS diagnostic table, one bit indicating each fault for the entire station

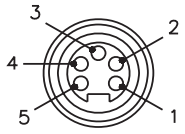
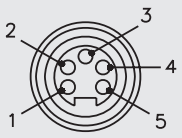
Diagnostics (Physical)

- LEDs to indicate status of PROFIBUS communication and power supplies



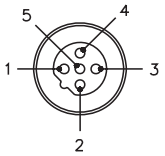
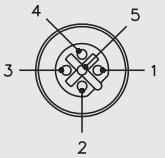
minifast® Power Pinouts

1 = Gnd
2 = Gnd
3 = PE
4 = U_B
5 = U_L

Male	Female
	
5-Pin	5-Pin

PROFIBUS _eurofast_® Pinouts

1 = 5 VDC*
2 = BUS _A
3 = Gnd
4 = BUS_B
5 = Shield
* Female connector only

Male	Female
	
5-Pin	5-Pin

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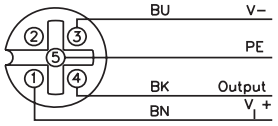
	Outputs								Data
Part Number	Output Count	Connectors	Pinout	Outputs per Connector	Current	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
FLDP-0M 8-0001	8	0-7	G	1	0.5 A				1
FLDP-0M 8-0002	8	0-7	H	1	2 A				1
FLDP-0M 16-0001	16	0-7	2G	2	0.5 A				2

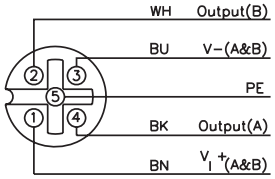
Input/Output Connectors

G



Mating cordset:
RK 4.4T-*-RS 4.4T

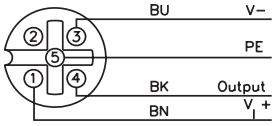
2G



Mating cordset:
RK 4.4T-*-RS 4.4T

Splitter:
VBRS 4.4-2RK 4T-*/*

H



Mating cordset:
RK 4.5T-*-RS 4.5T

I/O Data Map 1

Out	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0
Diagnosis									
Diag	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	-	-	-	-	-	V_I	V_0	-

I/O Data Map 2

Out	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0
	1	0-15	0-14	0-13	0-12	0-11	0-10	0-9	0-8
Diagnosis									
Diag	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	-	-	-	-	-	V_I	V_0	-

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Deluxe Output Stations

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Rotary Address Switches**
- **Automatic Baud Rate Sensing**

FXDP-OM 8-0001
FXDP-OM 16-0001

Electrical
- Operating Current: <70 mA (from U_B)
- Output Current: <1.4 A per output (from U_L)

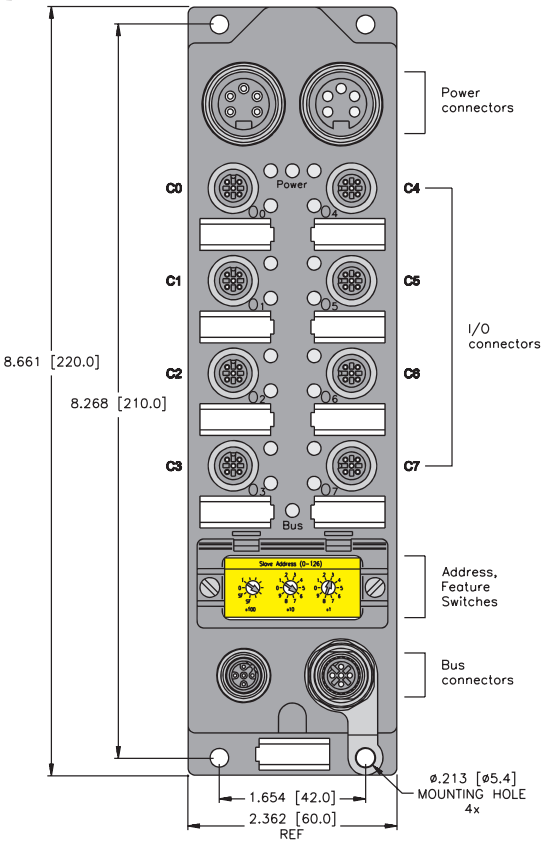
Power Distribution
- Outputs: U_L power supply

Mechanical
- Operating Temperature: -25 to +55°C (-13 to +131°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Material
- Connectors: Nickel-plated brass
- Housing: Nylon 6

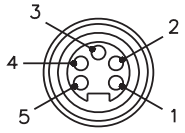
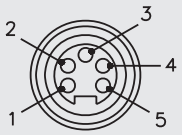
Diagnostics (Logical)
- Output short-circuit and power supply status mapped to PROFIBUS diagnostic table, one bit indicating a fault for each output point

Diagnostics (Physical)
- One LED indicates short-circuit for each output point
- LEDs to indicate status of PROFIBUS communication and power supply



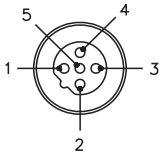
minifast® Power Pinouts

1 = Gnd
2 = Gnd
3 = PE
4 = U_B
5 = U_L

Male	Female
	
5-Pin	5-Pin

PROFIBUS eurofast® Pinouts

1 = 5 VDC*
2 = BUS _A
3 = Gnd
4 = BUS_B
5 = Shield
* Female connector only

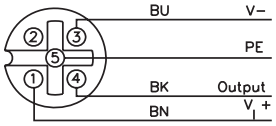
Male	Female
	
5-Pin	5-Pin

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

	Outputs								Data
Part Number	Output Count	Connectors	Pinout	Outputs per Connector	Current	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
FXDP-OM 8-0001	8	0-7	H	1	1.4 A	X	X		1
FXDP-OM 16-0001	16	0-7	2H	2	1.4 A	X	X		2

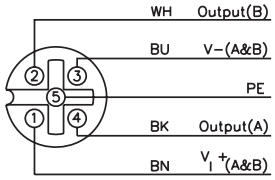
Input/Output Connectors

H



Mating cordset:
RK 4.4T-*-RS 4.4T

2H



Mating cordset:
RK 4.4T-*-RS 4.4T

Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0
	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Diag	0	-	-	-	-	-	V_I	V_0	SC
	1	SC-7	SC-6	SC-5	SC-4	SC-3	SC-2	SC-1	SC-0
	2	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0
	1	0-15	0-14	0-13	0-12	0-11	0-10	0-9	0-8
	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Diag	0	-	-	-	-	-	V_I	V_0	SC
	1	SC-7	SC-6	SC-5	SC-4	SC-3	SC-2	SC-1	SC-0
	2	SC-15	SC-14	SC-13	SC-12	SC-11	SC-10	SC-9	SC-8
	3	-	-	-	-	-	-	-	-

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Standard Input/Output Stations

FLDP-IOM 84-0001
FLDP-IOM 88-0001
FLDP-IOM 88-0002
FLDP-IOM 88-0004

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Rotary Address Switches**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <150 mA plus sum of input currents (from U_B)
- Sensor Current: <500 mA per group inputs (from U_B group is all inputs for IOM 84 and IOM 88-0002, two groups of four inputs for IOM 88-0001))
- Output Current: See table on facing page (from U_L)

Power Distribution

- Inputs: U_B power supply
- Outputs: U_L power supply

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Material

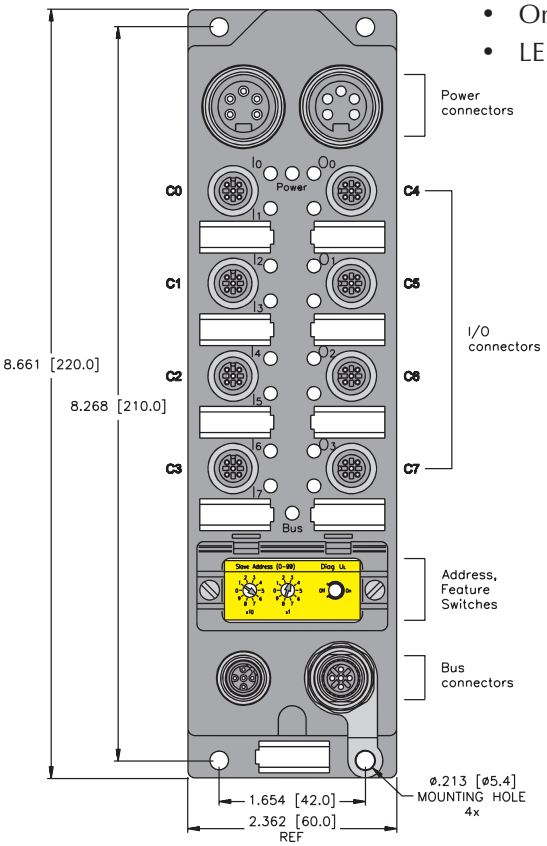
- Connectors: Nickel-plated brass
- Housing: Nylon 6

Diagnostics (Logical)

- Input short-circuit and power supply status mapped to PROFIBUS diagnostic table, one bit indicating each fault for the entire station

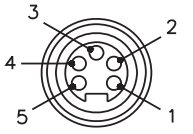
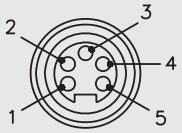
Diagnostics (Physical)

- One LED indicates short-circuit for all inputs
- LEDs to indicate status of PROFIBUS communication and power supply



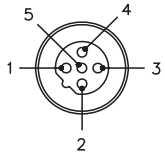
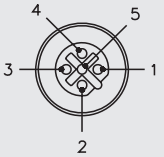
***minifast*® Power Pinouts**

1 = Gnd
2 = Gnd
3 = PE
4 = U_B
5 = U_L

Male	Female
	
5-Pin	5-Pin

PROFIBUS *eurofast*® Pinouts

1 = 5 VDC*
2 = BUS _A
3 = Gnd
4 = BUS_B
5 = Shield
* Female connector only

Male	Female
	
5-Pin	5-Pin

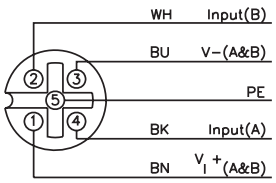
Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

	Inputs								Outputs								Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map	
FLDP-IOM 84-0001	8	0-3	2S	2	PNP	X			4	4-7	H	1	2 A			1	
FLDP-IOM 88-0001	8	0-7	C	1	PNP	X			8	0-7	C	1	0.5 A			2	
FLDP-IOM 88-0002	8	0-3	2S	2	PNP	X			8	4-7	2G	2	0.5 A			2	
FLDP-IOM 88-0004*	8	0-3	2S	2	PNP	X			8	4-7	2G	2	0.5 A			2	

* High speed (0.2 ms) inputs

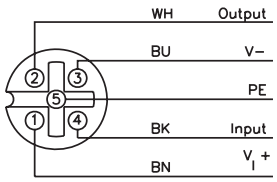
Input/Output Connectors

2S



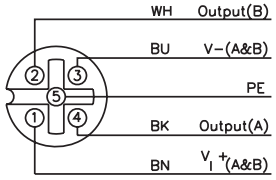
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

C



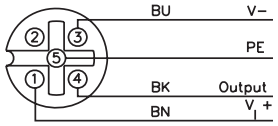
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VB2-RS 4.4T-1/2RK 4.4T-*/*/S651

2G



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

H



Mating cordset:
RK 4.4T-*-RS 4.4T

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
Out	0	-	0-6	-	0-4	-	0-2	-	0-0
Diagnosis									
Diag	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	-	-	-	-	-	V_I	V_0	SC

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
Out	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0
Diagnosis									
Diag	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	-	-	-	-	-	V_I	V_0	SC

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Standard Input/Output Station

FLDP-IOM 88-0002-ST

CE

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Screw Terminal Connections**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <150 mA plus sum of input currents (from U_B)
- Sensor Current: <500 mA sum of all inputs (from U_B)
- Output Current: <500 mA per output (from U_L)

Power Distribution

- Inputs: U_B power supply
- Outputs: U_L power supply

Mechanical

- Operating Temperature: 0 to +55 °C (+32 to +131 °F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Material

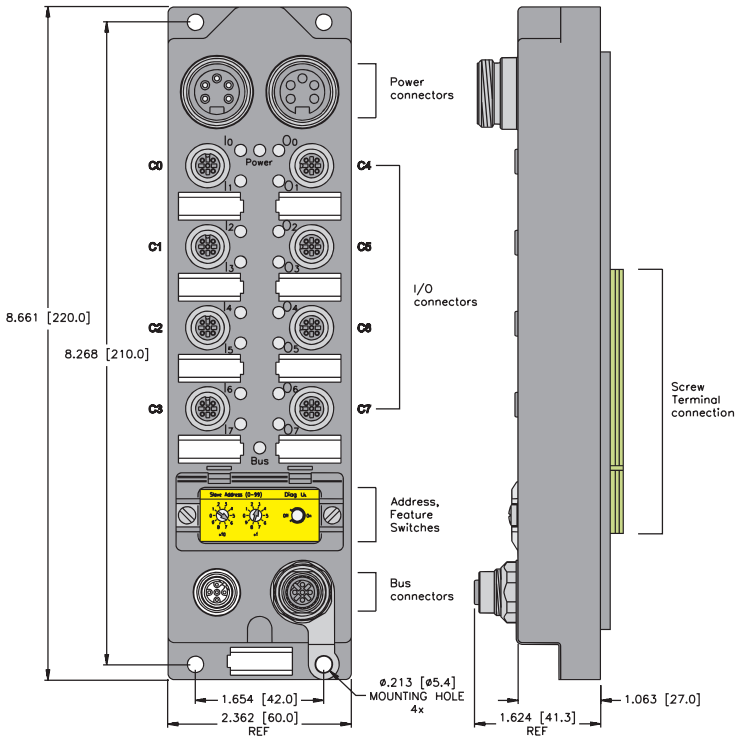
- Connectors: Nickel-plated brass
- Housing: Nylon 6

Diagnostics (Logical)

- Input short-circuit and power supply status mapped to PROFIBUS diagnostic table, one bit indicating each fault for the entire station

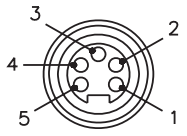
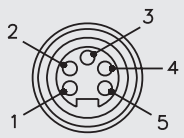
Diagnostics (Physical)

- One LED indicates short-circuit for all inputs
- LEDs to indicate status of PROFIBUS communication and power supply



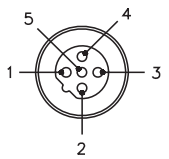
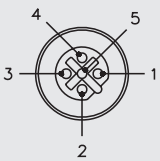
1 = Gnd
2 = Gnd
3 = PE
4 = U_B
5 = U_L

***minifast*® Power Pinouts**

Male	Female
	
5-Pin	5-Pin

1 = 5 VDC*
2 = BUS _A
3 = Gnd
4 = BUS_B
5 = Shield
* Female connector only

PROFIBUS *eurofast*® Pinouts

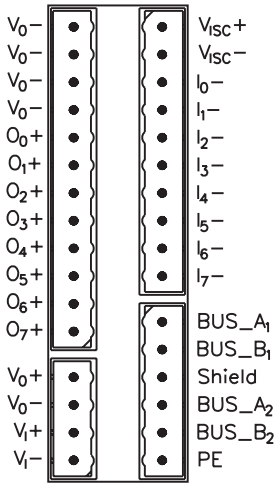
Male	Female
	
5-Pin	5-Pin

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

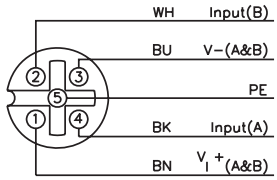
	Inputs								Outputs							Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FLDP-IOM 88-0002-ST	8	0-3	ST, 2S	2	PNP	X			8	4-7	ST, 2G	2	0.5 A			1

Input/Output Connectors

ST

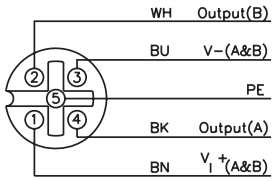


2S



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

2G



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

In	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
Out	0	O-7	O-6	O-5	O-4	O-3	O-2	O-1	O-0
Diagnosis									
Diag	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	-	-	-	-	-	V_I	V_O	SC

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Standard Input/Output Stations

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Rotary Address Switches**
- **Automatic Baud Rate Sensing**

FLDP-IOM 1616-0001
FLDP-IOM 248-0001

Electrical

- Operating Current: <110 mA plus sum of input currents (from U_B)
- Sensor Current: <500 mA per eight inputs (from U_B)
- Output Current: <500 mA per output (from U_L)

Power Distribution

- Inputs: U_B power supply
- Outputs: U_L power supply

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Material

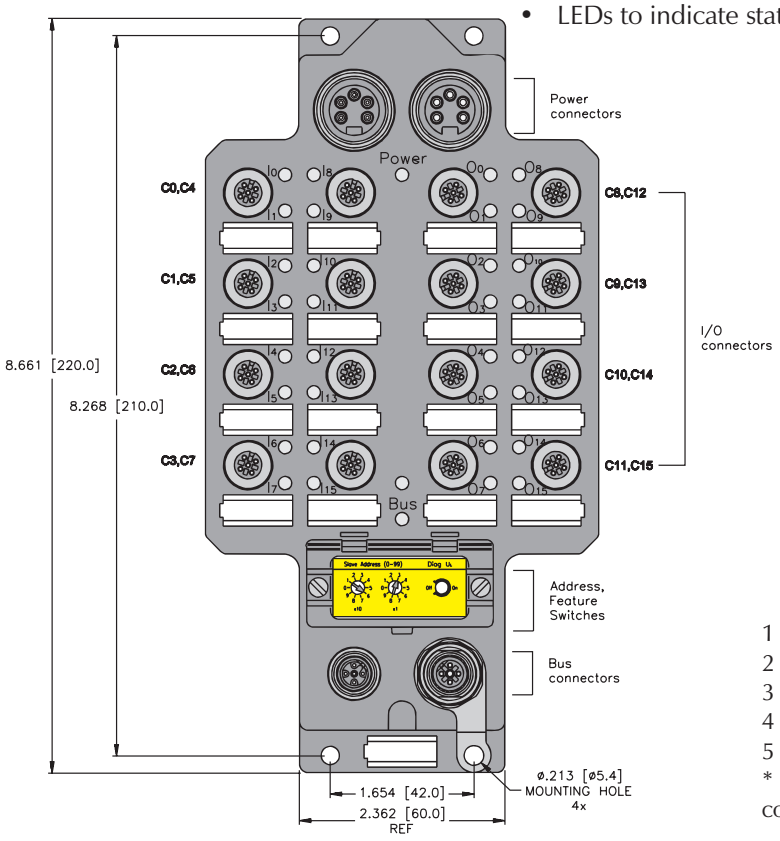
- Connectors: Nickel-plated brass
- Housing: Nylon 6

Diagnostics (Logical)

- Input short-circuit and power supply status mapped to PROFIBUS diagnostic table, one bit indicating each fault for the entire station

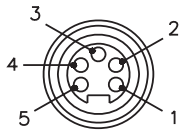
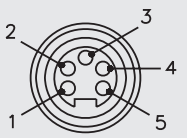
Diagnostics (Physical)

- One LED indicates short-circuit for each group of eight inputs
- LEDs to indicate status of PROFIBUS communication and power supply



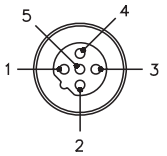
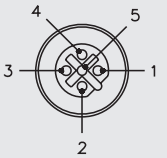
minifast® Power Pinouts

1 = Gnd
2 = Gnd
3 = PE
4 = U_B
5 = U_L

Male	Female
	
5-Pin	5-Pin

PROFIBUS _eurofast_® Pinouts

1 = 5 VDC*
2 = BUS _A
3 = Gnd
4 = BUS_B
5 = Shield
* Female connector only

Male	Female
	
5-Pin	5-Pin

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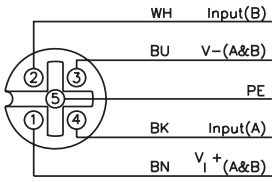
Part Number	Inputs								Outputs							Data
	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FLDP-IOM 1616-0001	16	0-7	2S	2	PNP	X			16	8-15	2G	2	0.5 A			1
FLDP-IOM 248-0001	24	0-11	2S	2	PNP	X			8	12-15	2G	2	0.5 A			2

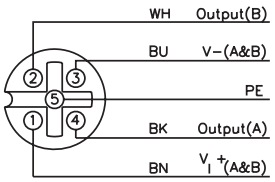
Input/Output Connectors

2S



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

2G



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
Out	0	O-7	O-6	O-5	O-4	O-3	O-2	O-1	O-0
	2	O-15	O-14	O-13	O-12	O-11	O-10	O-9	O-8
Diagnosis									
Diag	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	-	-	-	-	-	V_I	V_O	SC

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
	2	I-23	I-22	I-21	I-20	I-19	I-18	I-17	I-16
Out	0	O-7	O-6	O-5	O-4	O-3	O-2	O-1	O-0
Diagnosis									
Diag	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	-	-	-	-	-	V_I	V_O	SC

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Input/Output Station for Robot Control

FLDP-IOM 2012-0001

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Rotary Address Switches**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <110 mA plus sum of input currents (from U_B)
- Sensor Current: <500 mA per group of eight or twelve inputs (from U_B)
- Output Current: <500 mA per output (from U_L)

Power Distribution

- Inputs: U_B power supply
- Outputs: U_L power supply

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Material

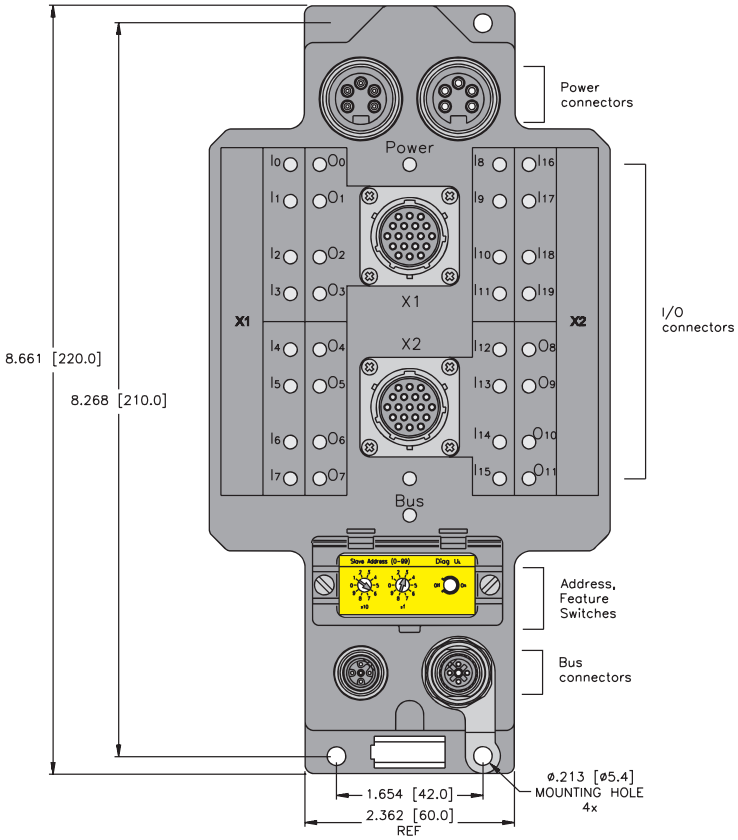
- Connectors: Nickel-plated brass
- Housing: Nylon 6

Diagnostics (Logical)

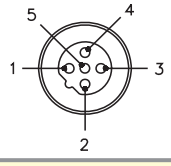
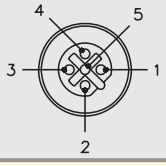
- Input short-circuit and power supply status mapped to PROFIBUS diagnostic table, one bit indicating each fault for the entire station

Diagnostics (Physical)

- One LED indicates short-circuit for each group of inputs
- LEDs to indicate status of PROFIBUS communication and power supply



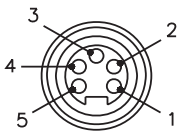
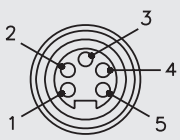
PROFIBUS *eurofast*® Pinouts

Male	Female
	
5-Pin	5-Pin

1 = 5 VDC*
2 = BUS _A
3 = Gnd
4 = BUS_B
5 = Shield
* Female connector only

***minifast*® Power Pinouts**

1 = Gnd2
2 = Gnd
3 = PE
4 = U_B
5 = U_L

Male	Female
	
5-Pin	5-Pin

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Part Number	Inputs								Outputs							Data
	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FLDP-IOM 2012-0001	20	X1,X2	B2	8, 12	PNP	X			12	X1,X2	B2	8,4	0.5 A			1

Input/Output Connectors

B2

	X1	X2
A	V+	V+
B	V–	V–
S	I_0	I_0
R	I_1	I_1
M	I_2	I_2
L	I_3	I_3
H	I_4	I_4
G	I_5	I_5
D	I_6	I_6
C	I_7	I_7
U	O_0	I_8
T	O_1	I_9
P	O_2	I_{10}
N	O_3	I_{11}
K	O_4	O_0
J	O_5	O_1
F	O_6	O_2
E	O_7	O_3
V	PE	PE

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	X1I7	X1I6	X1I5	X1I4	X1I3	X1I2	X1I1	X1I0
	1	X2I7	X2I6	X2I5	X2I4	X2I3	X2I2	X2I1	X2I0
	2	-	-	-	-	X2I11	X2I10	X2I9	X2I8
Out	0	X107	X106	X105	X104	X103	X102	X101	X100
	1	-	-	-	-	X203	X202	X201	X200
Diagnosis									
Status	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	-	-	-	-	-	U_I	U_0	SC

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Standard Input/Output Stations

FLDP-IOM124-0001
FLDP-IOM124-0002

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Rotary Address Switches**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <150 mA plus sum of input currents (from U_B)
- Sensor Current: <500 mA per group inputs (from U_B group is all inputs for IOM 84 and IOM 88-0002, two groups of four inputs for IOM 88-0001))
- Output Current: See table on facing page (from U_L)

Power Distribution

- Inputs: U_B power supply
- Outputs: U_L power supply

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Material

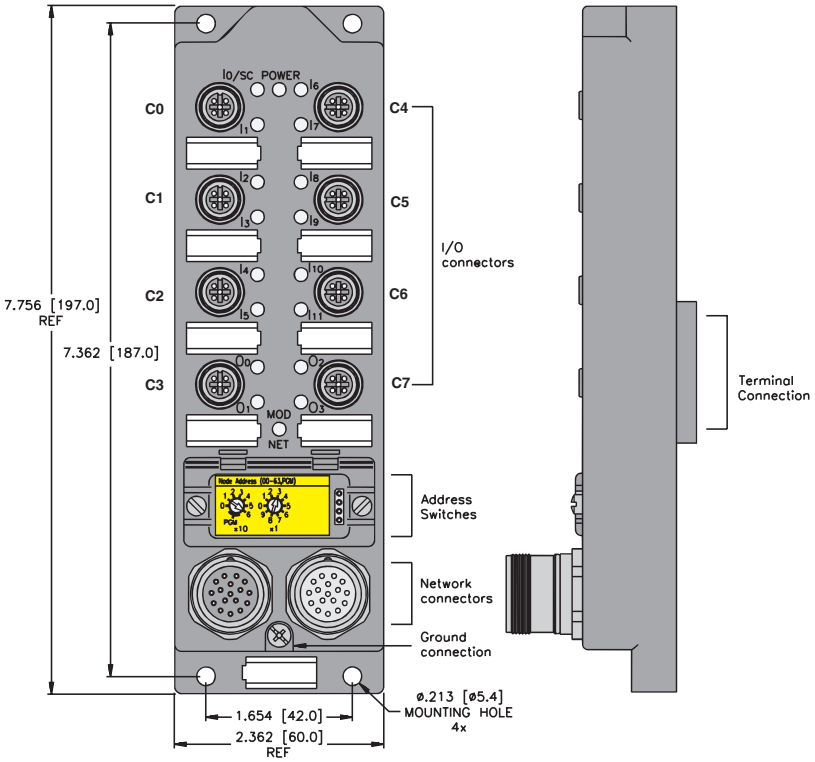
- Connectors: Nickel-plated brass
- Housing: Nylon 6

Diagnostics (Logical)

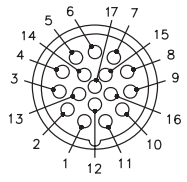
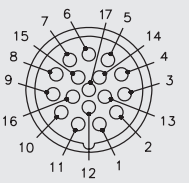
- Input short-circuit and power supply status mapped to PROFIBUS diagnostic table, one bit indicating each fault for the entire station

Diagnostics (Physical)

- One LED indicates short-circuit for all inputs
- LEDs to indicate status of PROFIBUS communication and power supply



DeviceNet *multifast* Pinout

Male	Female
	
17-Pin	**17-Pin**

1 = 0 V, us1
2 = 0 V, US2
3 = +24, US2
4 = +24, US1
5 = PE
6 = *
7 = Us COM
8 = *
9 = KSR2
10 = KSR1
11 = *
12 = Us CAN high
13 = Devnet high
14 = Devnet low
15 = RBST
16 = UL
17 = Us CAN low

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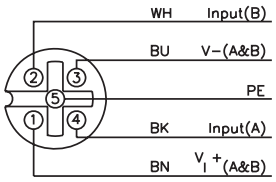
	Inputs								Outputs							Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FLDP-IOM124-0001	12	6	2S	2	PNP	X			4	2	2G	2	2 A			1
FLDP-IOM124-0002	12	6	2S	2	PNP	X			4	2	2G	2	2 A			1

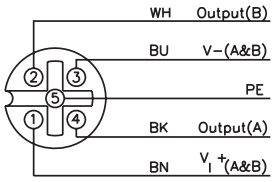
Input/Output Connectors

2S



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

2G



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	C4P2	C4P4	C2P2	C2P4	C1P2	C1P4	C0P2	C0P4
	1	-	-	-	-	C6P2	C6P4	C5P2	C5P4
Out	0	-	-	-	-	C7P2	C7P4	C3P2	C3P4
Diagnosis									
Diag	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	-	-	-	-	-	U_B	U_L	SC

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Deluxe Input/Output Stations

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Rotary Address Switches**
- **Automatic Baud Rate Sensing**

FXDP-IOM 88-0001
FXDP-CSG 88-0001
FXDP-XSG 16-0001

Electrical

- Operating Current: <70 mA plus sum of input currents (from U_B)
- Sensor Current: <120 mA per connector (input or pair of inputs) (from U_B)
- Output Current: 1.4 A per output (from U_L)

Power Distribution

- Inputs: U_B power supply
- Outputs: U_L power supply

Mechanical

- Operating Temperature: -25 to +55°C (-13 to +131°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Material

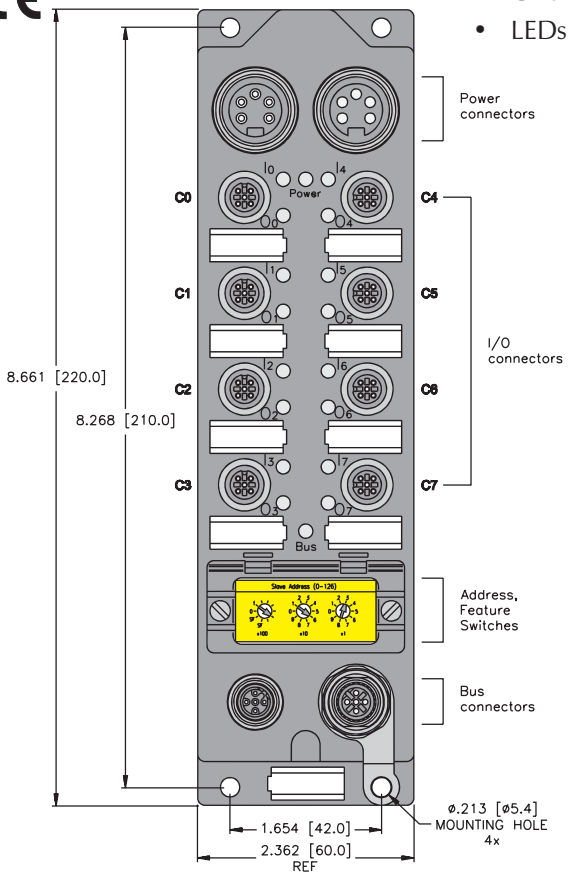
- Connectors: Nickel-plated brass
- Housing: Nylon 6

Diagnostics (Logical)

- I/O and power supply faults mapped to PROFIBUS diagnostic table, one bit per output and one bit per input connector

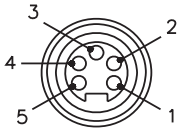
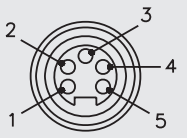
Diagnostics (Physical)

- One LED indicates short-circuit for each I/O point
- LEDs to indicate status of PROFIBUS communication and power supply



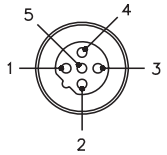
minifast® Power Pinouts

1 = Gnd
2 = Gnd
3 = PE
4 = U_B
5 = U_L

Male	Female
	
5-Pin	5-Pin

PROFIBUS *eurofast*® Pinouts

1 = 5 VDC*
2 = BUS _A
3 = Gnd
4 = BUS_B
5 = Shield
* Female connector only

Male	Female
	
5-Pin	5-Pin

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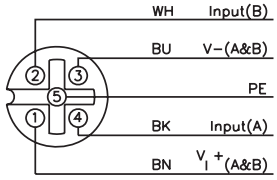
	Inputs								Outputs							Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FXDP-IOM 88-0001	8	0-3	2S	2	PNP		X		8	4-7	2G	2	1.4 A	X		1
FXDP-CSG 88-0001	8	0-7	C	1	PNP		X		8	0-7	C	1	1.4 A	X		2
FXDP-XSG 16-0001	16	0-7	2X	1	PNP		X		16	0-7	2X	1	1.4 A	X		3

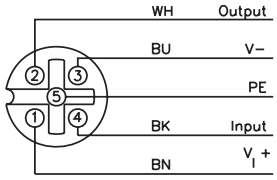
Input/Output Connectors

2S



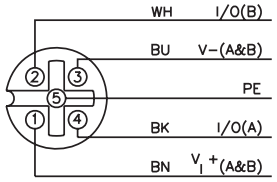
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

C



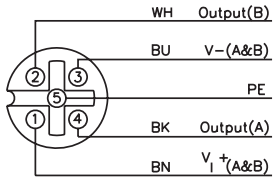
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VB2-RS 4.4T-1/2RK 4.4T-*/*/S651

2X



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

2G



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
Diag	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	-	-	-	-	-	UB	UL	SC
	1	SC-15	SC-14	SC-13	SC-12	SC-11	SC-10	SC-9	SC-8
	2	-	-	-	-	SC-7,6	SC-5,4	SC-3,2	SC-1,0
Out	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
Diag	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	-	-	-	-	-	UB	UL	SC
	1	SC-7	-	SC-5	-	SC-3	-	SC-1	-
	2	SC-15	-	SC-13	-	SC-11	-	SC-9	-
	3	SC-I7	SC-I6	SC-I5	SC-I4	SC-I3	SC-I2	SC-I1	SC-I0
Out	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0

I/O Data Map 3

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
Diag	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	-	-	-	-	-	UB	UL	SC
	1	SC-7	SC-6	SC-5	SC-4	SC-3	SC-2	SC-1	SC-1
	2	SC-15	SC-14	SC-13	SC-12	SC-11	SC-10	SC-9	SC-8
	3	SC-I 15,14	SC-I 13,12	SC-I 11,10	SC-I 9,8	SC-I 7,6	SC-I 5,4	SC-I 3,2	SC-I 1,0
Out	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0
	1	0-15	0-14	0-13	0-12	0-11	0-10	0-9	0-8

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PROFIBUS-DP FDP20 Stations

TURCK's FDP20 PROFIBUS stations are low-cost screw-terminal connection stations designed for mounting in an enclosure. These stations provide easy connection of standard I/O devices such as push buttons, pilot lights, motor starters and drives to a PROFIBUS network. FDP20 stations are designed to easily upgrade existing equipment to a PROFIBUS network.

Mechanical Specifications

TURCK FDP20 stations are designed to be mounted in standard equipment enclosures (operator stations, motor control centers, etc.). These stations use screw terminal connections for all I/O and network wiring. Detailed environmental specifications include:

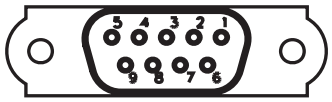
- Housing material: Nylon 6
- Protection level: IP 20
- Operating temperature: 0 to +55°C (32 to +131°F)

The station's components are identified in the figure below.

Connectors

Bus connectors

PROFIBUS-DP D9 Connector



I/O connectors

Each FDP20 version uses a different screw terminal connector. Detailed pinout information is given in the product information on the following pages.

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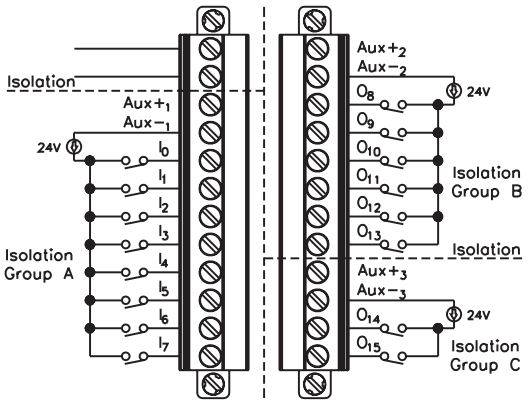
Power

FDP20 stations provide an auxiliary power connection for I/O devices and station electronics. Power can be applied separately to different I/O groups as shown in the following diagram.

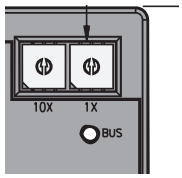


Power ratings for FDP20 stations:

- Operating Voltage: 18-30 VDC (24 VDC nominal)
- Internal Current Consumption: <75 mA (@ nominal 24 VDC) plus sum of I/O currents
- Input Signal Current (each input): OFF < 0.5 mA; ON 1-3.4 mA
- Input Delay: 2.5 ms
- Output Current: 1.8 A max per output (XSG version only)

Addressing

PROFIBUS® stations must have a network address for communication. The address for FDP20 stations may be set via the visible rotary switches on the front of the station.



The pair of switches represents the address as a decimal number; the left switch being the 10's multiplier and the right switch the 1's multiplier. To program the stations, rotate the switches with a small slotted screwdriver until the arrows are pointing at the appropriate numbers for the chosen address.

Diagnostics

FDP20 stations provide LEDs for diagnosing communication problems.

Bus

- Green: Normal operation
- Red: No communication

Voltage Supply

- Green: Power present
- Red: No power

Input/Output Status

- Off: Point is off
- Green: Point is on

Common short-circuit Indication (Two LEDs for entire station)

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Enclosure Mounted Input/Output Station

FDP20-16XSG
FDP20-16S

- **In-Cabinet I/O**
- **IP 20 Protection**
- **Ideal for Retrofits**
- **Automatic Baud Rate Detection**

Electrical

- Operating Current: <75 mA plus sensor currents (from Auxiliary power)
- Input Current: <700 mA sum of all inputs (from Auxiliary power)
- Output Current: <1.8 A per output (from Auxiliary power)

Power Distribution

- Inputs: Auxiliary power
- Outputs: Auxiliary power supply

Mechanical

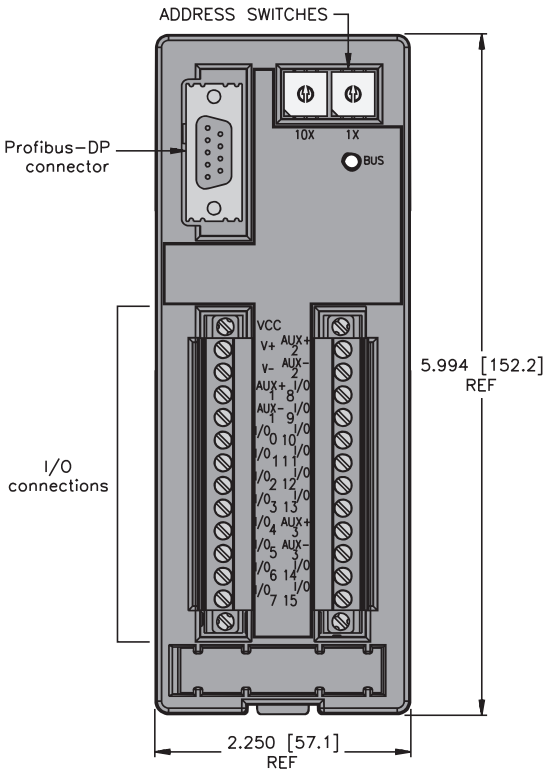
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IEC IP 20

Material

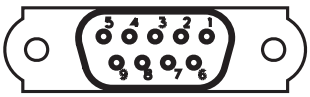
- Housing: Nylon

Diagnostics (Physical)

- LEDs to indicate status of PROFIBUS-DP communication



PROFIBUS-DP D9 Connector



3 = BUS_B
5 = DGnd
6 = +5VDC
8 = BUS_A

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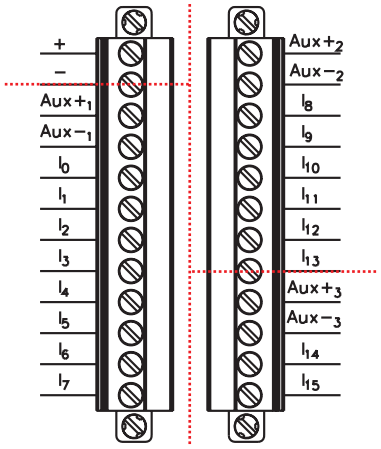
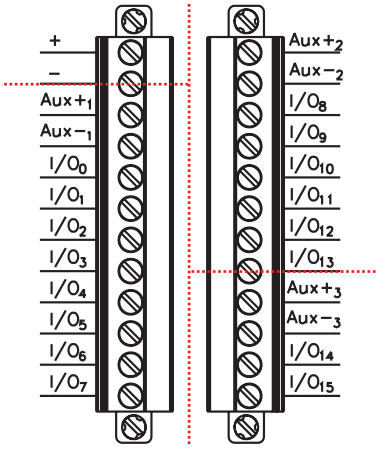
	Inputs						Outputs					Data
Part Number	Input Count	Pinout	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Pinout	Current	Individual Diagnostics	Wire-Break Detection	Data Map
FDP20-16XSG	16	FLX-DP	PNP				16	FLX-DP	0.5 A			1
FDP20-16S	16	FL-DP	PNP				0					2

Input/Output Connectors

FL-DP



FLX-DP



Indicates I/O groups which can be powered from separate Aux. power supplies if desired

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
Out	0	O-7	O-6	O-5	O-4	O-3	O-2	O-1	O-0
	1	O-15	O-14	O-13	O-12	O-11	O-10	O-9	O-8

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8

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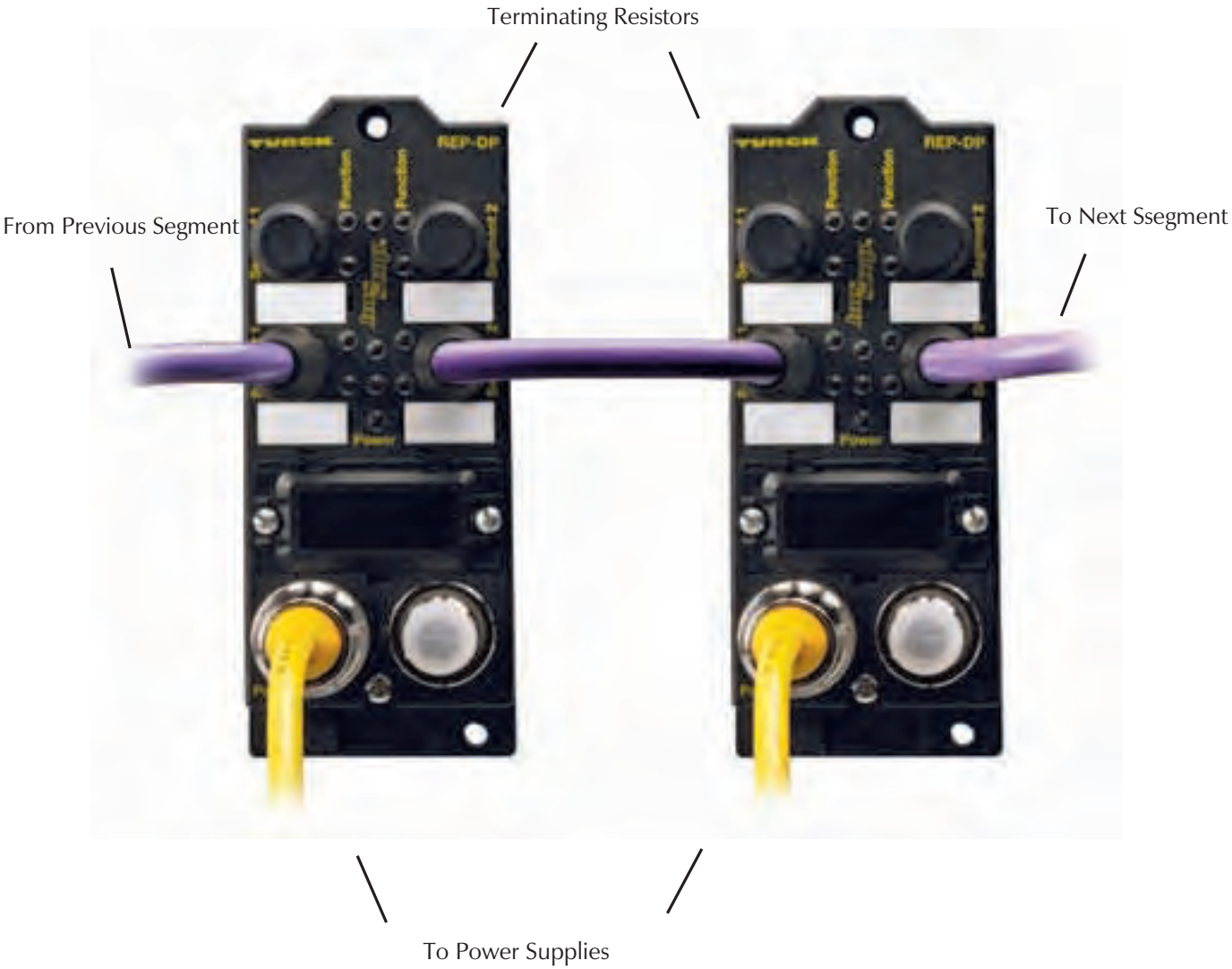
PROFIBUS®-DP Repeater

The **REP-DP** repeater serves to assemble two galvanically isolated PROFIBUS-DP segments in RS-485 technology with 32 participants each, and provides IP 67 protection. Up to four repeaters can be connected in series, so that up to 127 nodes can be operated via a single master; thus PROFIBUS networks can be extended significantly by using repeaters (depending on the baud rate).
The transmission rate is detected automatically (up to 12 Mbaud), and the signals are regenerated in amplitude. If there are faulty protocols in one of the segments (a wire-break, short-circuit in the bus line or by a defective node), that segment is decoupled and an error indication is provided by the LED.

Connection:

Individual PROFIBUS segments are connected via M12 connectors (see technical guidelines for PROFIBUS connection technology). The repeater is equipped with three female and one male connector; unused connections must be terminated with a terminating resistor (type: RSSW 45-TR). The shield of the PROFIBUS cable can be grounded directly via a grounding screw (internally the shield is coupled capacitively with the ground). Power (24 VDC) is supplied via standard 7/8 inch connectors.



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Profibus-DP Repeater

REP-DP-0002

- **Extend Network Length**
- **Extend Drop Lengths**
- **Allows More Than 32 Stations on Network**
- **Isolate Communication Segments**

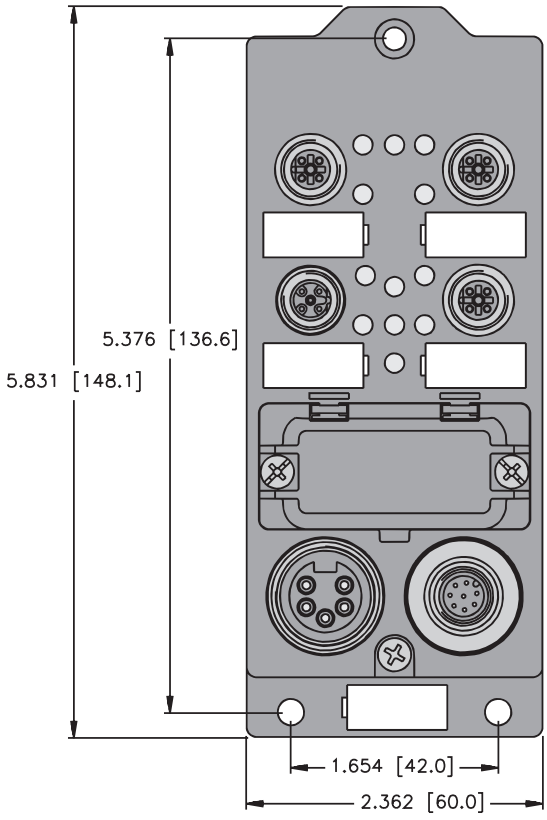
Electrical
- Operating Current: <60 mA

Power Distribution
- Station: Auxiliary power supply (U_B)

Mechanical
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: NEMA 1,3,4,12,13 and IEC IP 67
- Vibration: 50 g @ 10-500 Hz

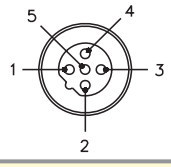
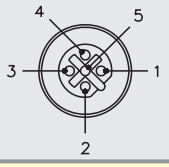
Material
- Connectors: Nickel-plated brass
- Housing: Nylon 6

Diagnostics (Physical)
- LEDs indicate communication status for each segment and power supply



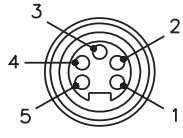
1 = 5 VDC*
2 = BUS _A
3 = Gnd
4 = BUS_B
5 = Shield
* Female connector only

PROFIBUS *eurofast*® Pinouts

Male	Female
	
5-Pin	**5-Pin**

minifast® Power Pinouts

1 = Gnd
2 = Gnd
3 = PE
4 = U_B
5 = NC

Male

5-Pin

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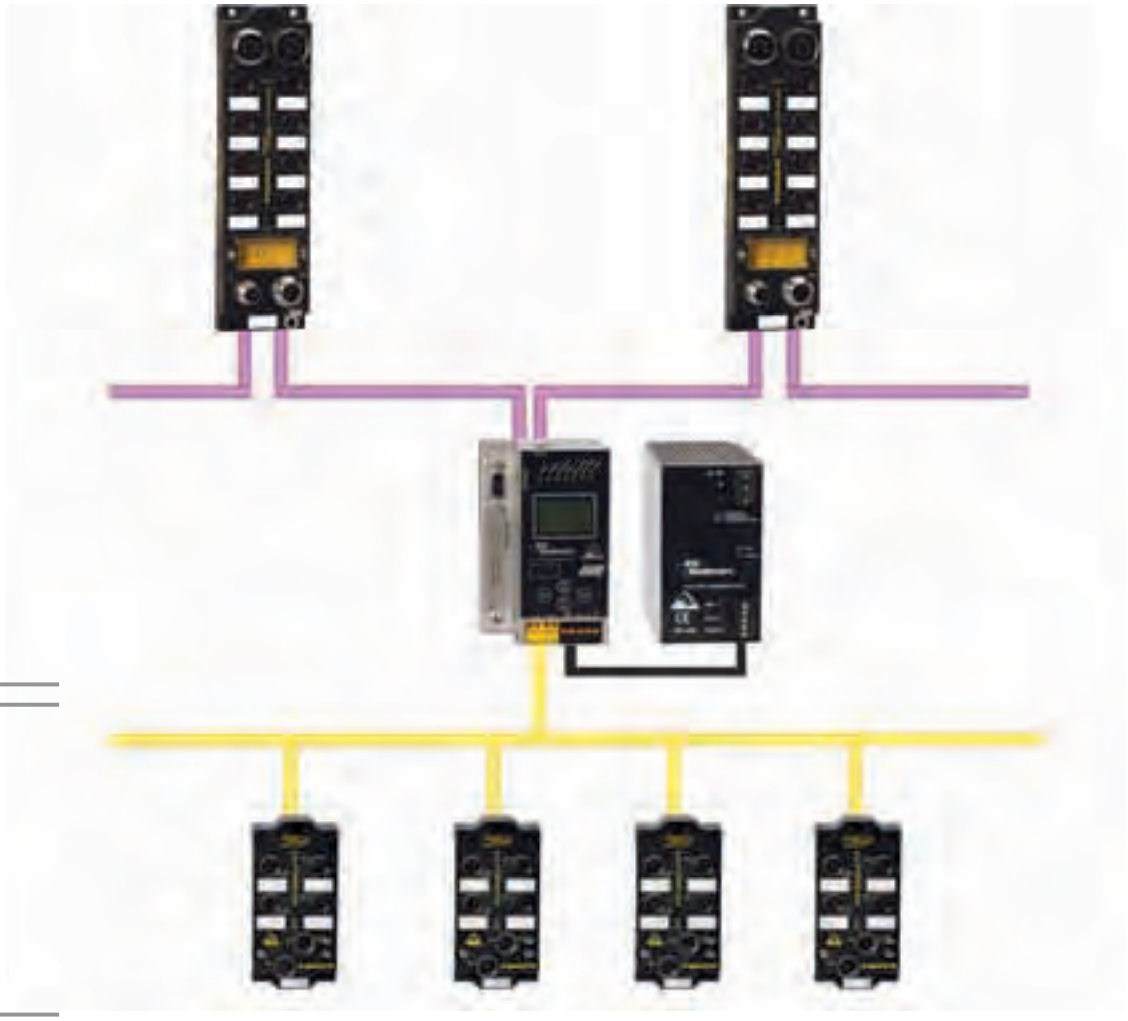
PROFIBUS-DP to AS-interface Gateways

AS-I systems can be easily connected to a higher-level network, like PROFIBUS, through a gateway master. The gateway acts as a master to the AS-I system(s) and a slave to the PROFIBUS system, mapping all of the AS-I data for PROFIBUS in a single block.

For AS-I specifications and rating details see section G of this catalog.

PROFIBUS-DP System
(Gateway is the Slave)



AS-I System
(Gateway is the Master)

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Addressing

PROFIBUS® stations must have a network address for communication. The address for AS-I/ PROFIBUS gateways may be set via the on-unit display and push buttons. Please consult the manual for a particular gateway for instruction on the procedure.

Diagnostics

AS-I/ PROFIBUS gateways contain LEDs for diagnosing I/O and communication problems for AS-I and PROFIBUS. For a detailed description of the LED states please see the Bihl+Wiedemann AS-I/ PROFIBUS Gateway User Manual available for download from www.bihl-wiedemann.com.

Power

Most AS-I/ PROFIBUS gateways draw power from the AS-I power supply. The option to use a separate, non-AS-I power supply is also available. Consult the gateway documentation to ensure that the gateway being selected meets the requirements of your system.

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AS-I Profibus-DP Gateways in Stainless Steel

ASI-DPG-SS BW1567*
ASI-DPG-SS BW1568*
ASI-DPG-SS BW1569*
ASI-DPG-SS-SE BW1773*
ASI-DPG-SS-SE BW1774*
ASI-DPG-SS-C1D2 BW1653
ASI-DPG-SS-C1D2 BW1654
ASI-DPG-SS-C1D2 BW1655

* Not ETL Listed

- **AS-I v3.0 Supported**
- **Graphical Display**
- **Integrated Ground-Fault Detection**
- **Integrated AS-I Diagnostics**

Electrical

- Operating Current: 200 mA from V_{AS-I} (Power Supply A)
  200 mA from V_{AS-i1}, 70mA from V_{AS-i2} (Power Supply A2)
  250 mA from V_{AUX} (Power Supply E)

Power Distribution

- From AS-I supply for each network (Power Supply A, A2)
- From external supply (Power Supply E)

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material

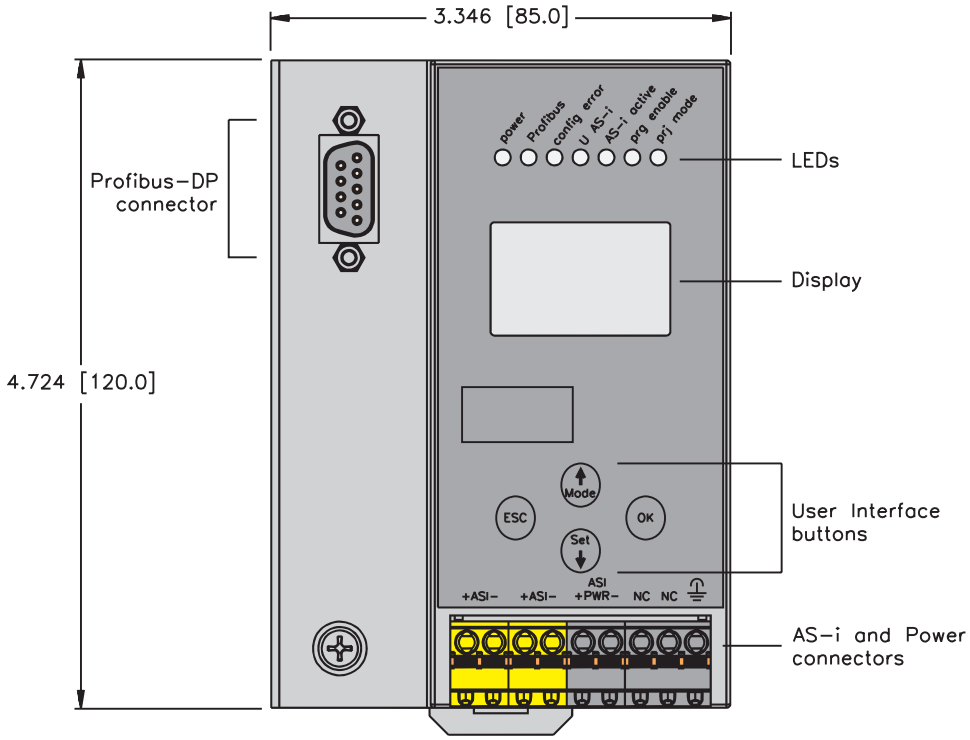
- Housing: Stainless Steel

Diagnostics (Logical)

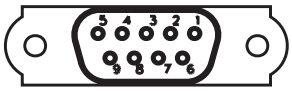
- Health of AS-I network is available via Proximus-DP interface

Diagnostics (Physical)

- LED to indicate status of network and AS-I communication and power supply



PROFIBUS-DP Connector



1 = Shield
3 = BUS_B
5 = DGnd
6 = +5 VDC
8 = BUS_A

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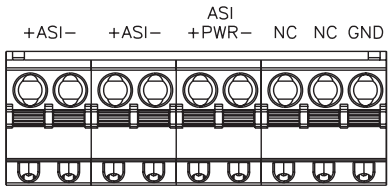
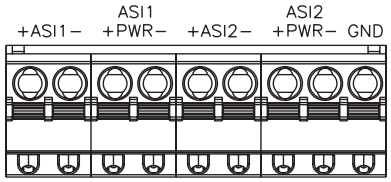
Part Number	Higher Level Network	Power Style	AS-I Version	# of AS-I Masters	Duplicate Address Detection	Programming Interface
ASI-DPG-SS BW1567	PROFIBUS-DP	A	2.1	1	X	X
ASI-DPG-SS BW1568	PROFIBUS-DP	A2	2.1	2	X	X
ASI-DPG-SS BW1569	PROFIBUS-DP	E	2.1	2	X	X
ASI-DPG-SS-SE BW1773	PROFIBUS-DP	A	2.1	1		
ASI-DPG-SS-SE BW1774	PROFIBUS-DP	A2	2.1	2		
ASI-DPG-SS-C1D2 BW1653	PROFIBUS-DP	A	3.0	1		
ASI-DPG-SS-C1D2 BW1654	PROFIBUS-DP	A2	3.0	2		
ASI-DPG-SS-C1D2 BW1655	PROFIBUS-DP	E	3.0	2		

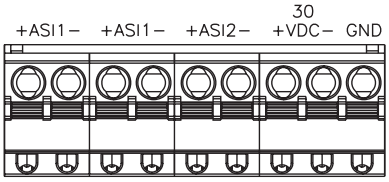
A



A2



E



A - Single AS-I network is powered by and AS-I power supply

A2 - Dual AS-I networks are each powered by their own AS-I power supply

E - Dual AS-I networks are both powered by a single 30 VDC supply, decoupled through the gateway

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AS-I PROFIBUS-D Economy Gateways

- **AS-I v3.0 Supported**
- **LED Display**
- **PROFIBUS-DP Support**
- **Integrated AS-I Diagnostics**

Electrical
- Operating Current: <300 mA from AS-I

Power Distribution
- From AS-I supply

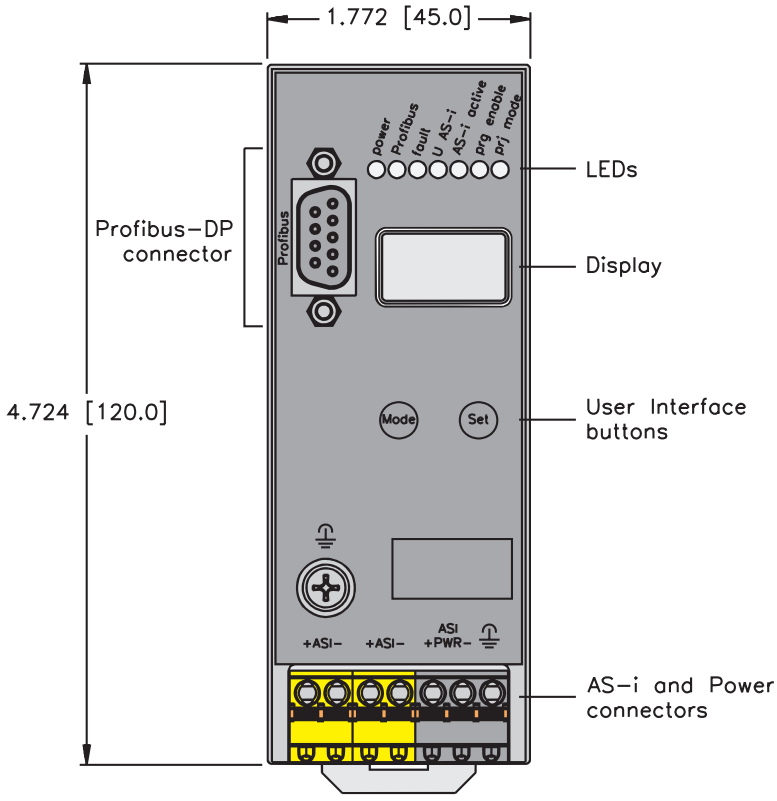
Mechanical
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material
- Housing: Stainless Steel

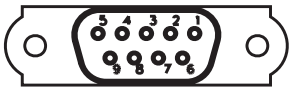
Diagnostics (Logical)
- AS-I diagnostic data is available via Network interface

Diagnostics (Physical)
- LEDs to indicate status of network and AS-I communication and power supply

ASI-DPG-SS-B BW1746



PROFIBUS-DP Connector



1 = Shield
3 = BUS_B
5 = DGnd
6 = +5 VDC
8 = BUS_A

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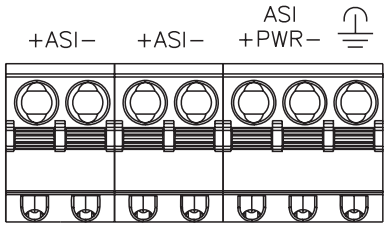
Part Number	Higher Level Network	Power Style	AS-I Version	Connection Diagram	# of AS-I Masters
ASI-DPB-SS BW1746	PROFIBUS-DP	A	2.1	A	1

A



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AS-I PROFIBUS®-DP Gateways

ASI-DPG BW1253
ASI-DPG BW1371

CE

- **AS-I v2.1 Supported**
- **2-Digit Display**
- **IP 65 Protection**
- **Integrated AS-I Diagnostics**

Electrical
- Operating Current: 200 mA from V_{AS-I}

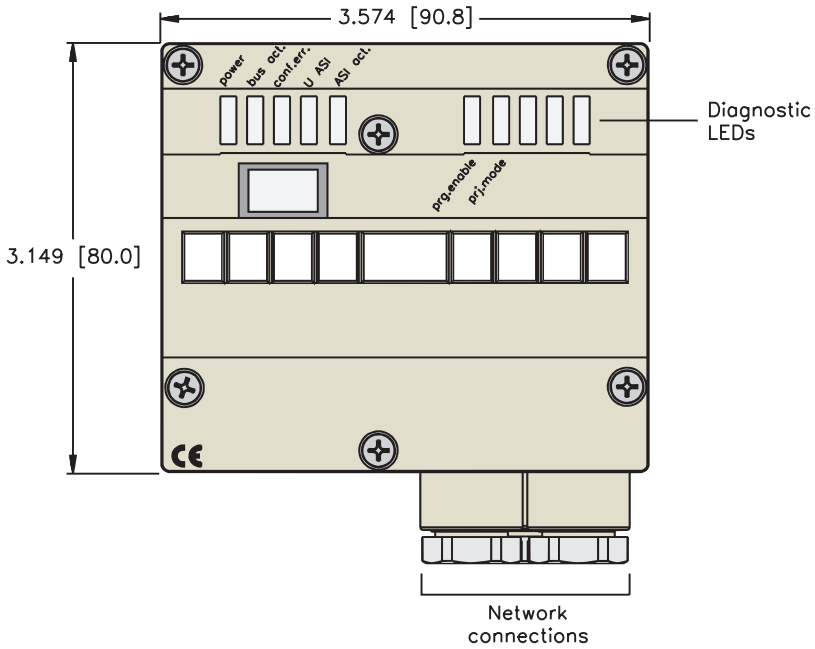
Power Distribution
- From AS-I supply for each network

Mechanical
- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 65

Material
- Housing: Plastic

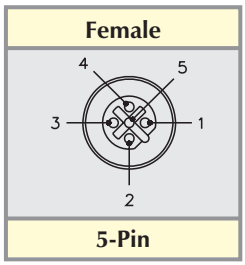
Diagnostics (Logical)
- Health of AS-I network is available via Network interface

Diagnostics (Physical)
- LEDs to indicate status of network and AS-I communication and power supply



1 = 5 VDC*
2 = BUS _A
3 = Gnd
4 = BUS_B
5 = Shield
* Female connector only

PROFIBUS *eurofast*® Pinouts



BW1371 only

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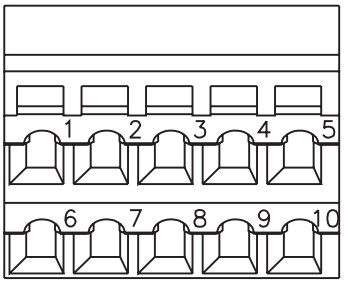
Part Number	Higher Level Network	Power Style	AS-I Version	Connection Diagram	# of AS-I Masters	Duplicate Address Detection	Programming Interface
ASI-DPG BW1253	PROFIBUS-DP	A	2.1	1	1		
ASI-DPG BW1371	PROFIBUS-DP	A	2.1	1	1		

A - Single AS-I network is powered by and AS-I power supply

1



1	BUS_A
2	BUS_B
3	BUS_A
4	BUS_B
5	0V
6	Shield
7	FG (Function Gnd)
8	FG (Function Gnd)
9	Shield
10	+5V

Note: AS-I connections are made via standard AS-I base modules ASI-BM BW1180 or ASI-BM BW1182 (see p. E103-104)

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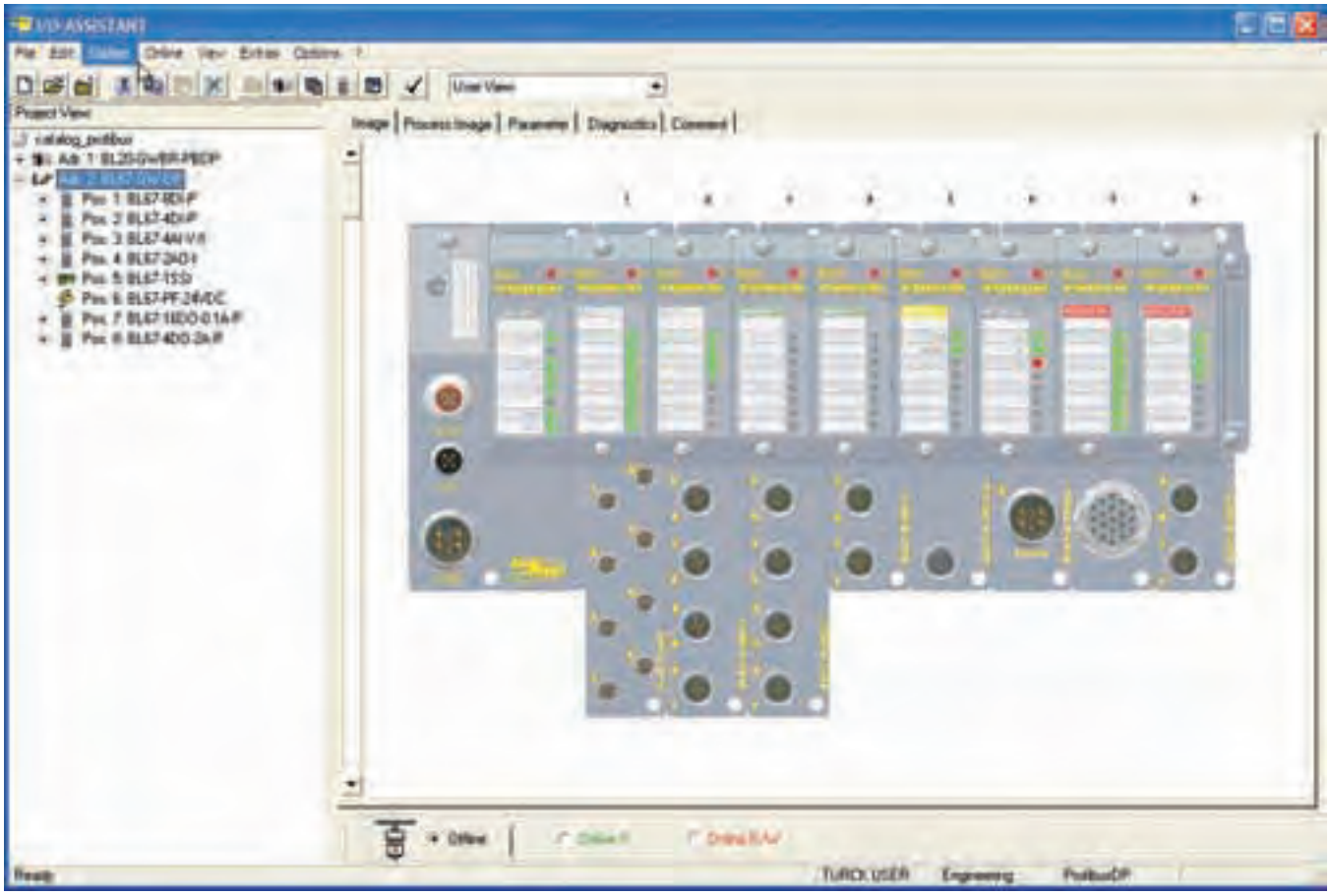
PROFIBUS®-DP BL67 Stations

TURCK's BL67 is a modular, user configurable network I/O system designed to allow installation of nodes containing different types and sizes of I/O depending on the users needs for a particular area. Featuring IP 67 protection and metal threaded connectors, the BL67 can often be mounted in the physical process environment or directly on a machine without a separate enclosure for the I/O. This saves planning and installation time, as well as the cost of the enclosure itself.

The BL67 system supports several different network protocols, including PROFIBUS-DP. A BL67 station consists of a gateway module that interfaces to the PROFIBUS system, and several I/O modules that interface with the physical I/O in the field. Different connector options are available to allow a greater level of customization to the user.

For more details on the BL67 system, please see section G of this catalog.

TURCK's I/O Assistant software package is used to configure the BL67 system.



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BL67 Gateway

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

BL67-GW-DP

CE

Electrical

- Operating Current: <50 mA from V_I
- Supply Current: <10 A to I/O (from V_I and V_O)
- Backplane Current: <1.5 A (from V_I)

Mechanical

- Operating Temperature: -25 to +55°C (+32 to +131°F)
- Protection: IP 67
- Vibration: 5 g @ 10-500 Hz

Material

- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

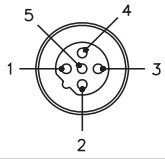
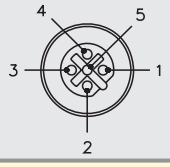
- Diagnostic information available through the PROFIBUS-DP interface

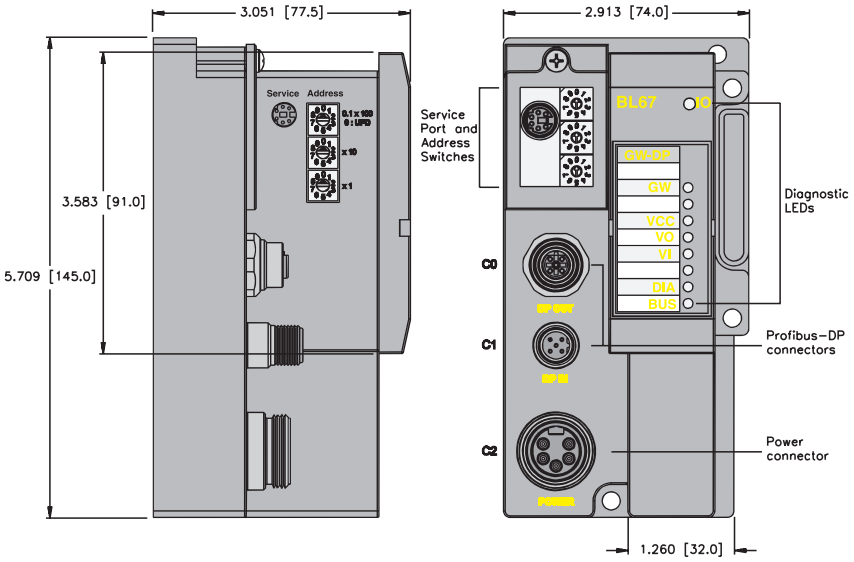
Diagnostics (Physical)

- LEDs to indicate status of PROFIBUS-DP and Module Bus communication

PROFIBUS *eurofast*® Pinouts

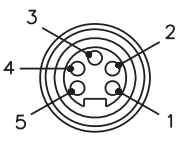
1 = 5 VDC*
2 = BUS _A
3 = Gnd
4 = BUS_B
5 = Shield
* Female connector only

Male	Female
	
5-Pin	5-Pin



***minifast*® Power Pinouts**

1 = Gnd
2 = Gnd
3 = PE
4 = V_I
5 = V_O

Male

5-Pin

Note: Power feeding modules may be used for I/O current supply to prevent overloading the gateway power supply.

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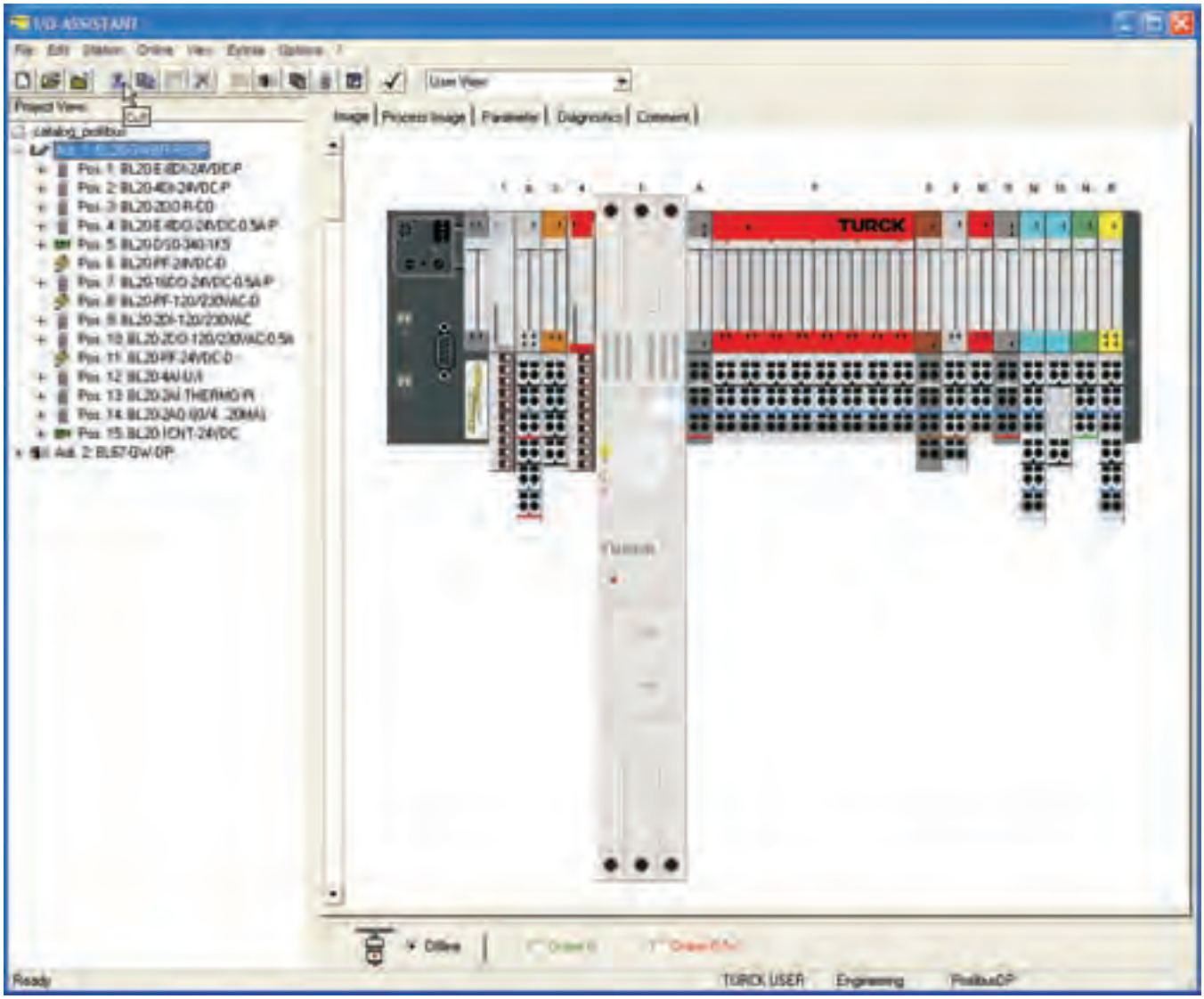
PROFIBUS®-DP BL20 Stations

TURCK's BL20 is a modular, user configurable network I/O system designed to allow installation of nodes containing different types and sizes of I/O depending on the users needs for a particular area. Featuring IP 20 protection and terminal point connections, the BL20 is intended to be mounted in the control cabinet or in a field enclosure.

The BL20 system supports several different network protocols, including PROFIBUS-DP. A BL20 station consists of a gateway module that interfaces to the PROFIBUS system, and several I/O modules that interface with the physical I/O in the field. The terminal bases are available with tension clamp or screw terminal connector types.

For more details on the BL20 system, please see section H of this catalog.

TURCK's I/O Assistant software package is used to configure the BL20 system.



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BL20 Gateway

BL20-GWBR-PBDP

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <430 mA from BR power supply (U_{SYS})
- Supply Current: <10 A to I/O (from U_L)
  <1.5 A to backplane (from U_{SYS})

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20
- Vibration: 1 g @ 5...100 Hz

Material

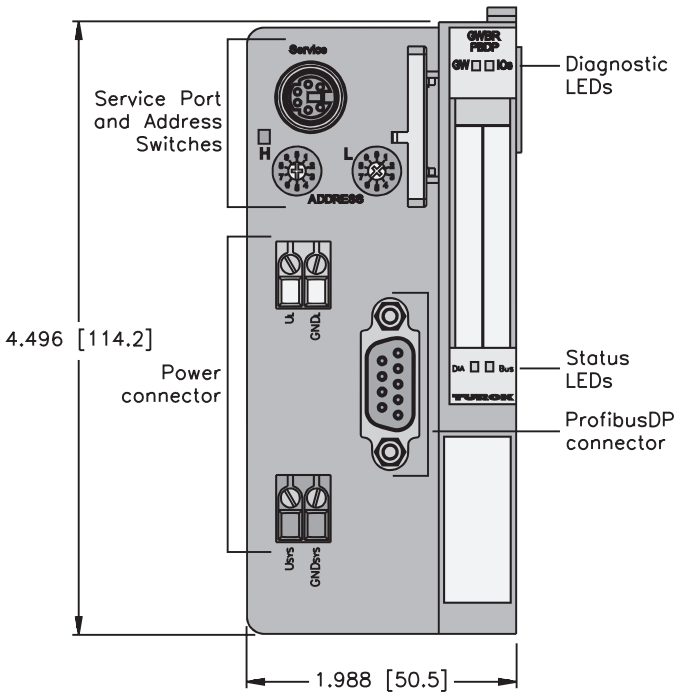
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

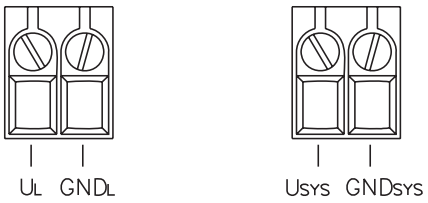
- Diagnostic information available through the PROFIBUS-DP interface

Diagnostics (Physical)

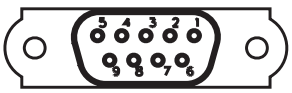
- LEDs to indicate status of PROFIBUS-DP and Module Bus communication



Power Connectors



PROFIBUS-DP Connector



1 = Shield
3 = BUS_B
5 = Gnd
6 = +VDC
8 = BUS_A

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Notes:

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PROFIBUS®-DP, Cable Specifications

- **Cable that Meets the Requirements of EN50170-2-2:1996 for Communications Up to 12 Mbaud**

Figure B

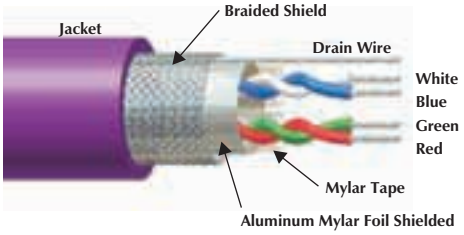


Figure A

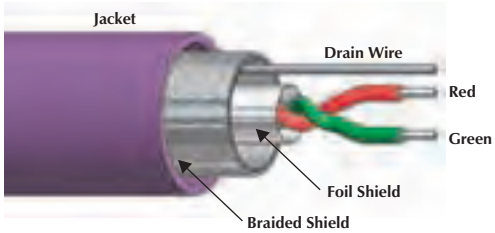
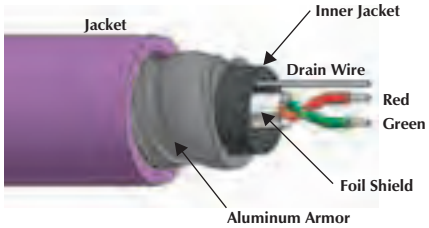


Figure C



Baud Rate (k baud)	9.6	19.2	93.75	187.5	500	1500	1200
Maximum Trunk Length	1200 meters	1200 meters	1200 meters	1000 meters	400 meters	200 meters	100 meters

Type	Approvals	Data Pair		2nd Data Pair		Outer Jacket	Shields	Bulk Cable Part Number / Weight/300 M	Figure
		AWG Color Code	DCR (/1000 feet) Insulation	AWG Color Code	DCR (/1000 feet) Insulation	Material Color Nominal O.D.	Type Drain Wire		
455 AWM 2464 75°C 300 Volts	**NEC** PLTC **CEC** AWM-I/II A/B FT4	2/22 AWG RD/GN	16.5 Ohms PE	None	N/A	PVC Purple 8.5 mm (.335 in)	Foil/Braid 22 AWG	RB50672-*M 62 lbs.	**A**
456 AWM 20233 80°C 300 Volts	**NEC** AWM **CEC** AWM-I/II A/B FT4	2/22 AWG RD/GN	16.5 Ohms PE	None	N/A	PUR Purple 7.9 mm (.310 in)	Foil/Braid 22 AWG	RB50683-*M 48 lbs.	A
457 75°C 300 Volts	**NEC** CMX	2/22 AWG RD/GN	16.5 Ohms PE	None	N/A	PUR Purple 8.0 mm (0.315 in)	Foil/Braid No Drain	RB50708-*M 51 lbs.	**A**
458 AWM 20233 80°C 300 Volts	**NEC** AWM **CEC** AWM-I/II A/B FT4	2/22 AWG RD/GN	16.5 Ohms PE	None	N/A	TPU Plum 8.5 mm (0.335 in)	Foil/Braid 22 AWG	RB50692-*M 58 lbs. ***flexlife-10*** ®	**A**
4511 AWM 2464 75°C 300 Volts	**NEC** PLTC **CEC** AWM-I/II A/B FT4	2/22 AWG RD/GN	16.5 Ohms PE	None	N/A	PVC Purple 8.5 mm (.319 in)	Foil/Braid 22 AWG	RB50881-*M 64 lbs. ***flexlife-10***	**A**
4510A 75°C 300 Volts	**NEC** PLTC **CEC** CM-CMG HL ABCD	2/22 AWG RD/GN	16.5 Ohms PE	None	N/A	Aluminum Armor/PVC 15.4 mm (.605 in)	Foil/Braid 22 AWG	RB50875-*M 112 lbs. ***armorfast*** ®	**C**
4515 80°C 300 Volts		2/22 AWG RD/GN	16.5 Ohms PE	None	N/A	PUR Purple 7.5 mm (0.295 in)	Foil/Braid 22 AWG	RB51225-*M 42 lbs. **Halogen-Free**††	**A**
4516 105° 300 Volt	NEC PLTC/ISO Open Wiring **CEC** CMG	2/22 AWG RD/GN	16.5 Ohms PE	None	N/A	PVC Purple 11.1 mm (.435 in)	Foil/Braid 22 AWG	RB51259-*M 93 lbs.	**A**
590 AWM 2464 75°C 300 Volts	**NEC** PLTC **CEC** AWM-I/II A/B FT4	2/22 AWG RD/GN	16.5 Ohms PE	2/22 AWG BU/WH	16.5 Ohms PE	PVC Purple 9.6 mm (.380 in)	Foil/Braid 22 AWG	RB51057-*M 75 lbs.	**B**

* Indicates length in meters.
Standard cable lengths are 30, 75, 150, 225 and 300 meters. Consult factory for other lengths.
†† Zero Halogen: to DIN VDE 0472 part 815 + IEC 60754-1

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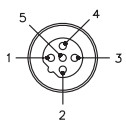
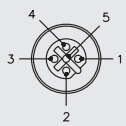
PROFIBUS®-DP, (M12x1) *eurofast*®Cable and Cordset Selection Matrix

			eurofast			
			Pin (Male)		Socket (Female)	
			1 RSSW	3 WSSW	2 RKSW	4 WKSW
		Bare	RSSW 45x-*M	WSSW 45x-*M	RKSW 45x-*M	WKSW 45x-*M
eurofast	Pin (Male)	1 RSSW	RSSW RSSW 45x-*M	RSSW WSSW 45x-*M	RSSW RKSW 45x-*M	RSSW WKSW 45x-*M
		3 WSSW		WSSW WSSW 45x-*M	WSSW RKSW 45x-*M	WSSW WKSW 45x-*M
	Socket (Female)	2 RKSW			RKSW RKSW 45x-*M	RKSW WKSW 45x-*M
		4 WKSW				WKSW WKSW 45x-*M

See page H54 for dimensional drawings.

* Indicates length in meters.
x Indicates cable type.
Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.
Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 Meters. Consult factory for other lengths.
For stainless steel coupling nuts change part number RSSW...RSSWV.
Change 45 to 59 for 59x series cordsets.

Pinouts

eurofast	45 series pinout	59 series pinout	*eurofast*
Male 	1. N/C 2. Green (TxD) 3. N/C 4. Red (RxD) 5. Bare (Shield Drain Wire)	1. Blue (TxD_1) 2. Green (TxD) 3. White (RxD_1) 4. Red (RxD) 5. Bare (Shield Drain Wire)	**Female** 

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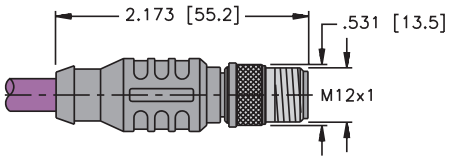
PROFIBUS®-DP, (M12x1) *eurofast*® Cable and Cordsets

Specifications

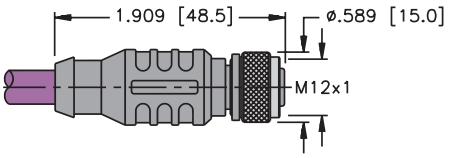
Housing:	PUR (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

1



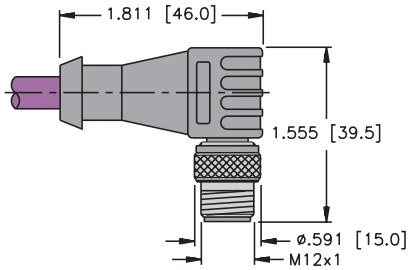
RSSW .. **Pages H53 - H56**

2



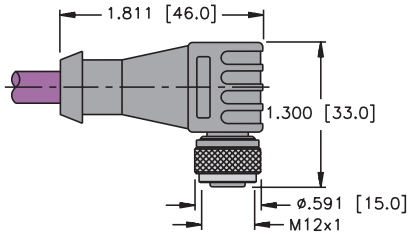
RKSW .. **Pages H53 - H56**

3

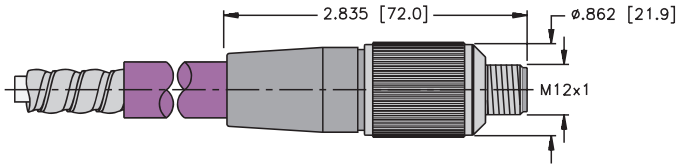


WSSW .. **Pages H53 - H56**

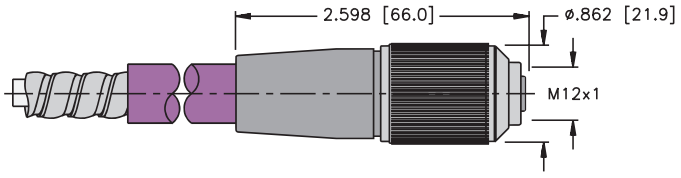
4



WKSW .. **Pages H53 - H56**



RSAW .. **(*armorfast* only)**



RKAW .. **(*armorfast* only)**

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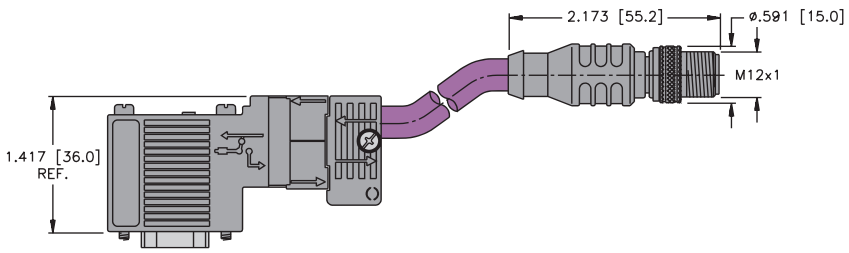
PROFIBUS®-DP, (M12x1) *eurofast*® Cable and Cordset Selection Matrix

			eurofast					
				Pin (Male)		Socket (Female)		Pin (Male)	Socket (Female)
			Bare	1 RSSW	3 WSSW	2 RKSW	4 WKSW	10 FSSDWE	11 FKSDWE
9-Pin Sub D Connector	Terminator	7 D9S/T	D9S/T 45x-*M	RSSW D9S/T 45x-*M	WSSW D9S/T 45x-*M	RKSW D9S/T 45x-*M	WKSW D9S/T 45x-*M	FSSDWE D9S/T 45x-*M	FKSDWE D9S/T 45x-*M
	Master	8 D9SM/T	D9SM/T 45x-*M	RSSW D9SM/T 45x-*M	WSSW D9SM/T 45x-*M	RKSW D9SM/T 45x-*M	WKSW D9SM/T 45x-*M	FSSDWE D9SM/T 45x-*M	FKSDWE D9SM/T 45x-*M

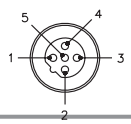
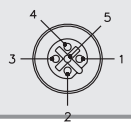
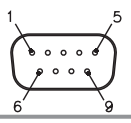
See page H54 & H58 for dimensional drawings.

* Indicates length in meters.
x Indicates cable type.
Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.
Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 meters. Consult factory for other lengths.
For stainless steel coupling nuts change part number RSSW...RSSW.

Extension example:



Pinouts

eurofast	45 series pinout	*eurofast*	D9
Male 	1. N/C 2. Green (TxD) 3. N/C 4. Red (RxD) 5. Bare (Shield Drain Wire)	Female 	Male 

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PROFIBUS®-DP, (M12x1) *eurofast*® Cable and Cordset Selection Matrix

			eurofast						
				Pin (Male)		Socket (Female)		Pin (Male)	Socket (Female)
			Bare	1 RSSW	3 WSSW	2 RKSW	4 WKSW	10 FSSDWE	11 FKSDWE
	Node	7 D9S	D9S 45x-*M	RSSW D9S RSSW 45x-*M-*M	WSSW D9S WSSW 45x-*M-*M	RKSW D9S RKSW 45x-*M-*M	WKSW D9S WKSW 45x-*M-*M	FSSDWE D9S FSSDWE 45x-*M-*M	FKSDWE D9S FKSDWE 45x-*M-*M
	Straight	9 SD9S	SD9S 45x-*M	RSSW SD9S RSSW 45x-*M-*M	WSSW SD9S WSSW 45x-*M-*M	RKSW SD9S RKSW 45x-*M-*M	WKSW SD9S WKSW 45x-*M-*M	FSSDWE SD9S FSSDWE 45x-*M-*M	FKSDWE SD9S FKSDWE 45x-*M-*M

			eurofast			
				Pin (Male)		Socket (Female)
			Bare	1 2 RSSW/RKSW	3 4 WSSW/WKSW	10 11 RSSW/RKSW
	Node	7 D9S	D9S 45x-*M	RSSW D9S RKSW 45x-*M-*M	WSSW D9S WKSW 45x-*M-*M	FSSDWE D9S FKSDWE 45x-*M-*M
	Straight	9 SD9S	SD9S 45x-*M	RSSW SD9S RKSW 45x-*M-*M	WSSW SD9S WKSW 45x-*M-*M	FSSDWE SD9S FKSDWE 45x-*M-*M

See page H54 & H58 Tfor dimensional drawings.

* Indicates length in meters.
x Indicates cable type.
Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.
Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 meters. Consult factory for other lengths.
For stainless steel coupling nuts change part number RSSW...RSSW.

Pinouts

eurofast	45 series pinout	*eurofast*	D9
Male	1. N/C 2. Green (TxD) 3. N/C 4. Red (RxD) 5. Bare (Shield Drain Wire)	Female	Male

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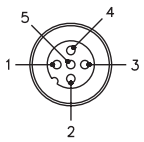
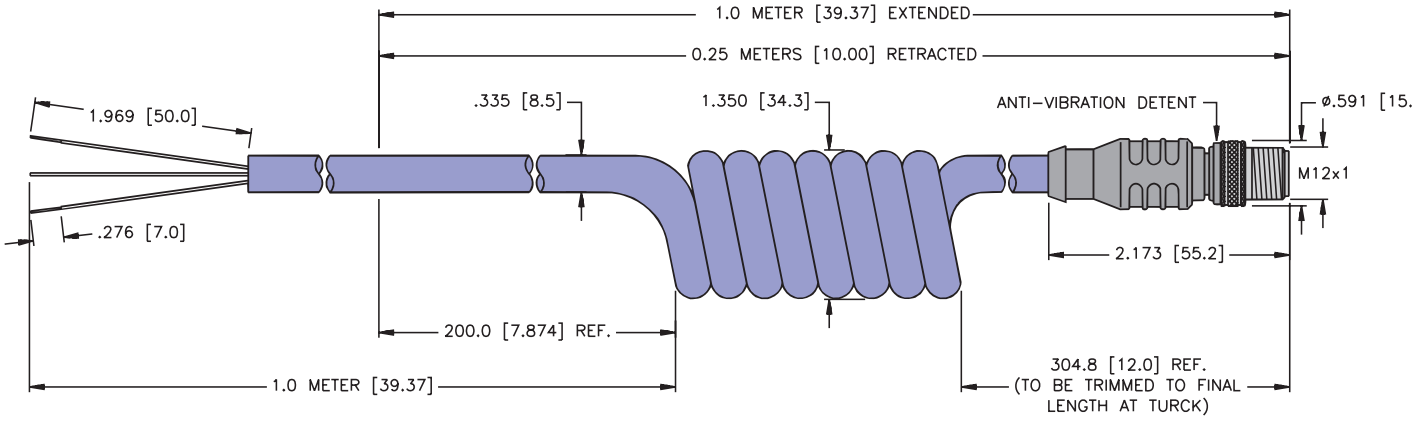
PROFIBUS®-DP (M12x1), *eurofast*® Retractile Cordsets

- **Single or Double Ended**
- **Available in 1, 2, 5 Meter Extended Lengths**

Part Number	Specs	Application	Pinouts	
RSSW 456SP-1M	PUR (Polyurethane) 250 V, 4 A -40° to +80°C	(M12x1) eurofast male connector 1 M extended length .25 M retracted length	1. NC 2. GN 3. NC 4. RD 5. Drain	
RSSW 456SP-2M		(M12x1) eurofast male connector 2 M extended length .5 M retracted length		
RSSW 456SP-5M		(M12x1) eurofast male connector 5 M extended length 1.12 M retracted length		

Single ended cordset part numbers shown. Also available in double ended (M12x1) eurofast connectors.



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PROFIBUS®-DP, Field Wireable D9 Connectors

Specifications - (D9)

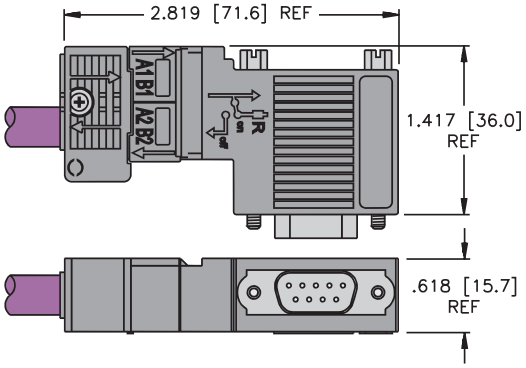
Housing:	TPU (Polyurethane)
Terminating Switch:	Yes
Protection:	IEC IP 20
Rated Voltage:	250 V
Rated Current:	5 A
Temperature Rating:	40° to +60°C

*Max. Cable diameter: 8.5 mm

Specifications (FKSDWE .. FSFDWE)

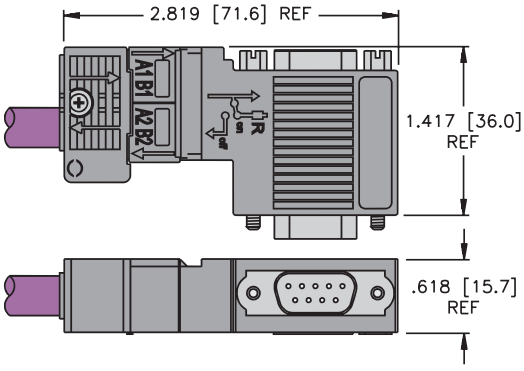
Housing:	PUR (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67
Rated Voltage:	250 V
Rated Current:	4 A
Temperature Rating:	-40° to +75°C

7



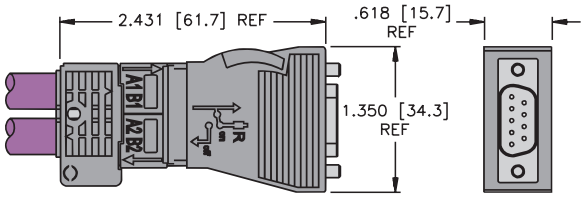
Connector, PDP, D9S **Pages H55 - H56**

8



Connector, PDP, D9SM **Pages H55 - H56**

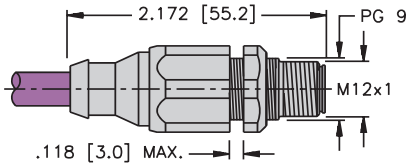
9



Connector, PDP, SD9S **Pages H55 - H56**

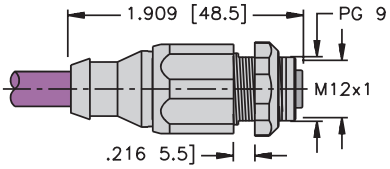
Note: Part numbers are for ordering connector only.
Cable must be ordered separately.

10



FSSDWE .. **Pages H55 - H56**

11



FKSDWE .. **Pages H55 - H56**

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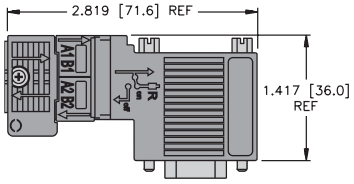
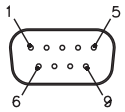
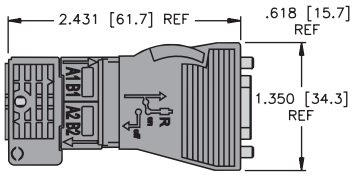
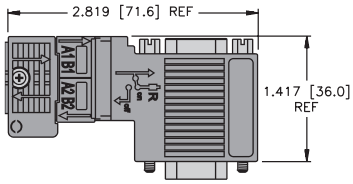
PROFIBUS®-DP, Field Wireable D9 Connectors

- **Provides Connection to Master or Node in the field**
- **Maximum Cable O.D. is 8.5 mm**

Housing	Part Number	Specs	Application	Pinouts	
	Connector,PDP,D9S	250 V, 5 A -25° to +80°C	*Right Angle, Terminating Switch*	1. N/C 2. N/C 3. RD (Bus_B) 4. N/C 5. N/C 6. N/C 7. N/C 8. Green (Bus_A) 9. N/C	Male 
	Connector,PDP,SD9S		*Straight, Terminating Switch*		
	Connector,PDP,D9SM	250 V, 4 A -25° to +80°C	*Right Angle, Master, Terminating Switch*		

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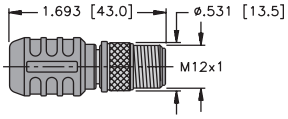
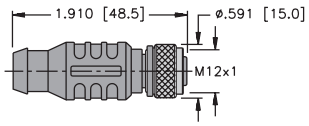
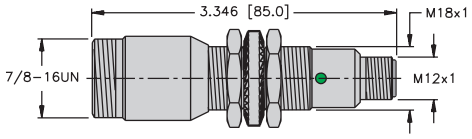
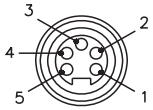
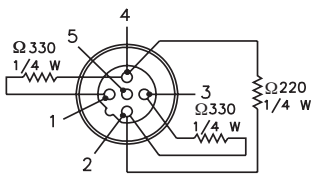
PROFIBUS®-DP, Terminating Resistors

- **Terminating Resistors Stabilize and Minimize Reflections on the Bus Line**
- **A Terminating Resistor is Required at the Beginning and End of the Main Bus Line**

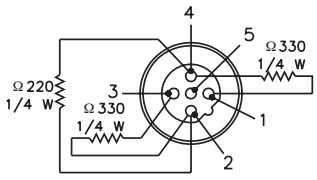
Housing	Part Number	Specs	Application	Pinouts	
	RSSW 45-TR	Nickel Plated Brass or Stainless Steel 250 V, 4 A -40° to +75°C	***eurofast*®** Terminating Resistor • Internal resistor • Male ***eurofast*** connector • Reverse keyed	1. N/C 2. GN 3. N/C 4. RD 5. BARE	See Below
	RKSW 45-TR		***eurofast*** Terminating Resistor • Internal resistor • Female ***eurofast*** connector • Reverse keyed	1. N/C 2. GN 3. N/C 4. RD 5. BARE	See Below
	PDP-TRA		Active Terminating Resistor • External power supply ***minifast*®** and ***eurofast*** connector • LED signal for power status	1. N/C 2. BUS_A 3. N/C 4. BUS_B 5. N/C	See Below
				1. N/C 2. GND 3. N/C 4. U_I=24 VDC 5. N/C	**Male** 

Pinout Diagram, RSSW 45-TR



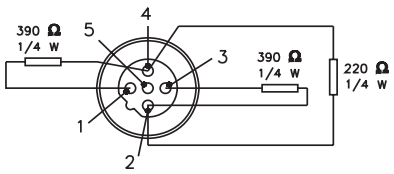
eurofast **Male Connector**

Pinout Diagram, RKSW 45-TR



eurofast **Female Connector**

Pinout Diagram, PDP-TRA



eurofast **Male Connector**

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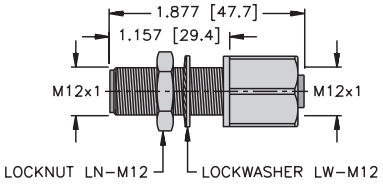
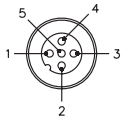
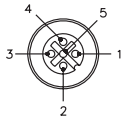
PROFIBUS®-DP, *eurofast*® Feed Through Receptacle

- **Provides Bulkhead Panel Mount Connection**

Housing	Part Number	Specs	Application	Pinouts
	FKW FSW 45/M12	Nickel Plated Brass or Stainless Steel 250 V, 4 A -40° to +75°C	***eurofast*** Feed Through Connection • Straight male/female connector • For pre-molded reverse keyed ***eurofast*** cables	**Male**  **Female** 

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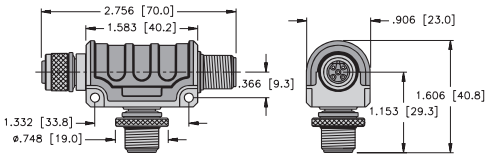
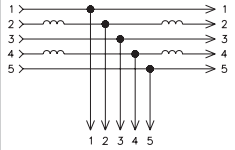
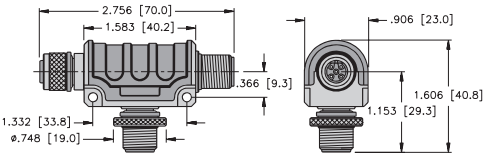
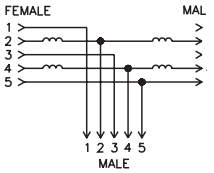
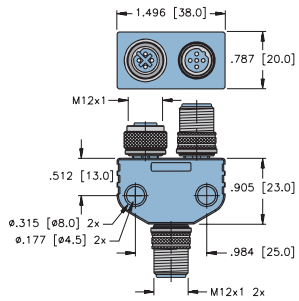
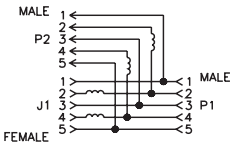
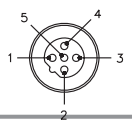
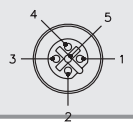
PROFIBUS®-DP, *eurofast*® Bus Tees

- **Creates a Branch from the Main Bus Line**

Housing	Part Number	Specs	Application	Wiring Diagrams
	RKSW 2RSSW 45	PUR (Polyurethane) Nickel Plated Brass 250 V, 4 A -40° to +75°C	***eurofast*** Bus Tee • Male ***eurofast*** drop connector • Fully shielded ***eurofast*** tee	
	* RKSW 2RSSW 45-0001		***eurofast*** Terminating Resistor • Male ***eurofast*** connector • Fully shielded ***eurofast*** tee	
	VB2/FSW/FKW/FSW 45		Y Junction • Fully shielded ***eurofast*** connectors	

* This part must be used when joining two tees together directly. A female terminating resistor will not work with this tee since there is no ground and power connection on the male side.

Pinouts

eurofast	
Male	**Female**
	

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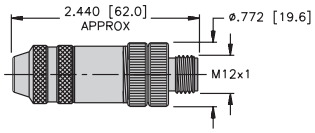
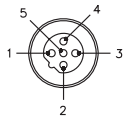
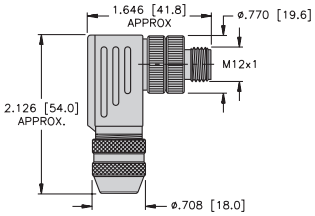
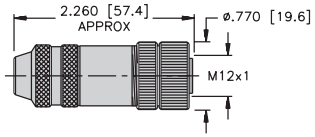
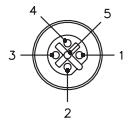
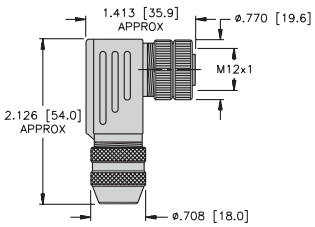
PROFIBUS®-DP, *eurofast*® Field Wireable Connectors

- **Allows Transition from Hard Wiring to Quick Connection to Network**

Housing	Part Number	Specs	Application	Pinouts
	BMSWS 8151-8.5	Nickel Plated Brass PG 9 cable gland, accepts 4-9 mm cable diameter Screw terminal accepts up to 18 AWG conductors 85°C 125 V, 4 A	• Metal, fully shielded • Mates with reverse key 5-pin cordsets and receptacles	**Male** 
	BMSWS 8251-8.5	Nickel Plated Brass PG 9 cable gland, accepts 4-9 mm cable diameter Screw terminal accepts up to 18 AWG conductors 85°C 125 V, 4 A		
	BMWS 8151-8.5	Nickel Plated Brass PG 9 cable gland, accepts 4-9 mm cable diameter Screw terminal accepts up to 18 AWG conductors 85°C 125 V, 4 A		**Female** 
	BMWS 8251-8.5	Nickel Plated Brass PG 9 cable gland, accepts 4-9 mm cable diameter Screw terminal accepts up to 18 AWG conductors 85°C 125 V, 4 A		

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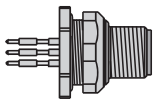
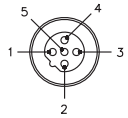
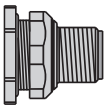
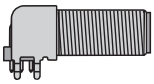
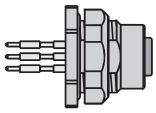
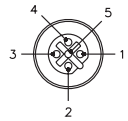
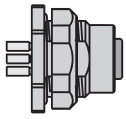
PROFIBUS®-DP, Circuit Board Connectors and OEM Receptacles

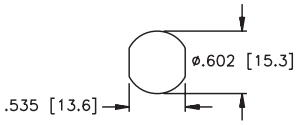
- **Provides (M12x1) *eurofast*® Connection to Field Devices**

Housing	Part Number	Specs	Application	Pinouts	
13 	FSFDW 45 PCB	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +75°C	Male ***eurofast*** PCB pins	1. N/C 2. GN 3. N/C 4. RD 5. BARE	Male 
12 	FSFDLW 45		Male ***eurofast*** solder cups		
14 	WFSW 45 PCB		Male ***eurofast*** right angle PCB pins		
16 	FKFDW 45 PCB		Female ***eurofast*** PCB pins		Female 
15 	FKFDLW 45		Male ***eurofast*** solder cups		

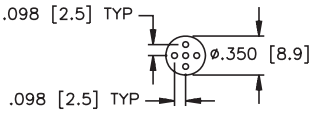
See pages H65 for dimensional drawings.

Standard housing material is nickel plated brass "FKFD .."; "FKFDV .." indicates 316 stainless steel.

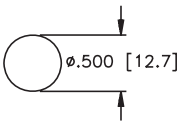
Panel Cutout
FKFD ... FSFD



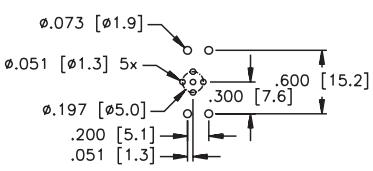
Board Layout (reference only)
FKFD ... FSFD



Panel Cutout
WFS



Board Layout (reference only)
WFS



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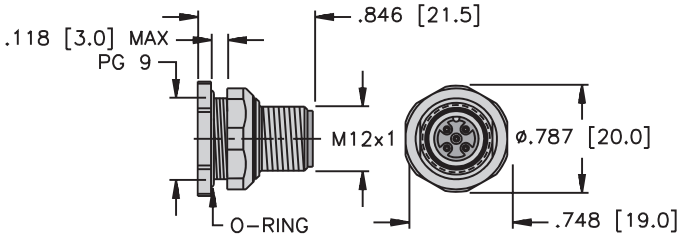
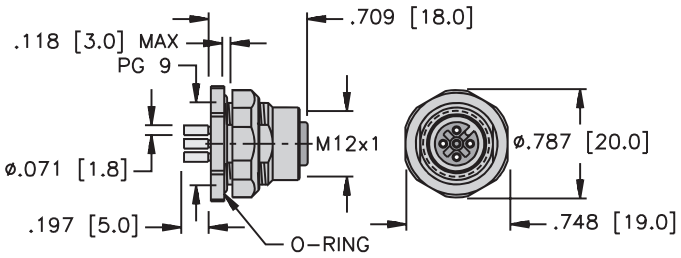
eurofast® PCB Mount Male and Female Receptacles

12



FSFDLW .. **Page H64**

15



FKFDLW .. **Page H64**

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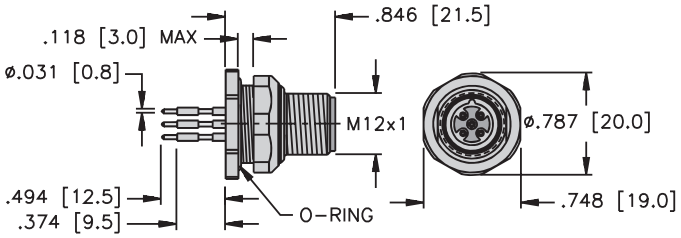
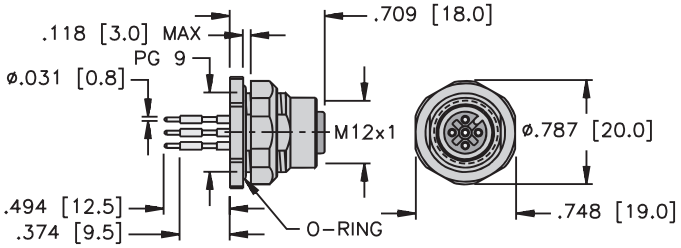


FSFDW ..PCB **Page H64**

16



FKFDW ..PCB **Page H64**

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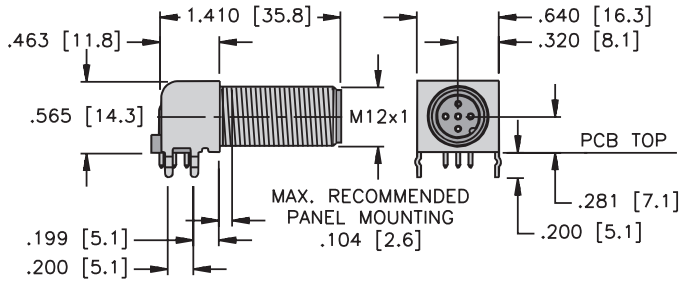

WFSW ..PCB **Page H64**

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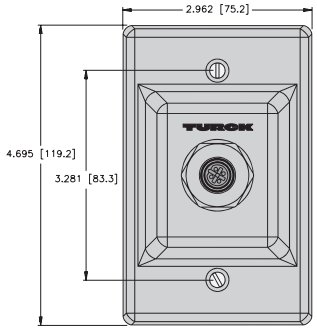
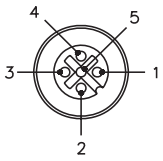
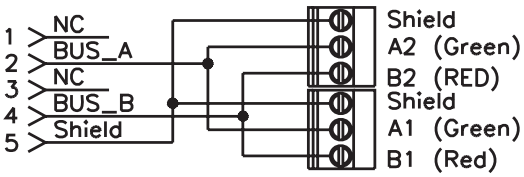
PROFIBUS®-DP, *eurofast*® Wall Plate Adapters

- **Gasket and Mounting Screws Provided**
- **For Use with a Single Gang Electrical Box**

	Part Number	Specs	Application	Pinouts
	BPA-45-E113	Stainless Steel 250 V, 4.0 A -40 to +70°C (-40 to +158°F)	Attaches to standard single gang electrical box for transition to 5-wire (M12x1) ***eurofast*** connector	



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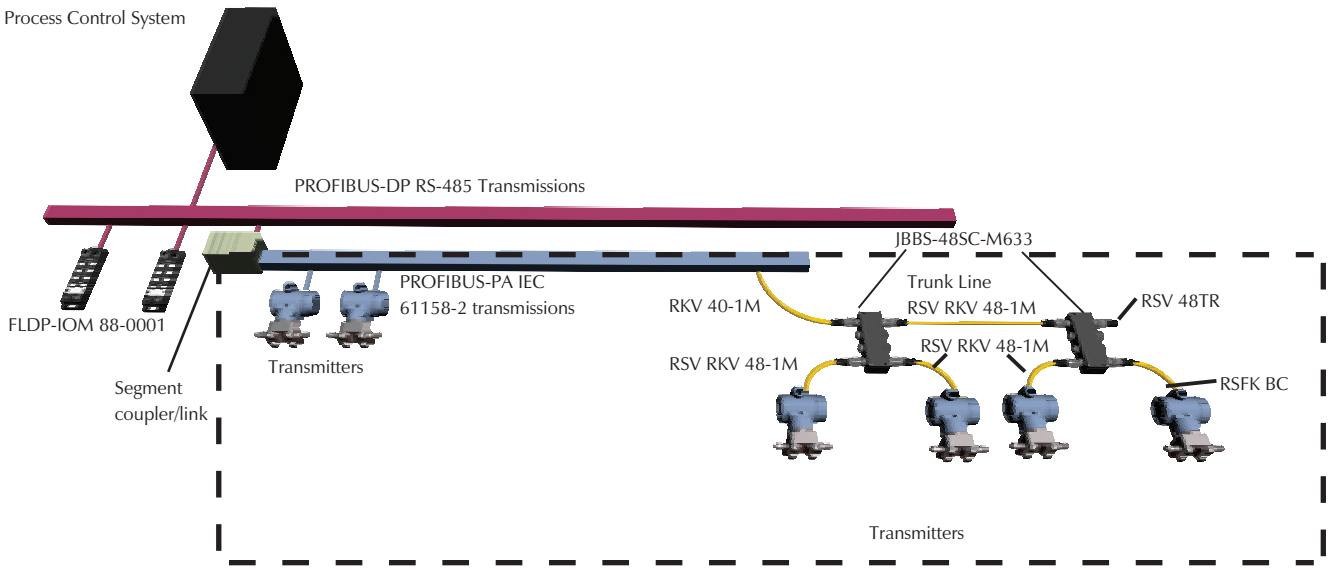
PROFIBUS®-PA Media Overview

PROFIBUS-PA (Process Automation) uses synchronous transfer mode technology, as defined in IEC 61158-2, to communicate between field devices and the RS 485 backbone of PROFIBUS®-DP. A segment coupler, or gateway is installed to bridge PROFIBUS-DP with PROFIBUS-PA. Otherwise, the protocols are identical, allowing transparent communication between general purpose automation systems and decentralized field devices.

PROFIBUS-PA is a master-slave bus. Transmitters used in the process industry are typically slave devices or passive stations which only communicate at the request of the master.

General Layout Topologies

The topology for PROFIBUS-DP is a linear bus. Branching can be accomplished with repeaters or, in the case of PROFIBUS-PA, this can be accomplished with the segment couplers. The PROFIBUS-PA topology follows the physical layer as defined in ISA SP50.02. Daisy chain or star topologies are allowed.



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PROFIBUS®-PA, Cable Specifications

- **Cable that Meets the Requirements of ISA/SP50 and PROFIBUS-PA Requirements for Type A Cable**
- **All Cables are Rated -40° to +105°C and are Sunlight Resistant**
- **Available in 3-wire Versions with a Device Ground or 2-wire Versions**

Type A Cable Specifications

- Designed for harsh environments
- Temperature range: -40° to +105°C
- Governed by: ISA SP50.02 specification
- Sunlight resistant per test
- PLTC and ITC rated (CSA FT4)
- Impedence [Z_0 at f_r (31.25 kHz)] = 100 Ohms $\pm$ 20 %
- Maximum attenuation at 1.25 f_r (39 kHz) = 3.0 dB/km
- Maximum capacitive unbalance to shield = 2 nF/km
- Maximum DC resistance (per conductor) = 24 Ohms /km
- Maximum propagation delay variance 0.25 f_r to 1.25 f_r = 1.7 µs/km
- Conductor cross-sectional area (wire size) = nominal 0.8 mm^2 (#18 AWG)
- Minimum shield coverage shall be 90%.

Figure A

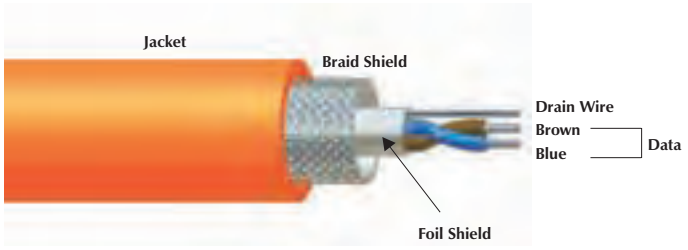
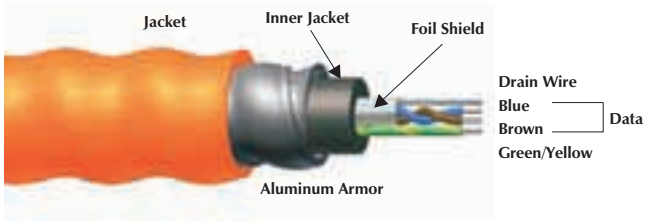


Figure B



Type	Approvals	Data Pair		Device Ground	Outer Jacket	Shields	Bulk Cable Part Number / Weight/300 M	Figure
		AWG Color Code	DCR (/1000 feet) Insulation	AWG Color Code	Material Color Nominal O.D.	Type Drain Wire		
483 105°C 300 Volts	**NEC ITC** PLTC Open Wiring **CEC** [CMG]	2/18 AWG BU/BN	6.5 Ohms XLPE	None	PVC Orange 7.9 mm (.310 in)	Foil/Braid 20 AWG	RB50785-*M 59 lbs.	**A**
483B 105°C 300 Volts	**NEC ITC** PLTC Open Wiring **CEC** [CMG]	2/18 AWG BU/BN	6.5 Ohms XLPE	None	PVC Blue 7.9 mm (.310 in)	Foil/Braid 20 AWG	RB50786-*M 59 lbs.	**A**
482A 105°C 300 Volts	**NEC ITC** PLTC/CM **CEC** [CMG HLBCD]	2/18 AWG BU/BN	6.5 Ohms PVC	18 AWG GN/YE	Armor/PVC Orange 13.5 mm (0.53 in)	Foil 20 AWG	RB50929-*M 96 lbs.	**B**
482BA 105°C 300 Volts	**NEC ITC** PLTC **CEC** [CMG]	2/18 AWG BU/BN	6.5 Ohms PE	18 AWG GN/YE	Armor/PVC Blue 13.5 mm (0.53 in)	Foil 20 AWG	RB50952-*M 96 lbs.	**B**
483BK 105°C 300 Volts	**NEC ITC** PLTC Open Wiring **CEC** [CMG]	2/18 AWG BU/BN	6.5 Ohms PE	None	PVC Black 7.9 mm (.310 in)	Foil/Braid 20 AWG	RB50860-*M 59 lbs.	**A**

* Indicates length in meters.
Standard cable lengths are 30, 75, 150, 225 and 300 meters.

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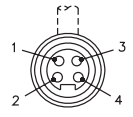
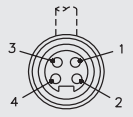
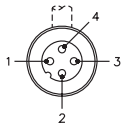
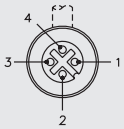
PROFIBUS®-PA, Cable and Cordset Selection Matrix

			minifast ®				*eurofast* ®
			Pin (Male)		Socket (Female)		Pin (Male)
			1 RSV	2 WSV	3 RKV	4 WKV	5 RSCV
		Bare	RSV 48x-*M	WSV 48x-*M	RKV 48x-*M	WKV 48x-*M	RSCV 48x-*M
minifast	Pin (Male)	1 RSV	RSV RSV 48x-*M	RSV WSV 48x-*M	RSV RKV 48x-*M	RSV WKV 48x-*M	RSV RSCV 48x-*M
		2 WSV		WSV WSV 48x-*M	WSV RKV 48x-*M	WSV WKV 48x-*M	WSV RSCV 48x-*M
	Socket (Female)	3 RKV			RKV RKV 48x-*M	RKV WKV 48x-*M	RKV RSCV 48x-*M
		4 WKV				WKV WKV 48x-*M	WKV RSCV 48x-*M
eurofast	Pin (Male)	5 RSCV					RSCV RSCV 48x-*M
		6 WSCV					
	Socket (Female)	7 RKCV					
		8 WKCV					

See pages H71 - H72 for dimensional drawings.

* Indicates length in meters.
x Indicates cable type.
Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.
Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 Meters. Consult factory for other lengths.

minifast		Pinouts	*eurofast*	
Male	Female		Male	Female
		1. Brown (+ Voltage) 2. N/C 3. Blue (- Voltage) 4. Bare (Shield Drain Wire)		

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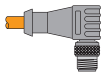
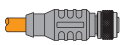
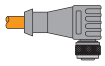
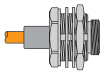
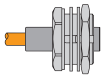
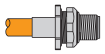
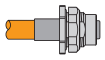
PROFIBUS®-PA, Cable and Cordset Selection Matrix

eurofast®			*minifast*® Bulkhead		*eurofast* Bulkhead	
Pin (Male)	Socket (Female)		Pin (Male)	Socket (Female)	Pin (Male)	Socket (Female)
6  WSCV	7  RKCV	8  WKCV	9  RSFPV	10  RKFPV	11  FSFDV	12  FKFDV
WSCV 48x-*M	RKCV 48x-*M	WKCV 48x-*M	RSFPV 48x-*M	RKFPV 48x-*M	FSFDV 48x-*M	FKFDV 48x-*M
RSV WSCV 48x-*M	RSV RKCV 48x-*M	RSV WKCV 48x-*M	RSV RSFPV 48x-*M	RSV RKFPV 48x-*M	RSV FSFDV 48x-*M	RSV FKFDV 48x-*M
WSV WSCV 48x-*M	WSV RKCV 48x-*M	WSV WKCV 48x-*M	WSV RSFPV 48x-*M	WSV RKFPV 48x-*M	WSV FSFDV 48x-*M	WSV FKFDV 48x-*M
RKV WSCV 48x-*M	RKV RKCV 48x-*M	RKV WKCV 48x-*M	RKV RSFPV 48x-*M	RKV RKFPV 48x-*M	RKV FSFDV 48x-*M	RKV FKFDV 48x-*M
WKV WSCV 48x-*M	WKV RKCV 48x-*M	WKV WKCV 48x-*M	WKV RSFPV 48x-*M	WKV RKFPV 48x-*M	WKV FSFDV 48x-*M	WKV FKFDV 48x-*M
RSCV WSCV 48x-*M	RSCV RKCV 48x-*M	RSCV WKCV 48x-*M	RSCV RSFPV 48x-*M	RSCV RKFPV 48x-*M	RSCV FSFDV 48x-*M	RSCV FKFDV 48x-*M
WSCV WSCV 48x-*M	WSCV RKCV 48x-*M	WSCV WKCV 48x-*M	WSCV RSFPV 48x-*M	WSCV RKFPV 48x-*M	WSCV FSFDV 48x-*M	WSCV FKFDV 48x-*M
	RKCV RKCV 48x-*M	RKCV WKCV 48x-*M	RKCV RSFPV 48x-*M	RKCV RKFPV 48x-*M	RKCV FSFDV 48x-*M	RKCV FKFDV 48x-*M
		WKCV WKCV 48x-*M	WKCV RSFPV 48x-*M	WKCV RKFPV 48x-*M	WKCV FSFDV 48x-*M	WKCV FKFDV 48x-*M

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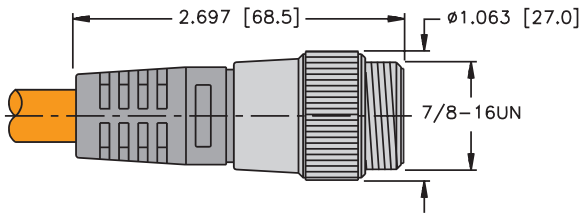
PROFIBUS®-PA, *minifast*® Cordset and Receptacle Connector Dimensions

Specifications

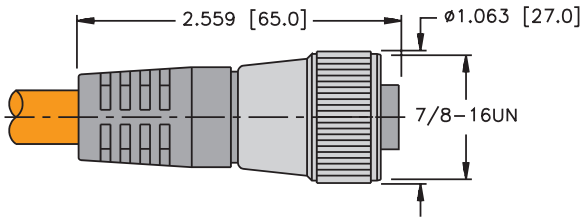
Housing:	PUR (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	300 V
Rated Current:	9 A
Ambient Temperature:	-40°C to +105°C (-40° to +221°F)

1



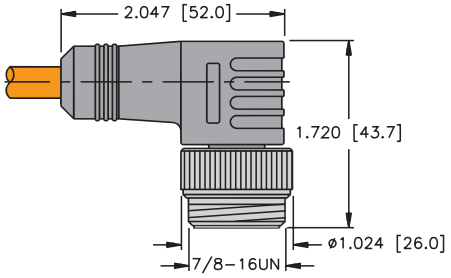
RSV .. **Pages H69 - H70**

3



RKV .. **Pages H69 - H70**

2



WSV .. **Pages H69 - H70**

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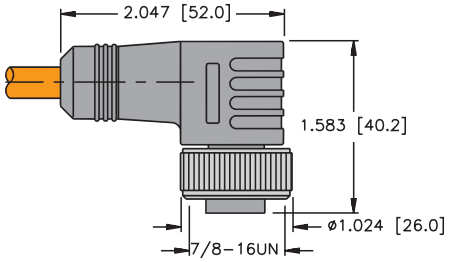
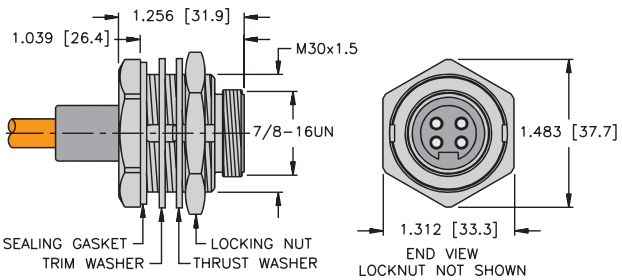


WKV .. **Pages H69 - H70**

9



RSFPV .. **Pages H69 - H70**

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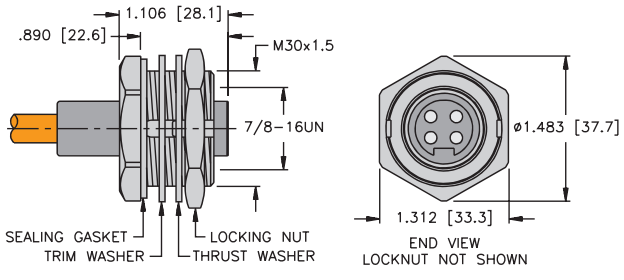

RKFPV .. **Pages H69 - H70**

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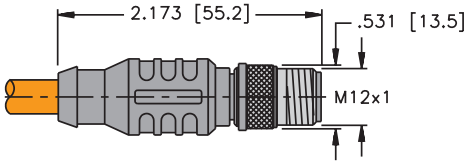
PROFIBUS®-PA, *eurofast*® Cordset and Receptacle Connector Dimensions

Specifications

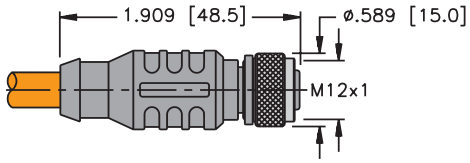
Housing:	PUR (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +105°C (-40° to +221°F)

5



RSCV .. **Pages H69 - H70**

7



RKCV .. **Pages H69 - H70**

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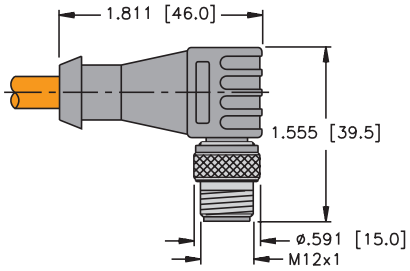
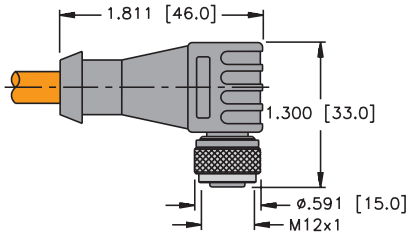


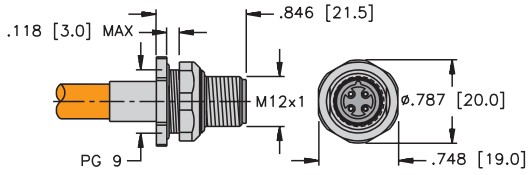
WSCV .. **Pages H69 - H70**

8



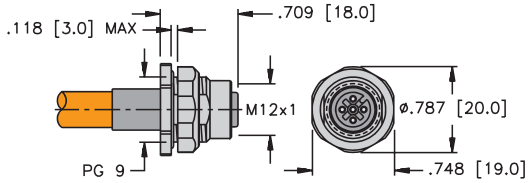
WKCV .. **Pages H69 - H70**

11



FSFDV .. **Pages H69 - H70**

12



FKFDV .. **Pages H69 - H70**

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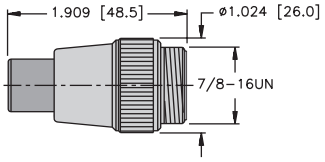
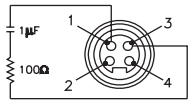
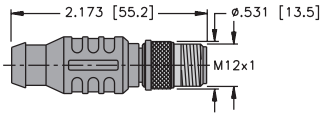
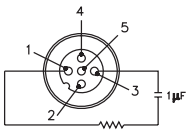
PROFIBUS®-PA, Terminating Resistors

- **Terminating Resistors Stabilize and Minimize Reflections on the Bus Line**
- **A Terminating Resistor is Required at the Beginning and End of the Main Bus Line**

Housing	Part Number	Specs	Application	Pinouts
	RSV 48-TR	Nickel Plated Brass or Stainless Steel 300 V, 9 A -40° to +75°C	***minifast*®** Terminating Resistor • Male ***minifast*** connector	Male 
	RSEV 48-TR	Nickel Plated Brass or Stainless Steel 250 V, 4 A -40° to +75°C	***eurofast*®** Terminating Resistor • Male ***eurofast*** connector	Male 

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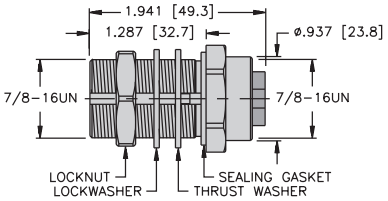
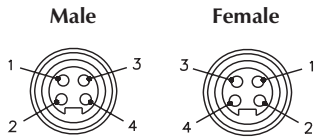
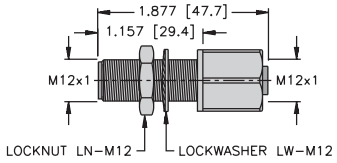
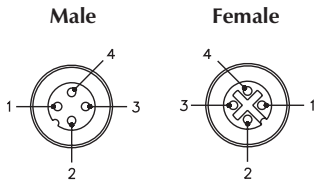
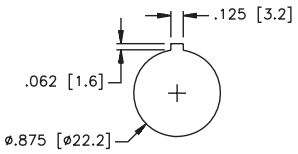
PROFIBUS®-PA, Feed Through Connectors

- **Receptacles Provide Transition from Male to Female Connectors**
- **Available for Bulkhead and Feed Through Applications**

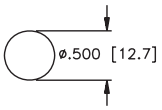
Housing	Part Number	Specs	Application	Pinouts
	RSFV RKFV 48/22	Nickel Plated CuZn or Stainless Steel 300 V, 9 A -40° to +75°C	***minifast*** ® Bulkhead Receptacle • Straight male/female feed through • For use with DeviceNet ***minifast*** cordsets	
	FKV FSV 48/M12	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +75°C	***eurofast*** ® Feed Through Connection • straight male/female connector • for pre-molded ***eurofast*** cables	

Standard housing material is nickel plated brass. "RSF RKF.."; "RSFV RKFV.." indicates stainless steel housing.

Panel Cutout
RSFV RKFV 48/22



Panel Cutout
FKV FSV 48/M12



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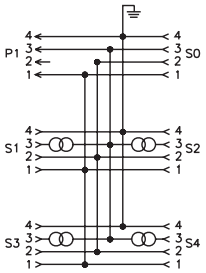
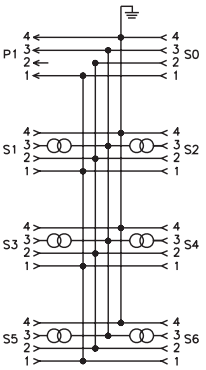
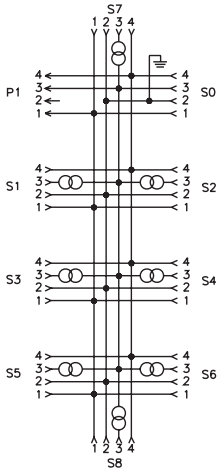
PROFIBUS®-PA, *minifast*® Passive Multiport Junctions (Bricks)

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Suitable for Outdoor Applications**

FM APPROVED

Part Number	Specs	Application	Wiring Diagrams
JBBS-48-M413	No short-circuit protection	4-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Four (7/8-16UN) ***minifast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-48SC-M413	**Electrical** • Short-circuit protection: 55 mA (Isc) • Open circuit voltage: 35 VDC • Current consumption: 5 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted		
JBBS-48-M613	No short-circuit protection	6-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Six (7/8-16UN) ***minifast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-48SC-M613	**Electrical** • Short-circuit protection: 55 mA (Isc) • Open circuit voltage: 35 VDC • Current consumption: 5 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted		
JBBS-48-M813	No short-circuit protection	8-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Eight (7/8-16UN) ***minifast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-48SC-M813	**Electrical** • Short-circuit protection: 55 mA (Isc) • Open circuit voltage: 35 VDC • Current consumption: 5 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted		

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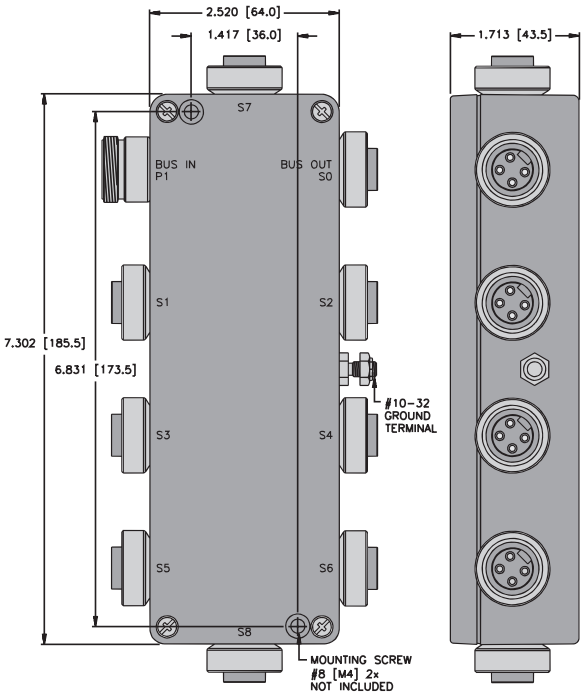
Specifications

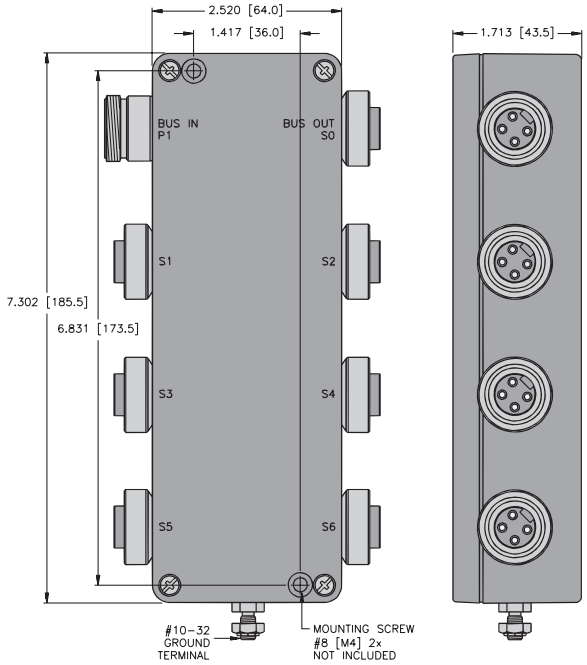
Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	300 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

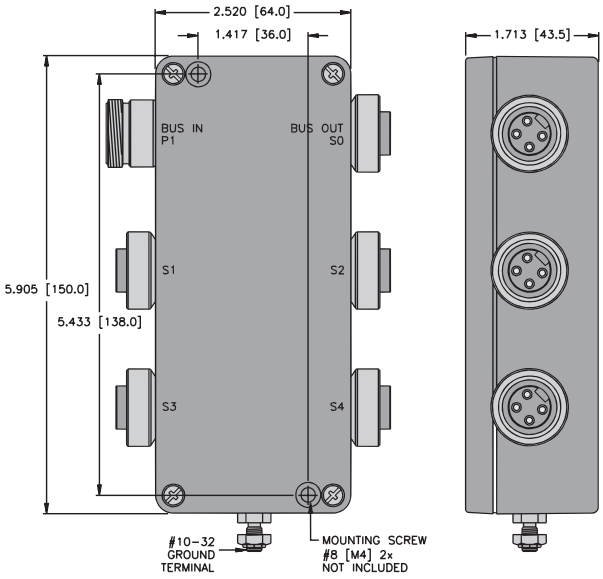
8-Port



6-Port



4-Port



Pinouts

minifast	
Male	**Female**

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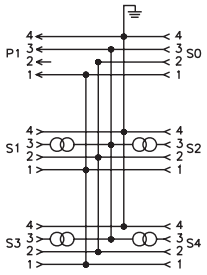
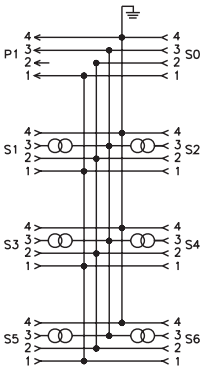
PROFIBUS®-PA, *minifast*® Passive Multiport Junctions (Bricks)

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Suitable for Outdoor Applications**

FM APPROVED

Part Number	Specs	Application	Wiring Diagrams
JBBS-48-M423	No short-circuit protection Fiberglass housing	4-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Four (7/8-16UN) ***minifast*** connectors for field devices CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-48-M623	No short-circuit protection Fiberglass housing	6-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Six (7/8-16UN) ***minifast*** connectors for field devices CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	

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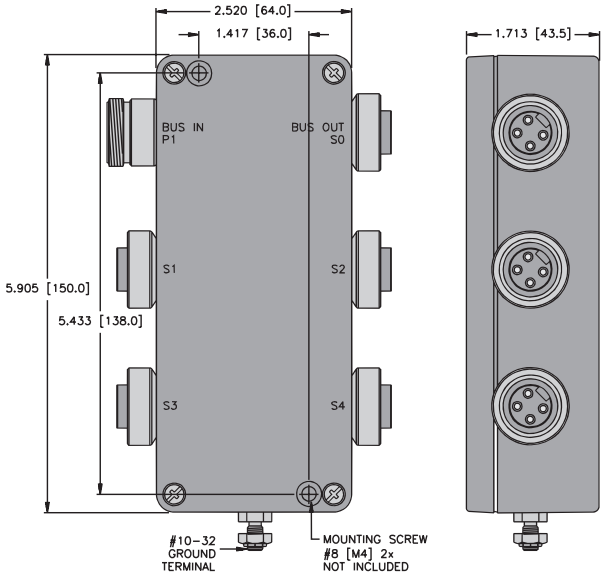
Specifications

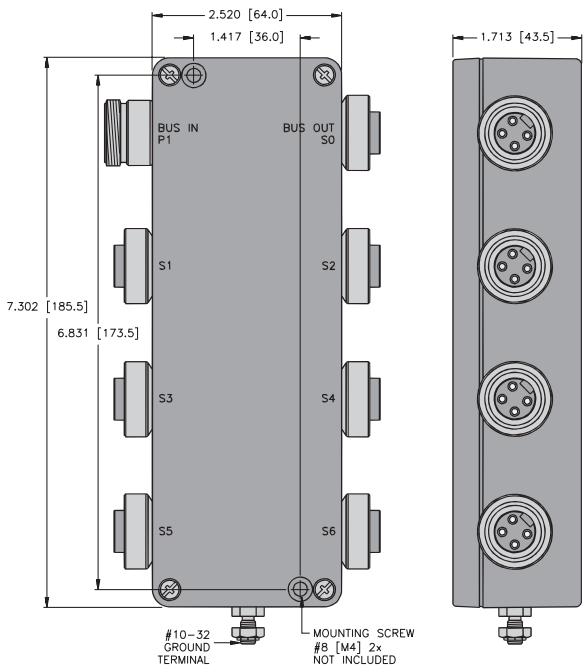
Housing:	Fiberglass
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	300 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

4-Port



6-Port



Pinouts

minifast	
Male	**Female**

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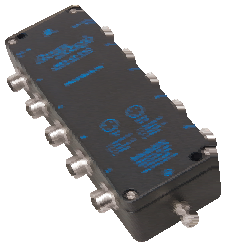
PROFIBUS®-PA, *eurofast*® Passive Multiport Junctions (Bricks)

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Suitable for Outdoor Applications**



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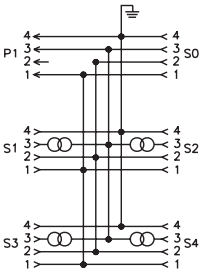
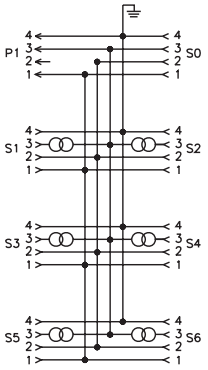
Part Number	Specs	Application	Wiring Diagrams
JBBS-48-E413	No short-circuit protection	4-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Four (M12x1) ***eurofast*** connectors for field devices • CL I, DIv 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-48SC-E413	**Electrical** • Short-circuit protection: 55 mA (Isc) • Open circuit voltage: 35 VDC • Current consumption: 5 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted		
JBBS-48-E613	No short-circuit protection	6-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Six (M12x1) ***eurofast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-48SC-E613	**Electrical** • Short-circuit protection: 55 mA (Isc) • Open circuit voltage: 35 VDC • Current consumption: 5 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted		

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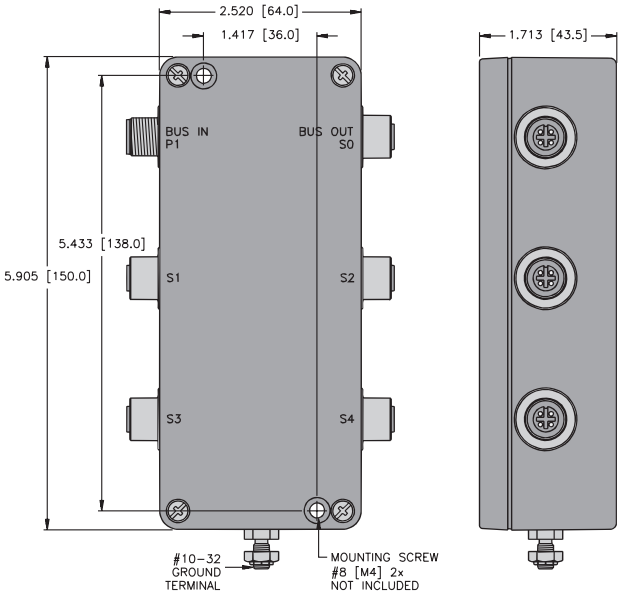
Specifications

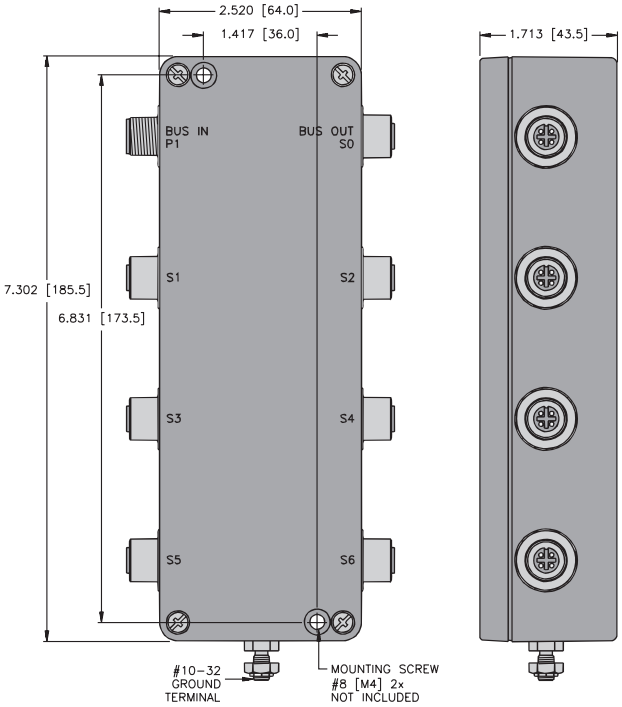
Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

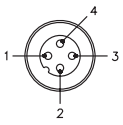
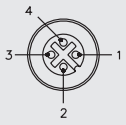
4-Port



6-Port



Pinouts

eurofast	
Male	**Female**
	

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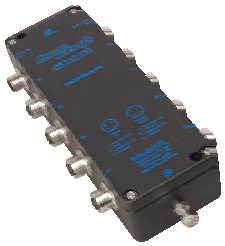
PROFIBUS®-PA, *eurofast*® Passive Multiport Junctions (Bricks)

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Suitable for Outdoor Applications**



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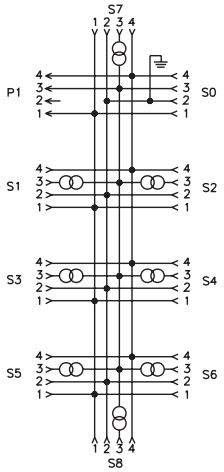
Part Number	Specs	Application	Wiring Diagrams
JBBS-48-E813	No short-circuit protection	8-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Eight (M12x1) ***eurofast*** connectors for field devices • CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-48SC-E813	**Electrical** • Short-circuit protection: 55 mA (Isc) • Open circuit voltage: 35 VDC • Current consumption: 5 mA **Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted		

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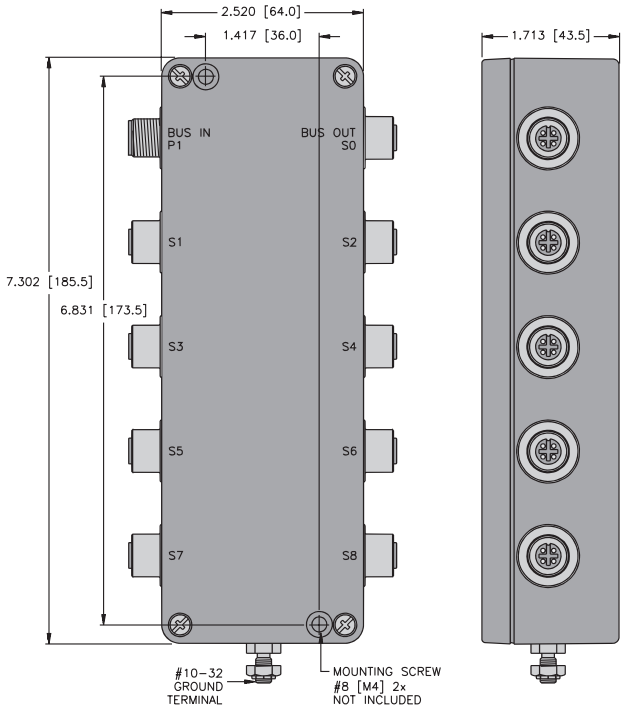
Specifications

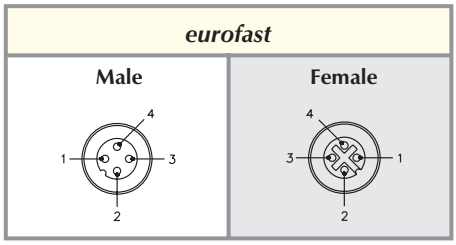
Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

8-Port



Pinouts



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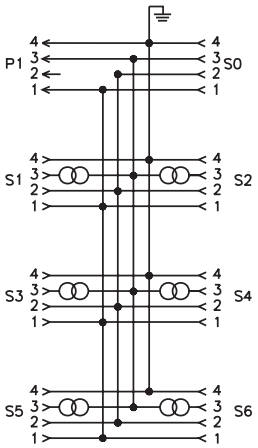
PROFIBUS®-PA, *eurofast*® Passive Multiport Junctions (Bricks), Short-Circuit Protected

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Suitable for Outdoor Applications**

FM APPROVED

Part Number	Specs	Application	Wiring Diagrams
JBBS-48SC-E613/EX	**Diagnostic** • LED indicators Power: Green = On Short-circuit: Red = Shorted • Short-Circuit Protection ≤35 mA • Current consumption ≤7 mA • Voltage drop ≤0.3 V	6-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Six (M12x1) ***eurofast*** connectors for field devices CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only) FISCO/ENTITY Field Device	

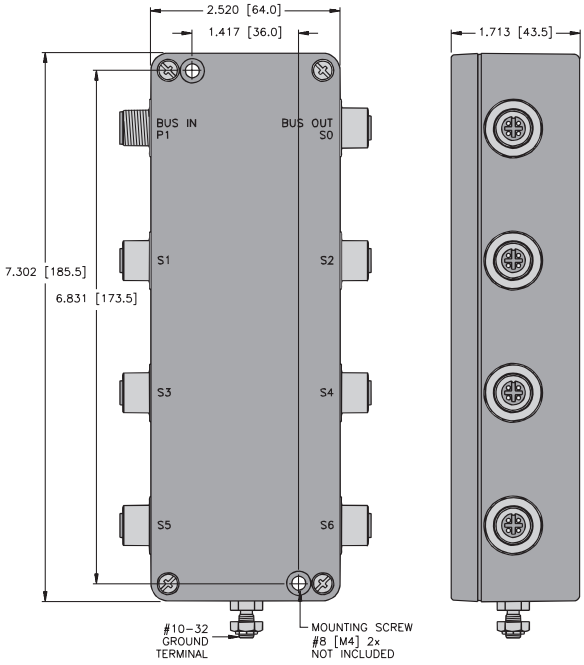
Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Specifications

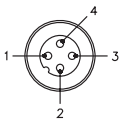
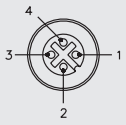
Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

6-Port



Pinouts

eurofast	
Male	**Female**
	

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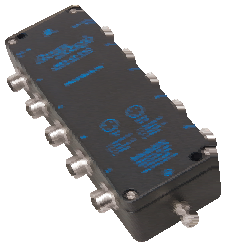
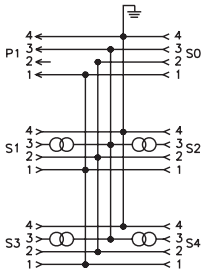
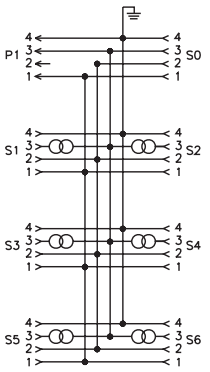
PROFIBUS®-PA, *eurofast*® Passive Multiport Junctions (Bricks)

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Suitable for Outdoor Applications**



FM APPROVED

Part Number	Specs	Application	Wiring Diagrams
JBBS-48-E414	No short-circuit protection	4-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Four (M12x1) ***eurofast*** connectors for field devices CL I, DIv 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	
JBBS-48-E614	No short-circuit protection	6-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Six (M12x1) ***eurofast*** connectors for field devices CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	

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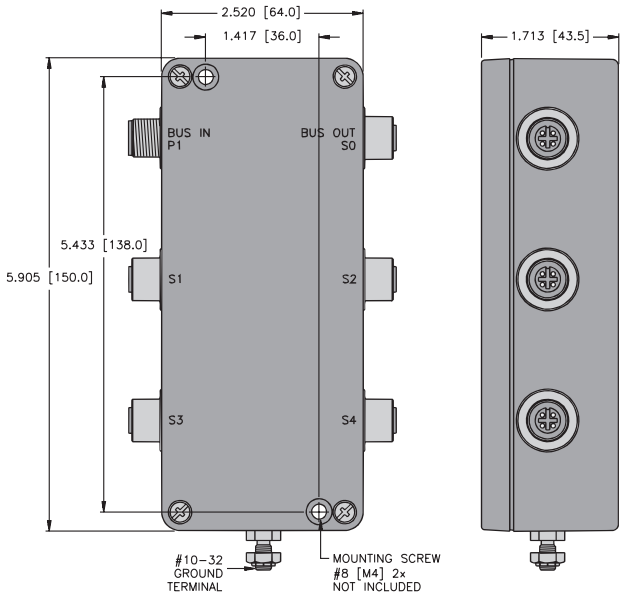
Specifications

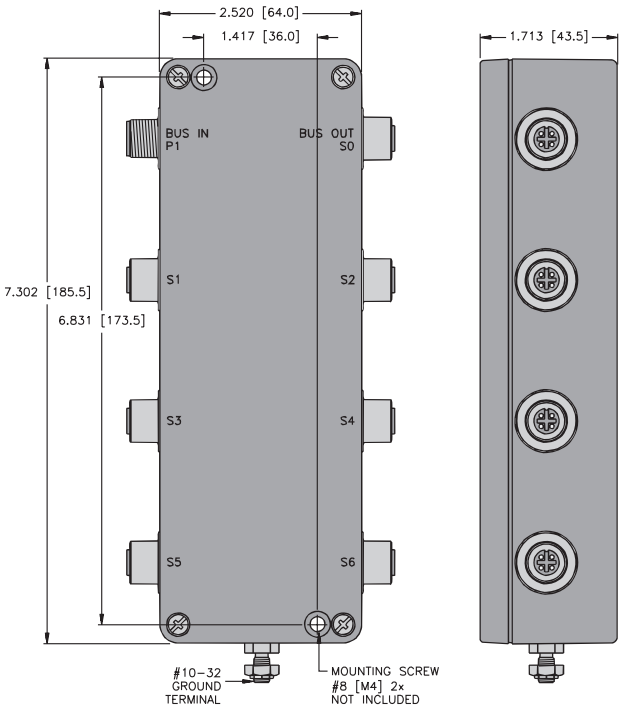
Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

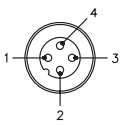
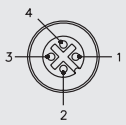
4-Port



6-Port



Pinouts

eurofast	
Male	**Female**
	

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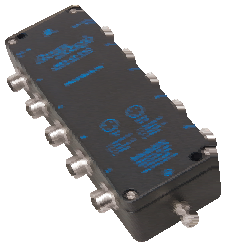
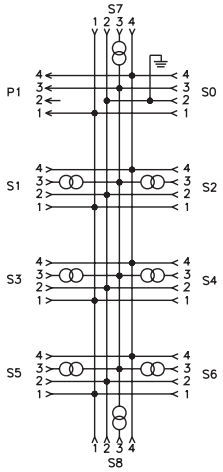
PROFIBUS®-PA, *eurofast*® Passive Multiport Junctions (Bricks)

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Suitable for Outdoor Applications**



FM APPROVED

Part Number	Specs	Application	Wiring Diagrams
JBBS-48-E814	No short-circuit protection	8-port Junction • Bus in/bus out connections (M12x1) ***eurofast*** • Eight (M12x1) ***eurofast*** connectors for field devices CL I, Div 2; Groups A-D see TURCK drawing N1-2.400 T6, Ta = 70°C (SC Only)	

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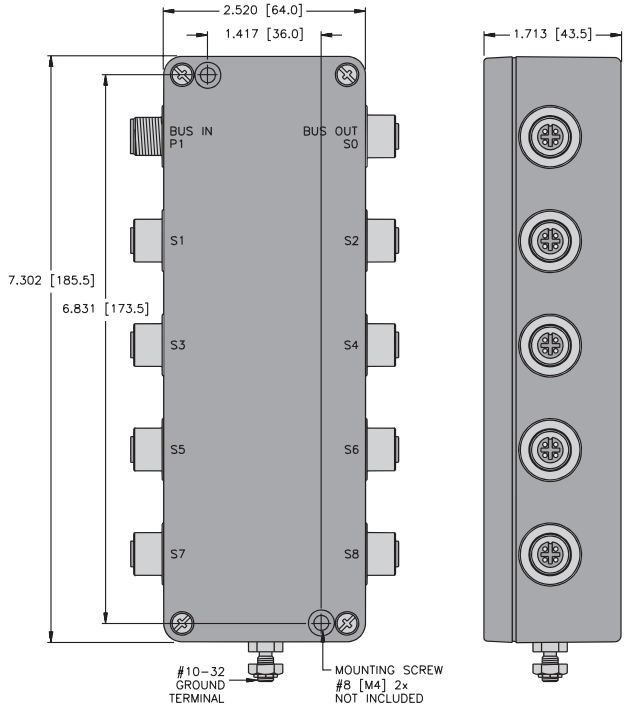
Specifications

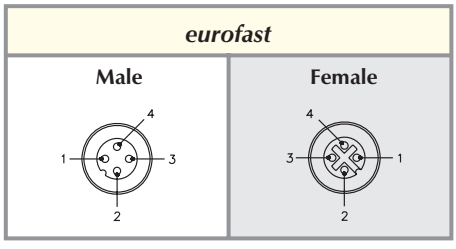
Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-40° to +167°F)

Dimensions

8-Port



Pinouts



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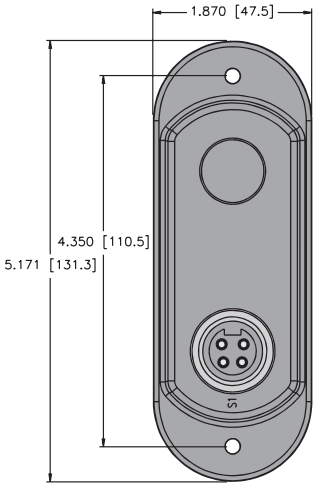
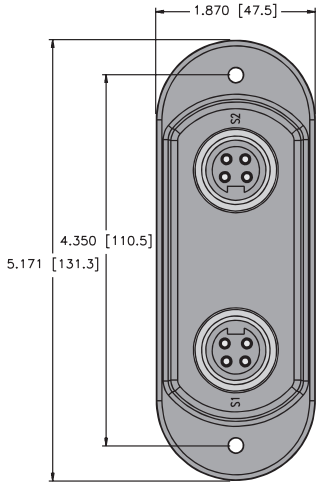
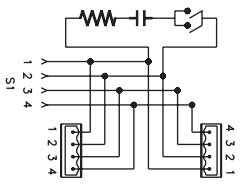
PROFIBUS®-PA, *minifast*® Conduit Adapters

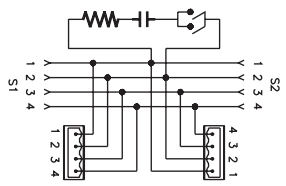
- **Gasket and Mounting Screws Provided**
- **Same Housing Style for Single or Double Port**

Housing	Part Number	Specs	Application	Pinout
	BCA 48-M123	Nylon Housing 300 V, 9 A -40° to +75°C	Attaches to standard conduit body* for transition to 4-wire (7/8-16UN) ***minifast*** connector *Crouse-Hinds 3/4" Form 8, or Mark 9 or equivalent.	Male
	BCA 48-M223		Attaches to standard conduit body* for transition to 4-wire (7/8-16UN) ***minifast*** connector *Crouse-Hinds 3/4" Form 8, or Mark 9 or equivalent.	

1-port Wiring Diagram



2-port Wiring Diagram



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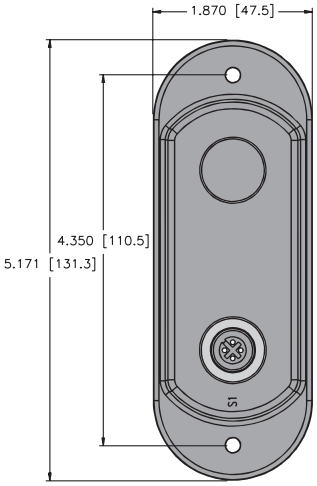
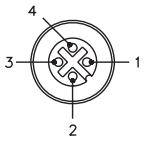
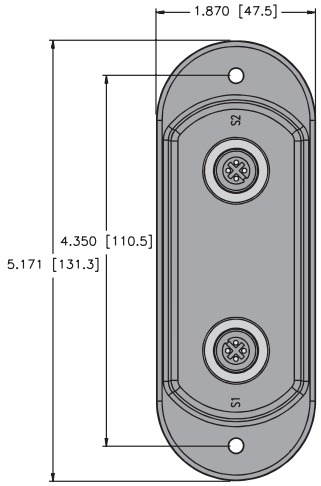
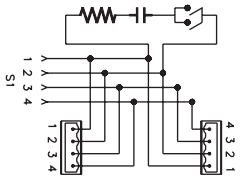
PROFIBUS®-PA, *eurofast*® Conduit Adapters

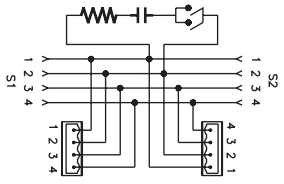
- **Gasket and Mounting Screws Provided**
- **Same Housing Style for Single or Double Port**

Housing	Part Number	Specs	Application	Pinout
	BCA 48-E123	Nylon Housing 250 V, 4 A -40° to +75°C	Attaches to standard conduit body* for transition to 4-wire (M12x1) ***eurofast*** connector *Crouse-Hinds 3/4" Form 8, or Mark 9 or equivalent.	**Female** 
	BCA 48-E223		Attaches to standard conduit body* for transition to 4-wire (M12x1) ***eurofast*** connector *Crouse-Hinds 3/4" Form 8, or Mark 9 or equivalent.	

1-port Wiring Diagram



2-port Wiring Diagram



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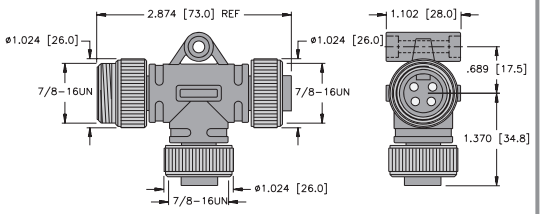
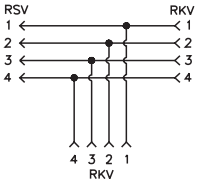
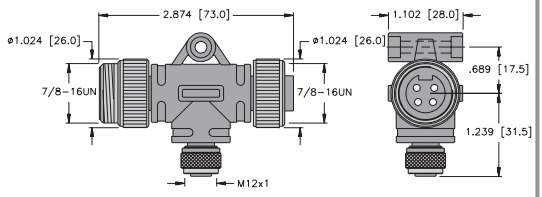
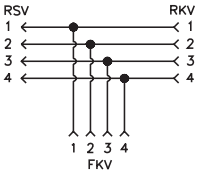
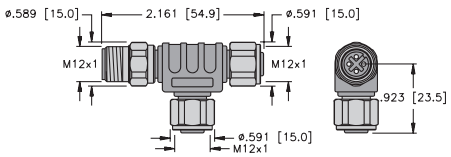
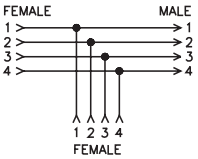
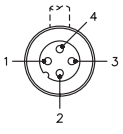
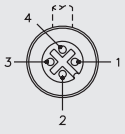
PROFIBUS®-PA, Tees

- **Creates a Drop or Branch from the Main Bus Line**
- ***minifast*® Connectors on Bus or Drop Lines**

Housing	Part Number	Specs	Application	Wiring Diagrams
	RSV 2RKV 48	PUR (Polyurethane) 250 V, 4 A -40° to +75°C	***minifast*** Tee • Data, ground, shield • Stainless steel coupling nuts	
	RSV FKV RKV 48		***minifast*** to ***eurofast***® Drop • Data, ground, shield • Stainless steel coupling nuts	
	RSCS 2RKCS 48		***eurofast*** Tee • Stainless steel coupling nuts	

Pinouts

minifast		*eurofast*	
Male	Female	Male	Female
			

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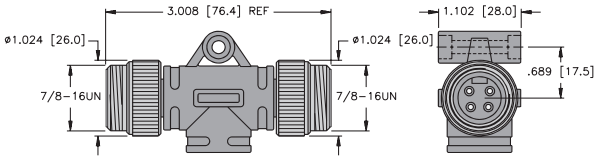
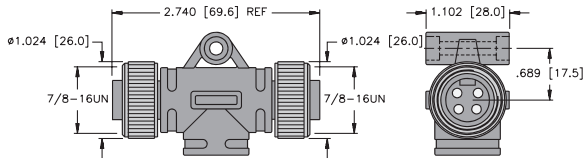
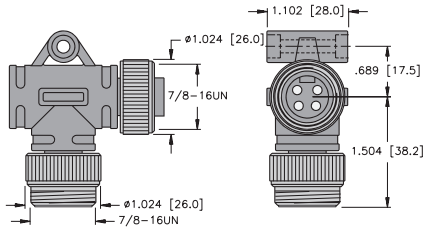
PROFIBUS®-PA, Gender Changers and Elbow Connectors

- **Allows Quick and Easy Changes from Male to Female *minifast*® Connectors**

Housing	Part Number	Specs	Application
	RSV RSV 48	TPU (Polyurethane) 250 V, 4 A -40° to +75°C	Male ***minifast*** Gender Changer • Changes female cordset to male receptacle
	RKV RKV 48		Female ***minifast*** Gender Changer • Changes female cordset to male receptacle
	WSV RKV 48		***minifast*** Elbow • Right angle male to female connector

Pinouts

minifast	
Male	**Female**

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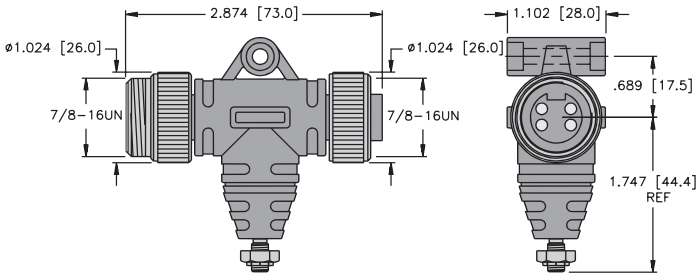
PROFIBUS®-PA, Surge Suppressor

- **Protects Data Communication Lines (V+ and V-)**
- **Absorbs the Front End of the Transient, Responding in Less Than a Nanosecond**
- **Diverts the Surge Energy to Ground**
- **Automatically Resets and waits for Next Surge**

Housing	Part Number	Specs	Application	Pinouts
See Drawing 1	RSV RKV 48 SS	**Electrical** • Maximum operating voltage: 27 Volts • Maximum operating current: 200 mA • Clamping Action Turn-on: 28.5 Volts • Maximum clamping at 2 kA: (8 x 20 Sec): 44 Volts • Maximum surge voltage: 20 kV • Maximum surge current: 2.5 kA • Current leakage/line at operating voltage: 5 A • Capacitance /line at operating voltage: 500 pF • Response time: Less than 1 nanosecond **Mechanical** • Ground Stud: 10-32 stainless steel • Operating temperature: -40° to +85°C	Male and female ***minifast***®, 4-pin	**Male** **Female**

1



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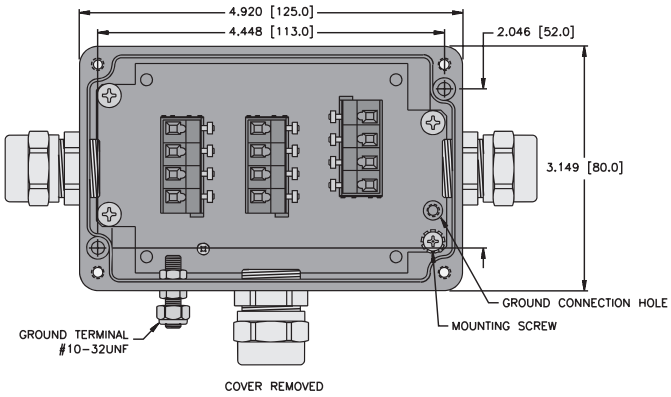
PROFIBUS®-PA, Field Wireable Tee

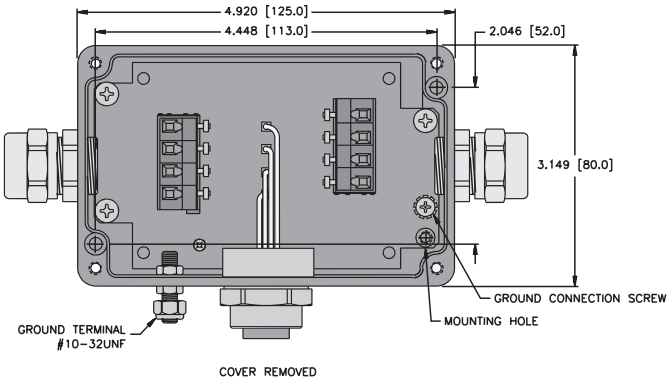
- **A Hybrid Connection System Offering Reliable Connections on the Short Drops and Ease of Installation on the Long Trunk Runs**
- **Features Standard *minifast*® Connector for the Drop Connection and Terminal Connectors on the Trunk Connections**

Housing Style	Part Number	Specs	Application	Pinout
See Drawing 1	SPTT1-A48	Anodized Aluminum 250 V, 4 A -40° to +75°C NEMA 1, 3, 4, 6P and IEC IP 68	(7/8-16UN) ***minifast*** connector for drop connection, and field wireable terminals on the trunk connections.	Female
See Drawing 2	SPTTM13-A48			

1



2



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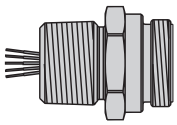
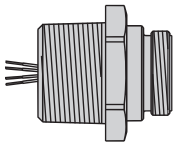
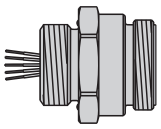
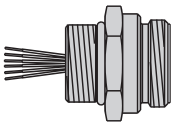
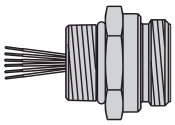
PROFIBUS®-PA, (7/8-16UN) *minifast*® Male Receptacles

- **Provides Quick Connection to Field Devices**
- **Available for 1/2-14NPT, 1/2-14NPSM, 3/4-14NPT and M20 Threads**

Housing	Part Number	Specs	Application	Pinouts	
13 	RSFV 48-*M/14.5	Nickel Plated CuZn or Stainless Steel 600 V, 9 A -40° to +105°C	1/2-14NPT full length threads	1. BN 2. N/C 3. BU 4. N/C	Male
15 	RSFV 48-*M/14.75		3/4-14NPT full length threads		
14 	RSFV 48-*M/M20		M20x1.5 threads		
16 	RSFV 48-*M		1/2-14NPSM threads		
17 	RSFV 48-*M/NPT		1/2-14NPT modified length threads		

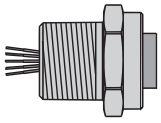
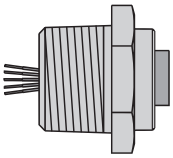
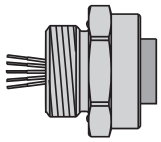
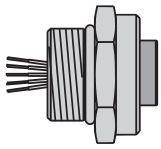
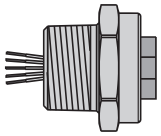
See page H99 for dimensional drawings.

Standard cable length is 0.3 Meters. Consult factory for other lengths.
Receptacles require a 13/16" (21 mm) clearance hole for panel mounting.
Standard housing material is nickel plated brass. "RKF ..."; indicates 316 stainless steel housing.
For locknuts to be included, add "W/LN" to the end of the part number.

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

PROFIBUS®-PA, (7/8-16UN) *minifast*® Female Receptacles

- **Provides Quick Connection to Field Devices**
- **Available for 1/2-14NPT, 1/2-14NPSM, 3/4-14NPT and M20 Threads**

Housing	Part Number	Specs	Application	Pinouts	
18 	RKFV 48-*M/14.5	Nickel Plated CuZn or Stainless Steel 600 V, 9 A -40° to +105°C	1/2-14NPT full length threads	1. BN 2. N/C 3. BU 4. GY	Female
20 	RKFV 48-*M/14.75		3/4-14NPT full length threads		
19 	RKFV 48-*M/M20		M20x1.5 threads		
21 	RKFV 48-*M		1/2-14NPSM threads		
22 	RKFV 48-*M/NPT		1/2-14NPT modified length threads		

See page H100 for dimensional drawings.

Standard cable length is 0.3 Meters. Consult factory for other lengths.
Receptacles require a 13/16" (21 mm) clearance hole for panel mounting.
Standard housing material is nickel plated brass. "RKF ..."; indicates 316 stainless steel housing.
For locknuts to be included, add "W/LN" to the end of the part number.

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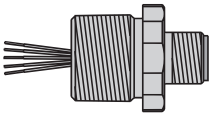
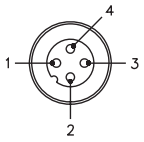
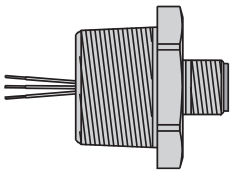
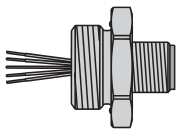
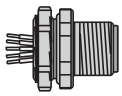
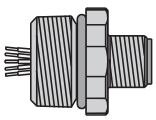
PROFIBUS®-PA, (M12x1) *eurofast*® Male Receptacles

- **Mounted for Quick Connection to Enclosures**
- **Available for 1/2-14NPT, 1/2-14NPSM, 3/4-14NPT and M20 Threads**

Housing	Part Number	Specs	Application	Pinout
23 	FSV 48-*M/14.5	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +105°C	1/2-14NPT full length threads	1. BN 2. N/C 3. BU 4. N/C 
25 	FSV 48-*M/14.75		3/4-14NPT full length threads	
24 	FSV 48-*M/M20		M20x1.5 threads	
26 	FSV 48-*M		PG 9 threads	
27 	FSV 48-*M/NPT		1/2-14NPT modified length threads	

See page H101 for dimensional drawings.

Standard cable length is 0.3 Meters. Consult factory for other lengths.
Receptacles require a 13/16" (21 mm) clearance hole for panel mounting.
Standard housing material is nickel plated brass. "RKF ..."; indicates 316 stainless steel housing.

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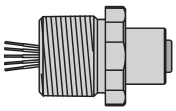
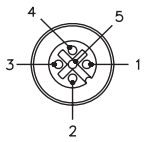
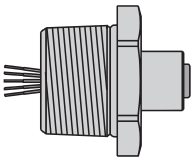
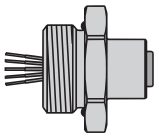
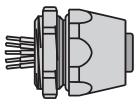
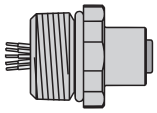
PROFIBUS®-PA, (M12x1) *eurofast*® Female Receptacles

- **Mounted for Quick Connection to Enclosures**
- **Available for 1/2-14 NPT, 1/2-14 NPSM, 3/4-14 NPT and M20 Threads**

Housing	Part Number	Specs	Application	Pinouts	
28 	FKV 48-*M/14.5	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +105°C	1/2-14NPT full length threads	1. BN 2. N/C 3. BU 4. GY	Female 
30 	FKV 48-*M/14.75		3/4-14NPT full length threads		
29 	FKV 48-*M/M20		M20x1.5 threads		
31 	FKV 48-*M		PG 9 threads		
32 	FKV 48-*M/NPT		1/2-14NPT modified length threads		

See page H102 for dimensional drawings.

Standard cable length is 0.3 Meters. Consult factory for other lengths.
Receptacles require a 13/16" (21 mm) clearance hole for panel mounting.
Standard housing material is nickel plated brass. "RKF ..."; indicates 316 stainless steel housing.

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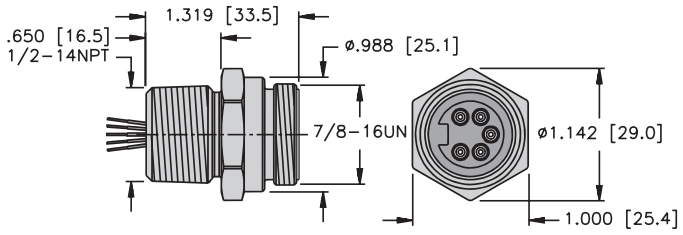
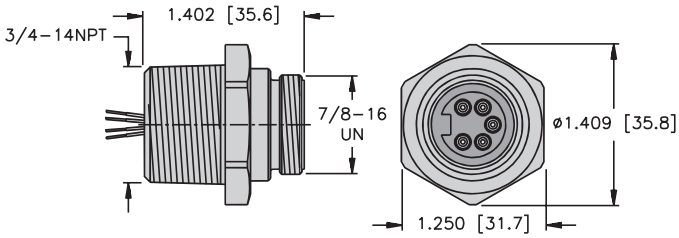
minifast® Male Receptacles

13



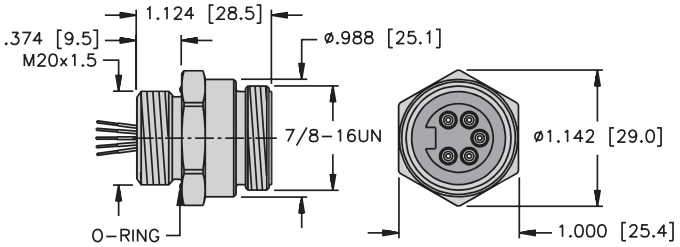
RSFV .. 14.5 **Page H95**

15



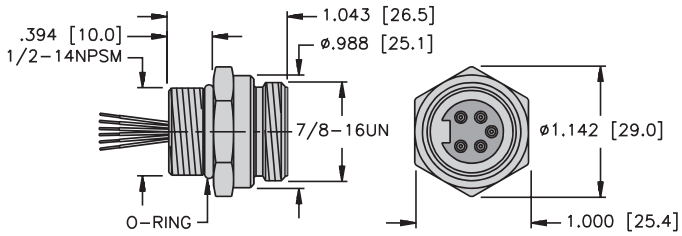
RSFV .. 14.75 **Page H95**

14



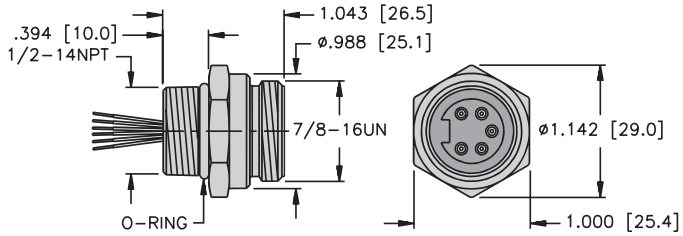
RSFV .. M20 **Page H95**

16



RSFV .. **Page H95**

17



RSFV .. NPT **Page H95**

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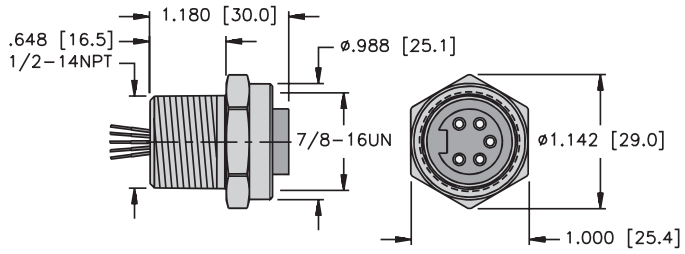
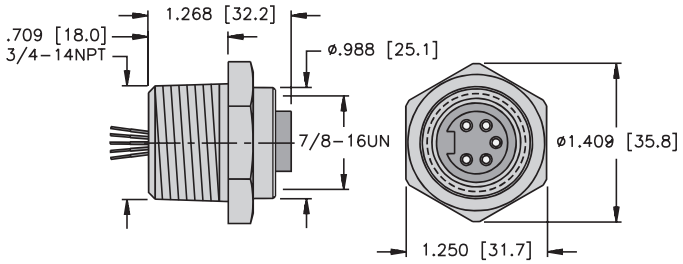
minifast® Female Receptacles

18



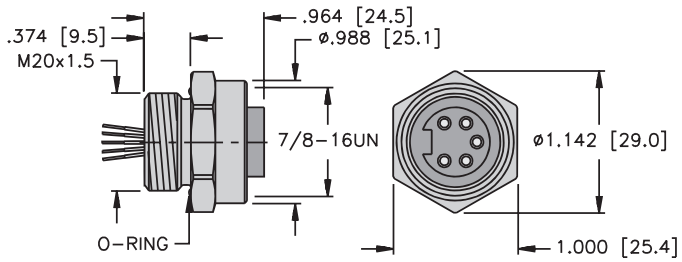
RKFV .. 14.5 **Page H96**

20



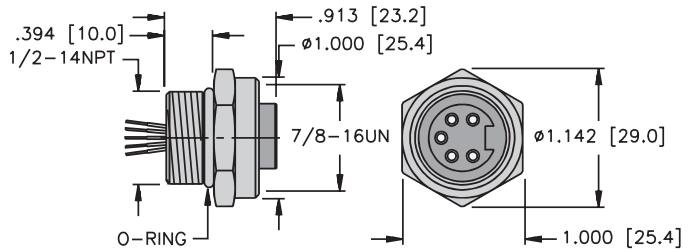
RKFV .. 14.75 **Page H96**

19



RKFV .. M20 **Page H96**

21



RKFV .. **Page H96**

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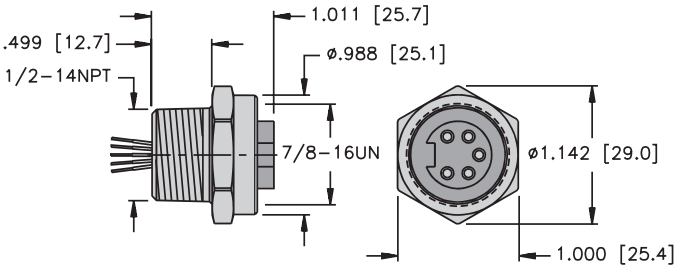

RKFV .. NPT **Page H96**

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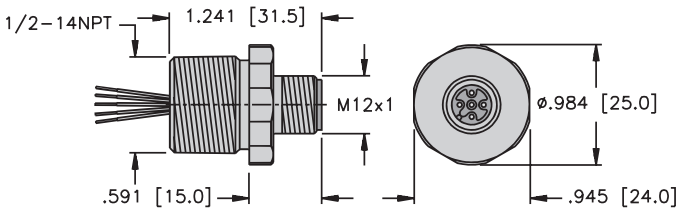
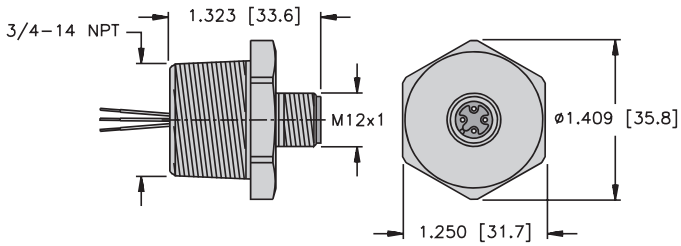
eurofast® Male Receptacles

23



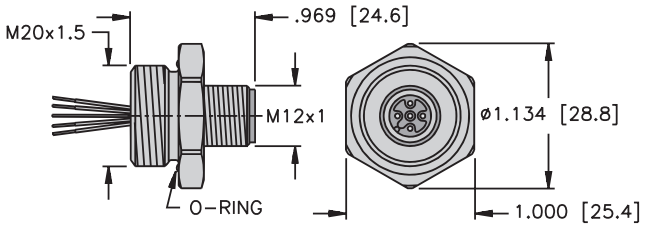
FSV .. 14.5 **Page H97**

25



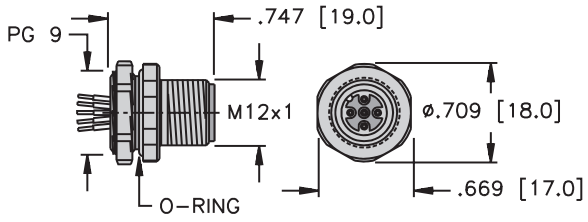
FSV .. 14.75 **Page H97**

24



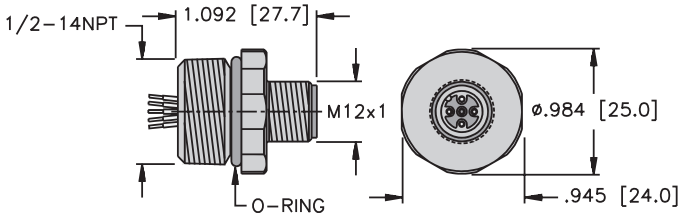
FSV .. M20 **Page H97**

26



FSV .. **Page H97**

27



FSV .. NPT **Page H97**

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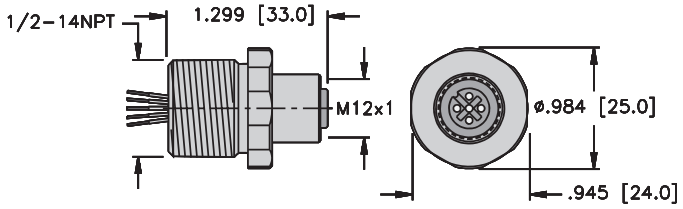
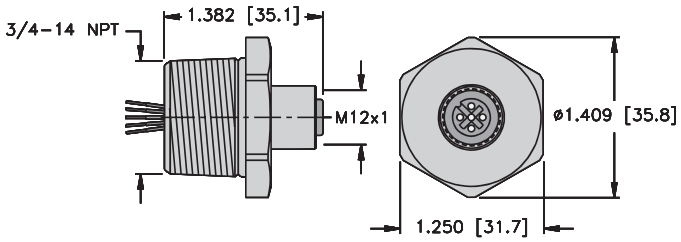
eurofast® Female Receptacles

28



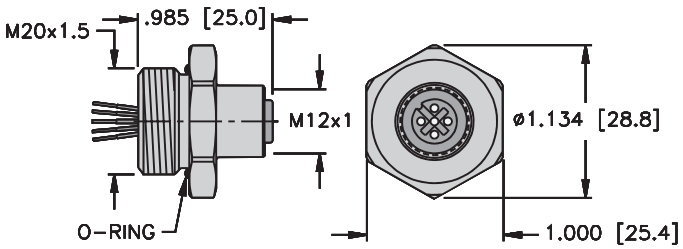
FKV .. 14.5 Page H98

30



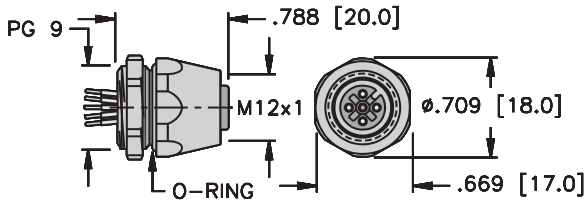
FKV .. 14.75 Page H98

29



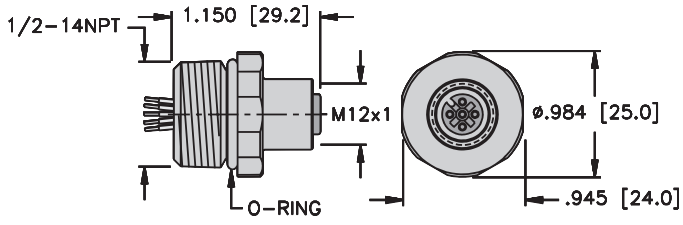
FKV .. M20 Page H98

31



FKV .. Page H98

32



FKV .. NPT Page H98

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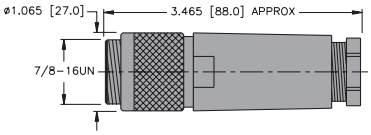
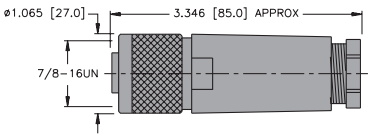
PROFIBUS®-PA, *minifast*® Field Wireable Connectors

- **Screw Terminals Accept up to 16 AWG Conductors**

Housing	Part Number	Specs	Application	Pinout
	BS 4148-0/9	Glass filled nylon PG 9 cable gland, accepts 6-8 mm cable diameter 85°C 250 V, 9 A	Mates with all 4-pin ***minifast*** cordsets and receptacles	**Female**
	BS 4148-0/13.5	Glass filled nylon PG 13.5 cable gland accepts 10-12 mm cable diameter 85°C 250 V, 9 A		
	B 4148-0/9	Glass filled nylon PG 9 cable gland, accepts 6-8 mm cable diameter 85°C 250 V, 9 A		**Male**
	B 4148-0/13.5	Glass filled nylon PG 13.5 cable gland accepts 10-12 mm cable diameter 85°C 250 V, 9 A		

For stainless steel coupling nuts change part number BS ... to BSV ...

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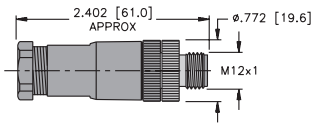
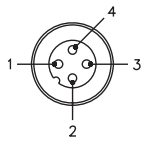
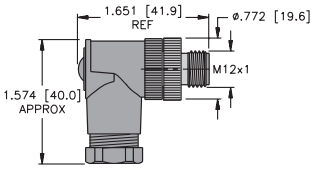
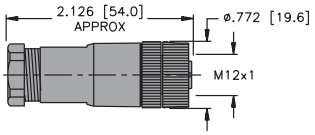
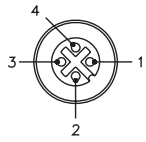
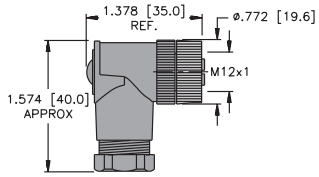
PROFIBUS®-PA, *eurofast*® Field Wireable Connectors

- **Screw Terminals Accept up to 18 AWG Conductors**

Housing	Part Number	Specs	Application	Pinouts
	BS 8141-0/PG9	PBT, Black PG 7 cable gland, accepts 4-8 mm cable diameter 85°C 125 V, 4 A	Mates with standard key 4-pin ***eurofast*** cordsets and receptacles	**Male** 
	BS 8241-0/PG9	PBT, Black PG 7 cable gland, accepts 4-8 mm cable diameter 85°C 125 V, 4 A		
	B 8141-0/PG9	PBT, Black PG 7 cable gland, accepts 4-6 mm cable diameter 85°C 250 V, 4 A		**Female** 
	B 8241-0/PG9	PBT, Black PG 7 cable gland, accepts 4-6 mm cable diameter 85°C 250 V, 4 A		

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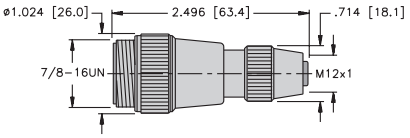
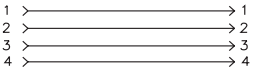
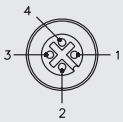
PROFIBUS®-PA, Gender Changers and Elbow Connectors

- **Allows Quick and Easy Changes from Male to Female and *minifast*® to *eurofast*® Connectors**

Housing	Part Number	Specs	Application	Wiring Diagram
	RSM 48-FK 4.5	Nickel plated brass CuZn or Stainless Steel 250 V, 4 A -40° to +80°C	Female ***eurofast,*** male ***minifast,*** 4-pin	

Pinouts

minifast	*eurofast*
Male	Female
	

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Notes:

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DeviceNet™ Selection Guide

AIM	Page
Discrete Input	J11-J13, J29, J37
Discrete Output	J27, J39
Discrete Input & Output	J15-J25, J31-J35, J41-J43
Analog	J45 - J47
Master	J49
Repeater	J51
Spanner	J53

FDN20	Page
Discrete Input & Ouput	J59 - J67

OEM	Page
Discrete Input & Ouput	J69 - J71

Operator Station	Page
Discrete Input & Ouput	J73

Gateways	Page
BL67	J76
BL20	J78
AS-I	J81

Cables	Flat Cable Connectors	Terminating Resistors	Feed Through Connectors
J84 - J93	J94	J95	J96

Junctions	Adapters	Tees	Gender Changers
J97 - J119	J121 - J123	J124 - J127	J128 - J129

Receptacles	Field Wireable Connectors	Power Taps	Daisy Chain Cordsets
J130 - J142	J143 - J144	J145	J147

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DeviceNet™ System Description

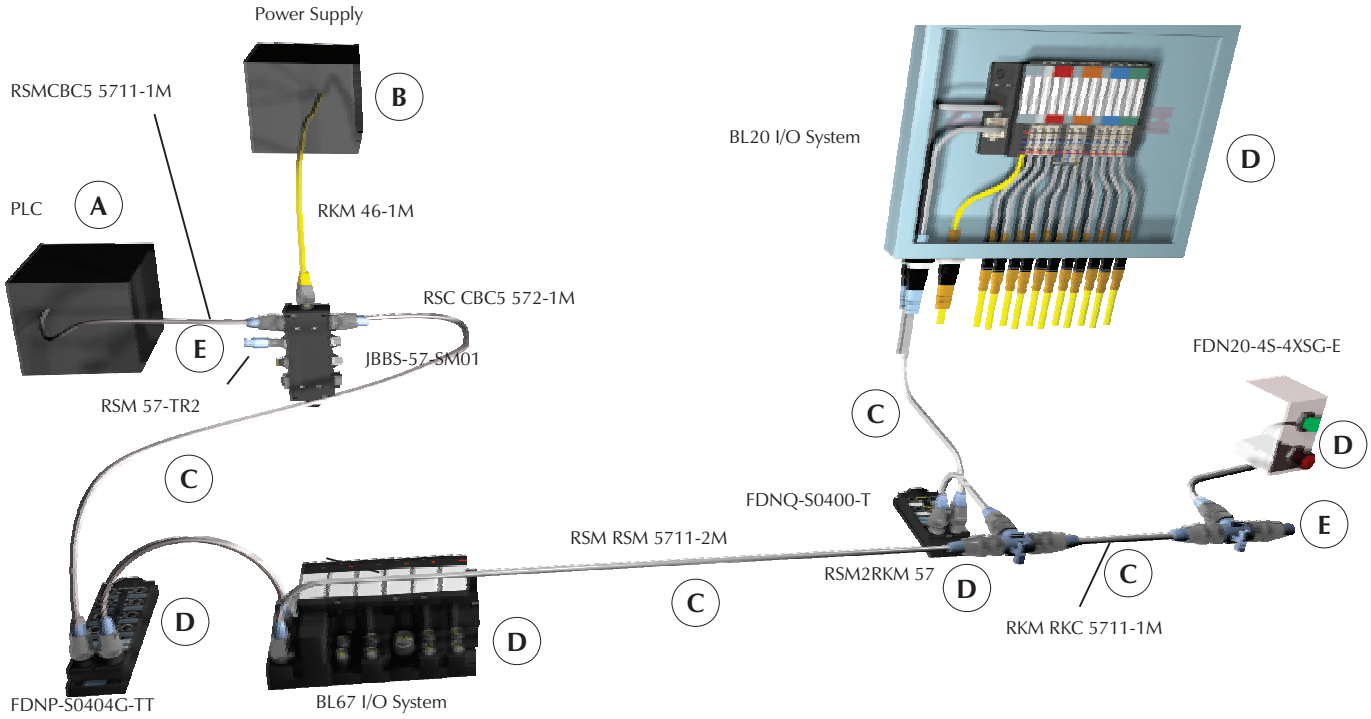
DeviceNet is a low-cost communications protocol that eliminates hard wiring and connects industrial devices such as limit switches, photoelectric sensors, valve manifolds, motor starters, process sensors, bar code readers, variable frequency drives, panel displays and operator interfaces to a network. DeviceNet's direct connection provides improved communication between devices, as well as important device-level diagnostics not easily accessible or available through hard-wired I/O interfaces.

DeviceNet is based on the Controller Area Network (CAN) broadcast-oriented communication architecture. CAN uses a bus arbitration method, CSMA/BA, that assures the highest priority message always gets use of the bus in the event of a data collision. The DeviceNet protocol further defines message priorities such that I/O messages are given top priority and configuration messages have lower priority.

A DeviceNet network supports up to 64 nodes and virtually an unlimited amount of I/O. The bus uses a trunkline/dropline topology, where bus power and communication are supplied on a single cable. Bus power is 24 VDC and supplies current to operate the nodes and (typically) power input devices. Some **TURCK** stations require an additional 24 VDC auxiliary power to supply current for outputs.

DeviceNet allows peer-to-peer data exchange (where a DeviceNet node can initiate communication with other nodes or peers), and a master/slave configuration in which the master node initiates all communication and all other nodes, or slaves, respond to the master node's requests.

Typical System Configuration



Basic Part List

A typical DeviceNet system consists of the following parts:

- A - Controller
- B - Power Supply
- C - DeviceNet Cable
- D - DeviceNet I/O Modules (or Slaves)
- E - Terminating Resistors

DeviceNet stations require a network master (also called a scanner) to interface the stations to the host controller. **TURCK** DeviceNet stations are designed to be fully compatible with DeviceNet equipment from other manufacturers.

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Cordsets

TURCK offers a complete line of molded DeviceNet cordsets to facilitate network installation, resulting in a faster start-up and fewer wiring errors. The bus and drop cables are specially designed foil-shielded, high-flex cables with very low inductance and capacitance to minimize propagation delay time. DeviceNet cables consist of a shielded and twisted data pair, as well as a shielded and twisted power pair for the 24 VDC bus power, with an additional outer shield. The 24 VDC power pair provides bus power to the station's communication electronics and (typically) to input circuits.

The data lines for CAN-High and CAN-Low differential signals conform to the CAN standard, and support network data exchange at the maximum transmission speed of 500 kbps.

In most cases, bus cable connections are made using 5-pin ***minifast***® (7/8-16 UN) or ***eurofast***® (M12) connectors. A variety of stations are also available that support terminal-block type connections. Stations with output circuits for DC actuators normally require 24 VDC auxiliary power fed through a separate connection from the communication bus.

TURCK cordsets for the DeviceNet system are available in standard lengths. Contact your local sales representative to order custom lengths.

Diagnostics

TURCK stations provide increased diagnostics when used with standard proximity or photoelectric sensors and discrete actuators. **TURCK** stations also serve as a buffer between I/O devices and the DeviceNet bus by detecting short-circuits without disrupting DeviceNet communication.

For deluxe style stations, each I/O point on the station provides state and status data. State data represents the real world value of the I/O device; for example, when the sensor is on or the actuator is off. Status data indicates short-circuits in the I/O device or in the wiring between the device and the station. Some models also use status data to indicate open circuits.

State and status data are transferred to the DeviceNet scanner where it is available for fault handling in the control program. Additionally, each input and output has a multicolored LED to indicate its state and status and pinpoint I/O problems quickly; for example the module status LED indicates the internal health of the station, and the network status LED indicates the station's communication on the DeviceNet network.

Addressing

The valid range of DeviceNet node addresses is 0 to 63. The station's default node address is 63. Each node's address must be initially set, usually via rotary dials or switches on the node. The address can also be set with a DeviceNet configuration tool.

Changes to the address settings take effect when the station power is cycled. Care must be taken to prevent the same address from being assigned to more than one node in a system. If the same address is set on multiple nodes, one node will take control of the address and the others will go into "Critical Link Failure" state, indicated by the network status LED (solid red).

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Communication Rate/Cycle Time

DeviceNet™ specifications define three transmission speeds: 125, 250 and 500 kbps. All nodes on a network must communicate at the same rate.

Several factors must be considered when calculating the complete cycle time of a DeviceNet system, including:

- Number of nodes being scanned
- Amount of data produced and consumed by the nodes
- Type of I/O messaging (change of state, strobe, poll)
- Network communication rate
- Device time-out and explicit messaging traffic
- Cycle time of the control program

Electronic Data Sheets (EDS) Files

Electronic Data Sheets, or EDS files, are files that contain detailed information about a DeviceNet device, including I/O data size and the device's configurable parameters. The information provided by EDS files guide a user through the steps necessary to configure a device. EDS files are available on the **TURCK** web site (www.turck.com).

Maximum Ratings

The DeviceNet bus uses trunk and drop topology. The trunk is the main communication cable, and requires a 121 ohm resistor at both ends of the trunk. The length of the trunk depends on the communication rate and the cable type. Drops are branches off the trunk, and may be from zero to 6 m (20 ft) in length. The cumulative drop lengths are dependent on the communication rate. The following table shows the maximum ratings for a trunk using thick, mid and thin cable. Thick and thin DeviceNet communication cable types are defined by the DeviceNet specification; mid cable is a hybrid of the two that is offered by **TURCK**.

Communication Rate	Thick Trunk Length (maximum)	Mid Trunk Length (maximum)	Thin Trunk Length (maximum)	Drop Length (maximum per drop)	Drop Length (cumulative)	Nodes (maximum)
125 kbps	500 m (1640 ft.)	300 m (984 ft.)	100 m (328 ft.)	6 m (20 ft.)	156 m (512 ft.)	64
250 kbps	250 m (820 ft.)	250 m (820 ft.)	100 m (328 ft.)	6 m (20 ft.)	78 m (256 ft.)	64
500 kbps	100 m (328 ft.)	100 m (328 ft.)	100 m (328 ft.)	6 m (20 ft.)	39 m (128 ft.)	64

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DeviceNet™ AIM™ Stations

TURCK's Advanced I/O Module (AIM) DeviceNet stations are extremely rugged stations designed for machine mounting. These stations allow easy connection of standard I/O devices (such as sensors, limit switches, valves and pilot lights) to a DeviceNet network, typically without a protective enclosure. This is made possible by epoxy-filled station housings, all-metal connectors and visible rotary address switches, among other things.

Specifications

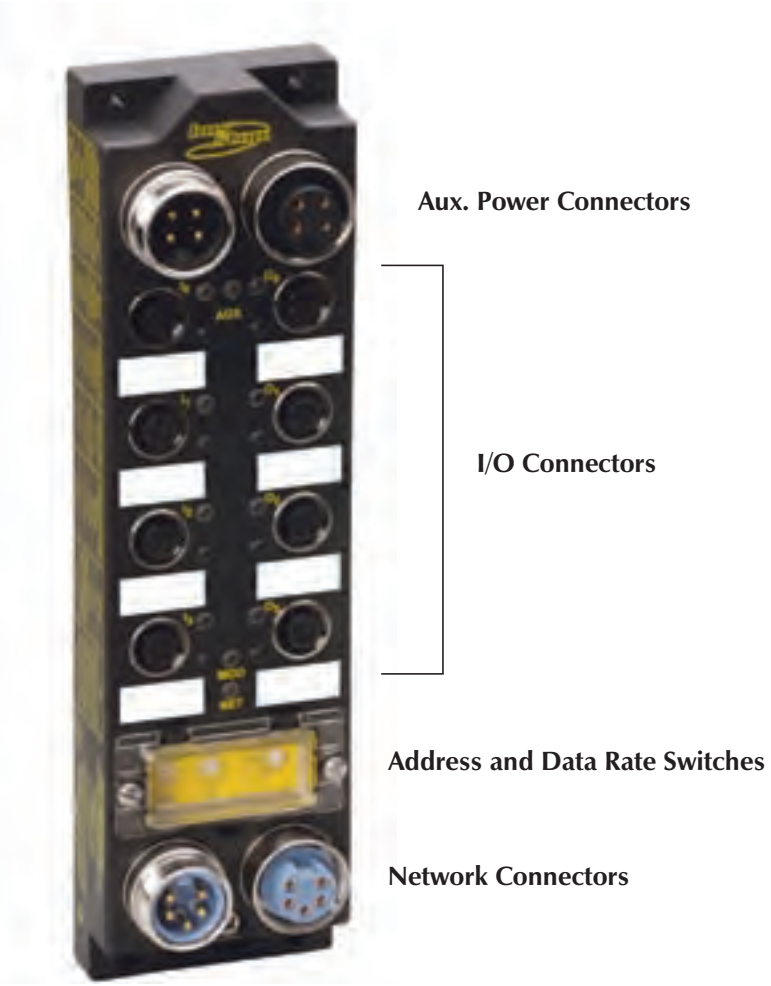
Mechanical

TURCK DeviceNet AIM stations are designed for machine mounting with no separate enclosure or housing necessary. Quick-disconnect capability, combined with an epoxy-filled housing, creates an extremely durable station that can be mounted in most industrial environments. Detailed environmental specifications are as follows:

- Housing material: Glass filled nylon
- Connector material: Nickel-plated brass
- Protection level: NEMA 1,3,4,12,13; IEC IP 67
- Operating temperature: SE stations -40 to +70°C (-40 to +158°F); LX stations -25 to +70°C (-13 to +158°F)
- Vibration: 50 g @ 10-500 Hz

Other housing and connector materials available upon request.

The stations components are identified in the following figure. The figure shows a station with ***minifast*** ® (7/8-16 UN) network connectors, but other connector options (such as M12 ***eurofast*** ®) are available for some stations. Stations with all I/O powered from the DeviceNet power supply do not have the auxiliary power connectors at the top of the housing.



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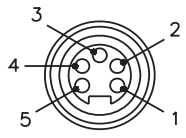
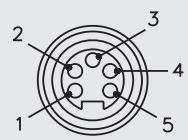
Connectors

DeviceNet™ AIM™ stations generally provide connections for the bus and I/O, in addition to auxiliary power for stations with outputs.

Bus Connectors

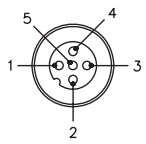
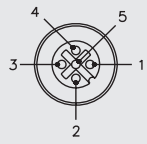
minifast ® (7/8-16UN) is the standard bus connector for DeviceNet AIM stations. Some stations are available with ***eurofast*** ® (M12) or M23 bus connectors.

DeviceNet *minifast* Pinouts

Male	Female
	
5-Pin	5-Pin

1 - Shield/Drain
2 - V+ (24 VDC)
3 - V- (0 VDC)
4 - CAN High
5 - CAN Low

DeviceNet *eurofast* Pinouts

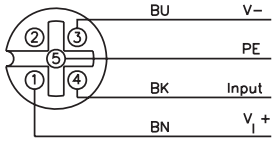
Male	Female
	
5-Pin	5-Pin

eurofast I/O Connectors

Different I/O connector pinouts are used for different station types. Stations are available with one or two inputs per connector, one or two outputs per connector, or one input and one output per connector. The pin assignments for these styles are provided below.

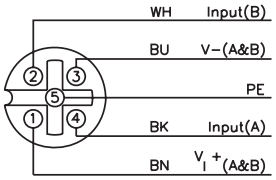
Screw Terminal I/O Connection

S



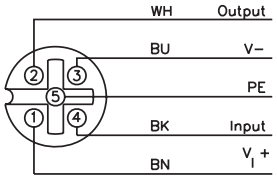
Mating cordset:
RK 4.4T-*-RS 4.4T

2S



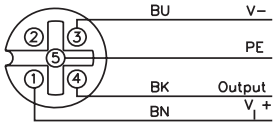
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS-4.4-2RK 4T-*/*

C



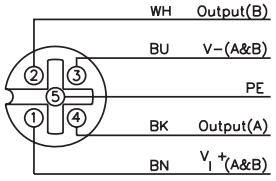
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VB2-RS 4.4T-1/2RK 4.4T-*/*/S651

G



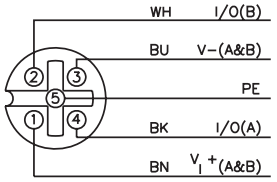
Mating cordset:
RK 4.4T-*-RS 4.4T

2G



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS-4.4-2RK 4T-*/*

2X



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS-4.4-2RK 4T-*/*

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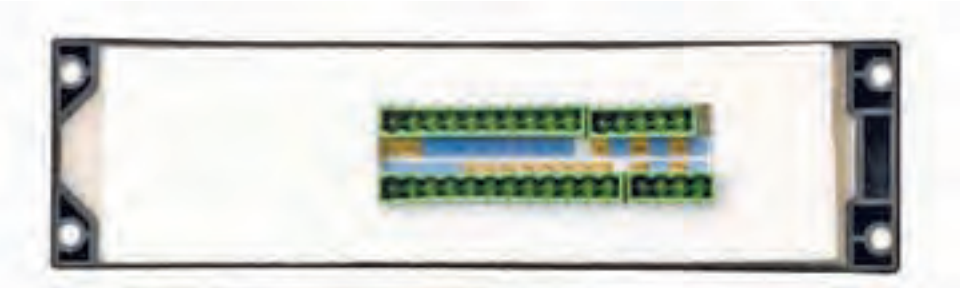
AIM™ stations with part numbers ending in "ST" support screw terminal I/O and bus connections. The screw terminals for these stations are located on the back of the station. The back of the station is also fitted with a foam gasket to allow the station to be mounted to the outside of a cabinet or field I/O box (i.e. motor control center).

Auxiliary Power Connectors



Stations where I/O draws a significant amount of current (2 Amp outputs, for example) receives this power from a second, or auxiliary, power supply. Some stations receive input power from the network and output power from the auxiliary supply. Generally, the connection is a male/female pair to allow cabling one power supply to multiple stations without the use of a tee (daisy chain configuration). Auxiliary power is typically supplied by a 4-pin ***minifast*** ® (7/8-16 UN) connector, though other auxiliary power connections are used on some stations. For further details see the individual station entries in this catalog.

Aux. Power Pinout

Male	Female
4-Pin	4-Pin

1 = V_{AUX}+
2 = Pass Through
3 = Pass Through
4 = V_{AUX}-

Power

Some AIM stations (typically those with only inputs) are completely powered from the DeviceNet power supply. When designing a network, take care to include the current draw for the station, as well as all input devices connected to the station in your power supply sizing calculations. For example, if the internal current consumption of the station is <50 mA and the total short-circuit limit for all inputs combined is <700 mA, then the maximum current draw for the station is 50 mA + 700 mA = 750 mA.

Stations with output points normally use a separate auxiliary power supply to provide current for the outputs. Several AIM stations can be powered by one auxiliary supply, or a single supply for each station can be used.

Common power ratings for AIM stations include:

- Bus (DeviceNet) Voltage: 11-26 VDC
- Aux Power Voltage: 24 VDC (nominal, supported stations)
- Input Voltage: 13-26 VDC (From DeviceNet supply)
- Input Signal Current (each input): OFF <2 mA; ON 3.0-3.4 mA (@ nominal 24 VDC)
- Input Delay: 2.5 ms

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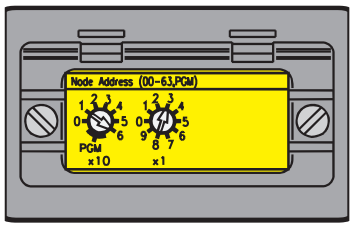
Addressing

DeviceNet™ stations must have a network address for communication. The address for AIM stations may be set via the visible rotary switches under the clear plastic cover on the front of the station.



Address = 6x10 + 3x1 = 63

The pair of switches represents the address as a decimal number; the left switch being the 10's multiplier and the right switch the 1's multiplier. To program the station, rotate the switches with a small slotted screwdriver until the arrows on the switch point to the appropriate numbers for the chosen address.

Some stations (LX style with extended diagnostics) have a third switch. This switch is used to set the communication baud rate for the station. When set to the AUTO position, the station automatically senses the baud rate of the network. SE style stations only use the autobaud setting.

Parameters

Many DeviceNet configuration tools support the use of EDS driver files to configure nodes and set various parameters. Some of the user settable parameters available for AIM stations are:

Parameter Name	Description	Valid Values	Default
Baud Rate	Defines the baud rate for the station to use if Autobaud is disabled	125kB; 250kB; 500kB	125kB
Autobaud	If enabled the station automatically senses the baud rate	Enable; Disable	Enable
Connection Mode	Set to UCMM to use unconnected messaging	Predefined M/S Connection; UCMM	Predefined M/S Connection
Quick Connect	Set to enable fast startup connection to DeviceNet (QuickConnect)	Enable; Disable	Disable

Consult the documentation for the DeviceNet configuration tool you are using for details on how to access device parameters via EDS files.

Diagnostics

AIM™ stations provide two LEDs for diagnosing communication problems.

Module Status

- Green: Working properly
- Flashing green: Detecting baud rate
- Flashing red: Input short-circuit

Network Status

- Green: Connection established
- Flashing green: Waiting for connection
- Flashing red: Connection timed out
- Red: Cannot connect

There is an additional LED for each I/O point on the station. This LED indicates:

- Off: Point is off
- Green: Point is on
- Amber: Point is in open circuit state (advanced diagnostic stations only)
- Red: Point is in short-circuit state (advanced diagnostic stations only)

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For SE style (group diagnostic) stations there is also a single bit communicated to the controller for diagnostic purposes. This bit is on if any input on the station is in the short-circuit condition, and off if all inputs are operating normally.

LX style (extended diagnostic) stations indicate the diagnostic status of each I/O point on the station, with an extra bit to indicate if the point is short or open circuited. These diagnostic bits can be disabled via the EDS parameter settings.

Connecting Devices to an AIM Station

AIM stations typically provide a ***eurofast***® (M12) connection for each I/O point. Standard **TURCK** I/O cordsets can be used to connect physical devices in the field to the AIM station. Some AIM stations, specifically those with I/O counts greater than eight total points, connect two signals to each connector. If the signals being connected are on the same physical device (for example a sensor with two outputs), a simple four or five-wire cordset can be used for connection (Figure 1) on the next page.

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	ISS-7	ISS-6	ISS-5	ISS-4	ISS-3	ISS-2	ISS-1	ISS-0
	2	IOS-7	IOS-6	IOS-5	IOS-4	IOS-3	IOS-2	IOS-1	IOS-0
	3	OS-7	OS-6	OS-5	OS-4	OS-3	OS-2	OS-1	OS-0
	4	-	APS	-	-	-	-	-	-
Out	0	O-7	O-6	O-5	O-4	O-3	O-2	O-1	O-0

Extended Diagnostic

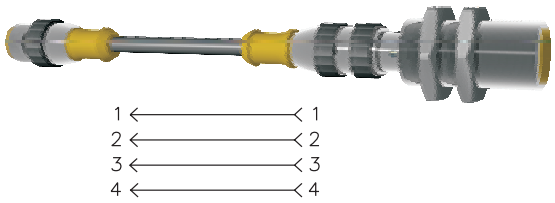
I = Input
O = Output
ISS = Input Short Circuit Status
IOS = Input Open Circuit Status
OS = Output Status
APS = Auxiliary Power Status

If the signals are on two separate devices, a splitter can be used to separate the AIM™ I/O connector into two individual ***eurofast***® connectors. The recommended splitter is wired such that the second signal pin on the AIM station (pin 2) is wired to the default signal pin (pin 4) on the second splitter arm - requiring no special wiring by the user. The splitter is simply plugged into the AIM I/O connector and each arm is plugged into the appropriate I/O devices, as shown (Figure 2).

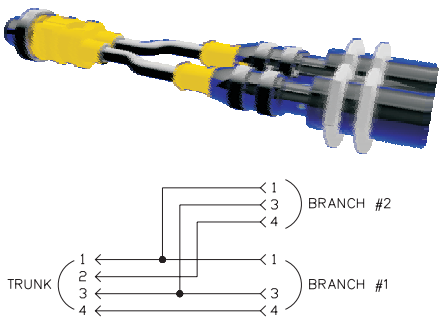
Figure 1

AIM stations provide a wide range of connection options depending on the I/O count and type being used. The user should be aware of the I/O pinout being used.

Figure 2



For one input per connector use standard cordsets, for example RK 4.4T-1-RS 4.4T



For two inputs per connector use a splitter, for example VBRS 4.4-2RK 4T-1/1

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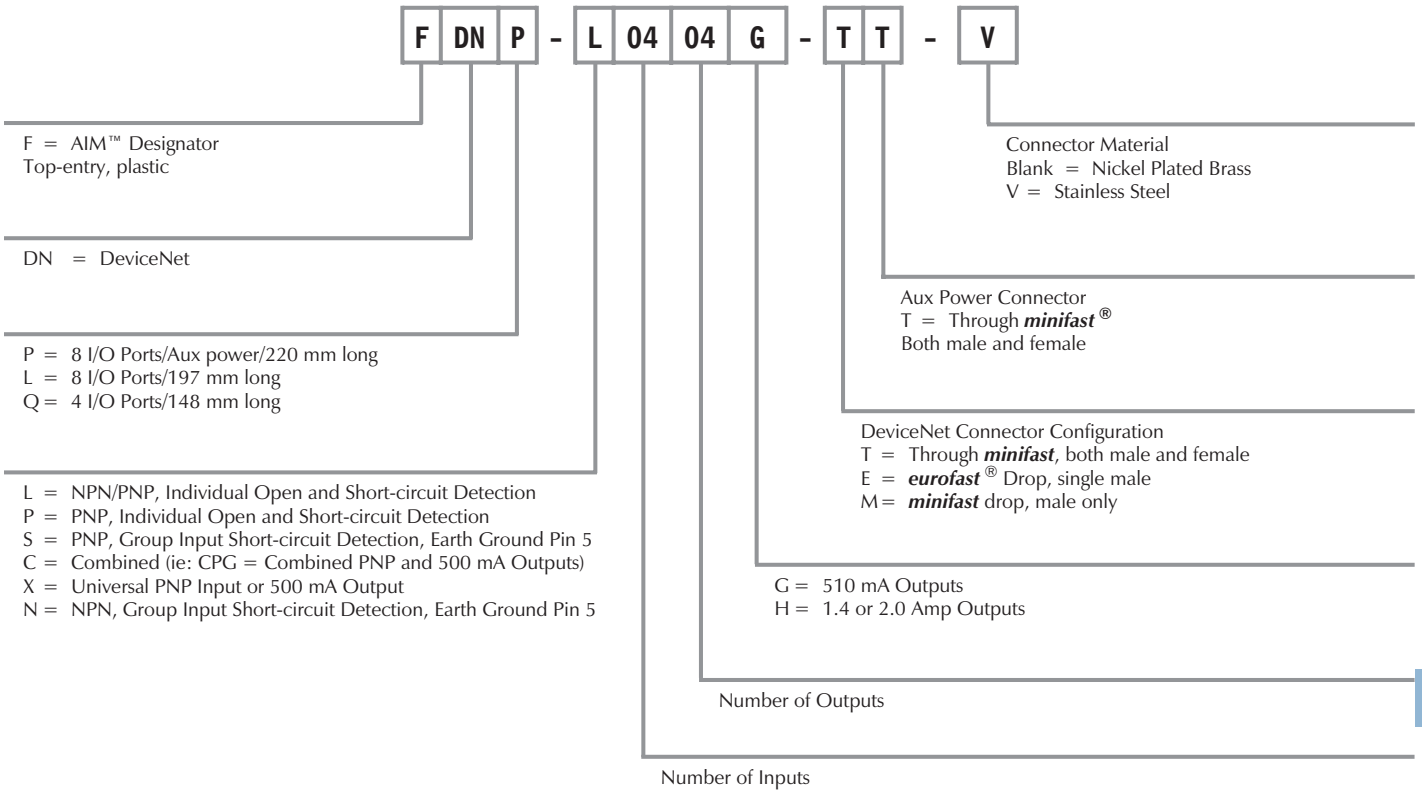
Part Number Key



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Deluxe Input Stations

FDNL-L0800-T
FDNL-L0800-T-V
FDNL-L1600-T
FDNL-L0800-C
FDNL-L1600-C

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Rotary Address Switches**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: ≤100 mA (8-in) or 140 mA (16-in) plus sum of input currents (from DeviceNet)
- Sensor Current: <80 mA per input (from DeviceNet)

Power Distribution

- Inputs: DeviceNet power supply

Mechanical

- Operating Temperature: -25 to +70°C (-13 to +158°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Material

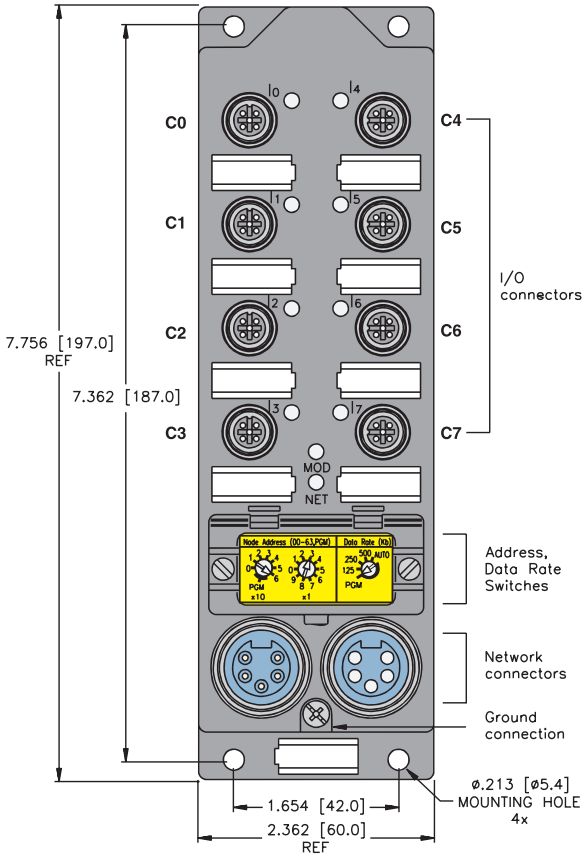
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

Diagnostics (Logical)

- Open/short-circuit status mapped to DeviceNet I/O table, one bit each per I/O point

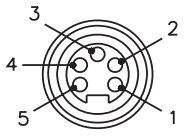
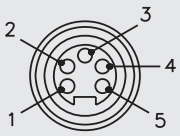
Diagnostics (Physical)

- Individual LED to indicate open/short-circuit for each channel
- LEDs to indicate status of DeviceNet communication



1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

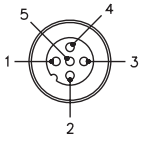
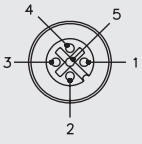
DeviceNet *minifast*® Pinouts

Male	Female
	
5-Pin	5-Pin

FDNL-...-T

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

DeviceNet *eurofast*® Pinouts

Male	Female
	
5-Pin	5-Pin

FDNL-...-C

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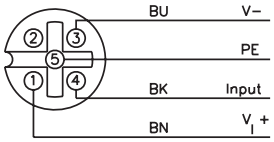
	Inputs								Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNL-L0800-T	8	0-7	L	1	NPN/PNP		X	X	1
FDNL-L0800-T-V	8	0-7	L	1	NPN/PNP		X	X	1
FDNL-L1600-T	16	0-7	2L	2	NPN/PNP		X	X	2
FDNL-L0800-C	8	0-7	L	1	NPN/PNP		X	X	1
FDNL-L1600-C	16	0-7	2L	2	NPN/PNP		X	X	2

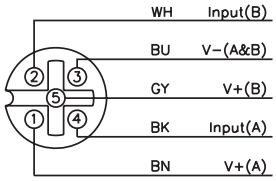
Input Connectors

L



Mating cordset:
RK 4.4T-*-RS 4.4T

2L



Mating cordset:
Sensor with dual outputs:
RK 4.4T-*-RS 4.4T
Two sensors:
RK 4.5T-*-RS 4.5T
Splitter:
VBRS 4.5-2RK 4T-*/*/S818

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	ISS-7	ISS-6	ISS-5	ISS-4	ISS-3	ISS-2	ISS-1	ISS-0
	2	IOS-7	IOS-6	IOS-5	IOS-4	IOS-3	IOS-2	IOS-1	IOS-0

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
	2	ISS-7	ISS-6	ISS-5	ISS-4	ISS-3	ISS-2	ISS-1	ISS-0
	3	ISS-15	ISS-14	ISS-13	ISS-12	ISS-11	ISS-10	ISS-9	ISS-8
	4	IOS-7	IOS-6	IOS-5	IOS-4	IOS-3	IOS-2	IOS-1	IOS-0
	5	IOS-15	IOS-14	IOS-13	IOS-12	IOS-11	IOS-10	IOS-9	IOS-8

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Standard Input Stations

FDNL-S0800-T
FDNL-S1600-T
FDNL-S1600-T-V
FDNL-N0800-T
FDNL-N1600-T
FDNL-S1600-E

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **Rotary Address Switches**
- **Automatic Baud Rate Sensing**

Electrical
- Operating Current: <50 mA plus input currents (from DeviceNet)
- Sensor Current: <700 mA sum of all inputs (from DeviceNet)

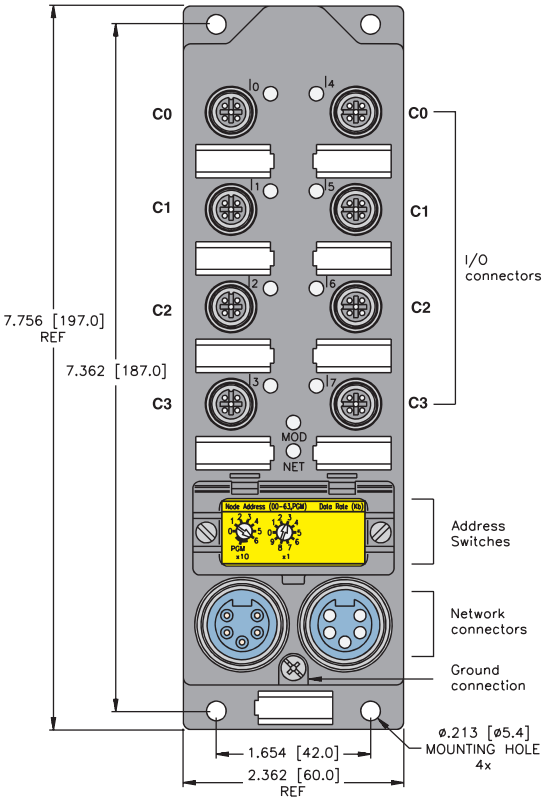
Power Distribution
- Inputs: DeviceNet power supply

Mechanical
- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

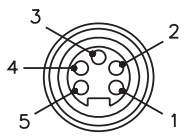
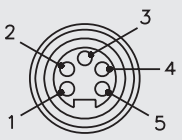
Diagnostics (Logical)
- Open/short-circuit status mapped to DeviceNet I/O table, one bit indicates a fault for all inputs

Diagnostics (Physical)
- One LED indicates a fault for the whole station
- LEDs to indicate status of DeviceNet communication



DeviceNet *minifast* Pinout

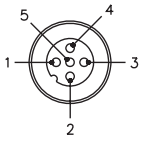
1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

Male	Female
	
5-Pin	5-Pin

FDNL...T

DeviceNet *eurofast*® Pinouts

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

Male

5-Pin

FDNL...E

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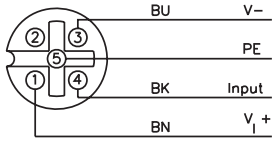
	Inputs								Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNL-S0800-T	8	0-7	S	1	PNP	X			1
FDNL-S1600-T	16	0-7	2S	2	PNP	X			2
FDNL-S1600-T-V	16	0-7	2S	2	PNP	X			2
FDNL-N0800-T	8	0-7	N	1	NPN	X			1
FDNL-N1600-T	16	0-7	2N	2	NPN	X			2
FDNL-S1600-E	16	0-7	2S	2	PNP	X			2

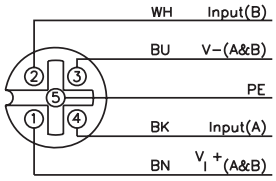
Input Connectors

S



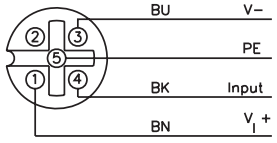
Mating cordset:
RK 4.4T-*-RS 4.4T

2S



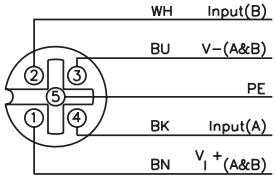
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

N



Mating cordset:
RK 4.4T-*-RS 4.4T

2N



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	IGS	-	-	-	-	-	-	-

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
	2	IGS	-	-	-	-	-	-	-

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Deluxe Input/Output Station

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **Input and Output on Same Connector**
- **Automatic Baud Rate Sensing**

FDNL-CPG88-T

Electrical

- Operating Current: <100 mA plus sum of I/O currents (from DeviceNet)
- Sensor Current: <120 mA per input (from DeviceNet)
- Output Current: <500 mA per output (from DeviceNet)

Power Distribution

- Inputs: DeviceNet power supply
- Outputs: DeviceNet power supply

Mechanical

- Operating Temperature: -25 to +70°C (-13 to +158°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material

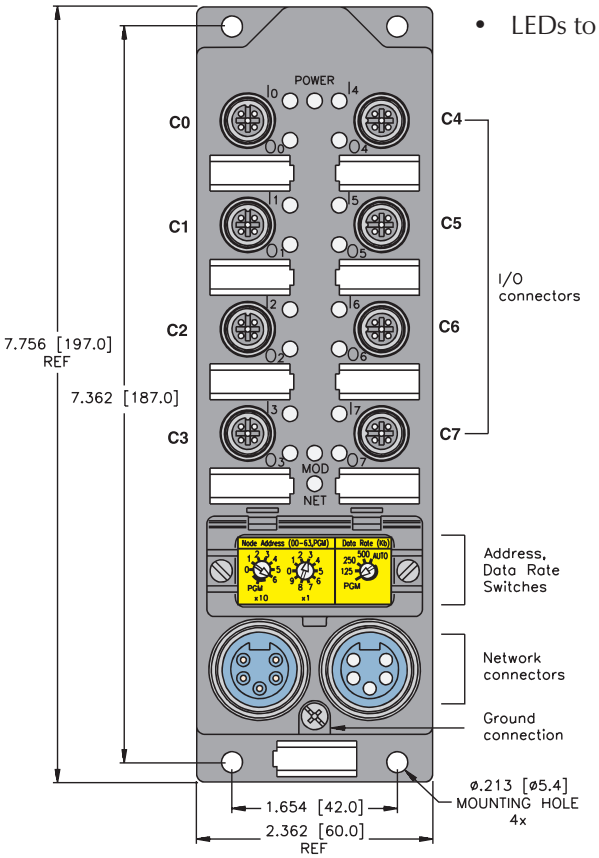
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

Diagnostics (Logical)

- Open/short-circuit status mapped to DeviceNet I/O table, one bit each per I/O point

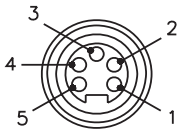
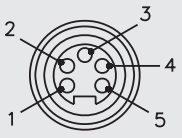
Diagnostics (Physical)

- Individual LED to indicate open/short-circuit for each channel
- LEDs to indicate status of DeviceNet communication



1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

DeviceNet *minifast* Pinout

Male	Female
	
5-Pin	5-Pin

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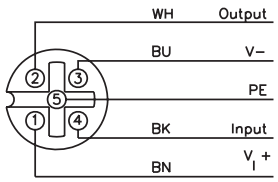
	Inputs								Outputs							Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNL-CPG88-T	8	0-7	C	1	PNP		X	X	8	0-7	C	1	0.5 A	X	X	1

Input/Output Connectors

C



Mating cordset:
RK 4.4T-*-RS 4.4T

Splitter:
VB2-RS 4.4T-1/2RK 4.4T-*/*/S651

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	ISS-7	ISS-6	ISS-5	ISS-4	ISS-3	ISS-2	ISS-1	ISS-0
	2	IOS-7	IOS-6	IOS-5	IOS-4	IOS-3	IOS-2	IOS-1	IOS-0
	3	OS-7	OS-6	OS-5	OS-4	OS-3	OS-2	OS-1	OS-0
	4	-	APS	-	-	-	-	-	-
Out	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0

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Standard Input/Output Station

FDNL-CSG88-T
FDNL-CSG88-T-V

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **Input and Output on Same Connector**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <100 mA plus sum of I/O currents (from DeviceNet)
- Sensor Current: <700 mA sum of all inputs (from DeviceNet)
- Output Current: <500 mA per output (from DeviceNet)

Power Distribution

- Inputs: DeviceNet power supply
- Outputs: DeviceNet power supply

Mechanical

- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material

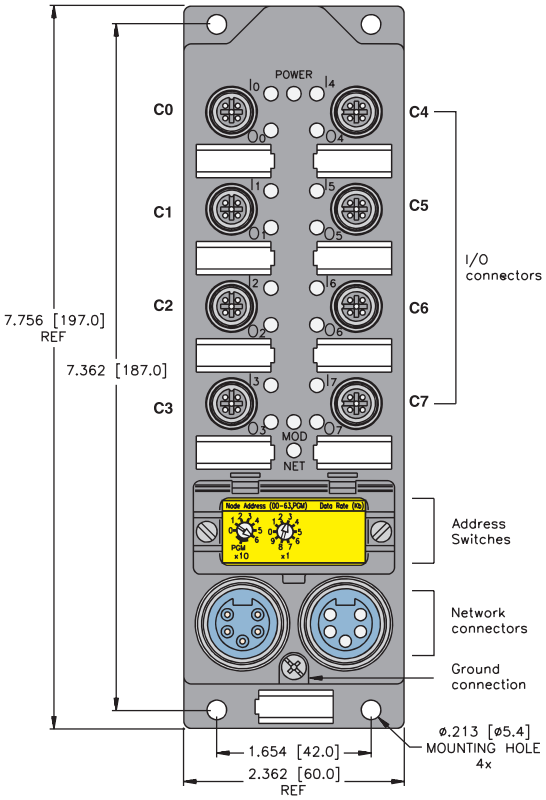
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

Diagnostics (Logical)

- Open/short-circuit status mapped to DeviceNet I/O table, one bit indicates a fault for all inputs, one bit for all outputs

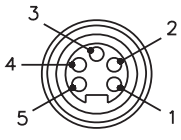
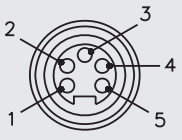
Diagnostics (Physical)

- One LED indicates I/O fault for entire station
- LEDs to indicate status of DeviceNet communication



DeviceNet *minifast* Pinout

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

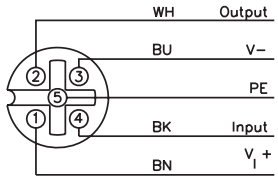
Male	Female
	
5-Pin	5-Pin

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

	Inputs								Outputs							Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNL-CSG88-T	8	0-7	C	1	PNP	X			8	0-7	C	1	0.5 A			1
FDNL-CSG88-T-V	8	0-7	C	1	PNP	X			8	0-7	C	1	0.5 A			1

Input/Output Connectors

C



Mating cordset:
RK 4.4T-*-RS 4.4T

Splitter:
VB2-RS 4.4T-1/2RK 4.4T-*/*/S651

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	IGS	OGS	-	-	-	-	-	-
Out	0	O-7	O-6	O-5	O-4	O-3	O-2	O-1	O-0

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Input/Output Station

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **DeviceNet Powered I/O**
- **Sinking Outputs**

FDNL-SN0808N-C

Electrical

- Operating Current: <75 mA (from DeviceNet)
- Sensor Current: <700 mA sum of all inputs (from DeviceNet)
- Output Current: <500 mA per output (from DeviceNet)

Power Distribution

- Inputs: DeviceNet power supply
- Outputs: DeviceNet power supply

Mechanical

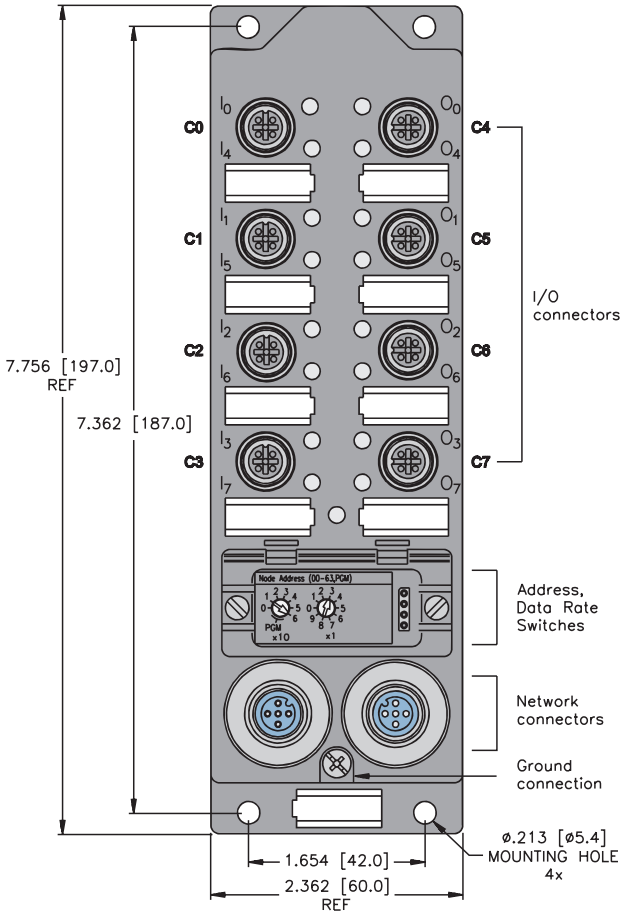
- Operating Temperature: -40 to +70 °C (-40 to +158 °F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material

- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

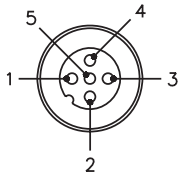
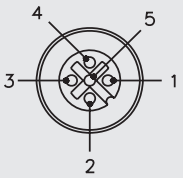
Diagnostics (Physical)

- One LED indicates a fault for the entire station
- LEDs to indicate status of DeviceNet communication



1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

DeviceNet *eurofast* Pinout

Male	Female
	
5-Pin	5-Pin

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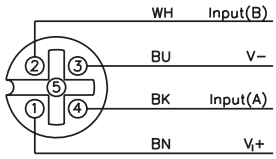
	Inputs								Outputs							Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNL-SNO808N-C	8	0-3	2SN	2	PNP/NPN				8	4-7	2NO	2	0.5 A			1

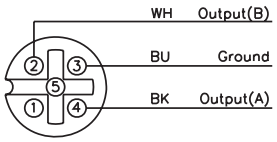
Input/Output Connectors

2SN



Mating cordset:
RK 4.4T-*-RS 4.4T

2NO



Mating cordset:
RK 4.4T-*-RS 4.4T

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	IGS	-	-	-	-	-	-	-
Out	0	O-7	O-6	O-5	O-4	O-3	O-2	O-1	O-0

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Input/Output Station

FDNL-S1204H-0142
FDNL-S1204H-0153

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **DeviceNet Powered I/O**
- **Sinking Outputs**

Electrical

- Operating Current: <75 mA (from DeviceNet)
- Sensor Current: <700 mA sum of all inputs (from DeviceNet)
- Output Current: <500 mA per output (from DeviceNet)

Power Distribution

- Inputs: DeviceNet power supply
- Outputs: DeviceNet power supply

Mechanical

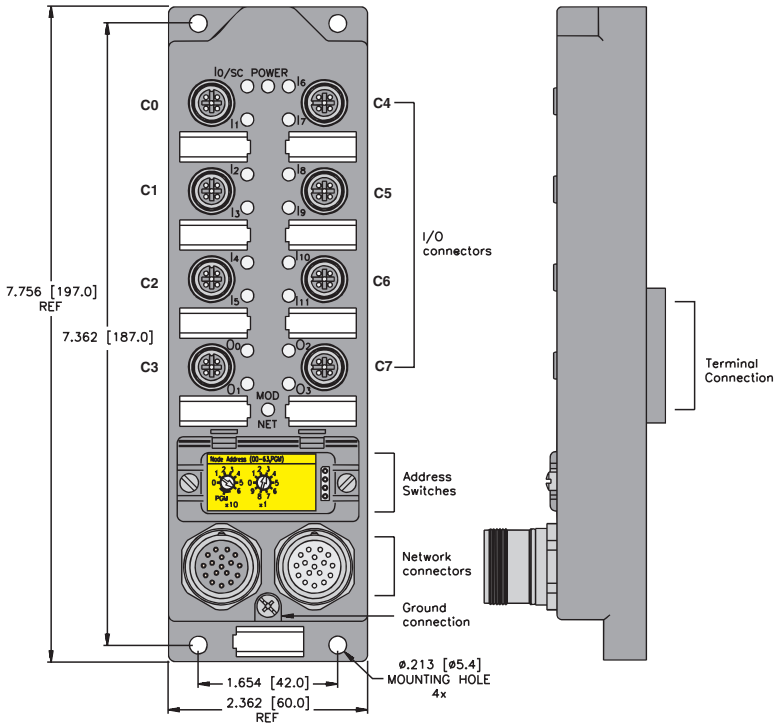
- Operating Temperature: -40 to +70 °C (-40 to +158 °F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material

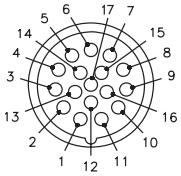
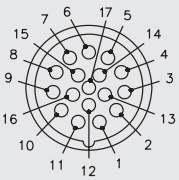
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

Diagnostics (Physical)

- One LED indicates a fault for the entire station
- LEDs to indicate status of DeviceNet communication



DeviceNet *multifast* Pinout

Male	Female
	
17-Pin	**17-Pin**

1 = 0 V, us1
2 = 0 V, US2
3 = +24, US2
4 = +24, US1
5 = PE
6 = *
7 = Us COM
8 = *
9 = KSR2
10 = KSR1
11 = *
12 = Us CAN high
13 = Devnet high
14 = Devnet low
15 = RBST
16 = UL
17 = Us CAN low

* Rear removable terminal present on FDNL-S1204H-0142 only.

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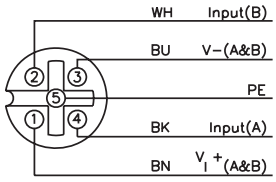
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNL-S1204H-0142	12	0-2 4-6	2S	2	PNP	X			4	3+7	2H	2	2.0 A			1
FDNL-S1204H-0153	12	0-2 4-6	2S	2	PNP	X			4	3+7	2H	2	2.0 A			1

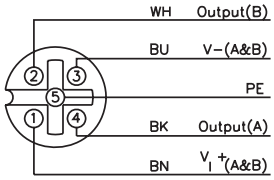
Input/Output Connectors

2S

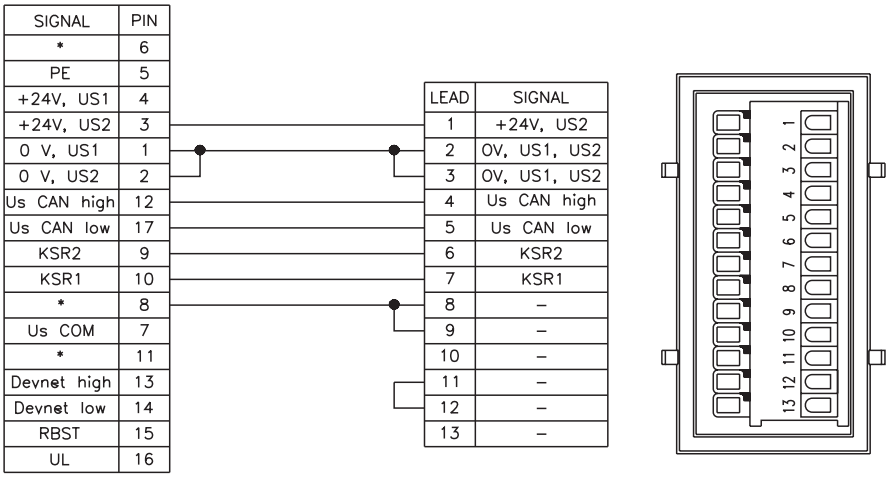


Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter: VBRS 4.4-2RK 4T-*/*

2H



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter: VBRS 4.4-2RK 4T-*/*



Terminal Connection

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	IGS	-	-	-	I-11	I-10	I-9	I-8
Out	0	-	-	-	-	0-3	0-2	0-1	0-0

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Deluxe Input/Output Stations

FDNP-L0404G-TT
FDNP-L0808G-TT
FDNP-L0808H-TT*
FDNP-P0808H-TT*

* Not FM

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **Auxiliary Powered Outputs**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <100 mA (all except ...L0404G... is <140 mA) plus sensor currents (from DeviceNet power)
- Sensor Current: <80 mA per input (from DeviceNet)
- Output Current: See table on facing page

Power Distribution

- Inputs: DeviceNet power supply
- Outputs: Auxiliary power supply

Mechanical

- Operating Temperature: -25 to +70°C (-13 to +158°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material

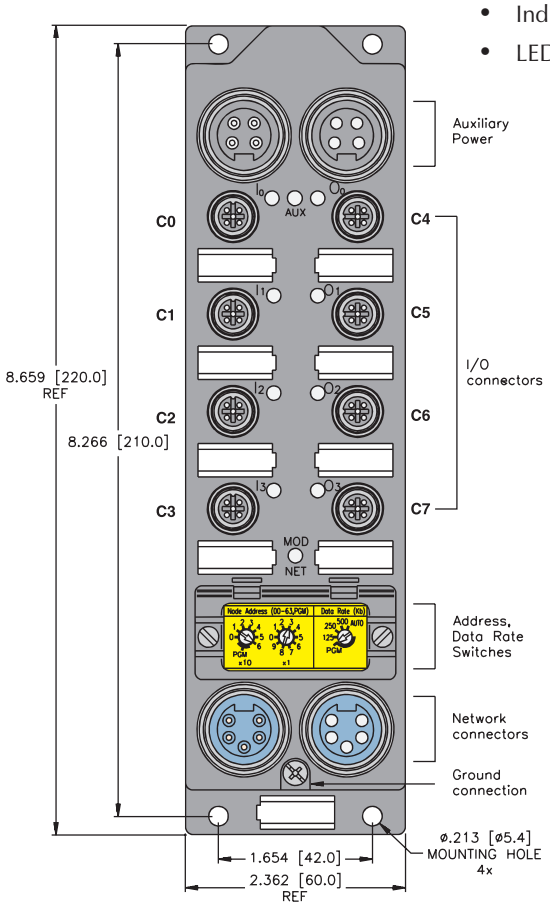
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

Diagnostics (Logical)

- Open/short-circuit status mapped to DeviceNet I/O table, one bit each per I/O point

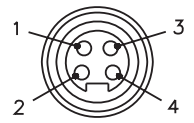
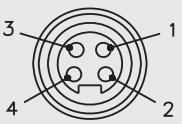
Diagnostics (Physical)

- Individual LED to indicate open/short-circuit for each channel
- LEDs to indicate status of DeviceNet communication



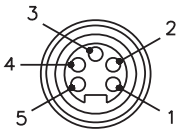
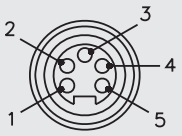
Aux. Power Pinout

1 = V_{aux}+
2 = Pass thru
3 = Pass thru
4 = V_{aux}-

Male	Female
	
4-Pin	4-Pin

DeviceNet *minifast* Pinout

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

Male	Female
	
5-Pin	5-Pin

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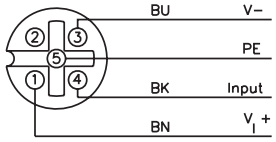
	Inputs								Outputs							Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNP-L0404G-TT	4	0-3	L	1	PNP/NPN		X	X	4	4-7	G	1	0.5 A	X	X	1
FDNP-L0808G-TT	8	0-3	2L	2	PNP/NPN		X	X	8	4-7	2G	2	0.5 A	X	X	2
FDNP-L0808H-TT	8	0-3	2L	2	PNP/NPN		X	X	8	4-7	2H	2	2 A	X	X	2
FDNP-P0808H-TT	8	0-3	2P	2	PNP		X	X	8	4-7	2H	2	2 A	X	X	2

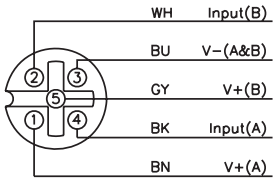
Input/Output Connectors

L



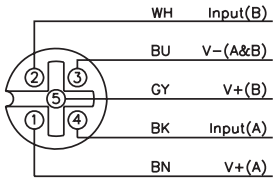
Mating cordset:
RK 4.4T-*-RS 4.4T

2L



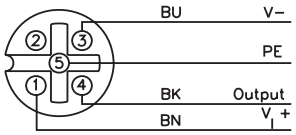
Mating cordset:
Sensor with dual outputs:
RK 4.4T-*-RS 4.4T
Two sensors:
RK 4.5T-*-RS 4.5T
Splitter:
VBRS 4.5-2RK 4T-*/*/S818

2P



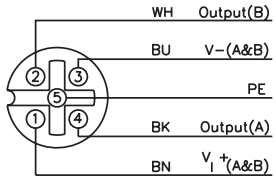
Mating cordset:
Sensor with dual outputs:
RK 4.4T-*-RS 4.4T
Two sensors:
RK 4.5T-*-RS 4.5T
Splitter:
VBRS 4.5-2RK 4T-*/*/S818

G



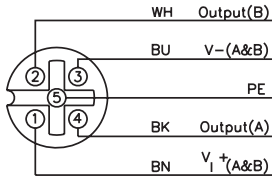
Mating cordset:
RK 4.4T-*-RS 4.4T

2G



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

2H



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	-	-	-	-	I-3	I-2	I-1	I-0
	1	IOS-3	IOS-2	IOS-1	IOS-0	ISS-3	ISS-2	ISS-1	ISS-0
	2	OOS-3	OOS-2	OOS-1	OOS-0	OSS-3	OSS-2	OSS-1	OSS-0
	3	-	APS	-	-	-	-	-	-
Out	0	-	-	-	-	0-3	0-2	0-1	0-0

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	ISS-7	ISS-6	ISS-5	ISS-4	ISS-3	ISS-2	ISS-1	ISS-0
	2	IOS-7	IOS-6	IOS-5	IOS-4	IOS-3	IOS-2	IOS-1	IOS-0
	3	OS-7	OS-6	OS-5	OS-4	OS-3	OS-2	OS-1	OS-0
	4	-	APS	-	-	-	-	-	-
Out	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0

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Deluxe Input/Output Station

FDNP-CPG88-TT

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **Auxiliary Powered I/O**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <30 mA (from DeviceNet)
- Sensor Current: <120 mA per input (from Auxiliary power)
- Output Current: <0.5 A per output (from Auxiliary power)

Power Distribution

- Inputs: Auxiliary power supply
- Outputs: Auxiliary power supply

Mechanical

- Operating Temperature: -25 to +70°C (-13 to +158°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material

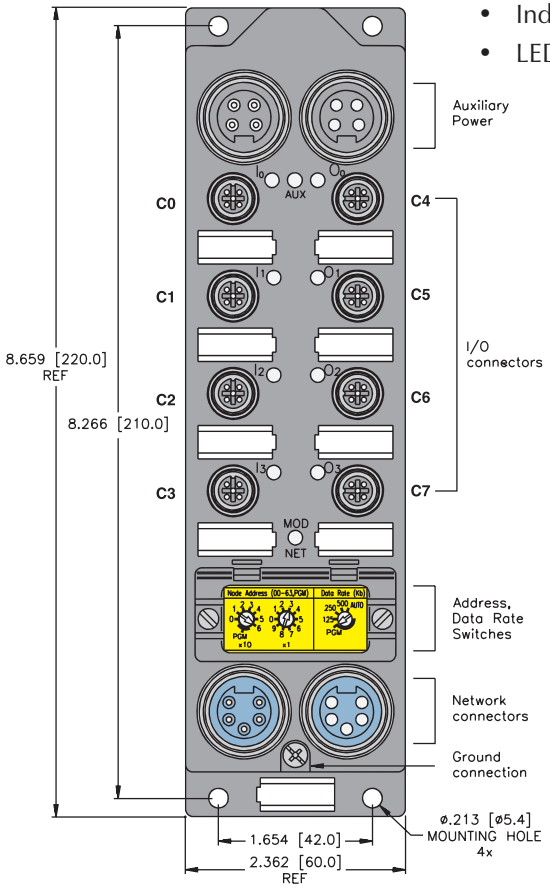
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

Diagnostics (Logical)

- Open/short-circuit status mapped to DeviceNet I/O table, one bit each per I/O point

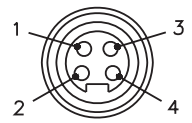
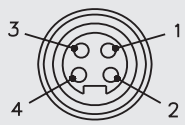
Diagnostics (Physical)

- Individual LED to indicate open/short-circuit for each channel
- LEDs to indicate status of DeviceNet communication



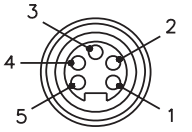
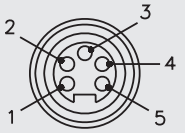
Aux. Power Pinout

1 = V_{aux}+
2 = Pass thru
3 = Pass thru
4 = V_{aux}-

Male	Female
	
4-Pin	4-Pin

DeviceNet *minifast* Pinout

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

Male	Female
	
5-Pin	5-Pin

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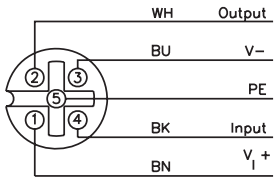
	Inputs								Outputs							Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNP-CPG88-TT	8	0-7	C	1	PNP		X	X	8	0-7	C	1	0.5 A	X	X	1

Input/Output Connectors

C



Mating cordset:
RK 4.4T-*-RS 4.4T

Splitter:
VB2-RS 4.4T-1/2RK 4.4T-*/*/S651

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	ISS-7	ISS-6	ISS-5	ISS-4	ISS-3	ISS-2	ISS-1	ISS-0
	2	IOS-7	IOS-6	IOS-5	IOS-4	IOS-3	IOS-2	IOS-1	IOS-0
	3	OS-7	OS-6	OS-5	OS-4	OS-3	OS-2	OS-1	OS-0
	4	-	APS	-	-	-	-	-	-
Out	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0

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Standard Output Stations

FDNP-S0008G-TT
FDNP-S0008G-TT-V
FDNP-S0008H-TT*
FDNP-S0016N-TT-0200*
*Not FM

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **Auxiliary Powered Outputs**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <140 mA (FDNP...G-TT), <50 mA (FDNP...H-TT), <75 mA (FDNP...0200) (from DeviceNet)
- Output Current: see table on facing page (from aux. power)

Power Distribution

- Outputs: Auxiliary power supply

Mechanical

- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material

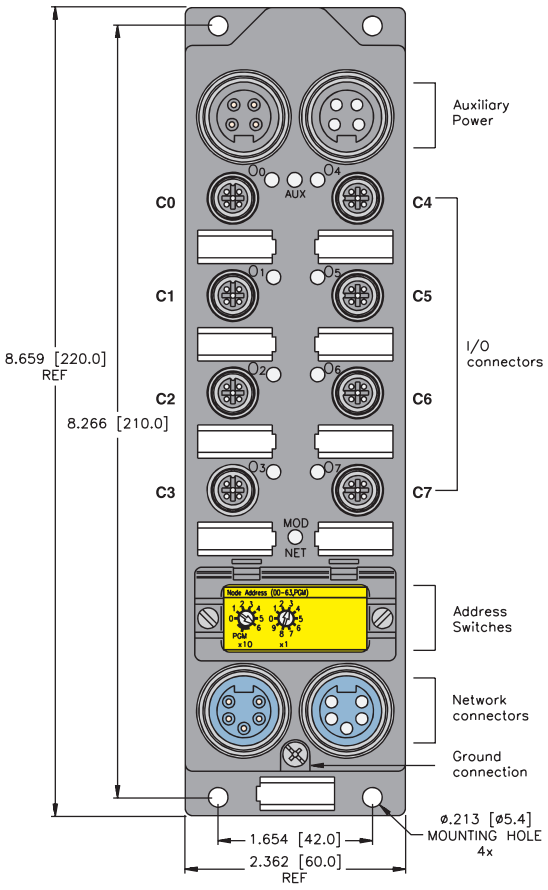
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

Diagnostics (Logical)

- short-circuit status mapped to DeviceNet I/O table, one bit per each I/O point (except FDNP...0200 has no diagnostic data)

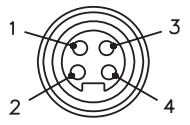
Diagnostics (Physical)

- Individual LED to indicate open/short-circuit for each channel (except FDNP...0200 has one LED indicating a short for all I/O points)



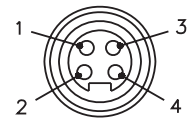
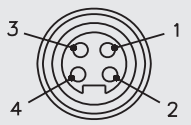
Aux. Power Pinout

1 = V_{AUX}+
2 = Pass thru
3 = Pass thru
4 = V_{AUX}-

Male	Female
	
4-Pin	4-Pin

FDNP...TT

Aux. Power Pinout

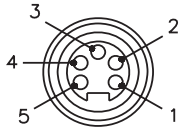
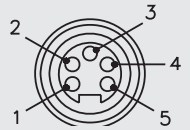
Male	Female
	
4-Pin	4-Pin

1 = V_{AUX}+
2 = V_{IN}+
3 = V_{IN}-
4 = V_{AUX}-

FDNP...0200

DeviceNet *minifast* Pinout

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

Male	Female
	
5-Pin	5-Pin

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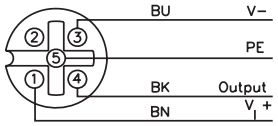
	Outputs							Data
Part Number	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNP-S0008G-TT	8	0-7	G	1	0.5 A	X		1
FDNP-S0008G-TT-V	8	0-7	G	1	0.5 A	X		1
FDNP-S0008H-TT	8	0-7	H	1	1.4 A	X		1
FDNP-S0016N-TT-0200	16	0-7	2GN	2	0.5 A			2

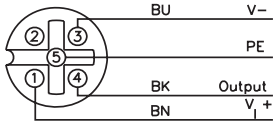
Output Connectors

G



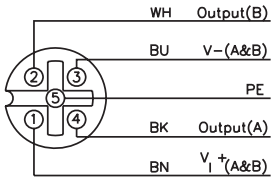
Mating cordset:
RK 4.4T-*-RS 4.4T

H



Mating cordset:
RK 4.4T-*-RS 4.4T

2GN



Mating cordset:
RK 4.4T-*-RS 4.4T

Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	OS-7	OS-6	OS-5	OS-4	OS-3	OS-2	OS-1	OS-0
Out	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0
	1	0-15	0-14	0-13	0-12	0-11	0-10	0-9	0-8

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Standard Input Station

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **Auxiliary Powered Inputs**
- **Automatic Baud Rate Sensing**

FDNP-N1600-TT-0197

Electrical
- Operating Current: <20 mA (from DeviceNet)
- Sensor Current: <700 mA total of all inputs (from V_{IN} power)

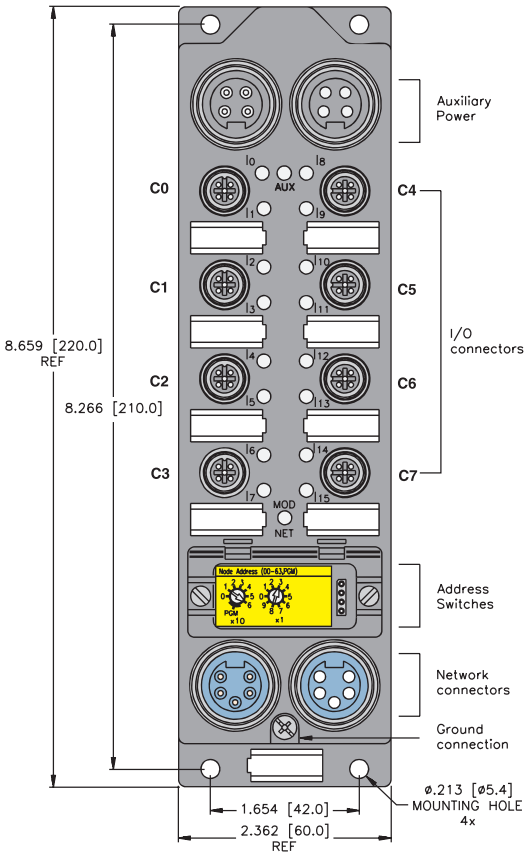
Power Distribution
- Inputs: Auxiliary (V_{IN}) power supply

Mechanical
- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

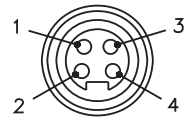
Diagnostics (Logical)
- No diagnostic data

Diagnostics (Physical)
- One LED indicates a fault for the entire station
- LEDs to indicate status of DeviceNet communication



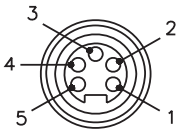
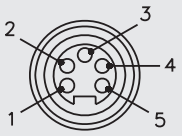
Aux. Power Pinout

1 = V_{AUX}+
2 = V_{IN}+
3 = V_{IN}-
4 = V_{AUX}-

Male	Female
	
4-Pin	4-Pin

DeviceNet *minifast* Pinout

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

Male	Female
	
5-Pin	5-Pin

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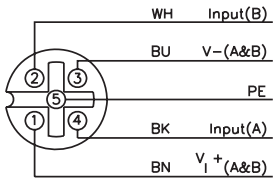
	Inputs								Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNP-N1600-TT-0197	16	0-7	2S	2	NPN				1

Input Connectors

2S



Mating cordset:
RK 4.4T-*-RS 4.4T

Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8

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DeviceNet™

Standard Input/Output Stations

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **Auxiliary Powered**
- **Automatic Baud Rate Sensing**

FDNP-S0404G-TT
FDNP-S0808G-TT
FDNP-CSG88-TT
FDNP-XSG16-TT
FDNP-S1204H-TT-0149*

* Not FM Approved

Electrical

- Operating Current: <75 mA plus applicable input currents (from DeviceNet)
- Sensor Current: <700 mA total (from DeviceNet except FDNP-CSG… and FDNP-XSG...) per input
- Output Current: See table on facing page

Power Distribution

- Inputs: DeviceNet power supply (except FDNP-CSG… and FDNP-XSG… from Auxiliary supply)
- Outputs: Auxiliary power supply

Mechanical

- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material

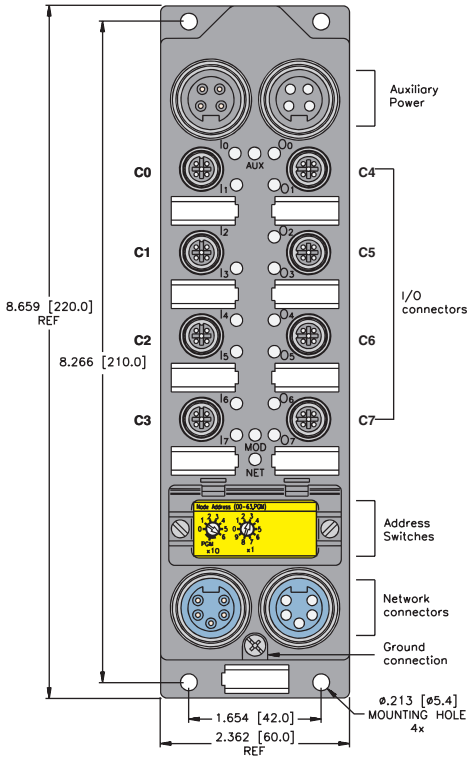
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

Diagnostics (Logical)

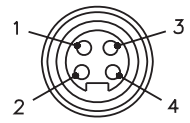
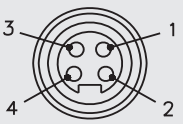
- Open/short-circuit status mapped to DeviceNet I/O table, one bit indicates fault for entire station (FDNP-CSG88-TT maps one bit for all inputs and one bit for each output point)

Diagnostics (Physical)

- One LED indicates fault for entire station
- LEDs to indicate status of DeviceNet communication

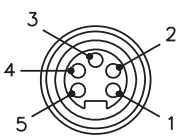
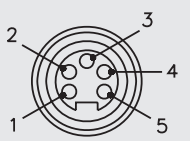


Aux. Power Pinout

Male	Female
	
4-Pin	4-Pin

1 = V_{AUX}+
2 = Pass thru
3 = Pass thru
4 = V_{AUX}-

DeviceNet *minifast* Pinout

Male	Female
	
5-Pin	5-Pin

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

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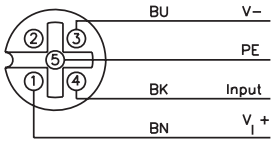
Part Number	Inputs								Outputs							Data
	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNP-S0404G-TT	4	0-3	S	1	PNP	X			4	4-7	G	1	0.5 A			1
FDNP-S0808G-TT	8	0-3	2S	2	PNP	X			8	4-7	2G	2	0.5 A			2
FDNP-CSG88-TT	8	0-7	C	1	PNP	X			8	0-7	C	1	0.5 A	X		5
FDNP-XSG16-TT	16	0-7	2X	2	PNP	X			16	0-7	2X	2	0.5 A			4
FDNP-S1204H-TT-0149	12	0-2, 4-6	2S	2	PNP	X			4	3, 7	2H	2	1.4 A			3

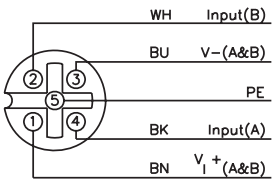
Input/Output Connectors

S



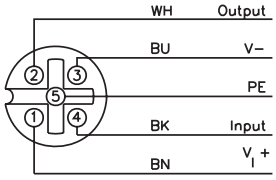
Mating cordset:
RK 4.4T-*-RS 4.4T

2S



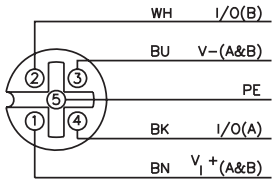
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter: VBRS 4.4-2RK 4T-*/*

C



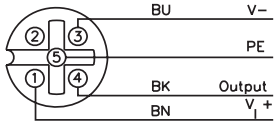
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter: VB2-RS 4.4T-1/2RK 4.4T-*/*/S651

2X



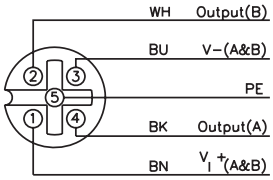
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter: VBRS 4.4-2RK 4T-*/*

G



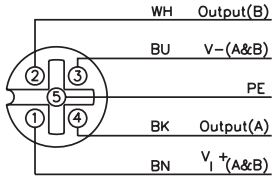
Mating cordset:
RK 4.4T-*-RS 4.4T

2G



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter: VBRS 4.4-2RK 4T-*/*

2H



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter: VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	IGS	OGS	-	-	I-3	I-2	I-1	I-0
Out	0	-	-	-	-	0-3	0-2	0-1	0-0

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	IGS	OGS	-	-	-	-	-	-
Out	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0

I/O Data Map 3

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	IGS	OGS	-	-	I-11	I-10	I-9	I-8
Out	0	-	-	-	-	0-3	0-2	0-1	0-0

I/O Data Map 4

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
	2	IGS	OGS						
Out	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0
	1	0-15	0-14	0-13	0-12	0-11	0-10	0-9	0-8

I/O Data Map 5

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	OS-7	OS-6	OS-5	OS-4	OS-3	OS-2	OS-1	OS-0
	2	IGS	-	-	-	-	-	-	-
Out	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0

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DeviceNet™

Deluxe Input/Output Station

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **Auxiliary Powered Outputs**
- **Automatic Baud Rate Sensing**

FDNP-P1204G-TT

Electrical

- Operating Current: <100 mA plus sum of input currents (from DeviceNet)
- Sensor Current: <80 mA per input (from DeviceNet)
- Output Current: <0.5 A per output (from Auxiliary power)

Power Distribution

- Inputs: DeviceNet power supply
- Outputs: Auxiliary power supply

Mechanical

- Operating Temperature: -25 to +70°C (-13 to +158°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material

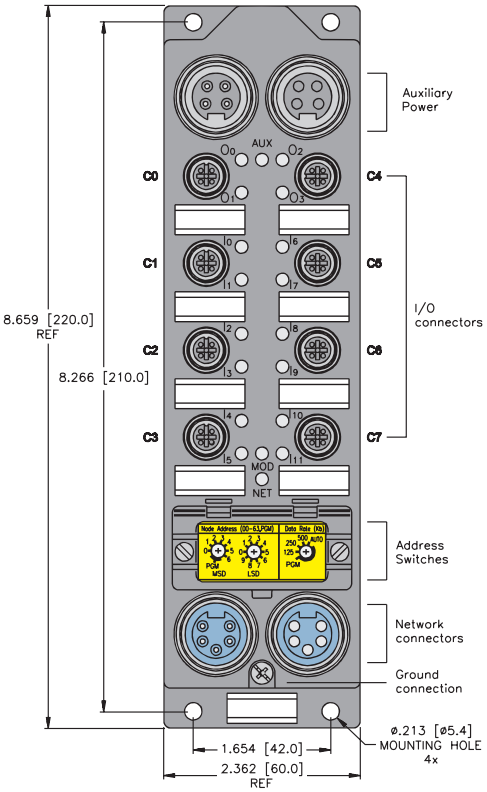
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

Diagnostics (Logical)

- Open/short-circuit status mapped to DeviceNet I/O table, one bit for each I/O point

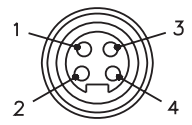
Diagnostics (Physical)

- Individual LED to indicate open/short-circuit for each channel
- LEDs to indicate status of DeviceNet communication



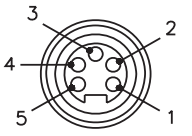
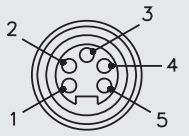
1 = V_{AUX}+
2 = pass thru
3 = pass thru
4 = V_{AUX}-

Aux. Power Pinout

Male	Female
	
4-Pin	4-Pin

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

DeviceNet *minifast* Pinout

Male	Female
	
5-Pin	5-Pin

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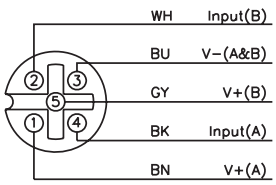
	Inputs									Outputs						Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNP-P1204G-TT	12	0-2, 4-6	2P	2	PNP		X	X	4	3, 7	2G	2	0.5 A	X	X	1

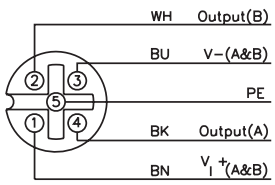
Input/Output Connectors

2P



Mating cordset:
Sensor with dual outputs:
RK 4.4T-*-RS 4.4T
Two sensors:
RK 4.5T-*-RS 4.5T
Splitter:
VBRS 4.5-2RK 4T-*/*/S818

2G



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	-	APS	-	-	I-11	I-10	I-9	I-8
	2	ISS-7	ISS-6	ISS-5	ISS-4	ISS-3	ISS-2	ISS-1	ISS-0
	3	OSS-3	OSS-2	OSS-1	OSS-0	ISS-11	ISS-10	ISS-9	ISS-8
	4	IOS-7	IOS-6	IOS-5	IOS-4	IOS-3	IOS-2	IOS-1	IOS-0
	5	OOS-3	OOS-2	OOS-1	OOS-0	IOS-11	IOS-10	IOS-9	IOS-8
Out	0	-	-	-	-	0-3	0-2	0-1	0-0

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DeviceNet™

Standard Input/Output Stations

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **Screw Terminal Connections**
- **Automatic Baud Rate Sensing**

FDNP-S0808G-ST
FDNP-XSG16-ST

Electrical

- Operating Current: <75 mA from DeviceNet (for ...S0808G… add input currents)
- Sensor Current: <700 mA total of all inputs (...S0808G… From DeviceNet, ...XSG16… from aux. Power)
- Output Current: <500 mA per output (from aux. power)

Power Distribution

- Inputs: ...S0808G… from DeviceNet power supply, ...XSG16… From Auxiliary power supply
- Outputs: Auxiliary power supply

Mechanical

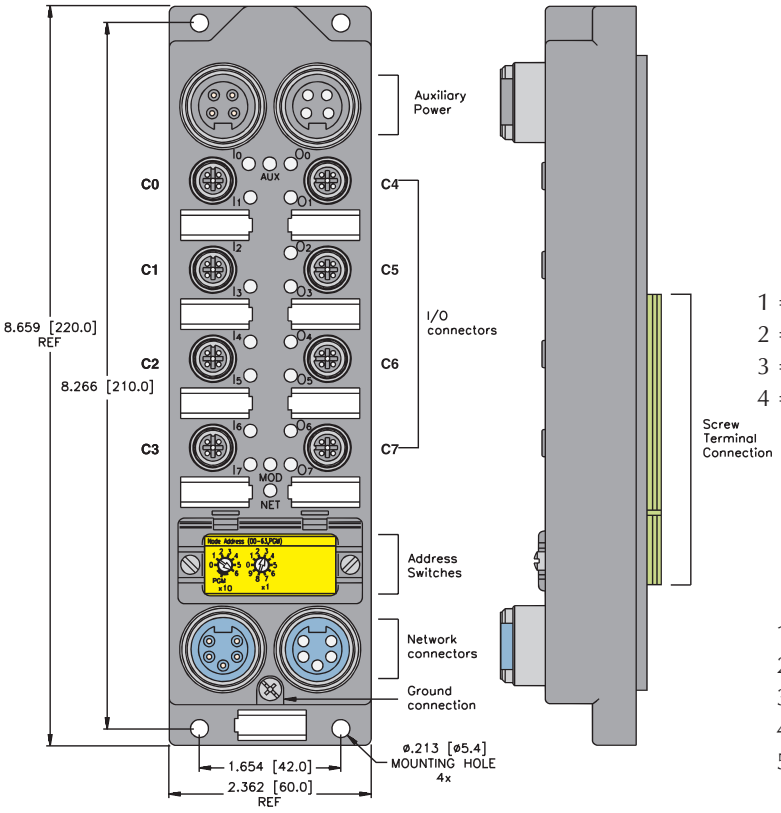
- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material

- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

Diagnostics (Logical)

- Open/short-circuit status mapped to DeviceNet I/O table, one bit indicates a fault for the entire station

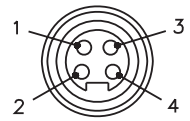


Diagnostics (Physical)

- One LED indicates an I/O fault for the entire station
- LEDs to indicate status of DeviceNet communication

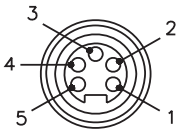
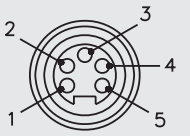
Aux. Power Pinout

1 = V_{AUX}+
2 = pass thru
3 = pass thru
4 = V_{AUX}-

Male	Female
	
4-Pin	4-Pin

DeviceNet *minifast* Pinout

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

Male	Female
	
5-Pin	5-Pin

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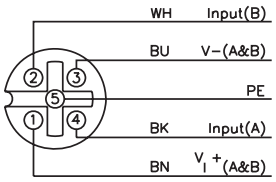
	Inputs								Outputs							Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNP-S0808G-ST	8	0-3	2S, ST1	2	PNP	X			8	4-7	2G, ST1	2	0.5 A			1
FDNP-XSG16-ST	16	0-7	2X, ST2	2	PNP	X			16	0-7	2X ST2	2	0.5 A			2

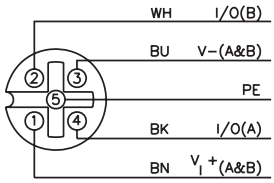
Input/Output Connectors

2S



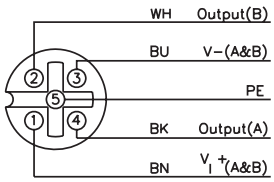
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

2X



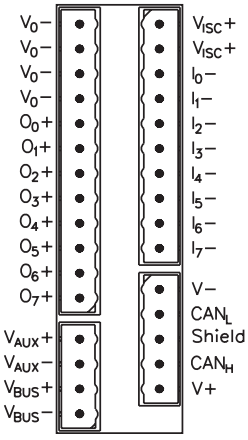
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

2G



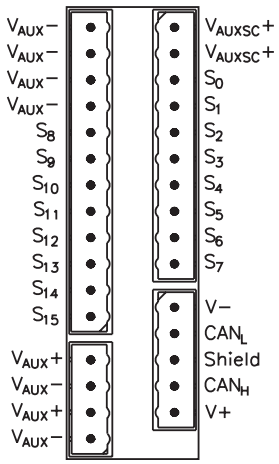
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

ST1



NOTE: V_{ISC} is from DeviceNet power supply.
V_O is from Auxiliary power supply.

ST2



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	IGS	OGS	-	-	-	-	-	-
Out	0	O-7	O-6	O-5	O-4	O-3	O-2	O-1	O-0

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
	2	IGS	OGS	-	-	-	-	-	-
Out	0	O-7	O-6	O-5	O-4	O-3	O-2	O-1	O-0
	1	O-15	O-14	O-13	O-12	O-11	O-10	O-9	O-8

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Standard Input Stations

FDNQ-S0200-T*
FDNQ-S0400-T
FDNQ-S0800-T
FDNQ-S0400-C

* Not FM Approved

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **Compact Housing**
- **Automatic Baud Rate Sensing**

Electrical
- Operating Current: <75 mA plus total of input currents (from DeviceNet)
- Sensor Current: <700 mA sum of all inputs (from DeviceNet)

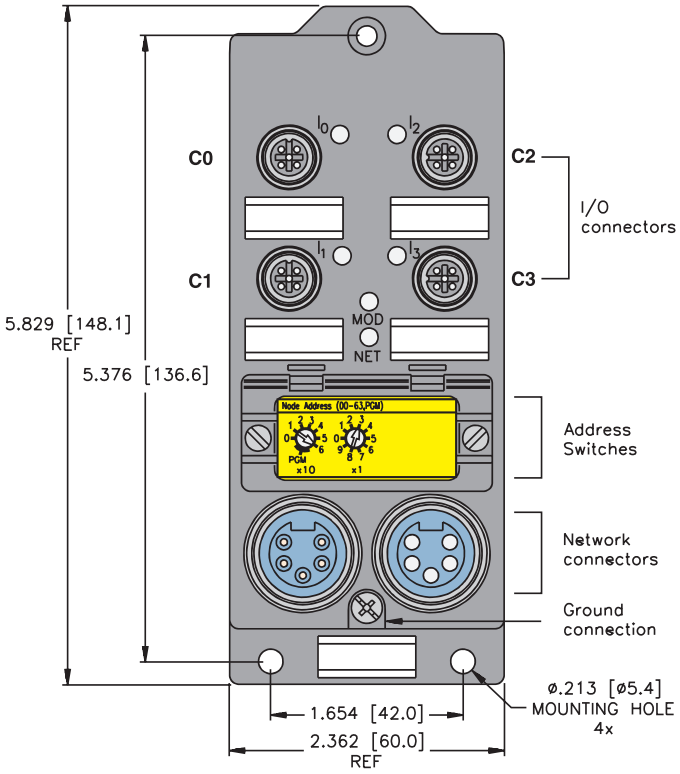
Power Distribution
- Inputs: DeviceNet power supply

Mechanical
- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

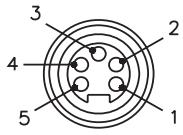
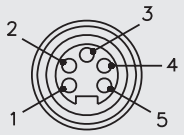
Diagnostics (Logical)
- Open/short-circuit status mapped to DeviceNet I/O table, one bit indicates fault for entire station

Diagnostics (Physical)
- One LED indicates fault for entire station
- LEDs to indicate status of DeviceNet communication



DeviceNet *minifast* Pinout

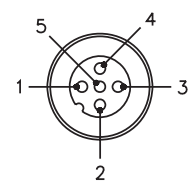
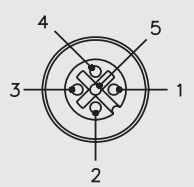
1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

Male	Female
	
5-Pin	5-Pin

FDNQ...T

DeviceNet *eurofast* Pinout

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

Male	Female
	
5-Pin	5-Pin

FDNQ...C

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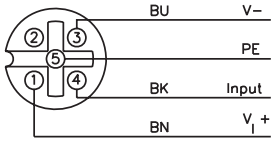
	Inputs								Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNQ-S0200-T	2	0,2	S	1	PNP	X			3
FDNQ-S0400-T	4	0-3	S	1	PNP	X			1
FDNQ-S0800-T	8	0-3	2S	2	PNP	X			2
FDNQ-S0400-C	4	0-3	S	1	PNP	X			1

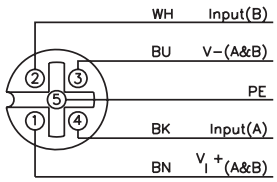
Input Connectors

S



Mating cordset:
RK 4.4T-*-RS 4.4T

2S



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

In	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	IGS	-	-	-	I-3	I-2	I-1	I-0

I/O Data Map 2

In	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	IGS	-	-	-	-	-	-	-

I/O Data Map 3

In	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	IGS	-	-	-	-	-	I-1	I-0

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Standard Output Station

FDNQ-S0002G-T

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **Compact Housing**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <75 mA plus total of all output currents (from DeviceNet)
- Output Current: <500 mA per output (from DeviceNet)

Power Distribution

- Outputs: DeviceNet power supply

Mechanical

- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material

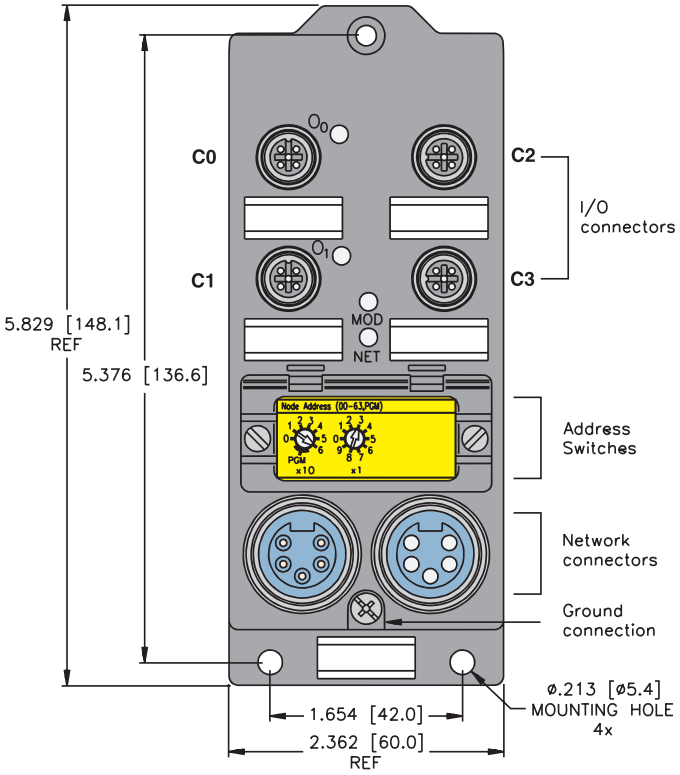
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

Diagnostics (Logical)

- Open/short-circuit status mapped to DeviceNet I/O table, one bit each per I/O point

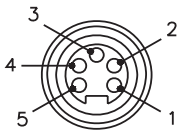
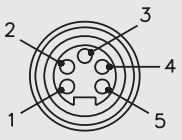
Diagnostics (Physical)

- Individual LED to indicate open/short-circuit for each channel
- LEDs to indicate status of DeviceNet communication



1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

DeviceNet *minifast* Pinout

Male	Female
	
5-Pin	5-Pin

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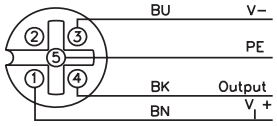
	Outputs							Data
Part Number	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNQ-S0002G-T	2	0, 2	G	1	0.5 A	X		1

Output Connectors

G



Mating cordset:
RK 4.4T-*-RS 4.4T

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	-	-	-	-	-	-	OS-1	OS-0
Out	0	-	-	-	-	-	-	O-1	O-0

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Standard Input/Output Stations

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **DeviceNet Powered I/O**
- **Compact Housing**

FDNQ-S0201G-T*
FDNQ-CSG44-T
FDNQ-S0404G-T
FDNQ-XSG08-T
FDNQ-CSG44-E

* Not CSA Approved

Electrical

- Operating Current: <75 mA plus total of all I/O current (from DeviceNet)
- Sensor Current: <700 mA total of all inputs (from DeviceNet)

Power Distribution

- Inputs: DeviceNet power supply
- Outputs: DeviceNet power supply

Mechanical

- Operating Temperature: -40 to +70 °C (-40 to +158 °F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material

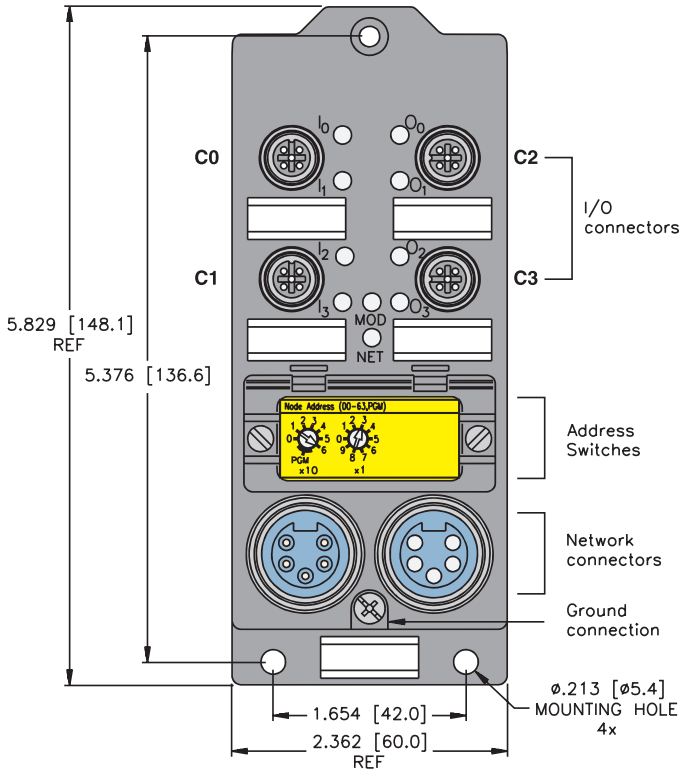
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

Diagnostics (Logical)

- Open/short-circuit status mapped to DeviceNet I/O table, one bit indicates fault for entire station (...S0201G-T has one dedicated bit to indicate a fault for the output point as well)

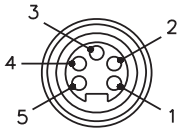
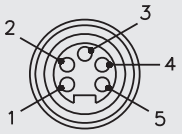
Diagnostics (Physical)

- One LED indicates fault for entire station
- LEDs to indicate status of DeviceNet communication



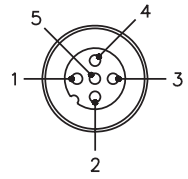
1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

DeviceNet *minifast* Pinout

Male	Female
	
5-Pin	5-Pin

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

DeviceNet Pinout

eurofast Male

5-Pin

FDNQ...-E

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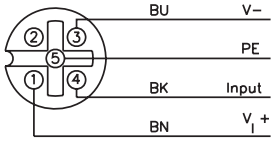
Part Number	Inputs								Outputs							Data
	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNQ-S0201G-T	2	0	2S	2	PNP	X			1	1	G	1	0.5 A	X		1
FDNQ-CSG44-T	4	0-3	C	1	PNP	X			4	0-3	C	1	0.5 A			2
FDNQ-S0404G-T	4	0-1	2S	2	PNP	X			4	2-3	2G	2	0.5 A			2
FDNQ-XSG08-T	8	0-3	2X	2	PNP	X			8	0-3	2X	2	0.5 A			3
FDNQ-CSG44-E	4	0-3	C	1	PNP	X			4	0-3	C	1	0.5 A			2

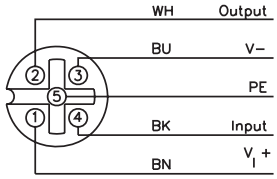
Input/Output Connectors

S



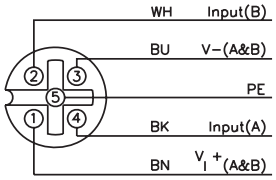
Mating cordset:
RK 4.4T-*-RS 4.4T

C



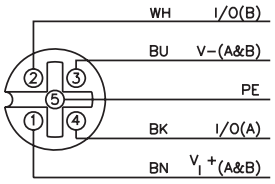
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VB2-RS 4.4T-1/2RK 4.4T-*/*/S651

2S



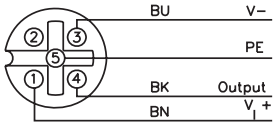
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

2X



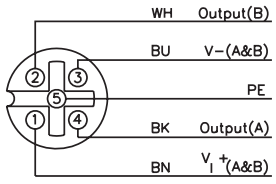
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

G



Mating cordset:
RK 4.4T-*-RS 4.4T

2G



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	IGS	-	-	-	-	OS-0	I-1	I-0
Out	0	-	-	-	-	-	-	-	O-0

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	IGS	OGS	-	-	I-3	I-2	I-1	I-0
Out	0	-	-	-	-	O-3	O-2	O-1	O-0

I/O Data Map 3

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	IGS	OGS	-	-	-	-	-	-
Out	0	O-7	O-6	O-5	O-4	O-3	O-2	O-1	O-0

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Standard Input/Output Station

FDNQ-S0404G-MM

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **Auxiliary Powered Outputs**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <75 mA plus total of input currents (from DeviceNet)
- Sensor Current: <700 mA total of all inputs (from DeviceNet)
- Output Current: <500 mA per output (from Auxiliary power)

Power Distribution

- Inputs: DeviceNet power supply
- Outputs: Auxiliary power supply

Mechanical

- Operating Temperature: -25 to +70°C (-13 to +158°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material

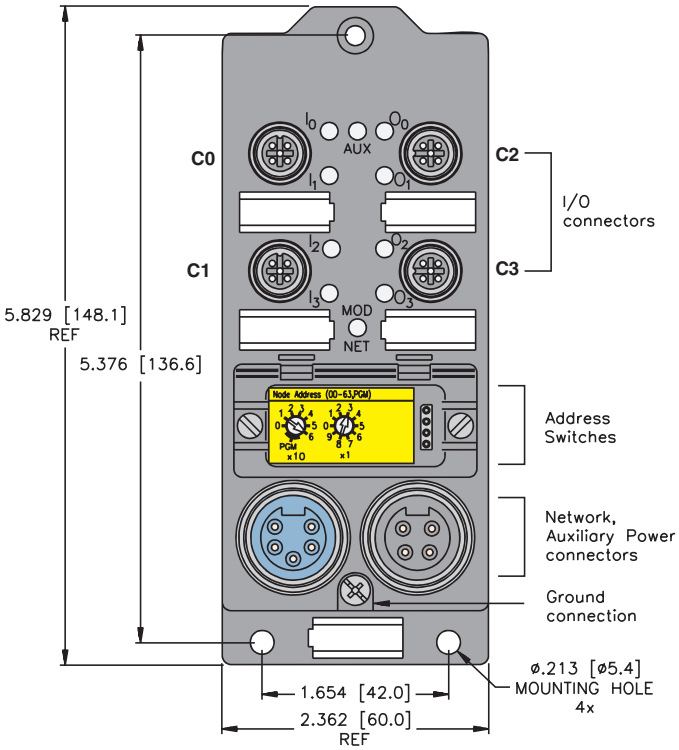
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

Diagnostics (Logical)

- Open/short-circuit status mapped to DeviceNet I/O table, one bit indicates fault for entire station

Diagnostics (Physical)

- One LED indicates a fault for the entire station
- LEDs to indicate status of DeviceNet communication



Aux. Power Pinout

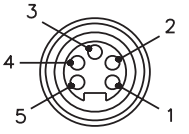
minifast Male

4-Pin

1 = V_{AUX}+
2 = NC
3 = NC
4 = V_{AUX}-

DeviceNet Pinout

minifast Male



5-Pin

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

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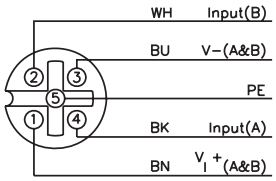
	Inputs								Outputs							Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNQ-S0404G-MM	4	0-1	2S	2	PNP	X			4	2-3	2G	2	0.5 A	X		1

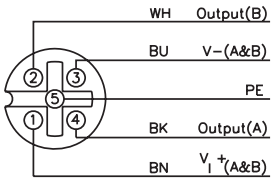
Input/Output Connectors

2S



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

2G



Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	IGS	OGS	-	-	I-3	I-2	I-1	I-0
Out	0	-	-	-	-	O-3	O-2	O-1	O-0

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Analog Input Station

FDNQ-4AI-I-T

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **Compact Housing**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <100 mA plus sum of input currents (from DeviceNet)
- Sensor Current: 0-20 mA or 4-20 mA analog signal (16-bit signed integer). The 0-20 mA or 4-20 mA range can be adjusted via rotary switch on front of station.

Power Distribution

- Inputs: DeviceNet power supply

Mechanical

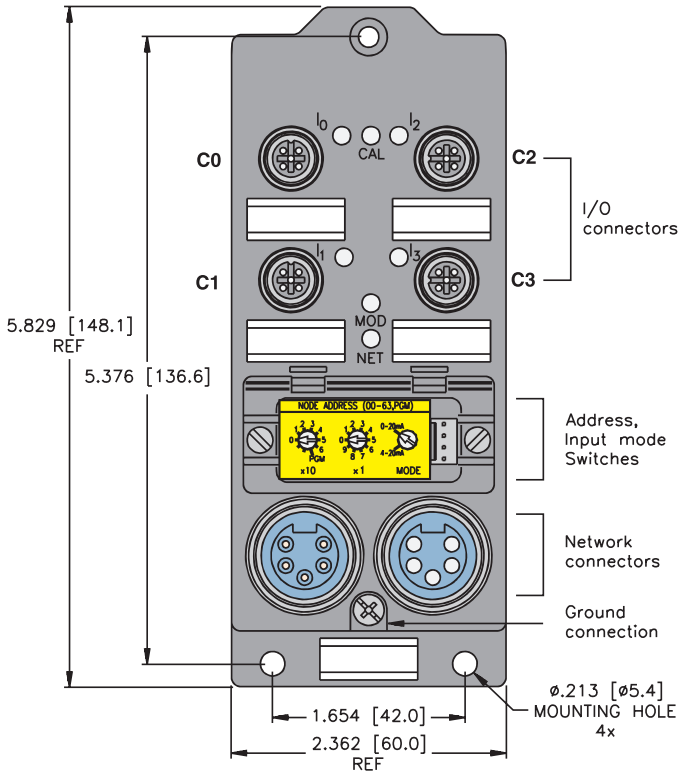
- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material

- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

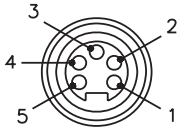
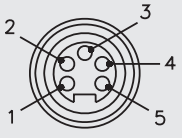
Diagnostics (Physical)

- LEDs to indicate status of DeviceNet communication



1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

DeviceNet *minifast* Pinout

Male	Female
	
5-Pin	5-Pin

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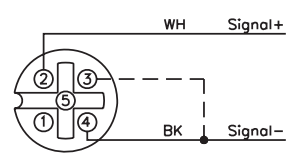
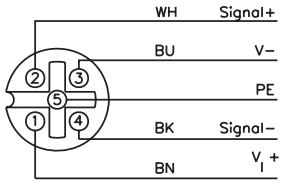
	Inputs								Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNQ-4AI-I-T	4	0-3	AI-I	1	0-20 mA or 4-20 mA				1

Input Connectors

AI-I



Loop Powered (Isolated)



DeviceNet Powered Transducer

Mating cordset:

Isolated Loop:

RK 4.5T-*M-RS 4.5T/S653

Loop Powered:

RK 4.5T-*M-RS 4.5T/LPS/S653

Note: The "LPS" in the part number indicates that the cord jumpers pin 3 to pin 4 on the male side to the signal- to the station common. Pin 3 is not connected at the female end.

Applications:

TURCK Sensors:
LU; RK 4.4T-*-RS 4.4T/S1118

LI; RK 4.4T-*-*RS 4.4T/S1120

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	Channel 0, LSB							
	1	Channel 0, MSB							
	2	Channel 1, LSB							
	3	Channel 1, MSB							
	4	Channel 2, LSB							
	5	Channel 2, MSB							
	6	Channel 3, LSB							
	7	Channel 3, MSB							

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Analog Input Station

FDNQ-4AI-V/I-T

- **Rugged, Fully Potted Stations**
- **IP 67, IP 68, IP 69K Protection**
- **Compact Housing**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <100 mA plus sum of input currents (from DeviceNet)
- Sensor Current: 0-20 mA or 4-20 mA analog signal (16-bit signed integer)
- Sensor Voltage: 0 to 10 V or -10 to +10 V Analog signal (16 bit signed integer)

The voltage/current ranges can be adjusted via rotary switch on front of station.

Power Distribution

- Inputs: DeviceNet power supply

Mechanical

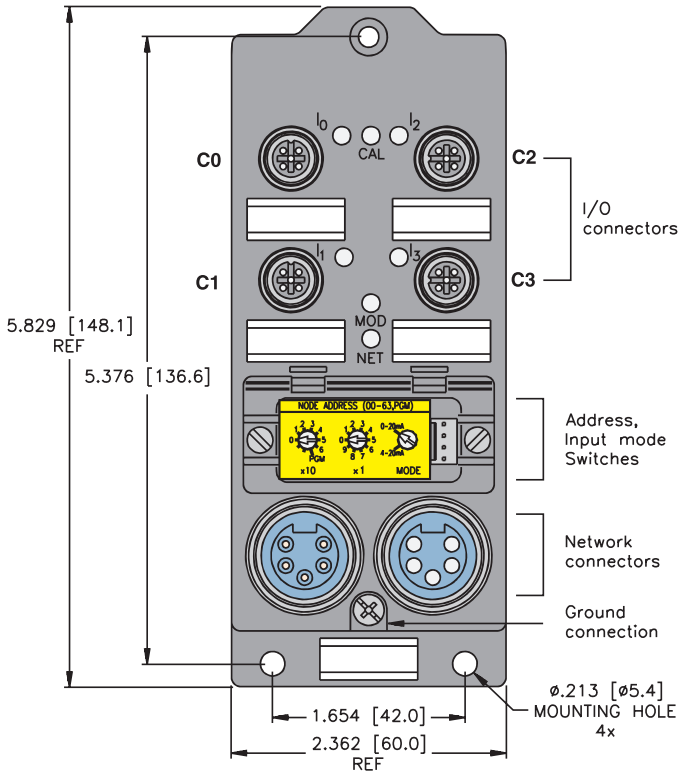
- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67, IP 68, IP 69K
- Vibration: 50 g @ 10-500 Hz

Material

- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

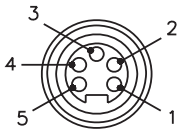
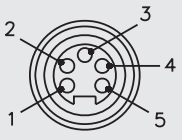
Diagnostics (Physical)

- LEDs to indicate status of DeviceNet communication



1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

DeviceNet *minifast* Pinout

Male	Female
	
5-Pin	5-Pin

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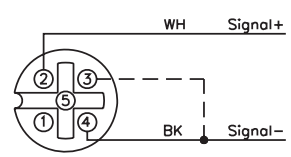
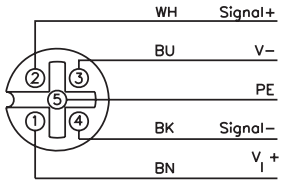
	Inputs								Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
FDNQ-4AI-V/I-T	4	0-3	AI-I	1	0-20 mA, 4-20 mA 0-10 V -10 to +10 V				1

Input Connectors

AI-I



Loop Powered (Isolated)



DeviceNet Powered Transducer

Mating cordset:

Isolated Loop:

RK 4.5T-*M-RS 4.5T/S653

Loop Powered:

RK 4.5T-*M-RS 4.5T/LPS/S653

Note: The "LPS" in the part number indicates that the cord jumpers pin 3 to pin 4 on the male side to the signal- to the station common. Pin 3 is not connected at the female end.

Applications:

TURCK Sensors:
LU; RK 4.4T-*-RS 4.4T/S1118

LI; RK 4.4T-*-*RS 4.4T/S1120

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	Channel 0, LSB							
	1	Channel 0, MSB							
	2	Channel 1, LSB							
	3	Channel 1, MSB							
	4	Channel 2, LSB							
	5	Channel 2, MSB							
	6	Channel 3, LSB							
	7	Channel 3, MSB							

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DeviceNet Master

- **Used to Manage a Sub-Network**
- **Manages 8-nodes on Sub-Network**

FDN-MSTR-1220

Electrical

- Bus Power: 11-30 VDC
- Current Consumption: 125 mA (Slave), 30 mA (Master)

LED Indication

- Slave Network Status: Flashing Green: Ready for connection
  Green: Established connection
  Flashing Red: Connection time out
- Master Network Status: Flashing Green: Ready for connection
  Green: Connected to all stations
  Flashing Red: Time out with one or more stations
  Red: Connection not possible

Adjustments

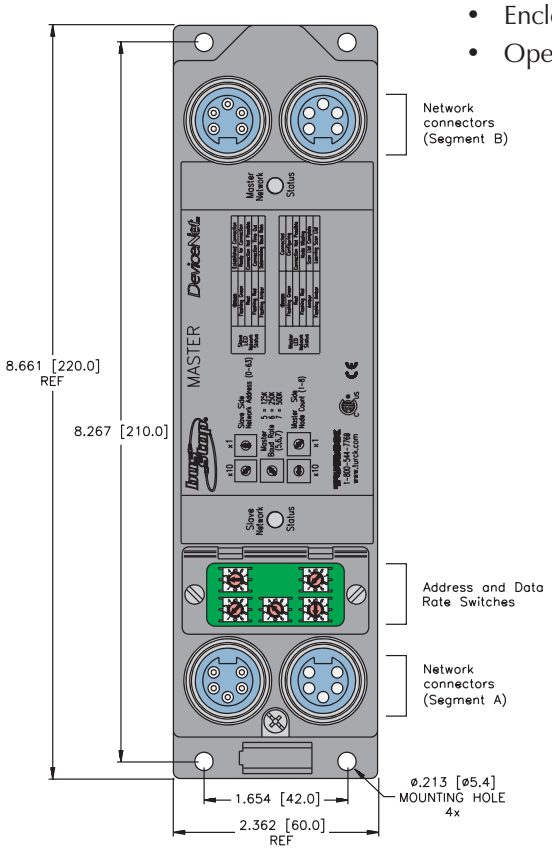
- Slave Side (Network address): 0-63 via rotary switches
- Master Side (Node count): 0-8 via rotary switches
- Master Baud Rage (5,6,7): 5=125 K, 6=250 K, 7=500 K

Connections

- Bus Line: 5-pin ***minifast***® connectors

Housing

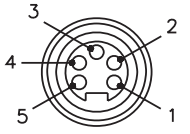
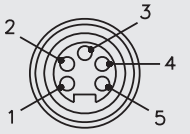
- Material: Glass filled nylon with nickel plated brass connectors
- Enclosure: NEMA 1,3,4,12,12 and IEC IP 67, 68 and 69K
- Operating Temperature: -25° to 70° C (-13° to 158° F)



Note: each segment has one male and one female connector

DeviceNet *minifast* Pinout

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

Male	Female
	
5-Pin	5-Pin

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The FDN-MSTR is a DeviceNet™ master used to manage a subnet off of the main DeviceNet network.

Main DeviceNet Network

The subnet to the FDN-MSTR is a DeviceNet network terminated on both ends and is limited to 8 nodes with addresses that must be in sequential order from 1 to 8. The baud rate for this network is determined by the rotary switch setting on the FDN-MSTR.

DeviceNet SubNetwork

The subnet to the FDN-MSTR is a DeviceNet network terminated on both ends and is limited to 8 nodes with addresses that must be in sequential order from 1 to 8. The baud rate for this network is determined by the rotary switch setting on the FDN-MSTR.

The slaves on the subnet are independent of the main DeviceNet network. Hence a node 4 on the main network will conflict with a node 4 on the sub network.

I/O Data Map 1

The Input data size is 64 bytes (where the first two bytes are reserved for status information from the FDN-MSTR).

	Byte	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	IC	-
	1	ESN 8	ESN 7	ESN 6	ESN 5	ESN 4	ESN 3	ESN 2	ESN 1	RSN 8	RSN 7	RSN 6	RSN 5	RSN 4	RSN 3	RSN 2	RSN 1
	2	Node Address 1 Input Data															
	3	Node Address 2 Input Data															
	…	…															
	N	Node Address X Input Data															

The Output data is 64 bytes.

	Byte	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	0	Node Address 1 Output Data															
	1	Node Address 2 Output Data															
	2	Node Address 3 Output Data															
	…	…															
	N	Node Address X Output Data															

IC = Invalid configuration of node missing: 0 means OK, 1 means error.
ESNX = Error on sub node X: 0 means OK, 1 means error communicating with node.
RSNX = Registered sub node X: 0 means no node is present, 1 means that node is present.
The data table for the Input and Output show the last Byte as "N". This "N" is variable depending on the total amount of data generated by all the nodes on the deviceNet™ sub network. However the maximum for both the Input and the Ouptut are 64 bytes.

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DeviceNet Repeater

REP-DN
REP-DN-DROP

- **Extend Network Length**
- **Extend Drop Lengths**
- **Isolate Power Segments**
- **Isolate Communication Segments**

Electrical

- Operating Current: 125 mA from segment A, 30 mA from segment B

Power Distribution

- REP-DN: DeviceNet power supply for each segment (must be powered by separate supplies)
- REP-DN-Drop: Does not require a separate power supply and does not isolate power between segments

Mechanical

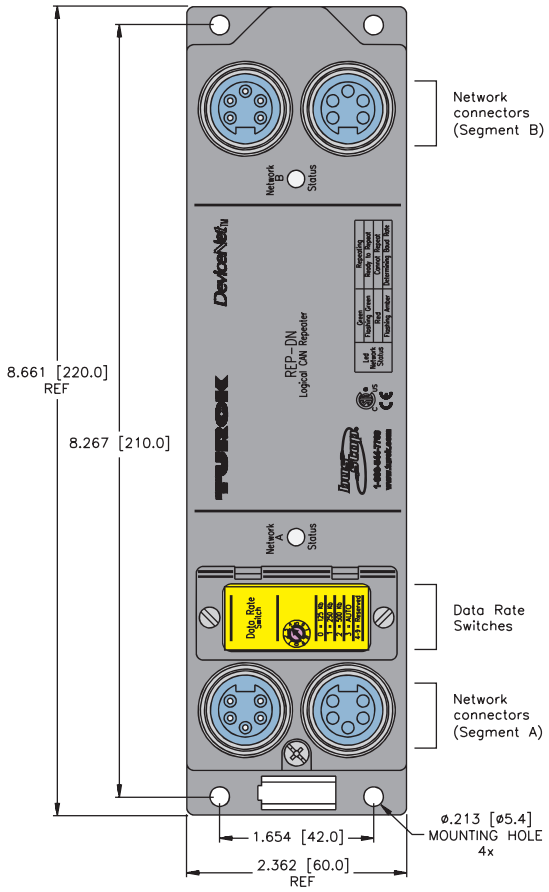
- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: NEMA 1,3,4,12,13 and IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Material

- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

Diagnostics (Physical)

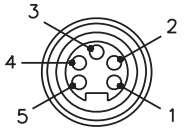
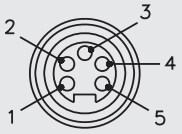
- One LED for each segment to indicate communication status



Note: each segment has one male and one female connector

DeviceNet *minifast* Pinout

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

Male	Female
	
5-Pin	5-Pin

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DeviceNet™ Repeater

The **REP-DN** is a potted, fully connectorized rugged repeater that can be mounted directly on the machine. It is designed for use on any Controller Area Network (CAN), including DeviceNet. Network segments connected by a repeater are considered separate physical networks (trunk and drop lengths for each segment are determined as if the other segments are not there), but one logical network (addresses cannot be duplicated - the scanner and configuration tools work as a single network).

A repeater does not consume an address and is invisible to all the other devices on the network. A repeater does not have an EDS file. The **REP-DN** repeater can be used to extend either the trunk or drop lines, and to isolate power supplies on networks with multiple supplies. There is no limit to the number of repeaters that can be used on one network.

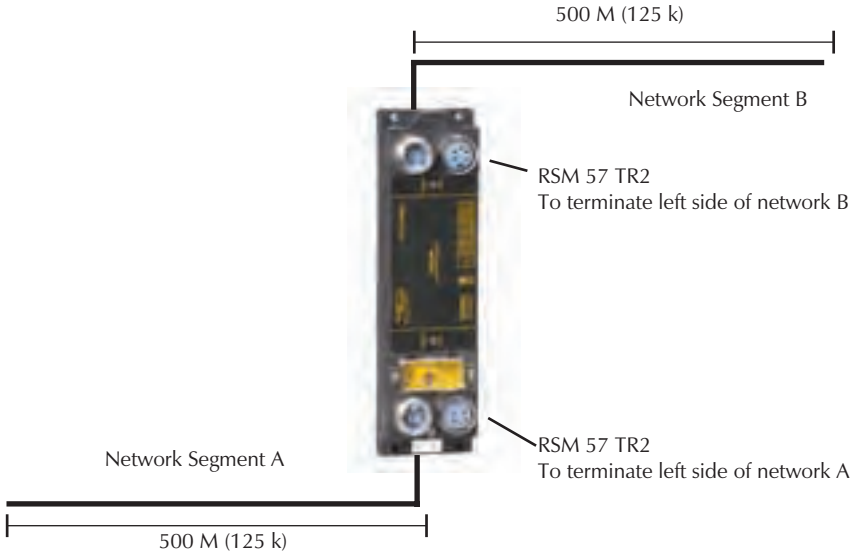
A repeater's baudrate is set via a rotary switch. The baudrate on each side of the repeater must be the same, as different rates would cause the "slow" side to be overloaded with messages from the "fast" side. When a message is repeated, a 2 ms delay is introduced. This is typically insignificant compared to the overall scan time of the network. If more than four repeaters are used in series, the interscan delay may need to be increased.

Repeater Configurations

Extended Trunk Line

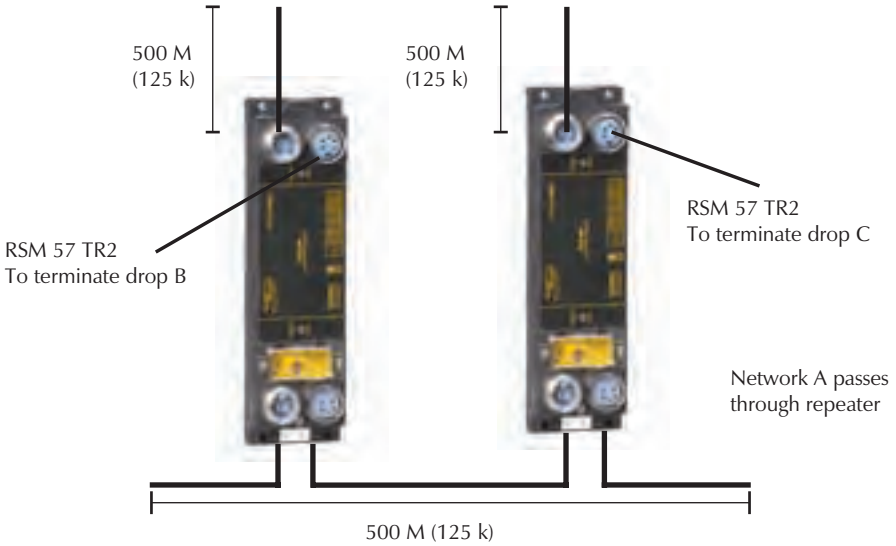
Repeaters are connected in series to extend the trunk line. The total delay is 2 ms multiplied by the number of repeaters.

* REP-DN-DROP does not require a separate power supply on segment B. If a separate power supply is desired, it must be attached using a "Power T" (RSM RKM 57 WSM 40 PST recommended).



Extended Drop Line

Repeaters are connected in parallel to extend the drop length. The overall network delay is 2 ms, because there is only one repeater between the scanner on the trunk and any other device.



Do Not Create a Ring

While a repeater can be used to create very large and complex networks, some configurations are not permitted. If a ring is created (both sides of a repeater are connected to the same network), the repeater will continuously repeat to itself, causing the network to overload.

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DeviceNet Spanner

FDN-DN1

- **Rugged, Fully Potted Stations**
- **IP 67 Protection**
- **Communicate Between PLCs**
- **Connect Two DeviceNet Networks**

Electrical

- Operating Current: 125 mA from segment A, 30 mA from segment B

Power Distribution

- Station: DeviceNet power supply for each segment (must be powered by separate supplies)

Mechanical

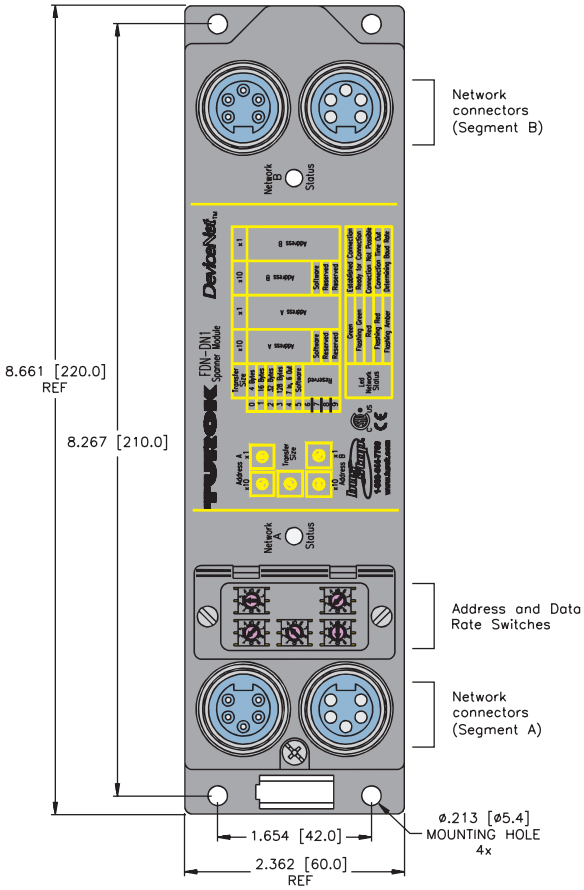
- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: NEMA 1,3,4,12,13 and IEC IP 67
- Vibration: 50 g @ 10-500 Hz

Material

- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Nylon 6 (other materials available on request)

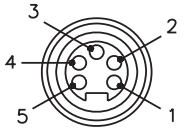
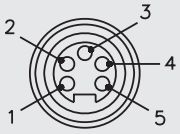
Diagnostics (Physical)

- One LED for each segment to indicate communication status



DeviceNet *minifast* Pinouts

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

Male	Female
	
5-Pin	5-Pin

Note: Each segment has one male and one female connector.

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DeviceNet™ Spanner

The FDN-DN1 "Spanner" module provides a means to route data between two PLC's using DeviceNet. The spanner eliminates the need for a high level control network pyramid, by connecting the DeviceNet networks directly. This simple approach is extremely powerful and economical. It is simple because the spanner appears to each PLC as a standard rack of I/O; any DeviceNet scanner can send I/O data to the spanner without additional software or complex configuration procedures. It is powerful because it can transfer up to 128 bytes of data in one message. It is economical because it replaces the high level control network, eliminating two control cards, wiring, conduit and programming.

Theory of operation

The spanner transfers data between PLC A and PLC B by appearing as I/O to each PLC. The spanner immediately copies the output data from PLC A to the input data for PLC B. Similarly, PLC B's output data is copied to PLC A's input data. The size of data transferred is set by the transfer size switch. If the transfer size switch is set at 4,16, 32 or 128 bytes, then the size of the data transferred is the same in both directions. If the transfer size switch is set to software, then the transfer size is set via software and it can be any size (0,1,2,3...128 bytes). When in software mode, the data size mapped to the PLC must be equal in opposite directions on either side of the spanner. For example, if side A produces 2 input bytes and consumes 12 output bytes, then side B must be set to produce 12 input bytes and consume 2 output bytes.

Electrically

The spanner optically isolates network A from network B; the networks do not interact electrically in any way. The spanner is powered internally by network A; a power reset on the A side will reset the entire station.

Addressing

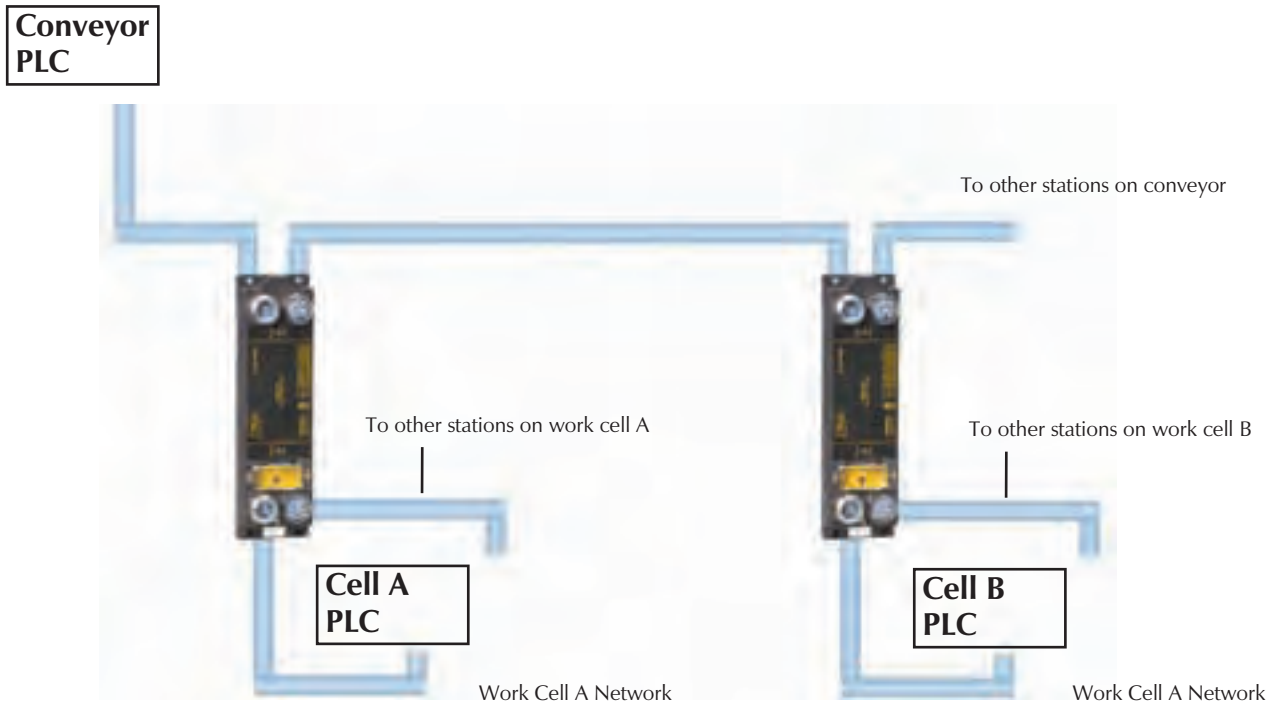
Because the spanner is essentially two DeviceNet devices, one on network A and one on network B, it has two sets of address switches. The address switches for network A are completely independent of network B.

Baudrate

The spanner automatically detects the Baudrate at startup. Network A and B may be at different baudrates.

Spanner Topology

The spanner is typically used to correct and coordinate multiple work cells.



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DeviceNet FDN20 Stations

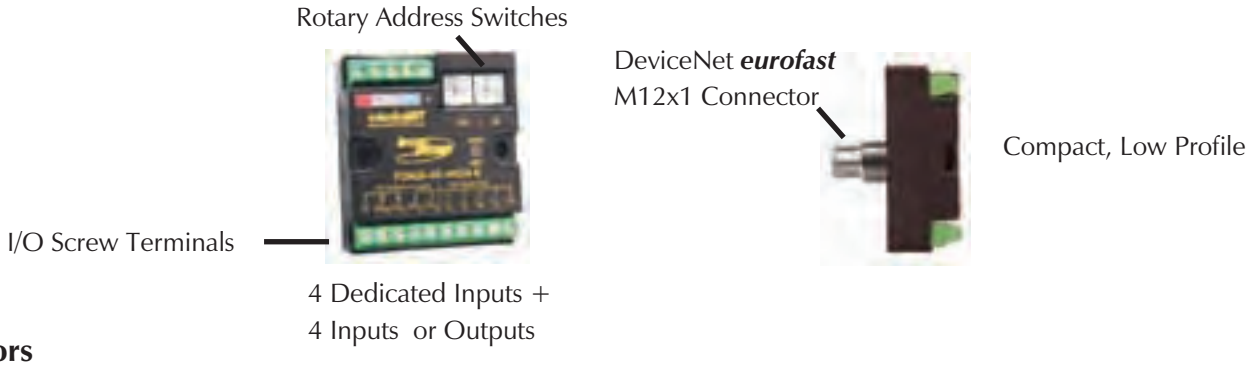
TURCK's FDN20 DeviceNet stations are low-cost screw-terminal connection stations designed for mounting in an enclosure. These stations allow you to easily connect standard I/O devices such as push buttons, pilot lights, motor starters and drives to a DeviceNet network. The FDN20 station is designed to easily upgrade existing equipment to a DeviceNet network.

Specifications

TURCK FDN20 stations are designed to be mounted in standard equipment enclosures (operator stations, motor control centers, etc.). Most FDN20 stations use only screw terminal connections for all I/O and network wiring. FDN20-4S-4XSG-E has a DeviceNet ***eurofast*** ® (M12) connector on the back of the housing that enables mounting the station to an enclosure wall with the (DeviceNet) connection on the outside of the box; greatly simplifying network wiring. Detailed environmental specifications are as follows:

- Housing material: Glass filled nylon
- Protection level: IP 20
- Operating temperature: -40 to +70°C (-40 to +158°F)

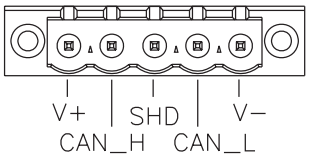
The station's components are identified in the figure below.



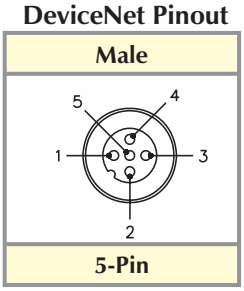
Connectors

Bus connectors:

FDN20 screw terminal and ***eurofast*** bus connectors pinouts:



1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L



I/O connectors:

Each FDN20 version uses a different screw terminal connector. Detailed pinout information is given in the product information on the following pages.

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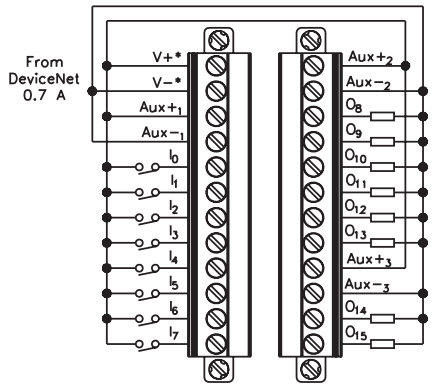
Power

The short FDN20 stations provide all the power to the I/O devices from the DeviceNet™ power supply. In this case there is no auxiliary power connection.

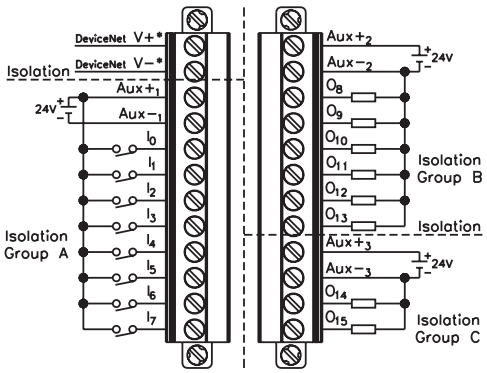
The remaining long FDN20 stations (FDN20-16XSG, for example) provide an auxiliary power connection. I/O devices can be powered from the DeviceNet or auxiliary power supply, depending on how the user chooses to wire the station. The different wiring options are illustrated in the following diagram.

*WARNING NOTE: (V+) and (V–) PROVIDE POWER FROM DeviceNet . DO NOT CONNECT TO SUPPLY OR GROUND.



CONNECT AS SHOWN TO USE DeviceNet to POWER I/O

*WARNING NOTE: (V+) and (V–) PROVIDE POWER FROM DeviceNet. DO NOT CONNECT TO SUPPLY OR GROUND.



TO USE EXTERNAL POWER SUPPLY

Power ratings for FDN20 stations:

- Bus (DeviceNet) Voltage: 11-26 VDC
- Aux Power Voltage: 24 VDC (nominal)
- Internal Current Consumption: <75 mA (@ nominal 24 VDC) plus sum of I/O currents if auxiliary power is not used
- Input Voltage: 13-26 VDC (From DeviceNet supply)
- Input Short-Circuit Current: <700 mA (total for entire station)
- Input Signal Current (each input): OFF <2 mA; ON 3.0-3.4 mA (@ nominal 24 VDC)
- Input Delay: 2.5 ms
- Output Current: 0.5 A max per output

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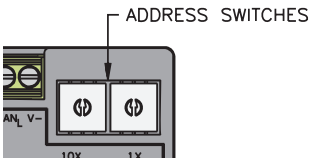
Addressing

DeviceNet stations must have a network address for communication. The address for FDN20 stations may be set via the visible rotary switches on the front of the station.



Address = 6x10 + 3x1 = 63

The pair of switches represents the address as a decimal number; the left switch being the 10's multiplier and the right switch the 1's multiplier. To program the stations, rotate the switches with a small slotted screwdriver until the arrows are pointing at the appropriate numbers for the chosen address.

Diagnostics

FDN20 stations provide a single Network Status LED for diagnosing communication problems.

- Green: Connection established
- Flashing green: Waiting for connection
- Flashing red: Connection timed out
- Red: Cannot connect
- Flashing Amber: Finding baud rate (autobaud setting)

The long housing stations (i.e. FDN20-16XSG) have an additional LED for each I/O point on the station indicating:

- Off: Point is off
- Green: Point is on

Additionally, most FDN20 stations provide diagnostic bits in the I/O table for diagnostics. One bit indicates a short-circuit fault for outputs or inputs. See product pages in this catalog for detailed I/O information.

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Notes:

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Enclosure Mounted Input/Output Stations

FDN20-4S-4XSG
FDN20-4S-4XSG-E*
FDN20-4S-4XSG-DIN*

* Not UL

- **In-Cabinet I/O**
- **IP 20 Protection**
- **Ideal for Retrofits**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <75 mA (from DeviceNet) plus I/O currents (from bus power)
- Input Current: <700 mA sum of all inputs (from DeviceNet)
- Output Current: <500 mA per output (from DeviceNet)

Power Distribution

- Inputs: DeviceNet power supply
- Outputs: DeviceNet power supply

Mechanical

- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: IEC IP 20

Material

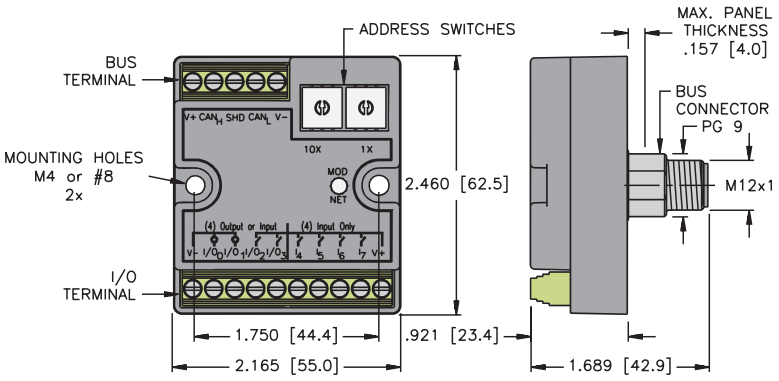
- Connectors: Nickel-plated brass (***eurofast*** option only)
- Housing: Nylon

Diagnostics (Logical)

- Open/short-circuit status mapped to DeviceNet I/O table, one bit indicates a fault for all inputs and one bit indicates a fault for all outputs

Diagnostics (Physical)

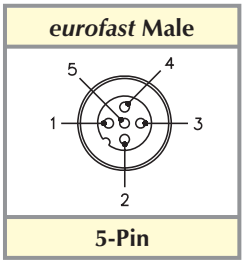
- LED to indicate status of DeviceNet communication



FDN20-4S-4XSG-E shown

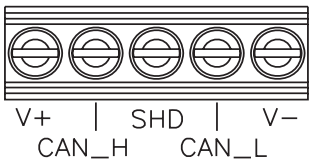
DeviceNet Pinout

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L



FDN20-4S-4XSG-E only

DeviceNet Connector



Note: A DIN rail mounting bracket (FDN20-BKT-DIN) may be purchased separately for use with the FDN20-4S-4XSG.

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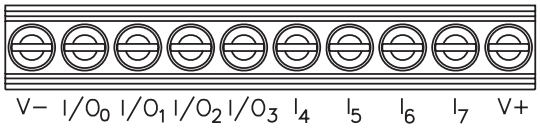
	Inputs						Outputs					Data
Part Number	Input Count	Pinout	Sensor Style	Group	Individual	Wire-Break Detection	Output Count	Pinout	Current	Individual	Wire-Break Detection	Data Map
FDN20-4S-4XSG	8	FS	PNP	X			4	FS	0.5 A			1
FDN20-4S-4XSG-E	8	FS	PNP	X			4	FS	0.5 A			1
FDN20-4S-4XSG-DIN	8	FS	PNP	X			4	FS	0.5 A			1

Input/Output Connectors

FS



*Note: I/O_0 to I/O_3 can be used as inputs or outputs

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	IGS	OGS	-	-	-	-	-	-
Out	0	-	-	-	-	O-3	O-2	O-1	O-0

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Enclosure Mounted Input/Output Station

FDN20-4S-4XSG-0189
FDN20-S0404G-0220*
* Not CE

- **In-Cabinet I/O**
- **IP 20 Protection**
- **Ideal for Retrofits**
- **Automatic Baud Rate Sensing**

Electrical
- Operating Current: <75 mA plus I/O currents (from bus power)
- Input Current: <700 mA sum of all inputs (from DeviceNet)
- Output Current: <500 mA per output (from DeviceNet)

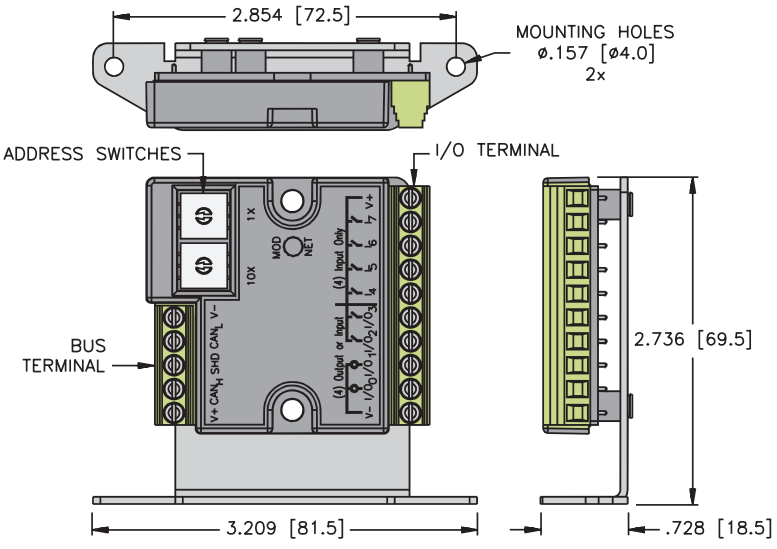
Power Distribution
- Inputs: DeviceNet power supply
- Outputs: DeviceNet power supply

Mechanical
- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: IEC IP 20

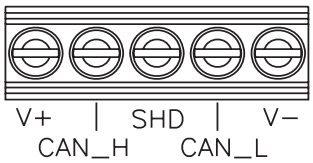
Material
- Housing: Nylon

Diagnostics (Logical)
- Open/short-circuit status mapped to DeviceNet I/O table, one bit indicates a fault for all inputs and one bit indicates a fault for all outputs

Diagnostics (Physical)
- LED to indicate status of DeviceNet communication



DeviceNet Connector



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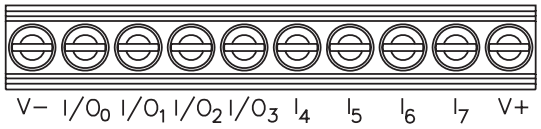
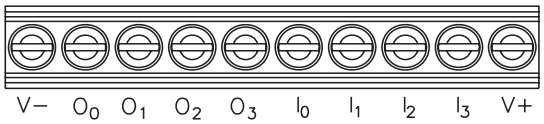
	Inputs						Outputs					Data
Part Number	Input Count	Pinout	Sensor Style	Group	Individual	Wire-Break Detection	Output Count	Pinout	Current	Individual	Wire-Break Detection	Data Map
FDN20-4S-4XSG-0189	8	FS	PNP	X			4	FS	0.5A			1
FDN20-S0404G-0220	4	FS-2	PNP	X			4	FS-2	0.5 A			2

Input/Output Connectors

FS



FS-2



*Note: I/O_0 to I/O_3 can be used as inputs or outputs

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	IGS	OGS	-	-	-	-	-	-
Out	0	-	-	-	-	O-3	O-2	O-1	O-0

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	IGS	OGS	-	-	I-3	I-2	I-1	I-0
Out	0	-	-	-	-	O-3	O-2	O-1	O-0

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Enclosure Mounted Input/Output Stations

FDN20-16XSG
FDN20-16S

- **In-Cabinet I/O**
- **IP 20 Protection**
- **Ideal for Retrofits**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <75 mA plus applicable I/O currents (from bus power)
- Input Current: <700 mA sum of all inputs
- Output Current: <500 mA per output

Power Distribution

- Inputs: Optionally DeviceNet or Auxiliary power supply as shown in wiring diagram
- Outputs: Optionally DeviceNet or Auxiliary power supply as shown in wiring diagram

Mechanical

- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: IEC IP 20

Material

- Housing: Nylon

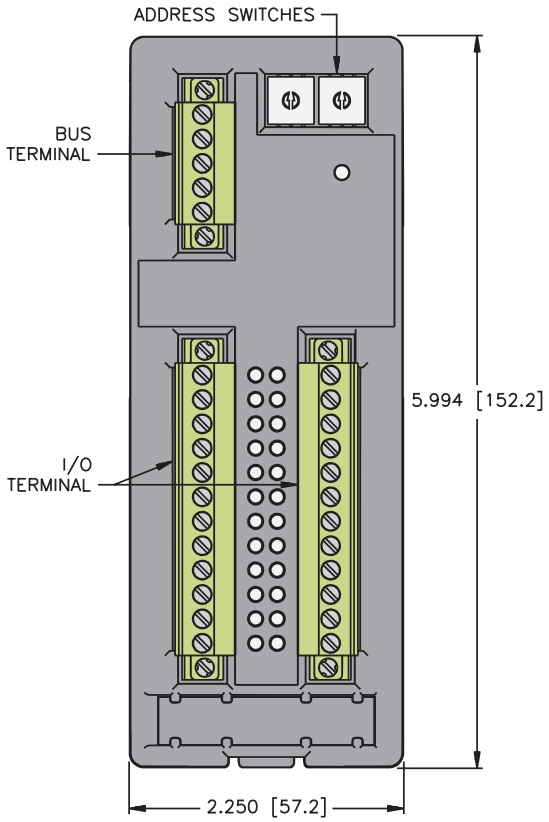
Diagnostics (Logical)

- Open/short-circuit status mapped to DeviceNet I/O table, one bit indicates a fault for all inputs, on bit indicates a fault for all outputs

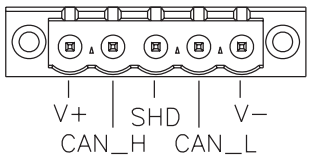
Diagnostics (Physical)

- LED to indicate status of DeviceNet communication

CE FM DIV 2 UL



DeviceNet Connector



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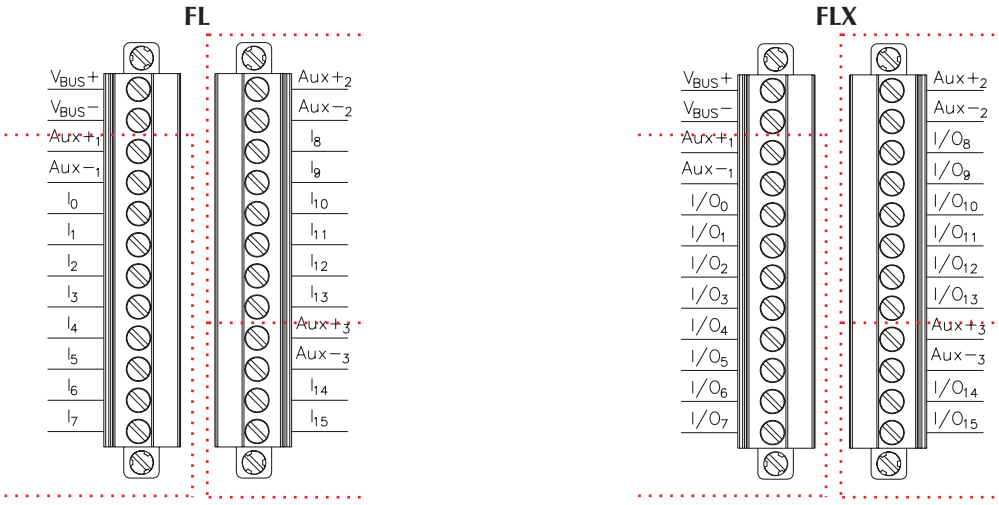
	Inputs						Outputs					Data
Part Number	Input Count	Pinout	Sensor Style	Group	Individual	Wire-Break Detection	Output Count	Pinout	Current	Individual	Wire-Break Detection	Data Map
FDN20-16XSG	16	FLX	PNP	X			16	FLX	0.5 A			1
FDN20-16S	16	FL	PNP	X			0					2

Input/Output Connectors



Indicates I/O groups which can be powered from separate Aux. Power supplies if desired.

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
	2	IGS	OGS	-	-	-	-	-	-
Out	0	O-7	O-6	O-5	O-4	O-3	O-2	O-1	O-0
	1	O-15	O-14	O-13	O-12	O-11	O-10	O-9	O-8

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
	2	IGS	OGS	-	-	-	-	-	-

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Enclosure Mounted Input/Output Stations

FDN20-16SN-16XSG
FDN20-32SN

- **In-Cabinet I/O**
- **IP 20 Protection**
- **Ideal for Retrofits**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <75 mA plus applicable I/O currents (from bus power)
- Input Current: <700 mA sum of all inputs
- Output Current: 1.8 A per output

Power Distribution

- Inputs: Optionally DeviceNet or Auxiliary power supply as shown in wiring diagram
- Outputs: Optionally DeviceNet or Auxiliary power supply as shown in wiring diagram

Mechanical

- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: IEC IP 20

Material

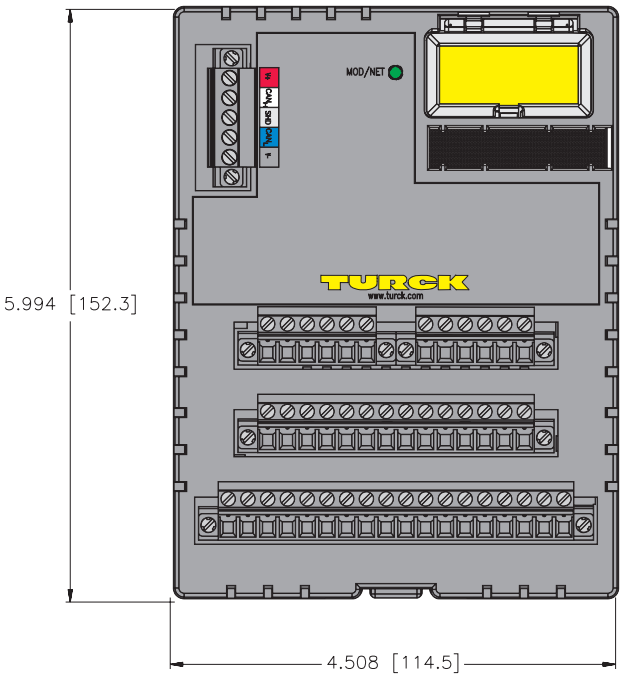
- Housing: Nylon

Diagnostics (Logical)

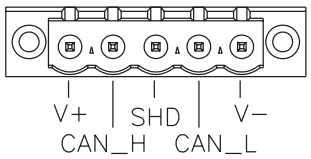
- Open/short-circuit status mapped to DeviceNet I/O table, one bit indicates a fault for all inputs, on bit indicates a fault for all outputs

Diagnostics (Physical)

- LED to indicate status of DeviceNet communication



DeviceNet Connector



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Part Number	Inputs						Outputs					Data
	Input Count	Pinout	Sensor Style	Group	Individual	Wire-Break Detection	Output Count	Pinout	Current	Individual	Wire-Break Detection	Data Map
FDN20-16SN-16XSG	32*	1	NPN/PNP	X			16*	2	1.8 A			1
FDN20-32SN	32	1	NPN/PNP	X								2

* 16 dedicated inputs and 16 points which can be used as inputs or outputs.

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
	2	I-23	I-22	I-21	I-20	I-19	I-18	I-17	I-16
	3	I-31	I-30	I-29	I-28	I-27	I-26	I-25	I-24
	4	IGS	OGS	-	-	-	-	-	-
Out	0	O-7	O-6	O-5	O-4	O-3	O-2	O-1	O-0
	1	O-15	O-14	O-13	O-12	O-11	O-10	O-9	O-8

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
	2	I-23	I-22	I-21	I-20	I-19	I-18	I-17	I-16
	3	I-31	I-30	I-29	I-28	I-27	I-26	I-25	I-24
	4	IGS	OGS	-	-	-	-	-	-

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Enclosure Mounted Input/Output Stations

FDN20-4DR

- **In-Cabinet I/O**
- **IP 20 Protection**
- **Ideal for Retrofits**
- **Automatic Baud Rate Sensing**

Electrical

- Bus Power: 11-26 VDC
- Internal Current Consumption: ≤75 mA plus sum of sensor and output currents (from bus power)

Input Circuits: (4) Negative Switched Dry contacts

- Input Voltage (V+): 0-26 VDC
- Input Signal Current (Input): OFF>3 V, <0.5 mA
  ON 0-1 V, 2-3 mA
- Input Delay: 1 ms

Output Circuits: (12) Solid State Relays

- Output Voltage: 0-26 VDC
- Output Load Current: 120 mA (max.)

Output Circuits (Analog): (4) 0-10 V

- Output Voltage 0-10 V
- Representation 16-bit signed integer
- Analog Supply Voltage 10-24 V

Network Status LED

- Status: Green: Established connection
  Flashing Green: Ready for connection
  Red: Connection not possible
  Flashing Amber: autobaud/125k/250k/500k

Adjustments

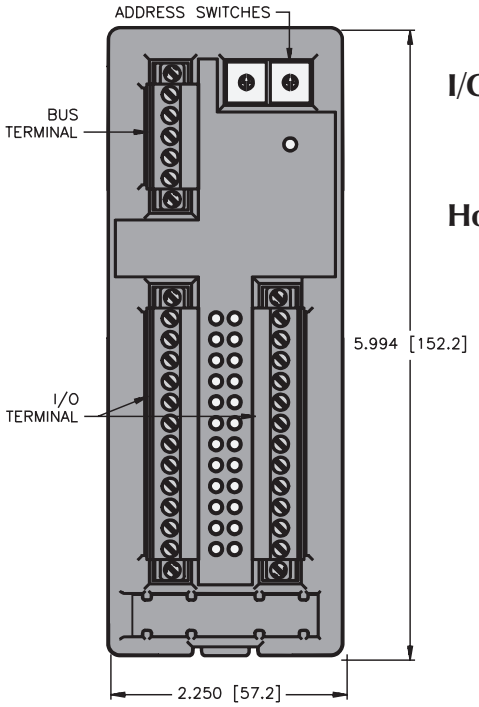
- Slave Side (Network address): 0-63 via rotary switches
- Master Side (Node count): 0-8 via rotary switches
- Master Baud Rage (5,6,7): 5=125 K, 6=250 K, 7=500 K

I/O Status LED

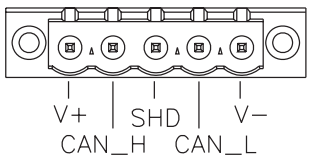
- OFF = off
- Green = On

Housing

- Material: Nylon
- Operating Temperature: -40° to 70° C (-40° to 158° F)



DeviceNet Connector



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	Inputs						Outputs					Data
Part Number	Input Count	Pinout	Sensor Style	Group	Individual	Wire-Break Detection	Discrete Relay Output Count	Pinout	Analog Outputs	Individual	Wire-Break Detection	Data Map
FDN20-4DR	4	1	Sinking Dry Contacts	X			12	1	4			1

Input/Output Connectors

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	-	-	-	-	-	-	I-1	I-0
	1	-	-	-	-	-	-	I-3	I-2
Out	0	-	-	O-5	O-4	O-3	O-2	O-1	O-0
	1	-	-	O-11	O-10	O-9	O-8	O-7	O-6
	2	A0 Low Byte							
	3	A0 High Byte							
	4	A1 Low Byte							
	5	A1 High Byte							
	6	A2 Low Byte							
	7	A2 High Byte							
	8	A3 Low Byte							
	9	A3 High Byte							

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OEM Stations

- **PC-Board Slaves**
- **Small Footprint**
- **Ideal for Retrofits**
- **Bus Powered I/O**

FDN-PCB-22
FDN-PCB-22-OEM*
* Not CE

CE

Electrical

- Operating Current: <50 mA plus sum of I/O currents (from DeviceNet)
- Input Current: <700 mA sum of all inputs (from DeviceNet)
- Output Current: <500 mA per output (from DeviceNet)

Power Distribution

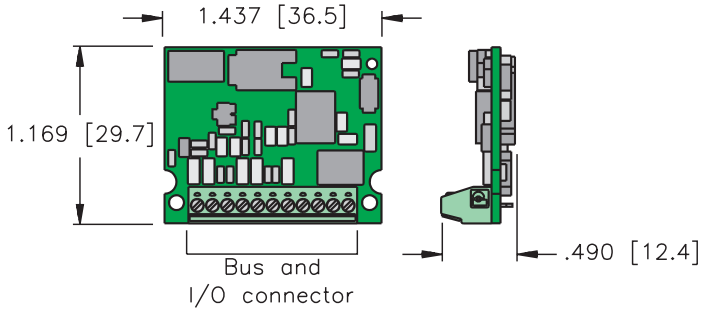
- Inputs: DeviceNet power supply
- Outputs: DeviceNet power supply

Mechanical

- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: Open Frame

Diagnostics (Logical)

- One bit in I/O table indicates input fault for entire station, one bit er output for fault indication



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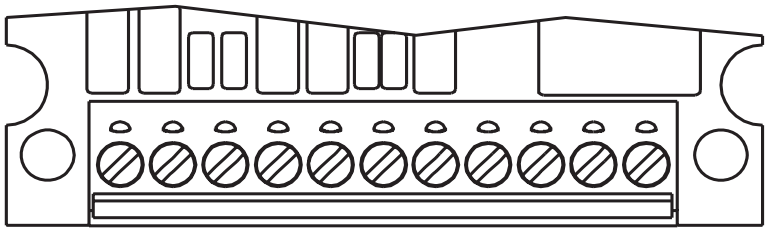
		Inputs						Outputs					Data
Part Number	Connector	Input Count	Pinout	Style	Group Diagnostics	Individual Diagnostics	OCD	Output Count	Pinout	Current	Individual Diagnostics	OCD	Map
FDN-PCB-22	Screw Terminal	2	DN-O1	PNP	X			2	DN-O1	0.5A	X		1
FDN-PCB-22-OEM	None	2	DN-O1	PNP	X			2	DN-O1	0.5A	X		1

Input/Output Connectors

DN-O1



I_0	O_0	V-	I_1	O_1	V-	V+	L	H	V-	V+

Note: L refers to CAN_L and H refers to CAN_H

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	IGS	-	-	-	OS-1	OS-0	I-1	I-0
Out	0	-	-	-	-	-	-	O-1	O-0

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OEM Station

FDN-PCB-22-1003-BKT

CE

- **PC-Board Slaves**
- **Small Footprint**
- **Ideal for Retrofits**
- **Included Mounting Bracket**

Electrical

- Operating Current: <50 mA plus sum of I/O currents (from DeviceNet)
- Input Current: <700 mA sum of all inputs (from DeviceNet)
- Output Current: <500 mA per output (from DeviceNet)

Power Distribution

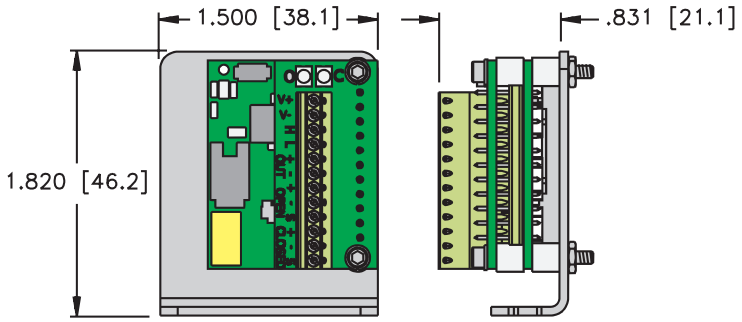
- Inputs: DeviceNet power supply
- Outputs: Auxiliary power supply

Mechanical

- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: Open Frame

Diagnostics (Logical)

- One bit in I/O table indicates input fault for entire station, one bit per output for fault indication



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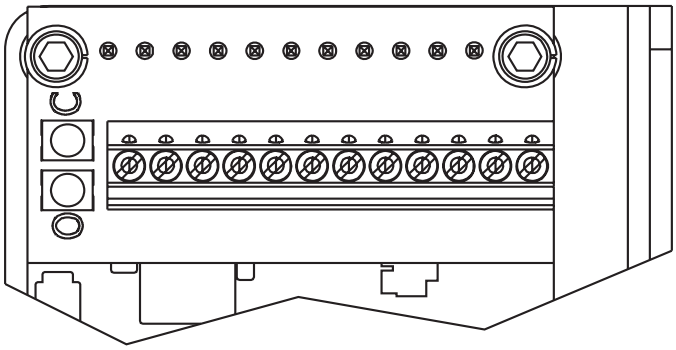
	Inputs						Outputs					Data
Part Number	Input Count	Pinout	Style	Group Diagnostics	Individual Diagnostics	OCD	Output Count	Pinout	Current	Individual Diagnostics	OCD	Map
FDN-PCB-22-1003-BKT	2	DN-O3	PNP	X			1	DN-O3	0.5 A	X		1

Input/Output Connectors

DN-O3



V+	V-	H	L	+	-	+	-	S	+	-	S
				Out		Open Input			Closed Input		

DeviceNet I/O

Note: L refers to CAN_L and H refers to CAN_H

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	IGS	-	-	-	OS-1	-	I-1	I-0
Out	0	-	-	-	-	-	-	O-1	-

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Operator Station

ODNA-4S-4XSG-E

- **Ideal for Operator Interfaces**
- **IP 67 Protection**
- **Bus Powered I/O**
- **Automatic Baud Rate Sensing**

Electrical

- Operating Current: <50 mA plus sum of all I/O currents (from DeviceNet)
- Input Current: <700 mA sum of all inputs (from DeviceNet)
- Output Current: <500 mA per output (from DeviceNet)

Power Distribution

- Inputs: DeviceNet power supply
- Outputs: Auxiliary power supply

Mechanical

- Operating Temperature: -25 to +70°C (-13 to +158°F)
- Protection: NEMA 4 / IEC IP 67

Material

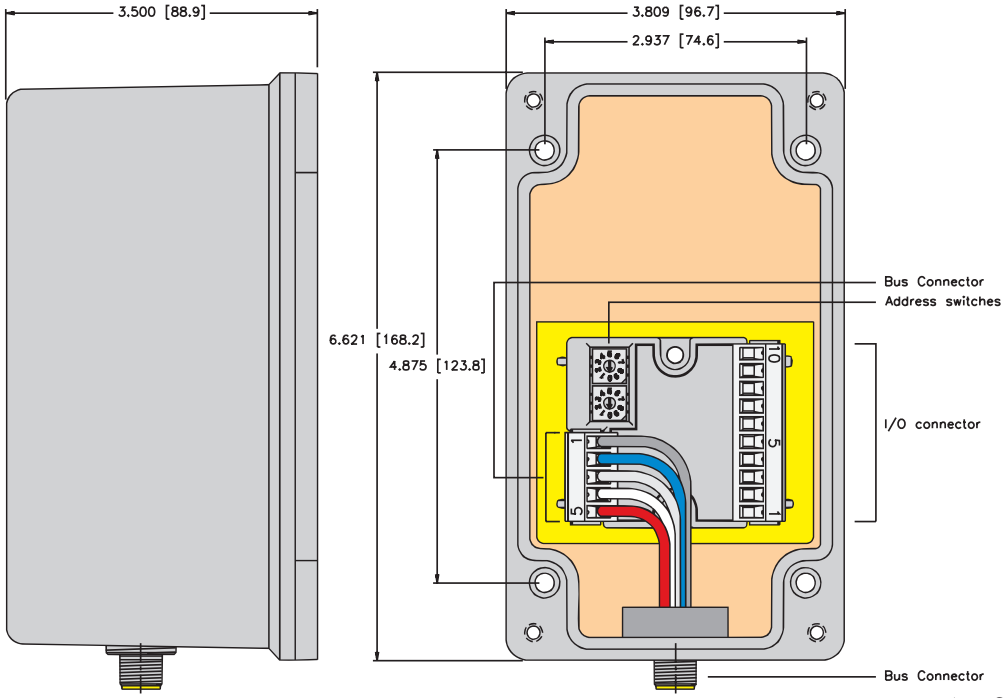
- Connectors: Nickel-plated brass (stainless steel available on request)
- Housing: Fiberglass

Diagnostics (Logical)

- One bit in I/O table indicates an I/O fault for inputs, one bit for outputs

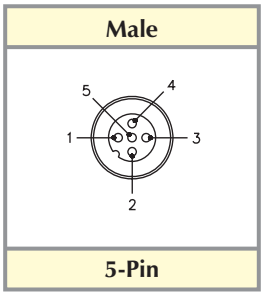
Diagnostics (Physical)

- LED to indicate status of DeviceNet communication



1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

DeviceNet *eurofast*® Pinouts



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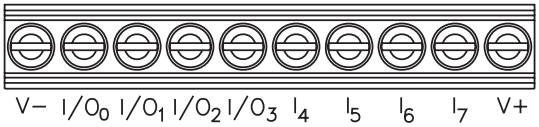
	Inputs						Outputs					Data
Part Number	Input Count	Pinout	Style	Group Diagnostics	Individual Diagnostics	OCD	Output Count	Pinout	Current	Individual Diagnostics	OCD	Map
ODNA-4S-4XSG-E	8	FS	PNP	X			4	FS	0.5A	X		1

Input/Output Connectors

FS



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	IGS	OGS	-	-	-	-	-	-
Out	0	-	-	-	-	O-3	O-2	O-1	O-0

Covers for ODNA-4S-4XSG-E	
Part Number	Cutouts
OCA-B	Blank
OCA-1-30	1 x 30 mm
OCA-2-30	2 x 30 mm
OCA-1-22	1 x 22 mm
OCA-2-22	2 x 22 mm
OCA-3-22	3 x 22 mm

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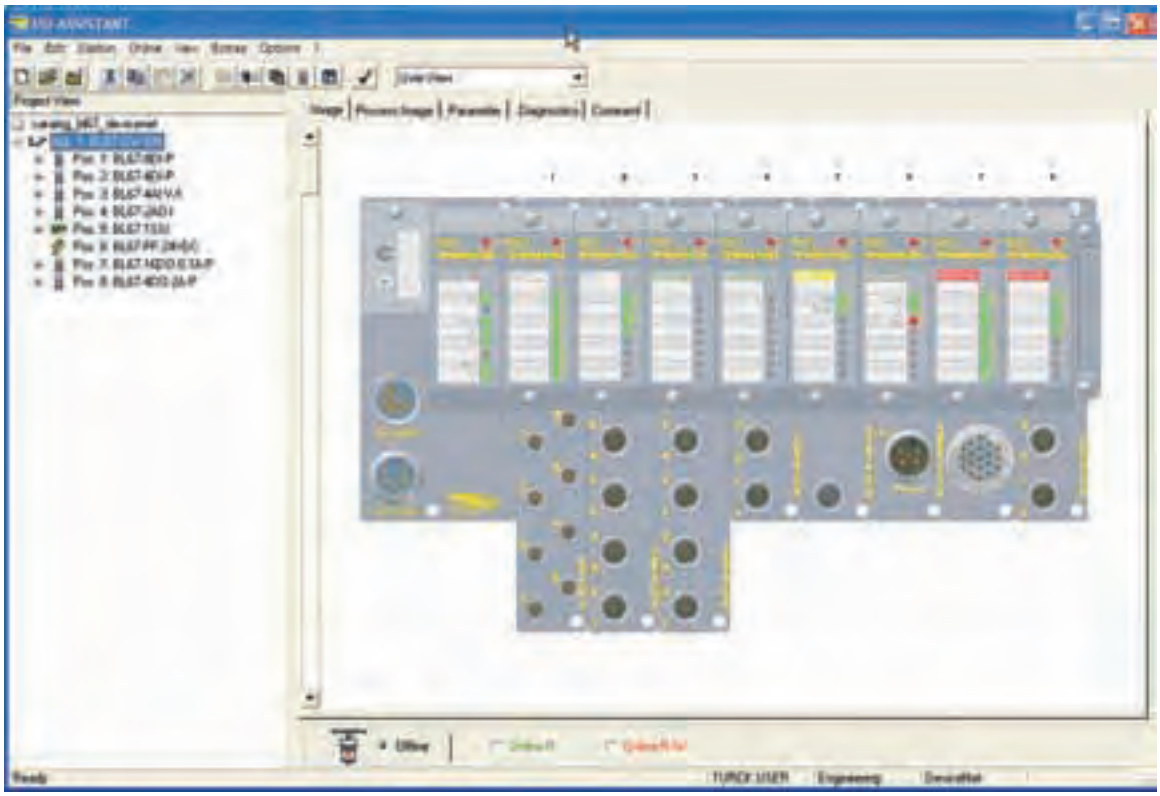
DeviceNet™ BL67 Stations

TURCK's BL67 is a modular, user configurable network I/O system designed to allow installation of nodes containing different types and sizes of I/O depending on the users needs for a particular area. Featuring IP 67 protection and metal threaded connectors, the BL67 can often be mounted in the physical process environment or directly on a machine without the need to plan or purchase a separate enclosure for the I/O. This saves planning and installation time, as well as the cost of the enclosure itself.

The BL67 system supports several different network protocols, including DeviceNet. A BL67 station consists of a gateway module that interfaces to the DeviceNet system, and several I/O modules that interface with the physical I/O in the field. Different connector options are available to allow a greater level of customization to the user.

For more details on the BL67 system please see the section G of this catalog.



TURCK's I/O Assistant software package is used to configure the BL67 system.

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BL67 Gateway

BL67-GW-DN

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <600 mA from V_{MB}
- Supply Current: <8 A to I/O (from DeviceNet)
- Backplane Current: <1.5 A (from DeviceNet)

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 67
- Vibration: 5 g @ 10-500 Hz

Material

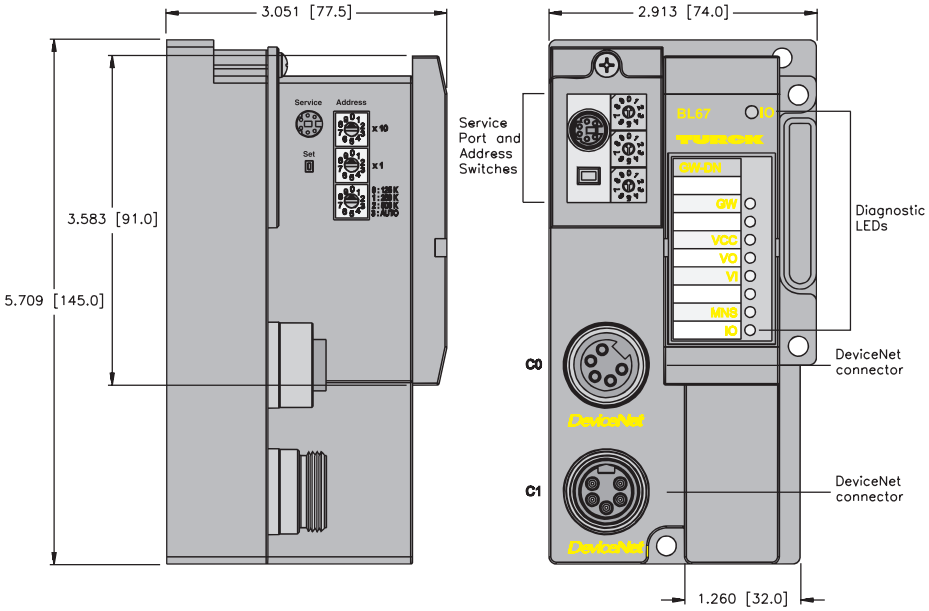
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the DeviceNet I/O map

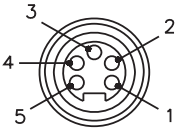
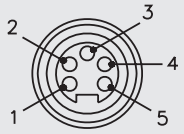
Diagnostics (Physical)

- LEDs to indicate status of DeviceNet and Module Bus communication



DeviceNet *minifast*® Pinouts

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

Male	Female
	
5-Pin	5-Pin

Note: Power feeding modules may be used for I/O current supply to prevent overloading the DeviceNet power supply.

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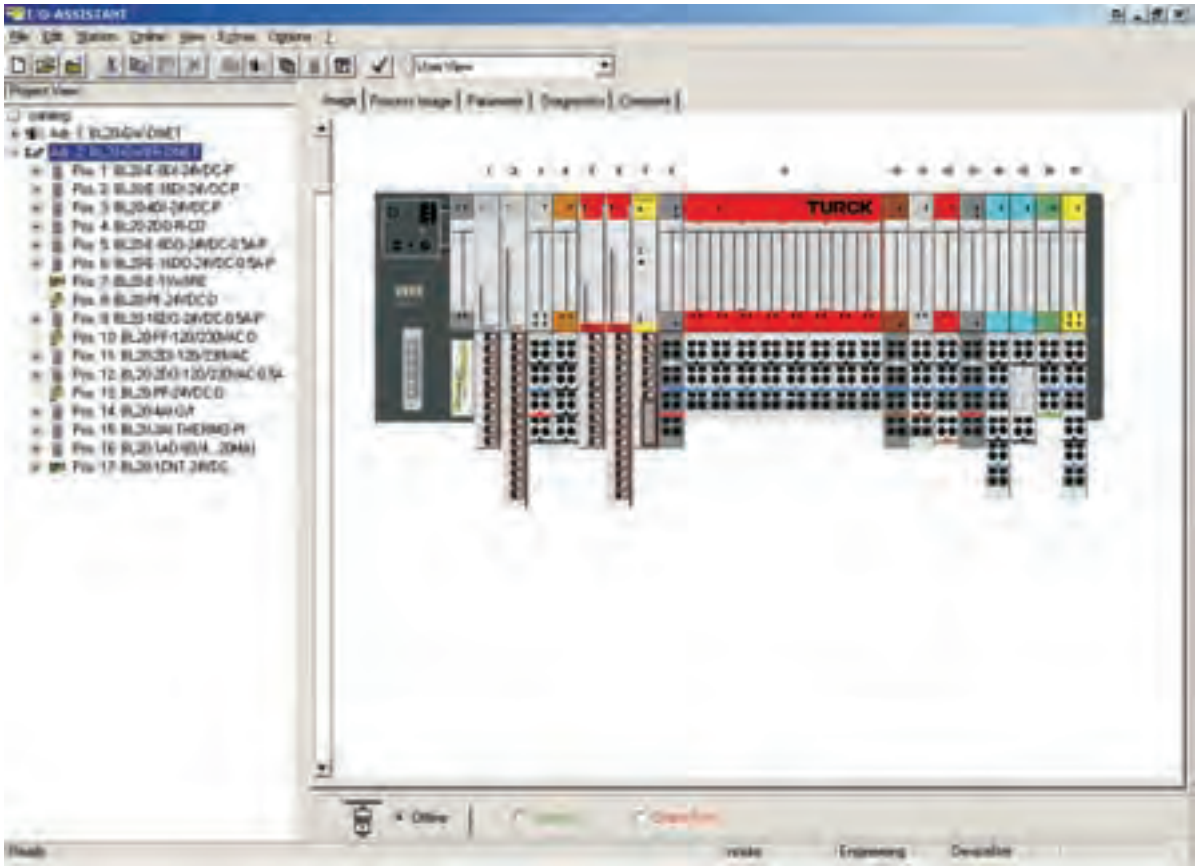
DeviceNet™ BL20 Stations

TURCK's BL20 is a modular, user configurable network I/O system designed to allow installation of nodes containing different types and sizes of I/O depending on the users needs for a particular area. Featuring IP 20 protection and terminal point connections, the BL20 is intended to be mounted in the control cabinet or in a field enclosure.

The BL20 system supports several different network protocols, including DeviceNet. A BL20 station consists of a gateway module that interfaces to the DeviceNet system, and several I/O modules that interface with the physical I/O in the field. The terminal bases are available with tension clamp or screw terminal connector types.

For more details on the BL20 system please see section H of this catalog.



TURCK's I/O Assistant software package is used to configure the BL20 system.

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BL20 Gateway

BL20-GWBR-DNET

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 20 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <250 mA from BR power supply
- Supply Current: <10 A to I/O (from U_L)
  <1.5 A to backplane (from U_{SYS})

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20
- Vibration: 1 g @ 5...100 Hz

Material

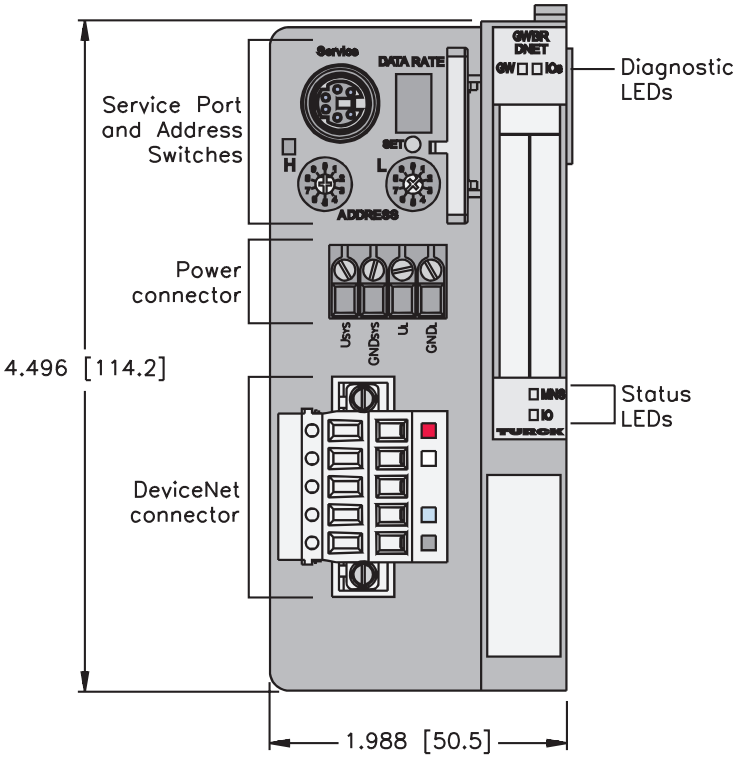
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

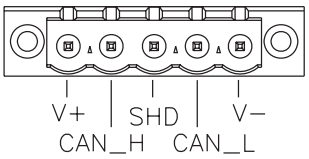
- Diagnostic information available through the DeviceNet I/O map

Diagnostics (Physical)

- LEDs to indicate status of DeviceNet and Module Bus communication

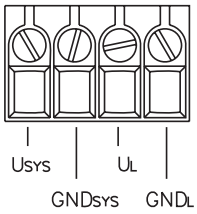


DeviceNet Connector



Power Connector

1 = U_{SYS}
2 = Gnd_{SYS}
3 = U_L
4 = Gnd_L



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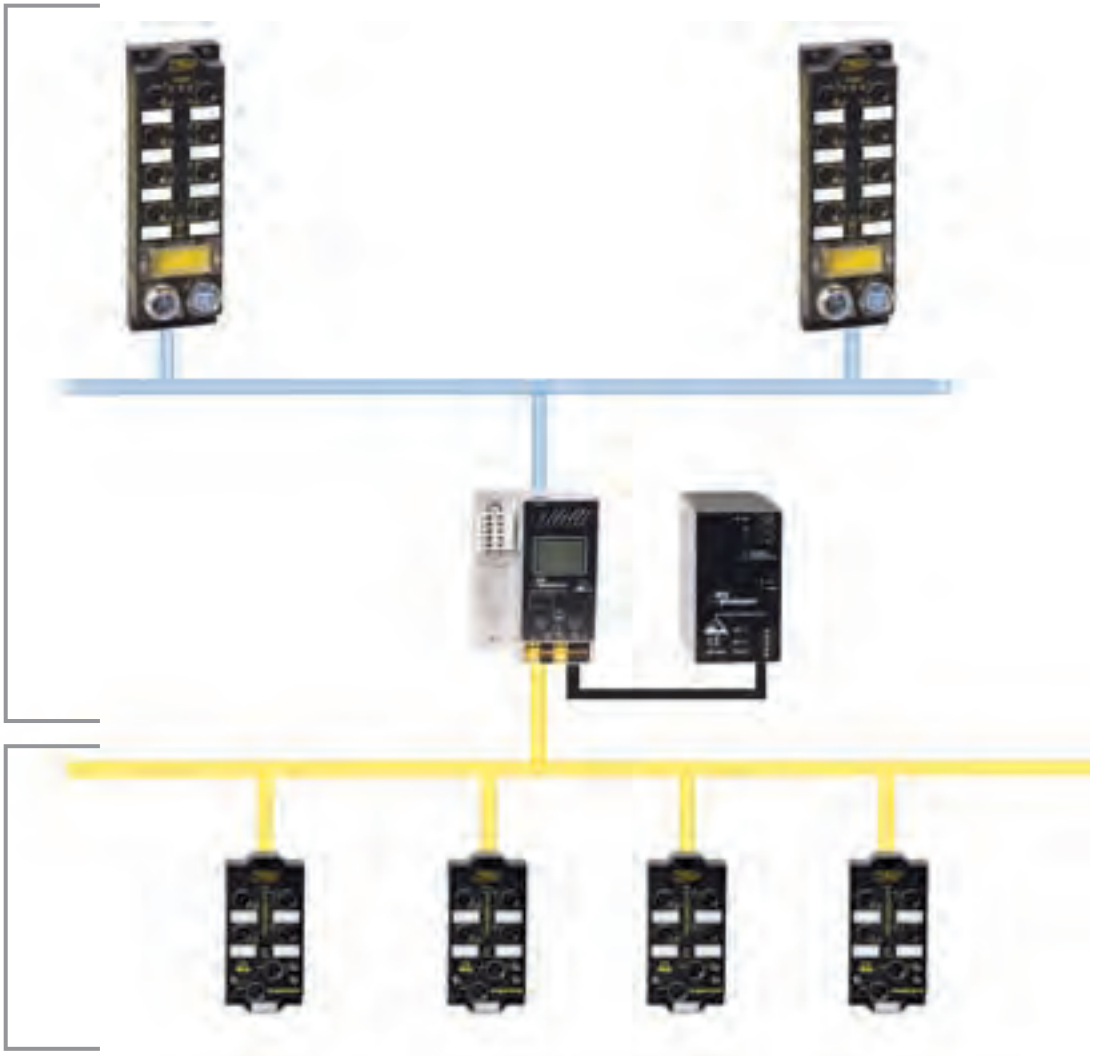
DeviceNet to AS-interface® Gateways

AS-I systems can be easily connected to a higher-level network, such as DeviceNet, through a gateway master. The gateway acts as a master to the AS-I system(s) and a slave to the DeviceNet system, mapping all of the AS-I data for DeviceNet in a single block.

For AS-I specifications and ratings details, see section E of this catalog.

DeviceNet System
(Gateway is the Slave)



AS-I System
(Gateway is the Master)

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Addressing

DeviceNet™ stations must have a network address for communication. The address for AS-i/DeviceNet gateway stations may be set via the display screen and push buttons. Please consult the manual for a particular gateway for instruction on the procedure.

Diagnostics

AS-i/DeviceNet gateways contain LEDs for diagnosing I/O and communication problems for both the DeviceNet and AS-I interfaces. For a detailed description of the LED states, please see the Bihl+Wiedemann AS-i/DeviceNet Gateway User Manual available to download from www.bihl-wiedemann.com.

Power

Most AS-i/DeviceNet gateways draw power from the AS-I power supply. The option to use a separate, non-AS-I power supply is also available. Refer to the AS-I masters section of this catalog for more details on the power supply configurations.

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AS-I Gateways in Stainless Steel

ASI-DNG-SS BW1818*
ASI-DNG-SS BW1819*
ASI-DNG-SS BW1820*
ASI-DNG-SS-C1D2 BW1824
ASI-DNG-SS-C1D2 BW1825
ASI-DNG-SS-C1D2 BW1826

* Not ETL Listed

- **AS-I v3.0 Supported**
- **Graphical Display**
- **Integrated Ground-Fault Detection**
- **Integrated AS-I Diagnostics**

Electrical

- Operating Current: 200 mA from V_{AS-I} (Power Supply A)
  200 mA from V_{AS-i1}, 70mA from V_{AS-i2} (Power Supply A2)
  250 mA from V_{AUX} (Power Supply E)

Power Distribution

- From AS-I supply for each network (Power Supply A, A2)
- From external supply (Power Supply E)

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20
- Vibration: According to EN 61131-2

Material

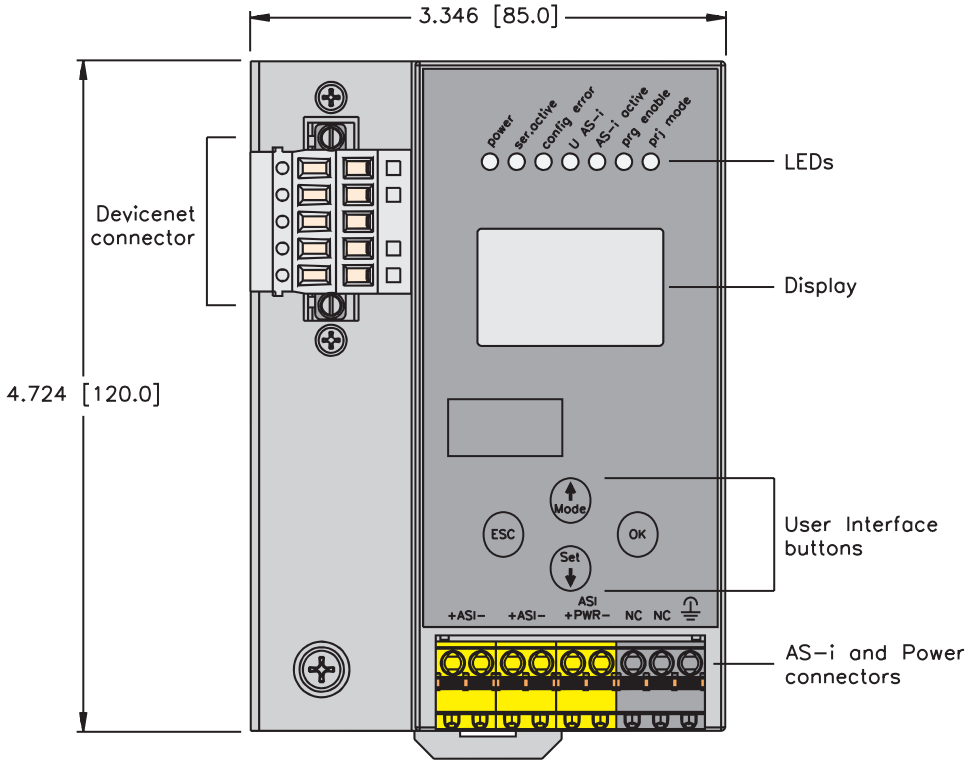
- Housing: Stainless Steel

Diagnostics (Logical)

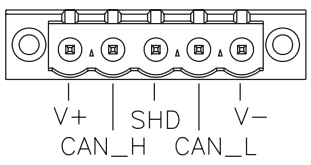
- AS-I diagnostic data is available via Network interface

Diagnostics (Physical)

- LEDs to indicate status of network and AS-I communication and power supply



DeviceNet Connector



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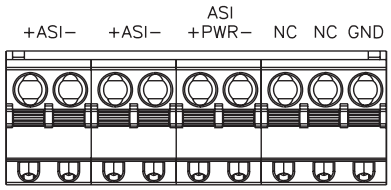
Part Number	Higher Level Network	Power Style	AS-I Version	Connection Diagram	# of AS-I Masters
ASI-DNG-SS BW1818	DeviceNet	A	3.0	A	1
ASI-DNG-SS BW1819	DeviceNet	A2	3.0	A2	2
ASI-DNG-SS BW1820	DeviceNet	E	3.0	E	2
ASI-DNG-SS-C1D2 BW1824*	DeviceNet	A	3.0	A	1
ASI-DNG-SS-C1D2 BW1825*	DeviceNet	A2	3.0	A2	2
ASI-DNG-SS-C1D2 BW1826*	DeviceNet	E	3.0	E	2

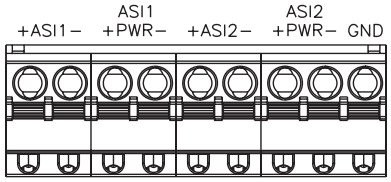
* Approved for use in Class 1, Division 2 areas.

Input/Output Connectors

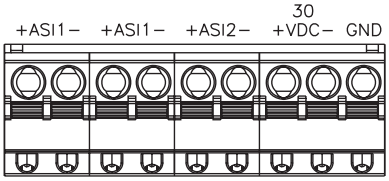
A



A2



E



A - Single AS-I network is powered by and AS-I power supply

A2 - Dual AS-I networks are each powered by their own AS-I power supply

E - Dual AS-I networks are both powered by a single 30 VDC supply, decoupled through the gateway

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Notes:

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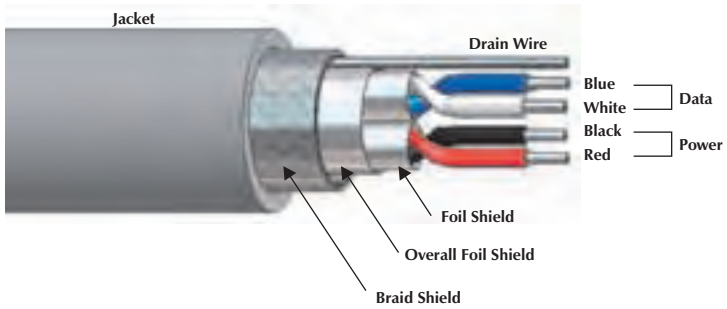
DeviceNet™, Thin Cable Specifications

- **Cable that Meets the Requirements of ODVA Thin or Type 1 Cable**
- **Commonly Used as Drop Cable to a Maximum Length of 6 Meters (20 Feet) or Trunk Cable in Networks Up to a Maximum Length of 100 Meters (328 Feet)**



Data Rate	Maximum Trunk Length	Drop Length	
		Maximum	Cumulative
125 Kbaud	100 meters (328 feet)	6 meters (20 feet)	156 meters (512 feet)
250 Kbaud	100 meters (328 feet)		78 meters (feet)
500 Kbaud	100 meters (328 feet)		39 meters (feet)

Type	Approvals	Power Pair		Data Pair		Outer Jacket	Shields	Bulk Cable Part Number / Weight/300 M
		AWG Color Code	DCR (/1000 feet) Insulation	AWG Color Code	DCR (/1000 feet) Insulation	Material Color Nominal O.D.	Type Drain Wire	
572 AWM 2464 75°C 300 Volts	**NEC** PLTC **CEC** AWM-I/II A/B FT4	2/22 AWG BK/RD	18.1 Ohms PVC	2/22 AWG BU/WH	18.1 Ohms PE	PVC Light Grey 7.2 mm (.285 in)	Foil 22 AWG	RB50603-*M 44 lbs.
577 AWM 2464 75°C 300 Volts	**NEC** PLTC **CEC** AWM-I/II A/B FT4	2/22 AWG BK/RD	16.9 Ohms PVC	2/22 AWG BU/WH	16.9 Ohms PE	PVC Light Grey 8.4 mm (.330 in)	Foil/Braid 22 AWG	RB50629-*M 65 lbs. ***flexlife-10*** ®
578 AWM 2464 75°C 300 Volts	**NEC** PLTC/CL2 **CEC** CMG	2/22 AWG BK/RD	18.1 Ohms PVC	2/22 AWG BU/WH	18.1 Ohms PE	PVC Light Grey 7.8 mm (.310 in)	Foil/Braid 22 AWG	RB50651-*M 51 lbs.
5715 AWM 2095 80°C 300 Volts	**NEC** AWM **CEC** AWM-I/II A/B FT1	2/22 AWG BK/RD	16.5 Ohms PVC	2/22 AWG BU/WH	16.5 Ohms PE	PVC Light Grey 6.0 mm (.235 in)	Foil (Data Only) 22 AWG	RB50764-*M 26 lbs.
5725 AWM 21080 75°C 300 Volts	**NEC** AWM	2/22 AWG BK/RD	16.5 Ohms PE	2/24 AWG BU/WH	27.7 Ohms PE	PUR Violet 7.1 mm (.280 in)	Foil/Braid 22 AWG	RB50994-*M 50 lbs. **Halogen-Free** ††
5732 AWM 20626 80°C 600 Volts	**NEC** AWM CEC AWM-I/II A/B FT4	2/22 AWG BK/RD	16.5 Ohms PVC	2/22 AWG BU/WH	16.5 Ohms PE	TPE Charcoal Grey 9.3 mm (.365 in)	Foil/Braid 22 AWG	RB51296-*M 68 lbs. ***flexlife*** ® ***weldlife*** ™

* Indicates length in meters.
Standard cable lengths are 30, 75, 150, 225 and 300 meters.
†† Zero Halogen: to DIN VDE 0472 part 815 + IEC 60754-1

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DeviceNet™, Mid Cable Specifications

- **Cable That Meets the Requirements of ODVA Mid or Type III Cable**
- **Provides More Flexibility When Used as a Trunk Cable Up to a Maximum Length of 300 Meters (984 Feet)**

Figure A

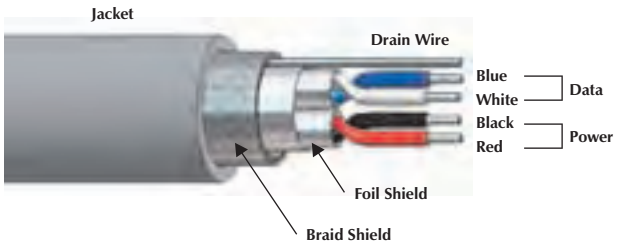
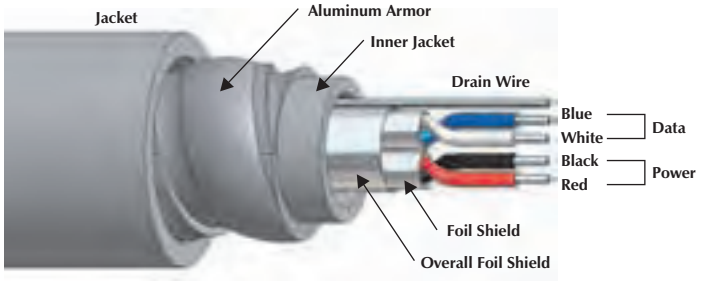


Figure B



Data Rate	Maximum Trunk Length
125 Kbaud	300 meters (984 feet)
250 Kbaud	250 meters (820 feet)
500 Kbaud	100 meters (328 feet)

Type	Approvals	Power Pair		Data Pair		Outer Jacket	Shields	Bulk Cable Part Number / Weight/300 M	Figure
		AWG Color Code	DCR (/1000 feet) Insulation	AWG Color Code	DCR (/1000 feet) Insulation	Material Color Nominal O.D.	Type Drain Wire		
5711 AWM 2464 80°C 300 Volts	**NEC** PLTC **CEC** AWM-I/II A/B FT4	2/16 AWG BK/RD	4.1 Ohms PVC	2/20 AWG BU/WH	11.2 Ohms PE	PVC Light Grey 8.4 mm (.330 in)	Foil 20 AWG	RB50721-*M 65 lbs.	A
5722 AWM 2464 75°C 300 Volts	**NEC** PLTC **CEC** AWM-I/II A/B FT4	2/17 AWG BK/RD	5.2 Ohms SR-PVC	2/20 AWG BU/WH	10.4 Ohms PE	PVC Light Grey 8.9 mm (.350 in)	Foil 20 AWG	RB50876-*M 71 lbs. ***flexlife-10*** ®	A
5723 AWM 20233 80°C 300 Volts	**NEC** AWM **CEC** AWM-I/II A/B FT1	2/17 AWG BK/RD	5.2 Ohms PVC	2/20 AWG BU/WH	10.4 Ohms PE	PUR Light Grey 8.4 mm (.330 in)	Foil 20 AWG	RB50877-*M 60 lbs. ***flexlife-10***	A
5721A 75°C 300 Volts	**NEC** PLTC/CM **CEC** CMG HL ABCD	2/18 AWG BK/RD	6.7 Ohms PVC	2/20 AWG BU/WH	10.4 Ohms PE	PVC Light Grey 14.9 mm (.585 in) Aluminum Armor	Foil/Armor 20 AWG	RB50859-*M 101 lbs. ***armorfast*** ®	B
5731 AWM 20626 80°C 300 Volts	**NEC** AWM **CEC** AWM-I/II A/B FT1	2/16 AWG BK/RD	4.1 Ohms PVC	2/20 AWG BU/WH	10.4 Ohms PE	TPE Charcoal Grey 10 mm (.394 in)	Foil/Spiral None	RB51235-*M 95 lbs. ***flexlife weldlife***™	A

* Indicates length in meters.
Standard cable lengths are 30, 75, 150, 225 and 300 meters.

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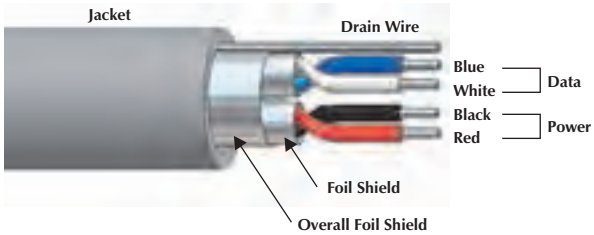
DeviceNet™, Thick Cable Specifications

- **Cable That Meets the Requirements of ODVA Thick or Type II Cable**
- **It Provides the Most Power to a Network When Used as a Trunk Cable Up to a Maximum Standard Cable Length of 500 Meters (1640 Feet)**



Data Rate	Maximum Trunk Length	Maximum Trunk Length (5720)
125 Kbaud	500 meters (1640 feet)	420 meters (1378 feet)
250 Kbaud	250 meters (820 feet)	200 meters (656 feet)
500 Kbaud	100 meters (328 feet)	100 meters (328 feet)

Type	Approvals	Power Pair		Data Pair		Outer Jacket	Shields	Bulk Cable Part Number / Weight/300 M
		AWG Color Code	DCR (/1000 feet) Insulation	AWG Color Code	DCR (/1000 feet) Insulation	Material Color Nominal O.D.	Type Drain Wire	
575 AWM 20233 80°C 300 Volts	**NEC** AWM **CEC** AWM-I/II A/B FT1	2/15 AWG BK/RD	3.3 Ohms PVC	2/18 AWG BU/WH	6.5 Ohms PE	PUR Light Grey 10.4 mm (.409 in)	Foil/Braid 18 AWG	RB50633-*M 94 lbs.
579 AWM 2570 75°C 300 Volts	**NEC** PLTC/CL2 **CEC** CMG	2/15 AWG BK/RD	3.2 Ohms PVC	2/18 AWG BU/WH	6.5 Ohms PE	PVC Light Grey 11.3 mm (.445 in)	Foil/Braid 18 AWG	RB50652-*M 122 lbs.
5720 75°C 600 Volts	**NEC** TC	2/16 AWG BK/RD	4.9 Ohms PVC	2/18 AWG BU/WH	6.9 Ohms PE	PVC Light Grey 13 mm (.515 in)	Foil/Braid 16 AWG	RB50793-*M 168 lbs.
5726 AWM 21080 70°C 300 Volts	NEC AWM	2/15 AWG BK/RD	3.2 Ohms PE	2/18 AWG BU/WH	6.9 Ohms PE	PUR Violet 11.2 mm (.449 in)	Foil/Braid 18 AWG	RB51038-*M 150 lbs. **Halogen-Free** ††
5727 75°C 300 Volts	NEC PLTC CEC AWM-I/II A/B FT4	2/15 AWG BK/RD	3.44 Ohms PVC	2/18 AWG BU/WH	7.06 Ohms PE	PVC Light Grey 13.7 mm (.540 in)	Foil/Spiral None	RB51106-*M 157 lbs ***flexlife-10*** ®
5730 AWM 20626 80°C 300 Volts	**NEC** AWM **CEC** AWM-I/II A/B FT1	2/15 AWG BK/RD	3.44 Ohms PVC	2/18 AWG BU/WH	7.06 Ohms PE	TPE Grey 10.4 mm (.413 in)	Foil/Braid 18 AWG	RB51231-*M 110 lbs. ***flexlife weldlife***™

* Indicates length in meters.
Standard cable lengths are 30, 75, 150, 225 and 300 meters.
†† Zero Halogen: to DIN VDE 0472 part 815 + IEC 60754-1

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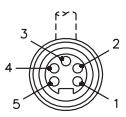
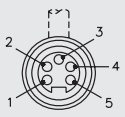
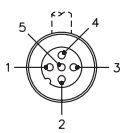
DeviceNet™, Cable/Cordset Selection Matrix

			minifast®				*eurofast*® (Thin/Mid Only)
			Pin (Male)		Socket (Female)		Pin (Male)
			1 RSM	2 WSM	3 RKM	4 WKM	5 RSC
		Bare	RSM 57x-*M	WSM 57x-*M	RKM 57x-*M	WKM 57x-*M	RSC 57x-*M
minifast	Pin (Male)	1 RSM	RSM RSM 57x-*M	RSM WSM 57x-*M	RSM RKM 57x-*M	RSM WKM 57x-*M	RSM RSC 57x-*M
		2 WSM		WSM WSM 57x-*M	WSM RKM 57x-*M	WSM WKM 57x-*M	WSM RSC 57x-*M
	Socket (Female)	3 RKM			RKM RKM 57x-*M	RKM WKM 57x-*M	RKM RSC 57x-*M
		4 WKM				WKM WKM 57x-*M	WKM RSC 57x-*M
eurofast (Thin/Mid Only)	Pin (Male)	5 RSC					RSC RSC 57x-*M
		6 WSC					
	Socket (Female)	7 RKC					
		8 WKC					

See pages J91 - J92 for dimensional drawings.

* Indicates length in meters.
x Indicates cable type.
Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.
Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 Meters. Consult factory for other lengths.
For stainless steel coupling nuts change part number RSM ... to RSV, WSM ... to WSV.

minifast		Pinouts	*eurofast*	
Male	Female		Male	Female
		1. Bare (Shield Drain Wire) 2. Red (+ Voltage) 3. Black (- Voltage) 4. White (CAN_H) 5. Blue (CAN_L)		

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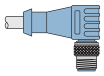
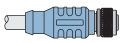
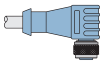
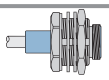
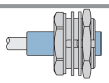
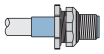
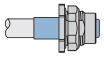
DeviceNet™, Cable/Cordset Selection Matrix

eurofast® (Thin/Mid Only)			*minifast*® Bulkhead		*eurofast* Bulkhead (Thin Only)	
Pin (Male)	Socket (Female)		Pin (Male)	Socket (Female)	Pin (Male)	Socket (Female)
6  WSC	7  RKC	8  WKC	9  RSFP	10  RKFP	11  FSFD	12  FKFD
WSC 57x-*M	RKC 57x-*M	WKC 57x-*M	RSFP 57x-*M	RKFP 57x-*M	FSFD 57x-*M	FKFD 57x-*M
RSM WSC 57x-*M	RSM RKC 57x-*M	RSM WKC 57x-*M	RSM RSFP 57x-*M	RSM RKFP 57x-*M	RSM FSFD 57x-*M	RSM FKFD 57x-*M
WSM WSC 57x-*M	WSM RKC 57x-*M	WSM WKC 57x-*M	WSM RSFP 57x-*M	WSM RKFP 57x-*M	WSM FSFD 57x-*M	WSM FKFD 57x-*M
RKM WSC 57x-*M	RKM RKC 57x-*M	RKM WKC 57x-*M	RKM RSFP 57x-*M	RKM RKFP 57x-*M	RKM FSFD 57x-*M	RKM FKFD 57x-*M
WKM WSC 57x-*M	WKM RKC 57x-*M	WKM WKC 57x-*M	WKM RSFP 57x-*M	WKM RKFP 57x-*M	WKM FSFD 57x-*M	WKM FKFD 57x-*M
RSC WSC 57x-*M	RSC RKC 57x-*M	RSC WKC 57x-*M	RSC RSFP 57x-*M	RSC RKFP 57x-*M	RSC FSFD 57x-*M	RSC FKFD 57x-*M
WSC WSC 57x-*M	WSC RKC 57x-*M	WSC WKC 57x-*M	WSC RSFP 57x-*M	WSC RKFP 57x-*M	WSC FSFD 57x-*M	WSC FKFD 57x-*M
	RKC RKC 57x-*M	RKC WKC 57x-*M	RKC RSFP 57x-*M	RKC RKFP 57x-*M	RKC FSFD 57x-*M	RKC FKFD 57x-*M
		WKC WKC 57x-*M	WKC RSFP 57x-*M	WKC RKFP 57x-*M	WKC FSFD 57x-*M	WKC FKFD 57x-*M

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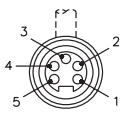
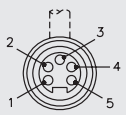
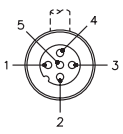
DeviceNet™, Open Connector Cordset Selection Matrix

		minifast ®				*eurofast* ®
		Pin (Male)		Socket (Female)		Pin (Male)
		1 RSM	2 WSM	3 RKM	4 WKM	5 RSC
13 CBC5	CBC5 57x-*M	RSM CBC5 57x-*M	WSM CBC5 57x-*M	RKM CBC5 57x-*M	WKM CBC5 57x-*M	RSC CBC5 57x-*M
14 BK52C	BK52C 57x-*M	RSM BK52C 57x-*M	WSM BK52C 57x-*M	RKM BK52C 57x-*M	WKM BK52C 57x-*M	RSC BK52C 57x-*M
	Thin, Mid and Thick Cable					Thin Cable Only

See pages J90 - J92 for dimensional drawings.

* Indicates length in meters.
x Indicates cable type.
Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.
Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 Meters. Consult factory for other lengths.
For stainless steel coupling nut: Change part number (RSM ... to RSV, RSC ... to RSCV).

minifast		Pinouts	*eurofast*	
Male	Female		Male	Female
		1. Bare (Shield Drain Wire) 2. Red (+ Voltage) 3. Black (- Voltage) 4. White (CAN_H) 5. Blue (CAN_L)		

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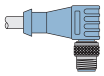
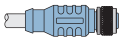
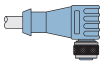
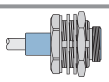
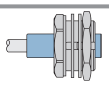
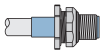
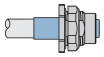
DeviceNet™, Open Connector Cordset Selection Matrix

eurofast®			*minifast*® Bulkhead		*eurofast* Bulkhead	
Pin (Male)	Socket (Female)		Pin (Male)	Socket (Female)	Pin (Male)	Socket (Female)
6  WSC	7  RKC	8  WKC	9  RSFP	10  RKFP	11  FSFD	12  FKFD
WSC CBC5 57x-*M	RKC CBC5 57x-*M	WKC CBC5 57x-*M	RSFP CBC5 57x-*M	RKFP CBC5 57x-*M	FSFD CBC5 57x-*M	FKFD CBC5 57x-*M
WSC BK52C 57x-*M	RKC BK52C 57x-*M	WKC BK52C 57x-*M	RSFP BK52C 57x-*M	RKFP BK52C 57x-*M	FSFD BK52C 57x-*M	FKFD BK52C 57x-*M
Thin and Mid Cable Only			Thin, Mid and Thick Cable		Thin Cable Only	

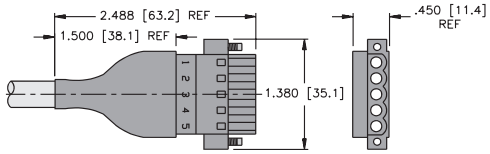
See pages J91 - J92 for dimensional drawings.

* Indicates length in meters.
x Indicates cable type.
Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.
Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 Meters. Consult factory for other lengths.

Specifications

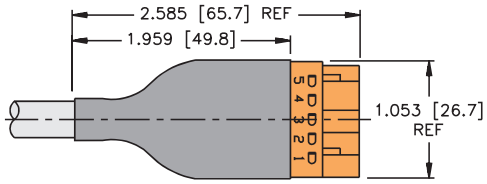
Housing:	PA (Nylon)
Protection:	NEMA 1, and IEC IP 20
Rated Voltage:	250 V
Rated Current:	12 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

13

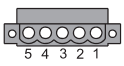
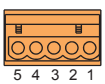


CBC5 .. **Page J89**

14



BK52C .. **Page J89**

CBC5	Pinouts	BK52C
	1 = Black (- Voltage) 2 = Blue (CAN_L) 3 = Bare (Shield Drain) 4 = White (CAN_H) 5 = Red (+ Voltage)	

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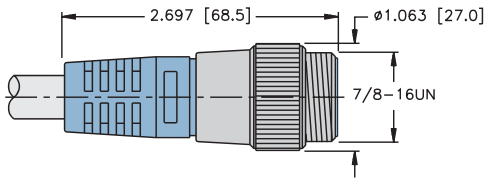
DeviceNet™, *minifast*® Cordset and Receptacle Connector Dimensions

Specifications

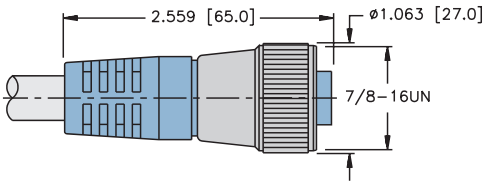
Overmold:	PUR (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	PUR (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67
Rated Voltage:	300 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

1



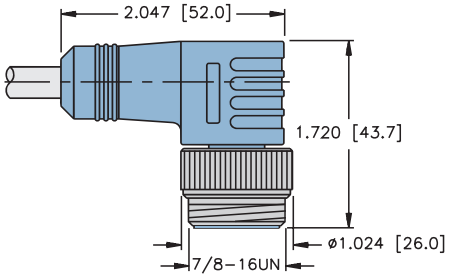
RSM .. **Pages J87 - J90**

3



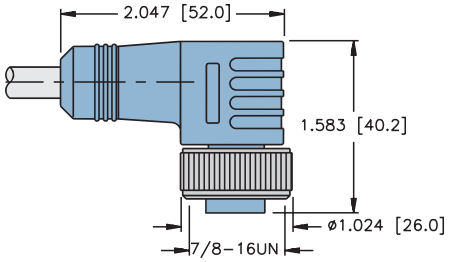
RKM .. **Pages J87 - J90**

2



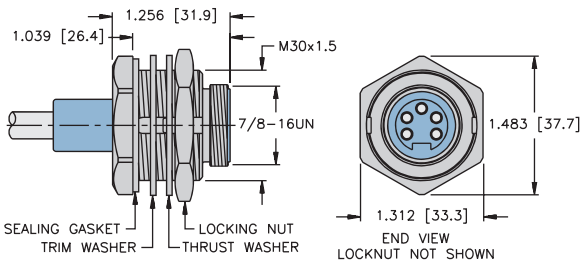
WSM .. **Pages J87 - J90**

4



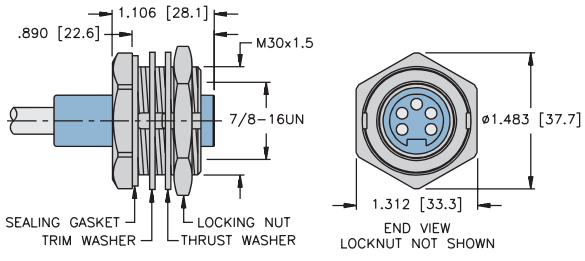
WKM .. **Pages J87 - J90**

9



RSFP .. **Pages J87 - J90**

10



RKFP .. **Pages J87 - J90**

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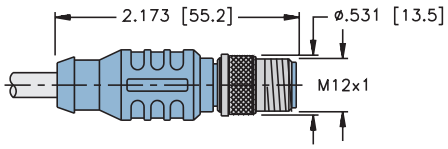
DeviceNet™, *eurofast*® Cordset and Receptacle Connector Dimensions

Specifications

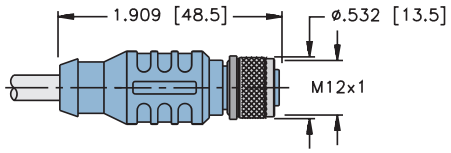
Overmold:	PUR (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	PUR (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

5



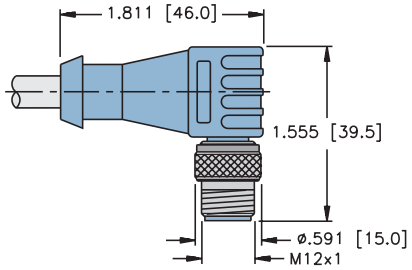
RSC .. **Pages J87 - J90**

7



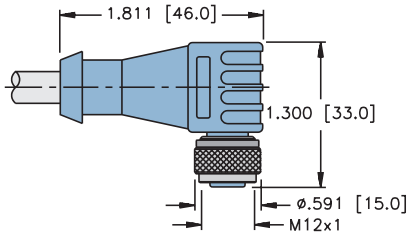
RKC .. **Pages J87 - J90**

6



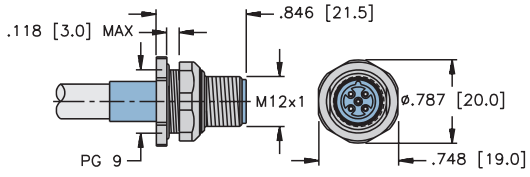
WSC .. **Pages J87 - J90**

8



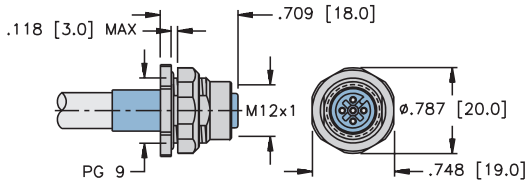
WKC .. **Pages J87 - J90**

11



FSFD .. **Pages J87 - J90**

12



FKFD .. **Pages J87 - J90**

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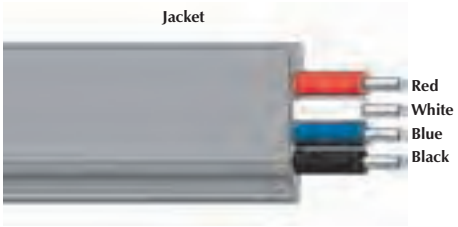
DeviceNet™, Flat Cable Specifications

- **Cable that Meets the Requirements of ODVA Thick or Type II Cable**
- **Uses Insulation Displacement Connectors as Device Taps**

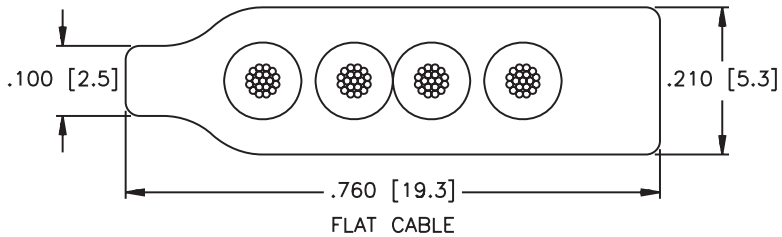


Data Rate	Maximum Trunk Length
125 Kbaud	420 meters (1378 feet)
250 Kbaud	200 meters (656 feet)
500 Kbaud	100 meters (328 feet)

Type	Approvals	Power Pair		Data Pair		Outer Jacket	Shields	Bulk Cable Part Number / Weight/300 M
		AWG Color Code	DCR (/1000 feet) Insulation	AWG Color Code	DCR (/1000 feet) Insulation	Material Color Nominal O.D.	Type Drain Wire	
5713 75°C 300 Volts	**NEC** CL2 **CEC** AWM-I/II A/B FT4	2/16 AWG BK/RD	4.1 PE	2/16 AWG BU/WH	4.1 PE	PVC Light Grey Flat Profile††	None	RB50787-*M 116 lbs.

* Indicates length in meters.
Standard cable lengths are 30, 75, 150, 225 and 300 meters. Consult factory for other lengths.
†† Flat cable profile is 19.3 mm (0.760 in) x 5.3 mm (0.210 in).

Flat Cable Profile



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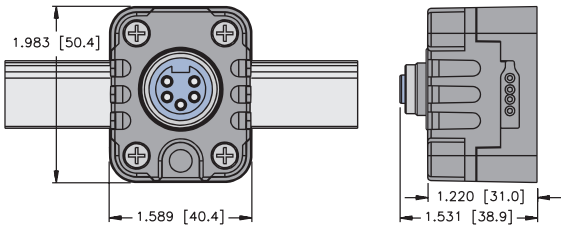
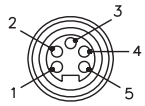
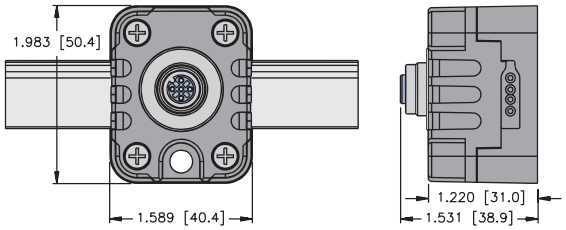
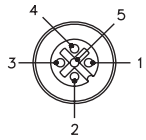
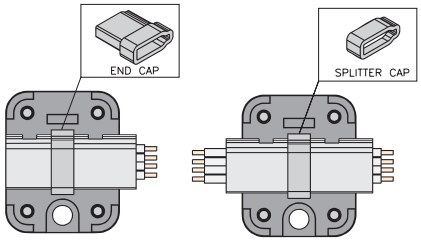
DeviceNet™, Flat Cable Connectors

- **Provides a *minifast*® or *eurofast*® Drop Connector from Flat Cable**

Housing	Part Number	Application	Pinouts
	RKF 57-IDC	(7/8-16UN) ***minifast*** Flat Cable Connector • Flat cable connector to female (7/8-16UN) ***minifast*** drop	**Female** 
	RKF 40-IDC	(7/8-16UN) ***minifast*** Auxiliary Power Connector	**Female**
	FK 57-IDC	(M12x1) ***eurofast*** Flat Cable Connector • Flat cable connector to female (M12x1) ***eurofast*** drop	**Female** 
	FK 57-IDC ET	Includes connector, end termination, and splice kit	
	RKF 57-IDC ET		
	RKF 40-IDC ET		

Specifications

Housing:	POM (Nylon)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	Nylon
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	250 V
Rated Current:	4 A (***eurofast***), 9 A (***minifast***)
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

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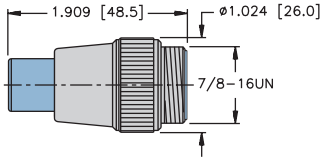
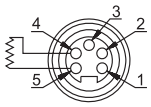
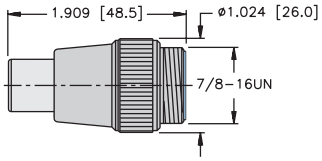
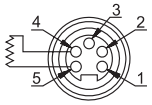
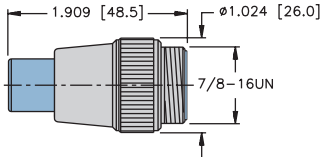
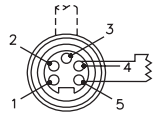
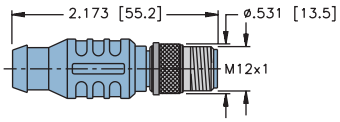
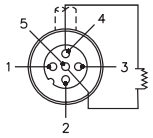
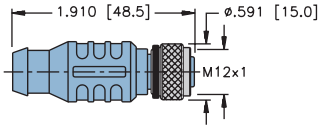
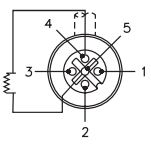
DeviceNet™, Terminating Resistors

- **Terminating Resistors Stabilize and Minimize Reflections on the Bus Line**
- **A Terminating Resistor is Required at the Beginning and End of the Main Bus Line**

Housing	Part Number	Specs	Application	Pinouts
	RSM 57-TR2	Nickel Plated Brass or Stainless Steel 300 V, 9 A -40° to +75°C IP 67	***minifast*** ® Terminating Resistor • Male ***minifast*** connector • 120 Ohms, 1/4 W internal resistance	**Male** 
	RSM 57-TR2/VM	Nickel Plated Brass or Stainless Steel 300 V, 9 A -40° to +75°C IP 67	***minifast*** Terminating Resistor with Voltage Monitoring • Male ***minifast*** connector • Led indication: Red - reverse polarity Green-okay • 120 Ohms, 1/4 W internal resistance	**Male** 
	RKM 57-TR2	Nickel Plated Brass or Stainless Steel 250 V, 4 A -40° to +75°C IP 67	***minifast*** Terminating Resistor • Female ***minifast*** connector • 120 Ohms, 1/4 W internal resistance	**Female** 
	RSE 57-TR2	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +75°C IP 67	***eurofast*** ® Terminating Resistor • Male ***eurofast*** connector • 120 Ohms, 1/4 W internal resistance	**Male** 
	RKE 57-TR2	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +75°C IP 67	***eurofast*** Terminating Resistor • Female ***eurofast*** connector • 120 Ohms, 1/4 W internal resistance	**Female** 

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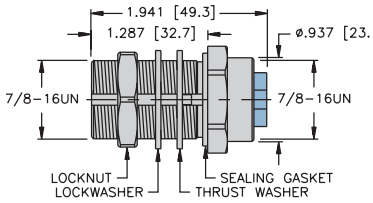
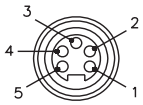
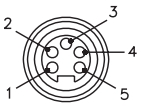
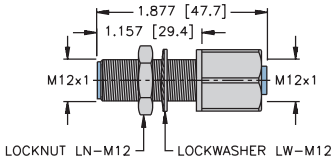
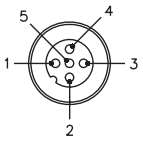
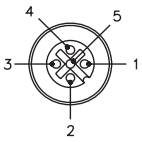
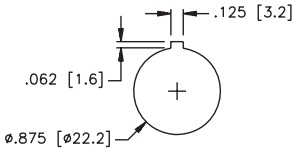
DeviceNet™, Receptacles

- **Receptacles Provide Transition from Male to Female Connectors**
- **Available for Bulkhead and Feed Through Applications**

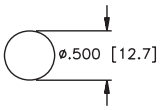
Housing	Part Number	Specs	Application	Pinouts
	RSF RKF 57/22	Nickel Plated CuZn or Stainless Steel 300 V, 9 A -40° to +75°C IP 67	***minifast*** ® Bulkhead Receptacle • Straight male/female feed through	Male  Female 
	FKM FS 57/M12	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +75°C IP 67	***eurofast*** ® Bulkhead Receptacle • Straight male/female feed through	Male  Female 

Standard housing material is nickel plated brass. "RSF RKF.."; "RSFV RKFV.." indicates stainless steel housing.

Panel Cutout
RSF RKF 57/22



Panel Cutout
FKM FS 57/M12



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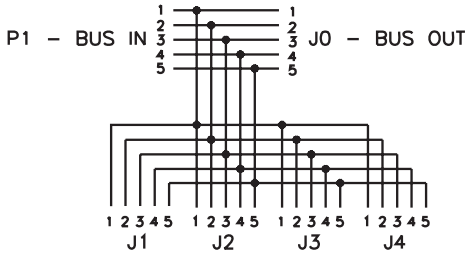
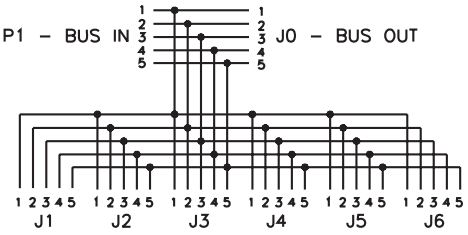
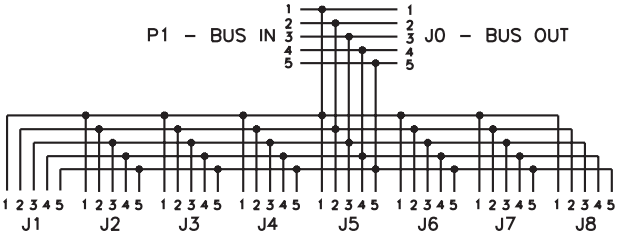
DeviceNet™, Panel Mount Junction Box

- DIN Rail Junction Box
- Open Style
- Removable Terminals

FM APPROVED

Part Number	Application	Wiring Diagrams
JRBS-57-4	Open style DIN mounted junction box	
JRBS-57-6		
JRBS-57-8		

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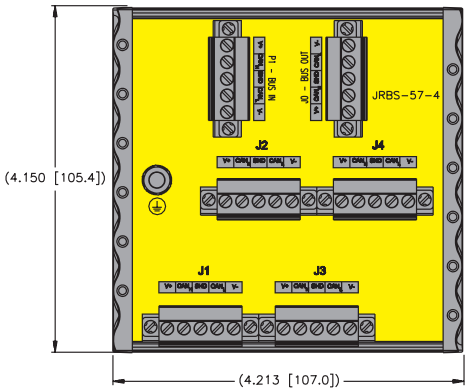
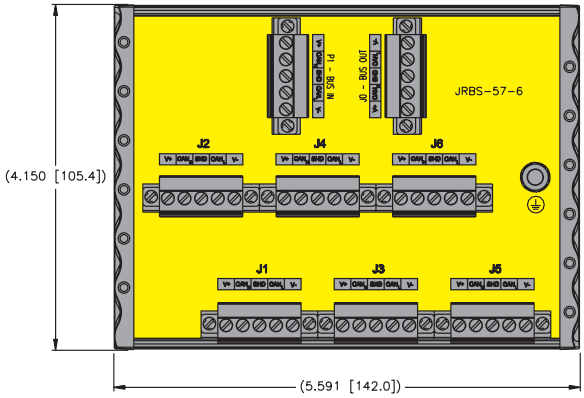
Specifications

Housing:	Aluminum
Contact Carrier:	PA (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1 and IP 20
Connection Mode:	Snap-on DIN RAIL (DIN 50022)
Ambient Temperature:	-25° to +70°C (-13° to +158°F)

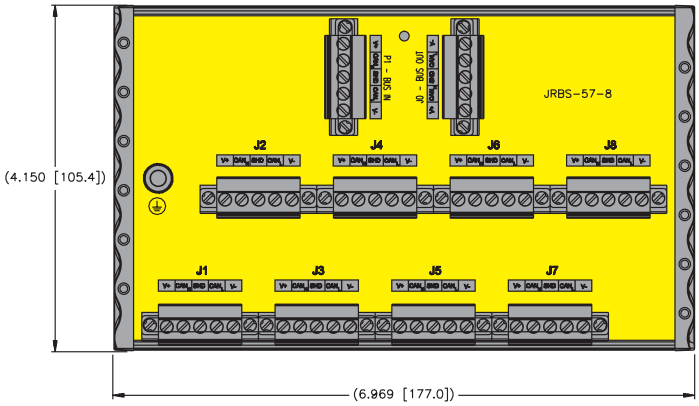
4-Port



6-Port



8-Port



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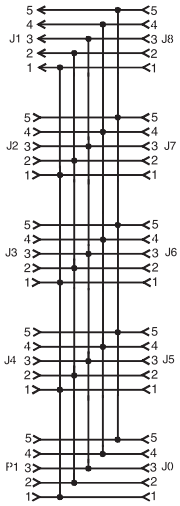
DeviceNet™, *eurofast*® Junctions

- **Multi-port Junction Boxes for Connecting I/O in Concentrated Areas**
- **Available in Standard and Voltage Monitoring**

Part Number	Application	Wiring Diagram
JBBS-57-E811	8-port Junction with Voltage Monitoring • Bus in/bus out connections (7/8-16UN) ***minifast***® • Eight (M12x1) ***eurofast*** connectors for field connectors • Voltage monitoring provides low voltage (12.9 V) and high voltage (25.6) indication LED indication: (Lo) < 12.9 V Amber (Ok) 12.9 - 25.6 V Green (Hi) > 25.6 V Amber	
JBBS-57-E812	8-port Junction • Bus in/bus out connections (7/8-16UN) ***minifast*** • Eight (M12x1) ***eurofast*** connectors for field connectors	

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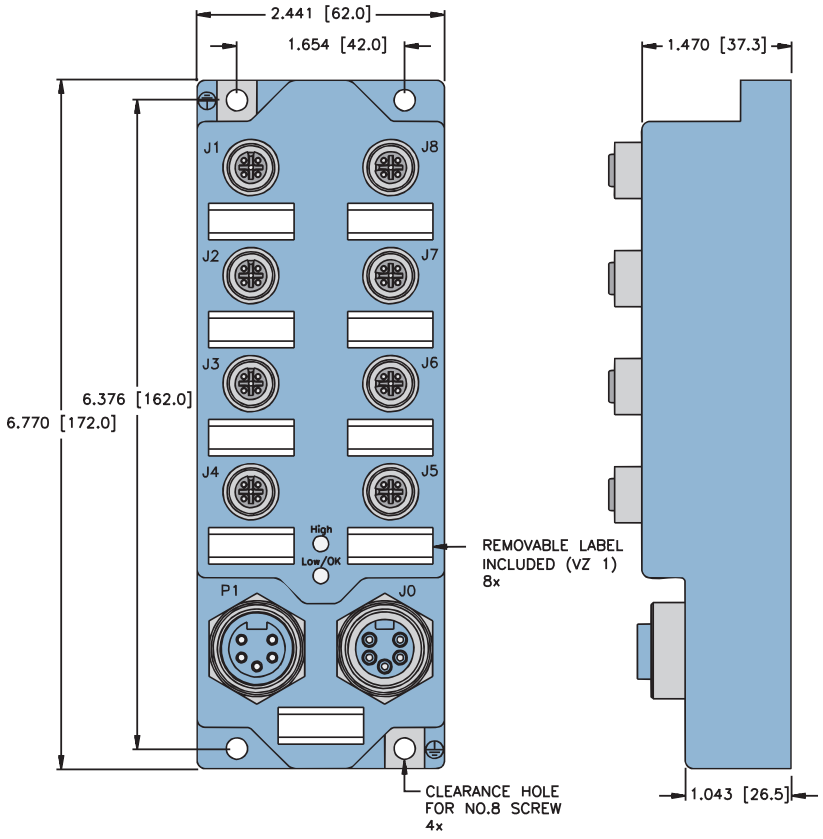
Specifications

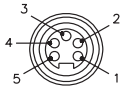
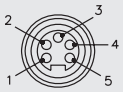
Housing:	POM (Nylon)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	Nylon
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

8-port



Pinouts

minifast		*eurofast*
Male	**Female**	**Female**
		

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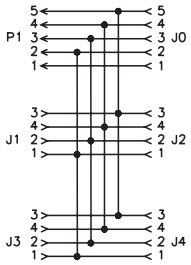
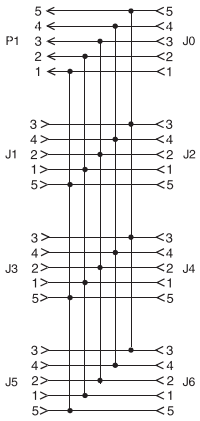
DeviceNet™, *minifast*® Passive Multi-Port Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Bus-In / Bus-Out Eliminates Need for Splitter Tee**
- **Suitable for Outdoor Applications**

Part Number	Specs	Application	Wiring Diagrams
JBBS-57-M401 JBBS-57-M413	Die-cast aluminum enclosure.	4-port Junction • Bus in/bus out straight (7/8-16UN) ***minifast*** through ports • Four device ports with (7/8-16UN) ***minifast*** connectors	
JBBS-57-M601 JBBS-57-M613		6-port Junction • Bus in/bus out straight (7/8-16UN) ***minifast*** through ports • Six device ports with (7/8-16UN) ***minifast*** connectors	

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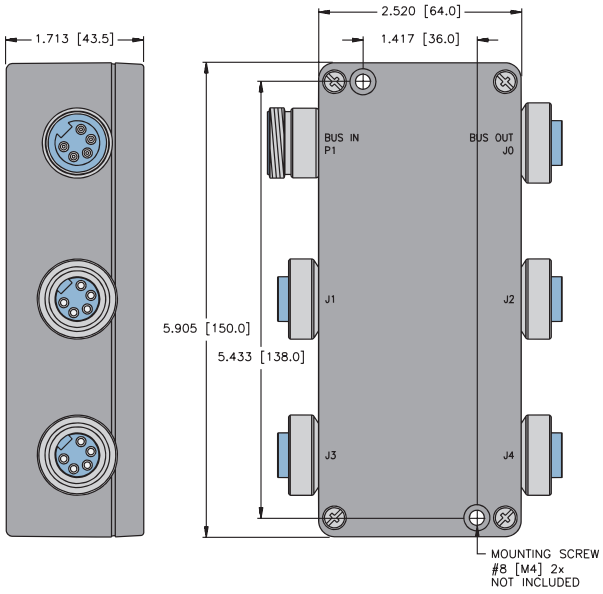
Specifications

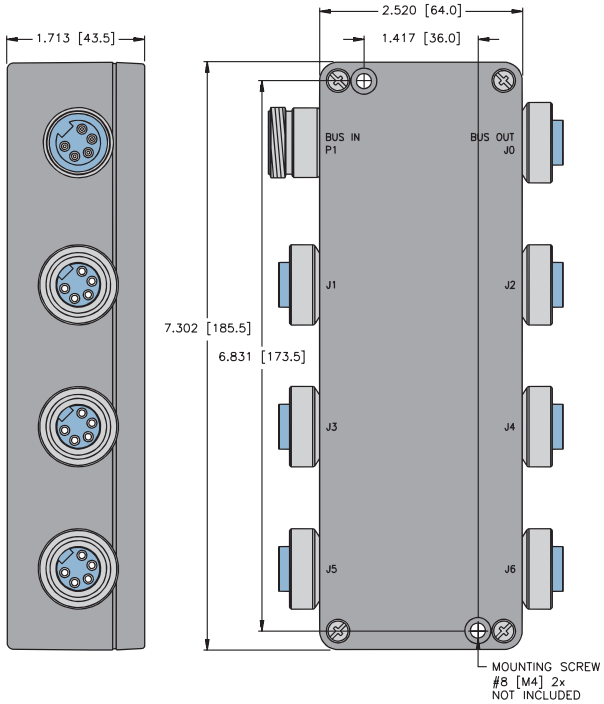
Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

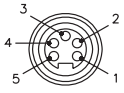
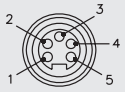
4-Port



6-Port



Pinouts

minifast	
Male	**Female**
	

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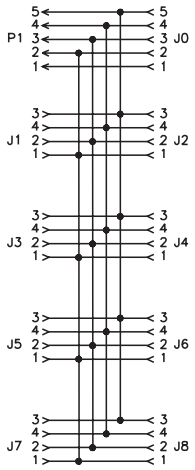
- **Suitable for Outdoor Applications**

Part Number	Specs	Application	Wiring Diagrams
JBBS-57-M801 JBBS-57-M813	Die-cast aluminum enclosure.	8-port Junction • Bus in/bus out straight (7/8-16UN) ***minifast*** through ports • Eight device ports with (7/8-16UN) ***minifast*** connectors	

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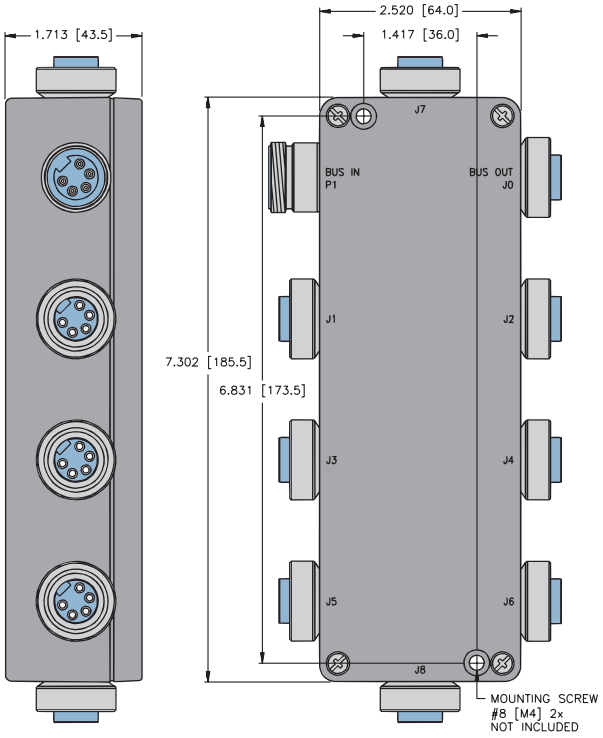
Specifications

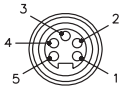
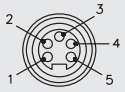
Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

8-Port



Pinouts

minifast	
Male	**Female**
	

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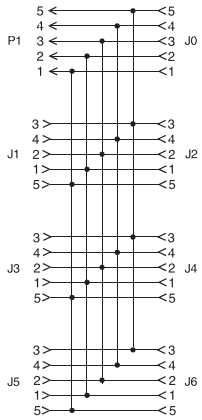
- **Suitable for Outdoor Applications**

Part Number	Specs	Application	Wiring Diagrams
JBBS-57-M623	Fiberglass enclosure	6-port Junction • Bus in/bus out straight (7/8-16UN) ***minifast*** through ports • Six device ports with (7/8-16UN) ***minifast*** connectors	

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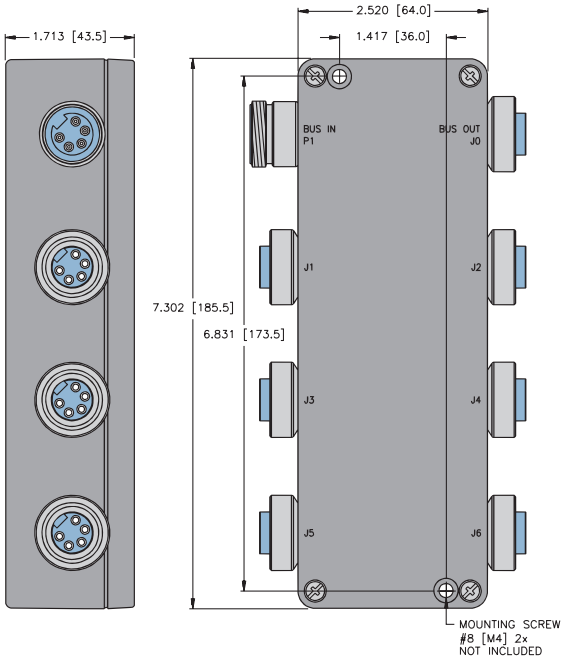
Specifications

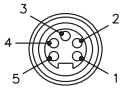
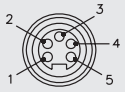
Housing:	Fiberglass
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	9 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

6-Port



Pinouts

minifast	
Male	**Female**
	

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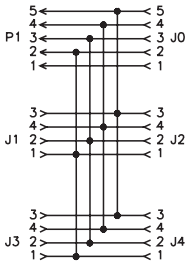
- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Bus-In / Bus-Out Eliminates Need for Splitter Tee**
- **Suitable for Outdoor Applications**

Part Number	Specs	Application	Wiring Diagram
JBBS-57-E401 JBBS-57-E403 JBBS-57-E411	Die-cast aluminum enclosure.	4-port Junction • Bus in/bus out straight (7/8-16UN) ***minifast***® through ports • Four device ports with (M12x1) ***eurofast*** connectors	
JBBS-57-E421	Fiberglass		

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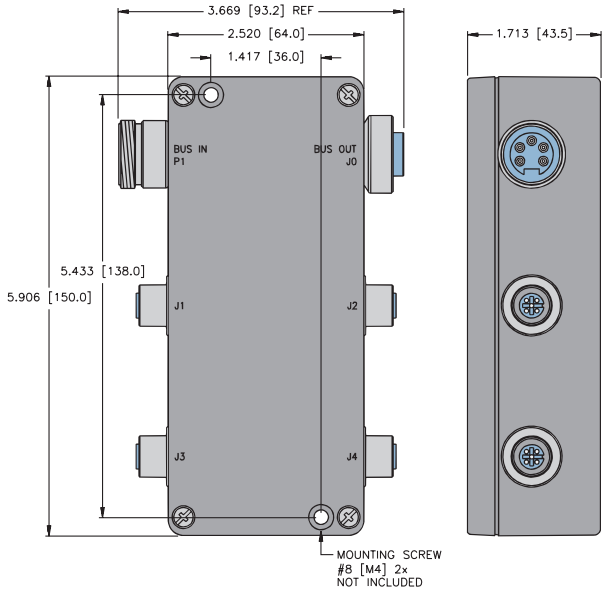
Specifications

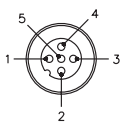
Housing:	Anodized Aluminum/Fiberglass
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

4-Port



Pinouts

eurofast	
Male	**Female**
	

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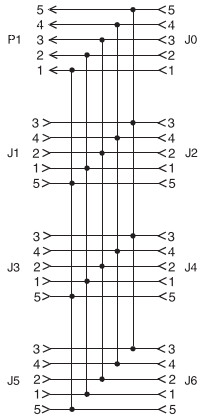
DeviceNet™, *eurofast*® Passive Multi-Port Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Bus-In / Bus-Out Eliminates Need for Splitter Tee**
- **Suitable for Outdoor Applications**

Part Number	Specs	Application	Wiring Diagram
JBBS-57-E601	Die-cast aluminum enclosure.	6-port Junction • Bus in/bus out straight (7/8-16UN) ***minifast*** through ports • Six device ports with (M12x1) ***eurofast*** connectors	
JBBS-57-E621	Fiberglass		

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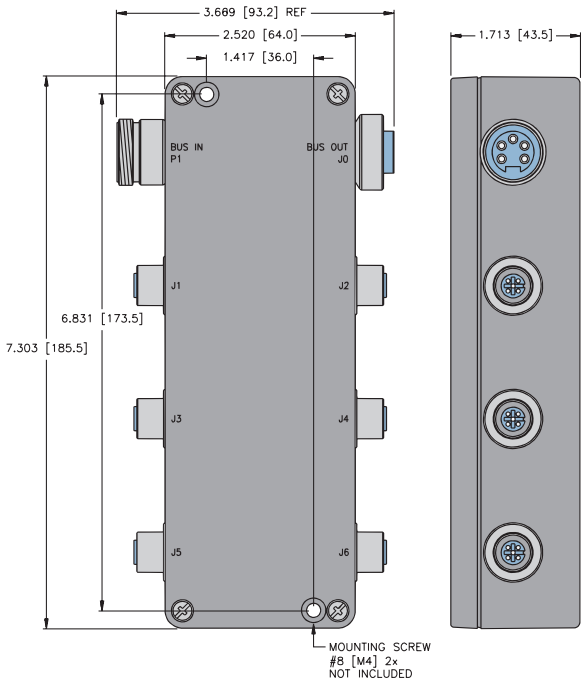
Specifications

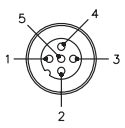
Housing:	Anodized Aluminum/Fiberglass
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

6-Port



Pinouts

eurofast	
Male	**Female**
	

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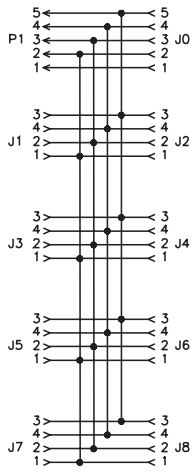
DeviceNet™, *eurofast*® Passive Multi-Port Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Bus-In / Bus-Out Eliminates Need for Splitter Tee**
- **Suitable for Outdoor Applications**

Part Number	Specs	Application	Wiring Diagram
JBBS-57-E801 JBBS-57-E803	Die-cast aluminum enclosure.	8-port Junction • Bus in/bus out straight (7/8-16UN) ***minifast*** through ports • Eight device ports with (M12x1) ***eurofast*** connectors	
JBBS-57-E821	Fiberglass		

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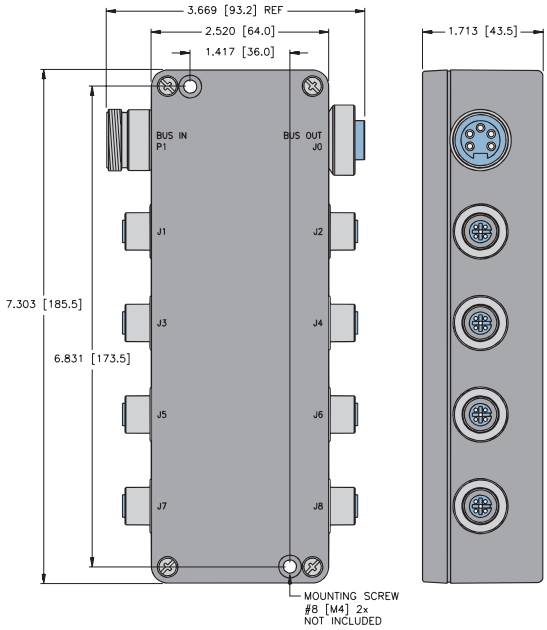
Specifications

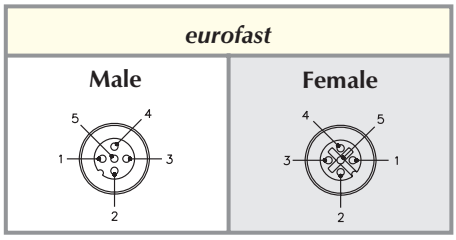
Housing:	Anodized Aluminum/Fiberglass
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

8-Port



Pinouts



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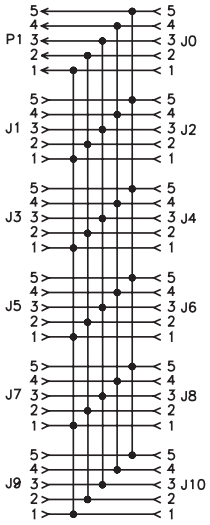
DeviceNet™, *eurofast*® Passive Multi-Port Junctions

- **Rugged, Fully Encapsulated Enclosure**
- **For Connecting I/O in Concentrated Areas**
- **Bus-In / Bus-Out Eliminates Need for Splitter Tee**
- **Suitable for Outdoor Applications**

Part Number	Specs	Application	Wiring Diagram
JBBS-57-E1001	Die-cast aluminum enclosure.	10-port Junction • Bus in/bus out straight (7/8-16UN) ***minifast***® through ports • Ten device ports with (M12x1) ***eurofast*** connectors	

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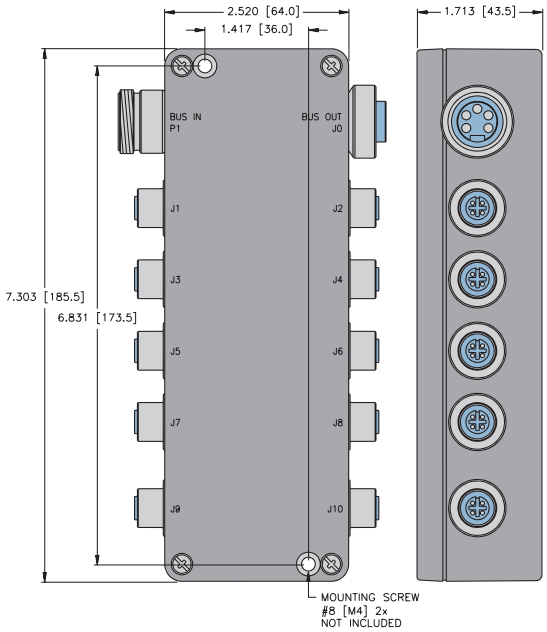
Specifications

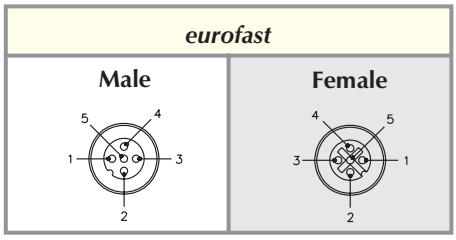
Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

10-Port



Pinouts



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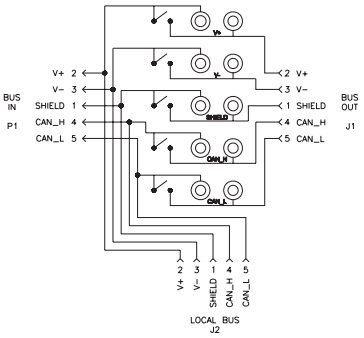
DeviceNet™, *eurofast*® Passive Multi-Port Junctions

- **Switchable DeviceNet Diagnostic Box**
- **Used fo DeviceNet Troubleshooting**

Part Number	Specs	Application	Wiring Diagram
JBBS-57-DGM	Fiberglass	Diagnostic Box • Taps into CAN_H, CAN_L, V+, V- and SHIELD • Used to diagnose DeviceNet (should not be installed permanently on network)	

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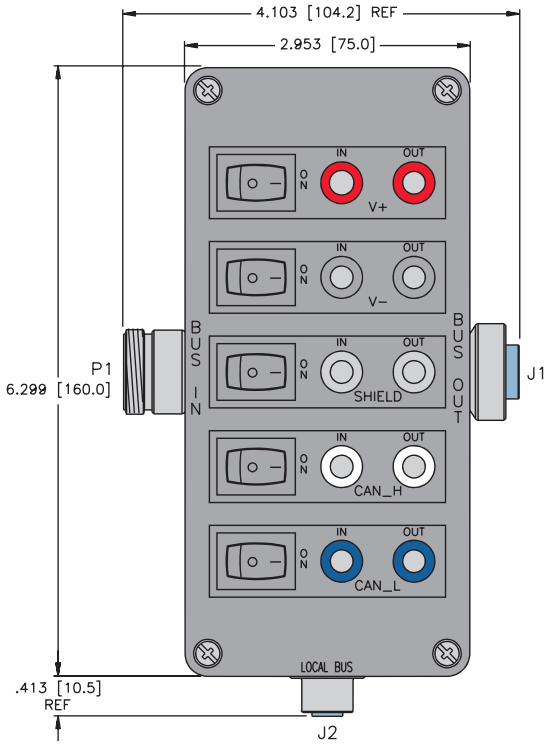
Specifications

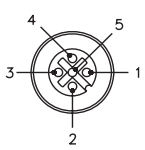
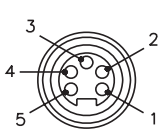
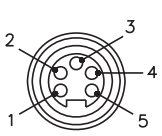
Housing:	Fiberglass
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	IEC IP20
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

DGM



Pinouts

eurofast Male	*minifast* Male	*minifast* Female
		

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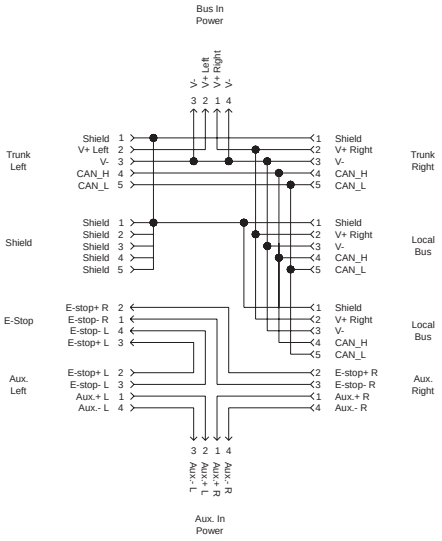
DeviceNet™, *eurofast*® Passive Multi-Port Junctions

- **System Module Junction Box**

Part Number	Specs	Application	Wiring Diagram
JBBS-57-SM01	Die-cast aluminum enclosure.	System module with two circuit groups • DeviceNet circuit • Supplies DC power • Two drops • Auxiliary power • Supplies DC power • Catagory 2 E-stop • General purpose • M(machine)-stop	

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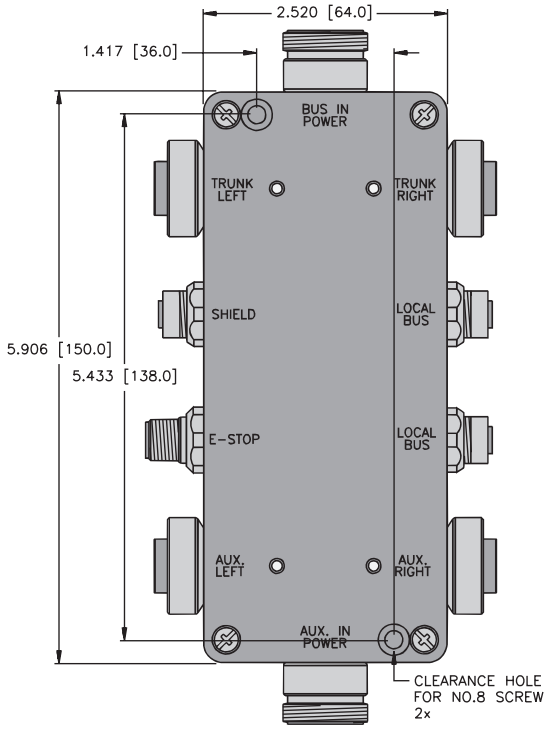
Specifications

Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67, IP 68, IP 69K
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Dimensions

SM01



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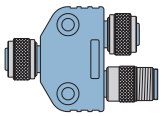
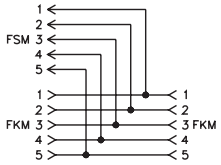
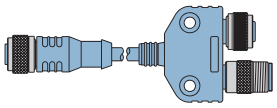
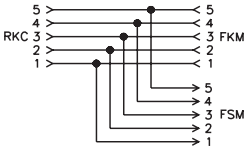
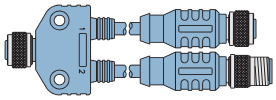
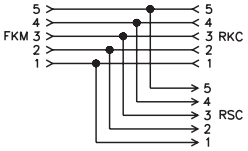
DeviceNet™, *eurofast*® Drop Junctions

- **Creates a Drop or Branch from the Main Bus Line**
- **Cable Drop Lengths Available Up to a Maximum of 6 Meters**

Housing	Part Number	Application	Wiring Diagrams
	VB2-FKM/FKM/FSM 57	VB2 Junction • Ready for ***eurofast*** drop and trunk cordsets • Maximum six meter drop	
	VB2-RKC 57x-*M-FKM FSM	VB2 Junction with Trunk Line • Ready for ***eurofast*** trunk line • Maximum six meter drop	
	VB2-FKM/RKC RSC 57x-*M/*M	VB2 Junction with Trunk Line • Ready for ***eurofast*** drop cordsets • Maximum six meter branch	

* Indicates length in meters.
x Indicates cable type.

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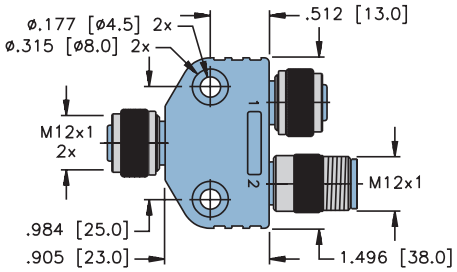
Specifications

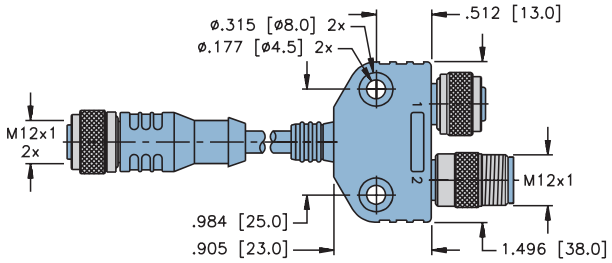
Housing:	PUR (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	PUR (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

Mounting: Mounting hole accepts #8 screw.

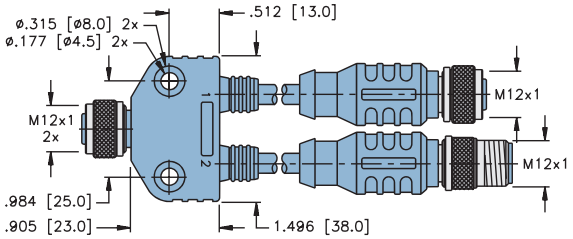
VB2-FKM/FKM/FSM 57



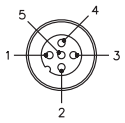
VB2-RKC 57x-*M-FKM FSM



VB2-FKM/RKC RSC 57x-*M/*M



Pinouts

eurofast ®	
Male	**Female**
	

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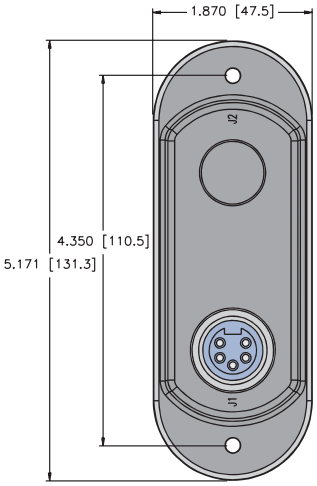
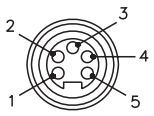
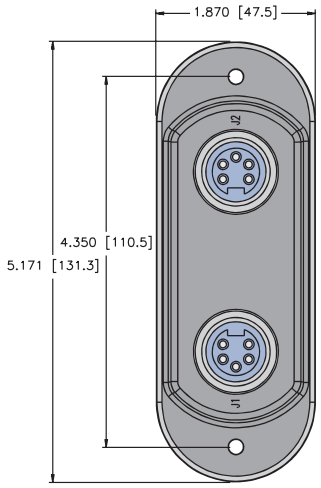
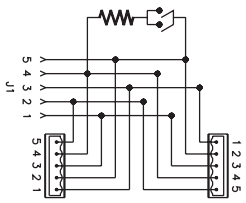
DeviceNet™, *minifast*® Conduit Adapters

- **Gasket and Mounting Screws Provided**
- **Same Housing Style for Single or Double Port**

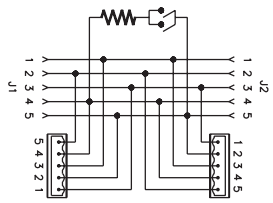
Housing	Part Number	Specs	Application	Pinout
	BCA 57-M123	Nylon Housing Stainless Steel Receptacle Housing 300 V, 9 A -40° to +75°C	Attaches to standard conduit body* for transition to 5-wire (7/8-16UN) ***minifast*** connector *Crouse-Hinds 3/4" Form 8, Mark 9 or equivalent.	**Female** 
	BCA 57-M223		Attaches to standard conduit body* for transition to 5-wire (7/8-16UN) ***minifast*** connector *Crouse-Hinds 3/4" Form 8, Mark 9 or equivalent.	

Standard receptacle housing material is stainless steel, for nickel plated brass change part number from ... M223 to ... M224.

1-port Wiring Diagram



2-port Wiring Diagram



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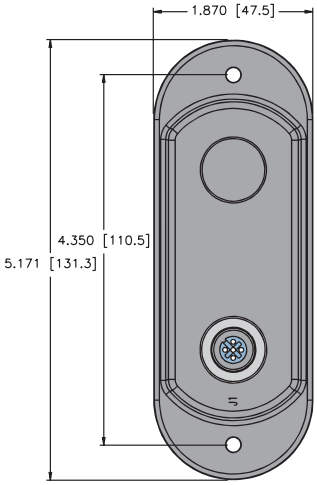
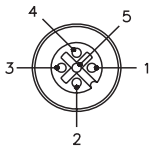
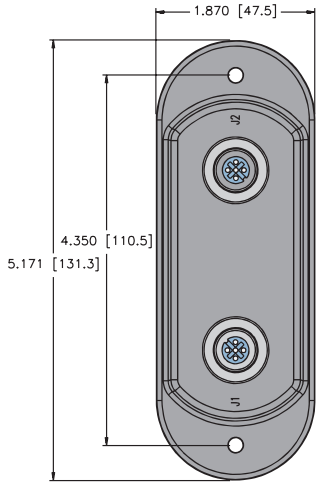
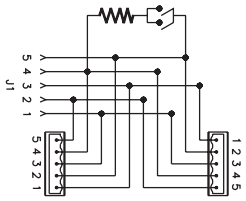
DeviceNet™, *eurofast*® Conduit Adapters

- **Gasket and Mounting Screws Provided**
- **Same Housing Style for Single or Double Port**

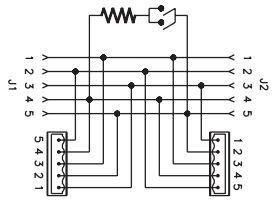
Housing	Part Number	Specs	Application	Pinout
	BCA 57-E123	Nylon Housing Stainless Steel Receptacle Housing 250 V, 4 A -40° to +75°C	Attaches to standard conduit body* for transition to 5-wire (M12x1) ***eurofast*** connector *Crouse-Hinds 3/4" Form 8, Mark 9 or equivalent.	**Female** 
	BCA 57-E223		Attaches to standard conduit body* for transition to 5-wire (M12x1) ***eurofast*** connector *Crouse-Hinds 3/4" Form 8, Mark 9 or equivalent.	

Standard receptacle housing material is stainless steel, for nickel plated brass change part number from ... M223 to ... M224.

1-port Wiring Diagram



2-port Wiring Diagram



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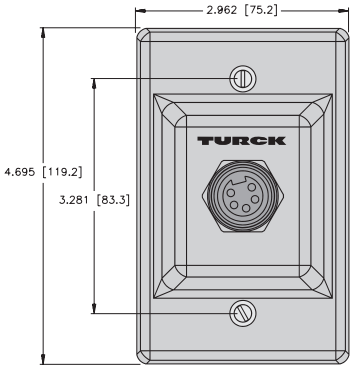
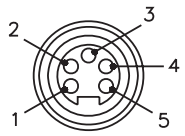
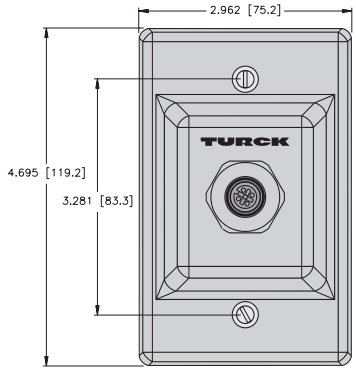
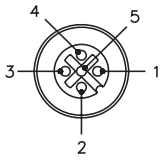
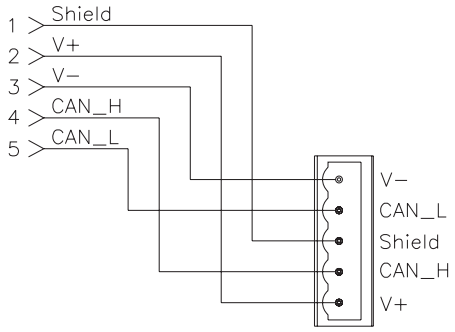
DeviceNet™, Wall Plate Adapters

- Gasket and Mounting Screws Provided
- For Use with a Single Gang Electrical Box

Housing	Part Number	Specs	Application		Pinouts
	BPA-57-M113	Stainless Steel 250 V, 4.0 A -40 to +70°C (-40 to +158°F)	Attaches to standard single gang electrical box for transition to 5-wire (7/8-16UN) ***minifast*** connector		
	BPA-57-E113		Attaches to standard single gang electrical box for transition to 5-wire (M12x1) ***eurofast*** connector		



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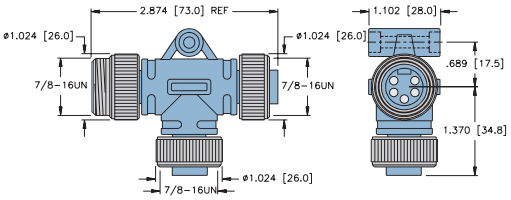
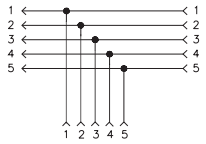
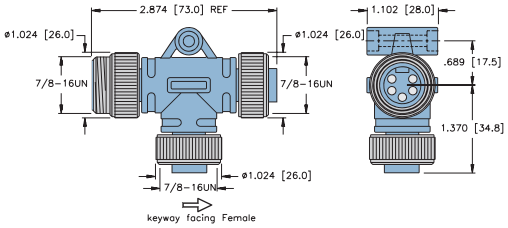
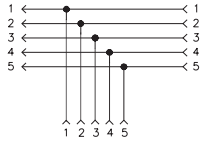
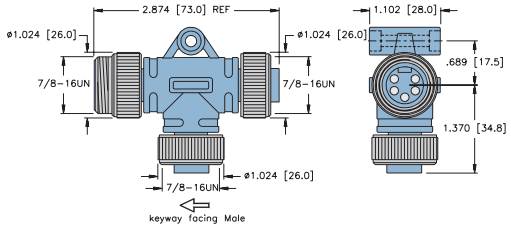
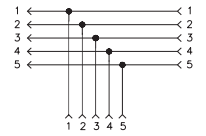
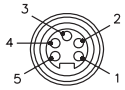
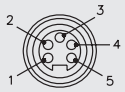
DeviceNet™, Bus Drop and Diagnostic Tees

- Creates a Drop or Branch from the Main Bus Line
- (7/8-16UN) *minifast* ® Connectors on Bus and Drop Lines
- Available in Three Keyway Options

Housing	Part Number	Specs	Application	Wiring Diagrams
	RSM 2RKM 57	PUR (Polyurethane) 300 V, 9 A -40° to +75°C	***minifast*** Drop Off Bus Line • Full power and data drop • Maximum six meter branch • Standard keyway	
	RSM 2RKM 57-KF		***minifast*** Drop Off Bus Line • Full power and data drop • Maximum six meter branch • Keyway facing female	
	RSM 2RKM 57-KM		***minifast*** Drop Off Bus Line • Full power and data drop • Maximum six meter branch • Keyway facing male	

Pinouts

minifast	
Male	Female
	

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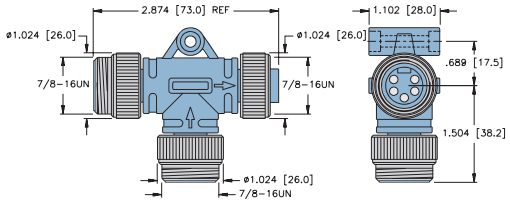
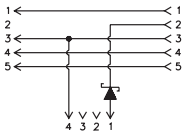
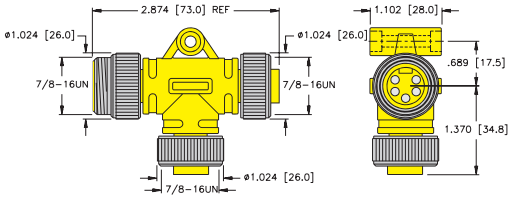
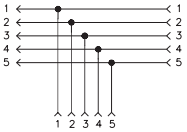
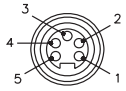
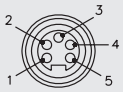
DeviceNet™, Power and Diagnostic Tees

- **Provide a Drop to Insert Power or Diagnostic Equipment**
- **(7/8-16UN) *minifast*® Connectors on Bus and Drop Lines**
- **Reverse Current Protection on Power Tap**

Housing	Part Number	Specs	Application	Wiring Diagrams
	RSM RKM 57 WSM 40 PST	PUR (Polyurethane) 300 V, 9 A -40° to +75°C	Bus Power • Tee provides segment power • Includes reverse current protection	
	RSM 2RKM 57 DGT		Bus Diagnostic Tee • Provides easy connection for diagnostic tools • Tap protected with cover when not in use (not shown)	

Pinouts

minifast	
Male	**Female**
	

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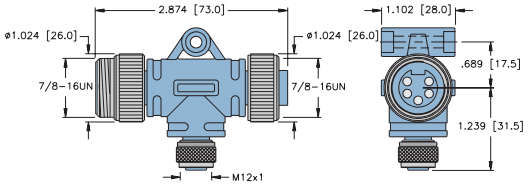
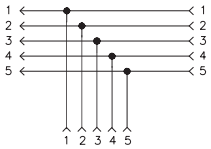
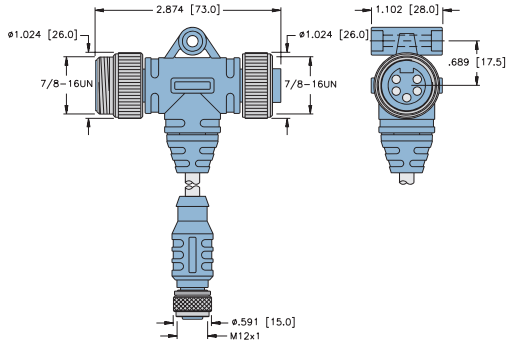
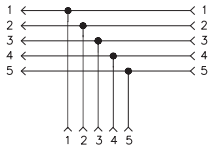
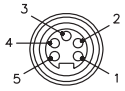
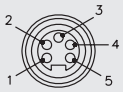
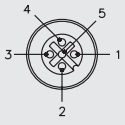
DeviceNet™, Bus Tees

- Creates a Drop or Branch from the Main Bus Line
- Cable Drop Can Be Up to a Maximum of 6 Meters
- *eurofast*® Drop Connector or Extension Cordset

Housing	Part Number	Specs	Application	Wiring Diagrams
	RSM-FKM-RKM 57	PUR (Polyurethane) 250 V, 4 A -40° to +75°C	***eurofast*** Drop • ***minifast***® to ***eurofast*** • Bus power and data drop	
	RSM RKC 57x-*M RKM 57		***eurofast*** Drop Cordset • ***minifast*** to ***eurofast*** cordset • Bus power and data drop	

Pinouts

minifast		*eurofast*
Male	Female	Female
		

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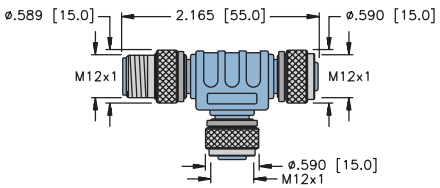
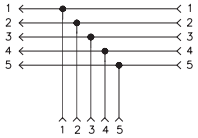
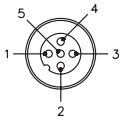
DeviceNet™, *eurofast*® Bus Tees

- **Creates a Drop or Branch from the Main Bus Line**
- **Cable Drop Can Be Up to a Maximum of 6 Meters**
- ***eurofast* Drop Connector**

Housing	Part Number	Specs	Application	Wiring Diagram
	RSC 2RKC 57	PUR (Polyurethane) 250 V, 4 A -40° to +75°C	***eurofast*** Tee • ***eurofast*** trunk and drop	
	RSC 2RKC 57/KS		***eurofast*** Tee • ***eurofast*** trunk and drop • Keyway aligns tee in-line on (M8x1) ***piconet***® boxes	

Pinouts

eurofast	
Male	Female
	

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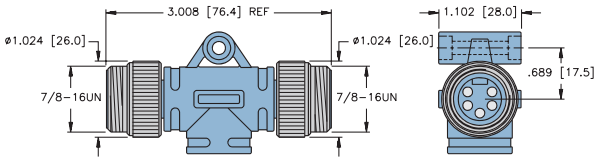
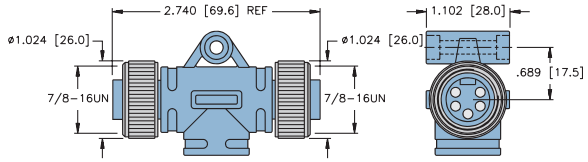
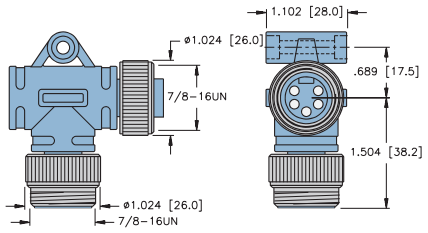
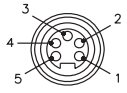
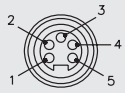
DeviceNet™, Gender Changers and Elbow Connectors

- **Allows Quick and Easy Changes from Male to Female Connectors**
- **Available in Straight and Right Angle Styles with *minifast*® Connectors**

Housing	Part Number	Specs	Application
	RSM RSM 57	PUR (Polyurethane) 300 V, 9 A -40° to +75°C	Male ***minifast*** Gender Changer • Changes female cordset to male cordset
	RKM RKM 57		Female ***minifast*** Gender Changer • Changes male cordset to female cordset • Changes straight male or female cordset to right angle cordset
	WSM RKM 57		***minifast*** Elbow • Right angle male to female connector

Pinouts

minifast	
Male	**Female**
	

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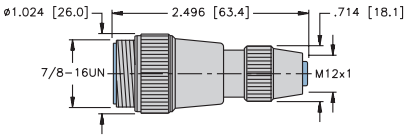
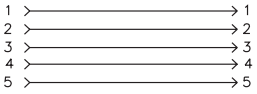
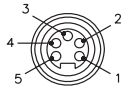
DeviceNet™, Gender Changers and Elbow Connectors

- **Allows Quick and Easy Changes from Male to Female and *minifast*® to *eurofast*® Connectors**

Housing	Part Number	Specs	Application	Wiring Diagram
	RSM 57-FK 4.5	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +75°C	Female ***eurofast*** to male ***minifast*** adapter	

Pinouts

minifast	*eurofast*
Male	Female
	

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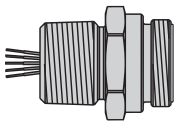
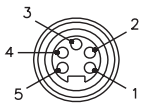
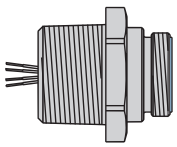
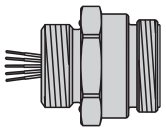
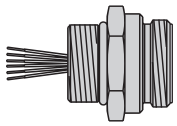
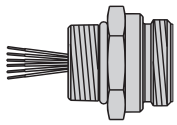
DeviceNet™, (7/8-16UN) *minifast*® Male Receptacles

- **Provides Quick Connection to Field Devices or Enclosures**
- **Available for 1/2-14NPT, 1/2-14NPSM, 3/4-14NPT and M20 Threads**

Housing	Part Number	Specs	Application	Pinouts	
23 	RSF 57-*M/14.5	Nickel Plated CuZn or Stainless Steel 300 V, 9 A -40° to +105°C	1/2-14NPT full length threads	1. GY 2. RD 3. BK 4. WH 5. BU	Male 
25 	RSF 57-*M/14.75		3/4-14NPT full length threads		
24 	RSF 57-*M/M20		M20x1.5 threads		
26 	RSF 57-*M		1/2-14NPSM threads		
27 	RSF 57-*M/NPT		1/2-14NPT modified length threads		

See page J137 for dimensional drawings.

* Length in meters.
Standard cable length is 0.3 meters. Consult factory for other lengths.
Receptacles require a 13/16" (21.0 mm) clearance hole for panel mounting.
Standard housing material is nickel plated brass. "RKF .."; "RKFV .." indicates 316 stainless steel housing.
For locknuts to be included, add "W/LN" to the end of the part number.

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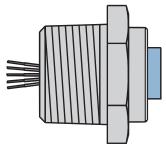
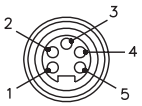
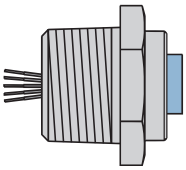
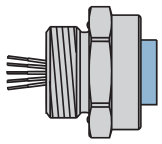
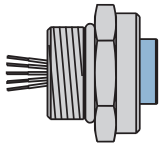
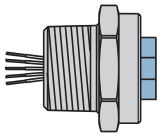
DeviceNet™, (7/8-16UN) *minifast*® Female Receptacles

- **Provides Quick Connection to Field Devices or Enclosures**
- **Available for 1/2-14NPT, 1/2-14NPSM, 3/4-14NPT and M20 Threads**

Housing	Part Number	Specs	Application	Pinouts	
28 	RKF 57-*M/14.5	Nickel Plated CuZn or Stainless Steel 300 V, 9 A -40° to +105°C	1/2-14NPT full length threads	1. GY 2. RD 3. BK 4. WH 5. BU	**Female** 
30 	RKF 57-*M/14.75		3/4-14NPT full length threads		
29 	RKF 57-*M/M20		M20x1.5 threads		
31 	RKF 57-*M		1/2-14NPSM threads		
32 	RKF 57-*M/NPT		1/2-14NPT modified length threads		

See page J138 for dimensional drawings.

* Length in meters.
Standard cable length is 0.3 meters. Consult factory for other lengths.
Receptacles require a 13/16" (21.0 mm) clearance hole for panel mounting.
Standard housing material is nickel plated brass. "RKF .."; "RKFV .." indicates 316 stainless steel housing.
For locknuts to be included, add "W/LN" to the end of the part number.

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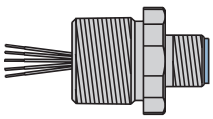
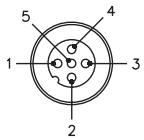
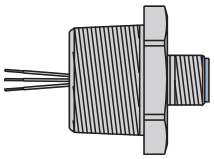
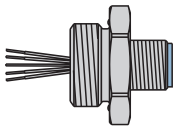
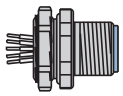
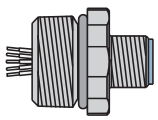
DeviceNet™, (M12x1) *eurofast*® Male Receptacles

- **Provides Quick Connection to Field Devices**
- **Available for 1/2-14NPT, 1/2-14NPSM, 3/4-14NPT and M20 Threads**

Housing	Part Number	Specs	Application	Pinout	
33 	FS 57-*M/14.5	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +105°C	1/2-14NPT full length threads	1. GY 2. RD 3. BK 4. WH 5. BU	Male 
35 	FS 57-*M/14.75		3/4-14NPT full length threads		
34 	FS 57-*M/M20		M20x1.5 threads		
36 	FS 57-*M		PG 9 threads		
37 	FS 57-*M/NPT		1/2-14NPT modified length threads		

See page J139 for dimensional drawings.

* Length in meters.
Standard cable length is 0.3 meters. Consult factory for other lengths.
Receptacles require a 13/16" (21.0 mm) clearance hole for panel mounting.
Standard housing material is nickel plated brass. "RKF .."; "RKFV .." indicates 316 stainless steel housing.

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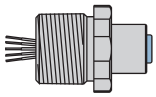
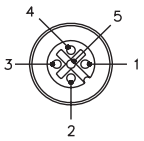
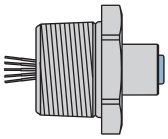
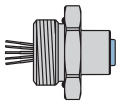
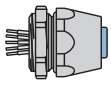
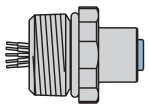
DeviceNet™, (M12x1) *eurofast*® Female Receptacles

- **Mounted for Quick Connection to Enclosures**
- **Available for 1/2-14NPT, 1/2-14NPSM, 3/4-14NPT and M20 Threads**

Housing	Part Number	Specs	Application	Pinouts	
38 	FK 57-*M/14.5	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +105°C	1/2-14NPT full length threads	1. GY 2. RD 3. BK 4. WH 5. BU	Female 
40 	FK 57-*M/14.75		3/4-14NPT full length threads		
39 	FK 57-*M/M20		M20x1.5 threads		
41 	FK 57-*M		PG 9 threads		
42 	FK 57-*M/NPT		1/2-14NPT modified length threads		

See page J140 for dimensional drawings.

* Length in meters.
Standard cable length is 0.3 meters. Consult factory for other lengths.
Receptacles require a 13/16" (21.0 mm) clearance hole for panel mounting.
Standard housing material is nickel plated brass. "RKF .."; "RKFV .." indicates 316 stainless steel housing.

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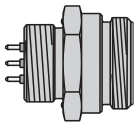
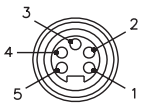
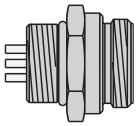
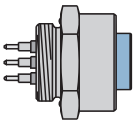
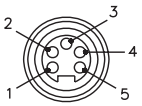
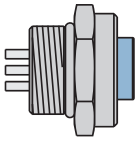
DeviceNet™, *minifast*® PCB and Solder Cup Receptacles

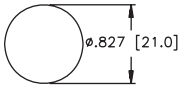
- **Provides (7/8-16UN) *minifast* Connection to Field Devices**

Housing	Part Number	Specs	Application	Pinouts
43 	RSF 57 PCB	Nickel Plated CuZn or Stainless Steel 300 V, 9 A -40° to +105°C	Male ***minifast*** PCB pins	1. BARE 2. RD 3. BK 4. WH 5. BU **Male** 
45 	RSF 57		Male ***minifast*** solder cups	
44 	RKF 57 PCB		Female ***minifast*** PCB pins	**Female** 
46 	RKF 57		Female ***minifast*** solder cups	

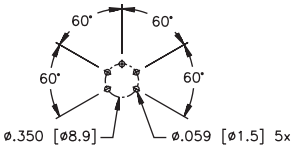
See page J141 for dimensional drawings.

Standard housing material is nickel plated brass "RSFV .."; "RKFV .." indicates 316 stainless steel.

Panel Cutout FK ... FS



Board Layout (reference only) FK ... FS



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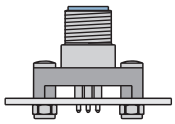
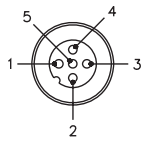
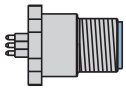
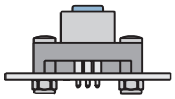
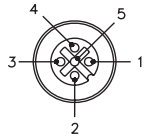
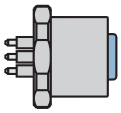
DeviceNet™, *eurofast*® PCB and Solder Cup Receptacles

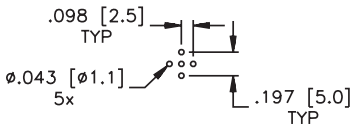
- **Provides (M12x1) *eurofast* Connection to Field Devices**

Housing	Part Number	Specs	Application	Pinouts	
50 	FS 57 PCB KIT	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +105°C	Male ***eurofast*** with mounting kit	1. BARE 2. RD 3. BK 4. WH 5. BU	**Male** 
51 	FS 57 PCB		Male ***eurofast***		
54 	FK 57 PCB KIT		Female ***eurofast*** with mounting kit		**Female** 
55 	FK 57 PCB		Female ***eurofast***		

See page J141 - 142 for dimensional drawings.

Standard housing material is nickel plated brass "FSV .."; "FKV .." indicates 316 stainless steel.

Board Layout (reference only)
FK ... FS



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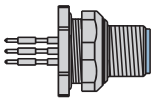
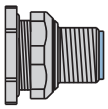
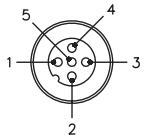
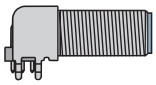
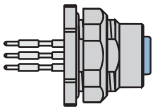
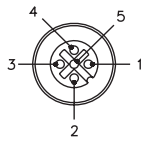
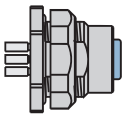
DeviceNet™, *eurofast*® PCB Pins and Solder Cup Receptacles

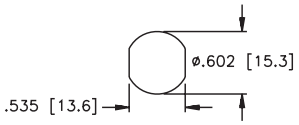
- **Provides (M12x1) *eurofast* Connection to Field Devices**

Housing	Part Number	Specs	Application	Pinouts
49 	FSFD 57 PCB	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +105°C	Male ***eurofast*** PCB pins	1. BARE 2. RD 3. BK 4. WH 5. BU
48 	FSFDL 57		Male ***eurofast*** solder cups	**Male** 
47 	WFS 57 PCB		Male ***eurofast*** right angle PCB pins	
53 	FKFD 57 PCB		Female ***eurofast*** PCB pins	**Female** 
52 	FKFDL 57		Female ***eurofast*** solder cups	

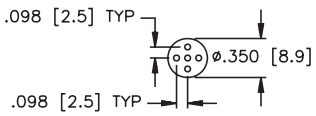
See pages J141 -J142 for dimensional drawings.

Standard housing material is nickel plated brass "FKFD .."; "FKFDV .." indicates 316 stainless steel.

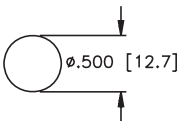
Panel Cutout
FKFD ... FSFD



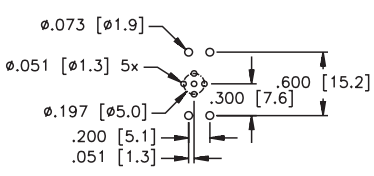
Board Layout (reference only)
FKFD ... FSFD



Panel Cutout
WFS



Board Layout (reference only)
WFS



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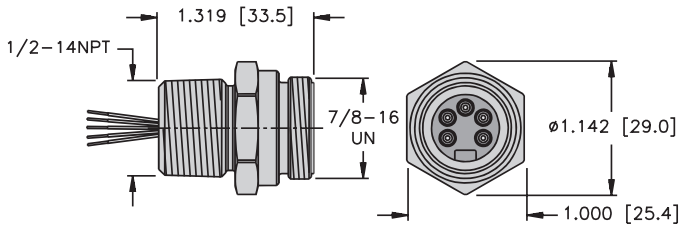
minifast® Male Receptacles

23



RSF ..14.5 **Page J130**

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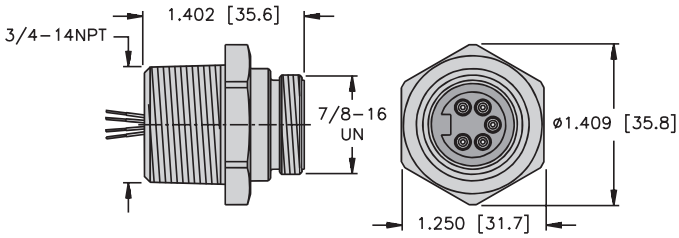

RSF ..14.75 **Page J130**

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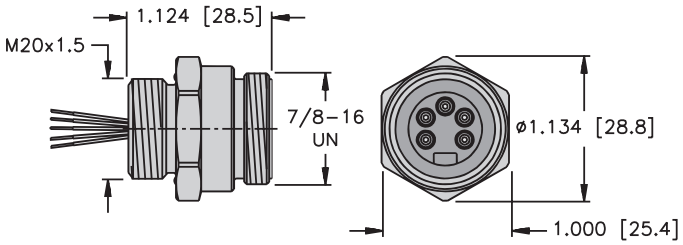

RSF .. M20 **Page J130**

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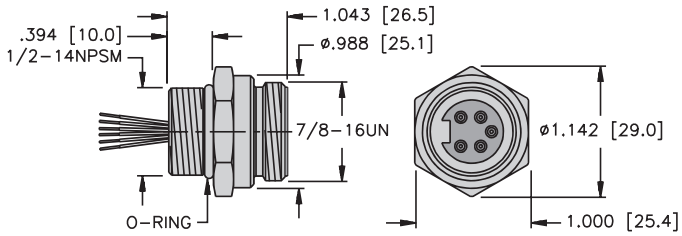

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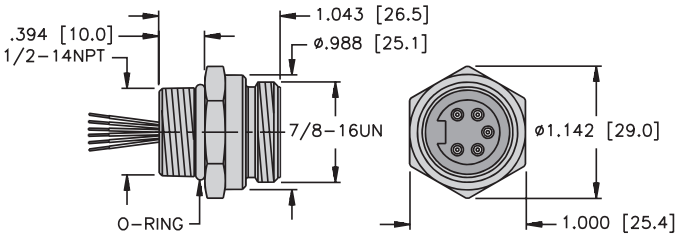

RSF .. NPT **Page J130**

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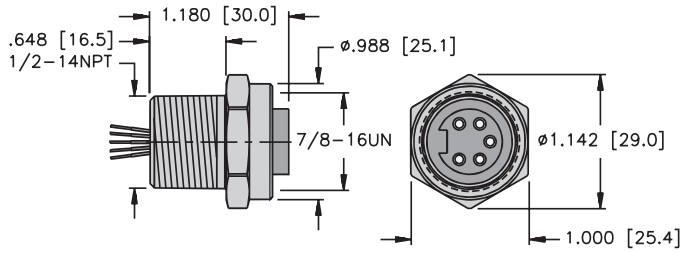
minifast® Female Receptacles

28



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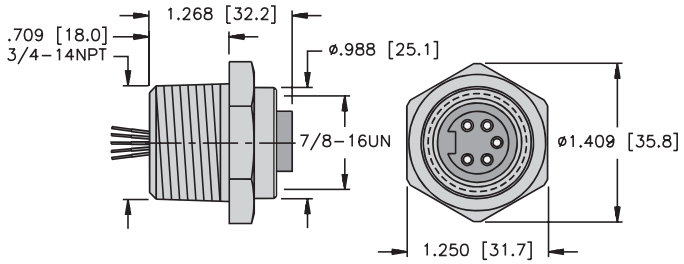

RKF .. 14.75 **Page J131**

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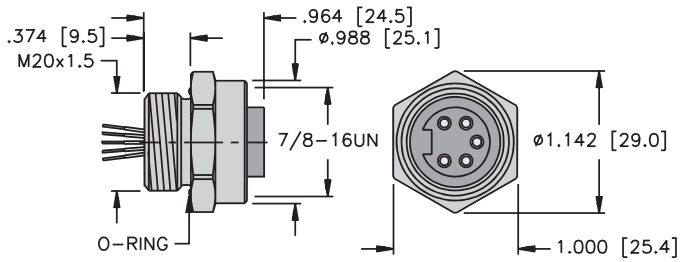

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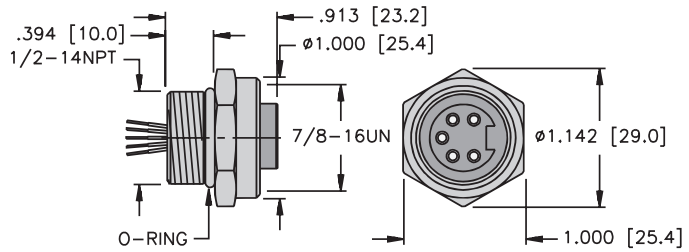

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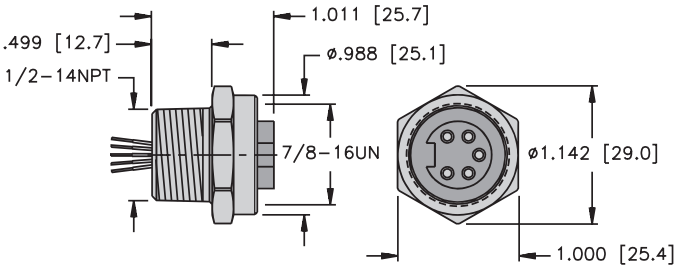

RKF .. NPT **Page J131**

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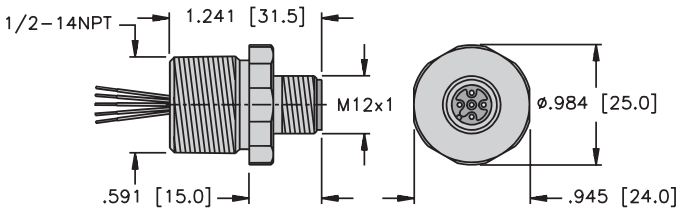
eurofast® Male Receptacles

33



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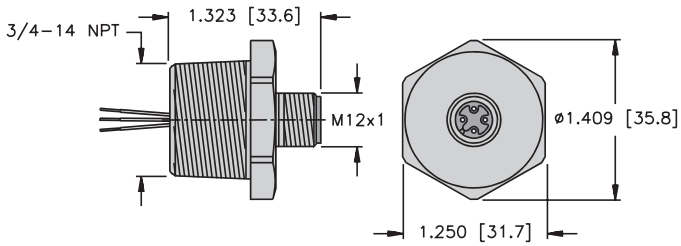

FS .. 14.75 **Page J132**

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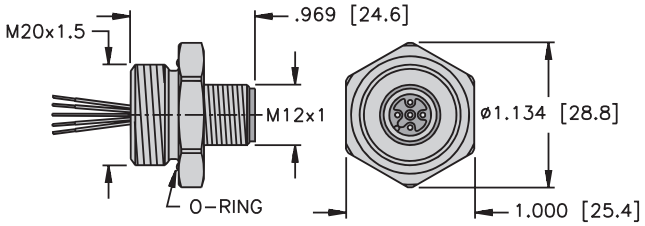

FS .. M20 **Page J132**

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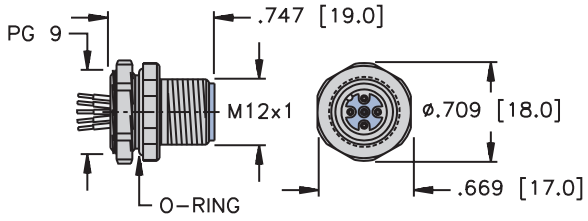

FS .. **Page J132**

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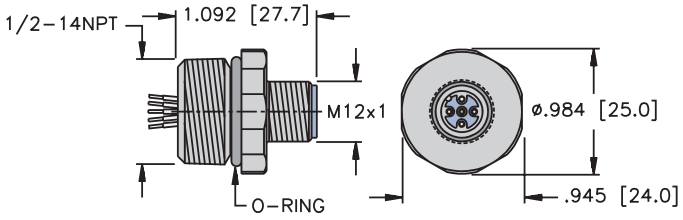

FS .. NPT **Page J132**

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eurofast® Female Receptacles

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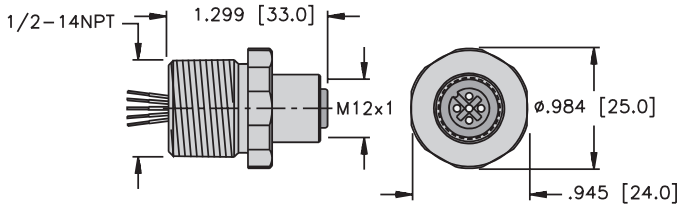

FK .. 14.5 **Page J133**

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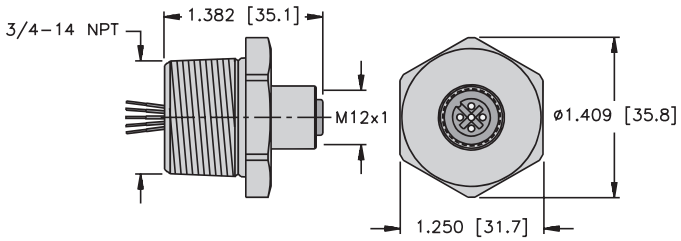

FK .. 14.75 **Page J133**

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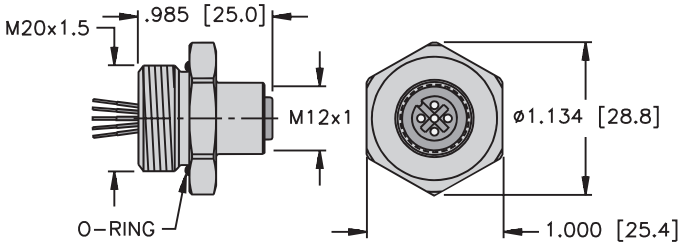

FK .. M20 **Page J133**

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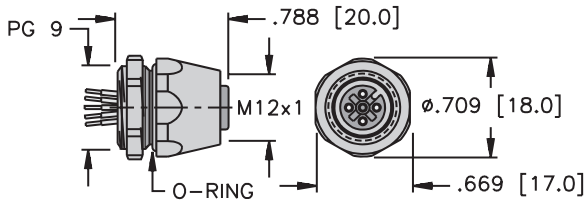

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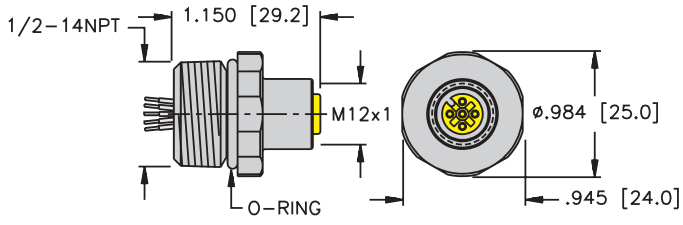

FK .. NPT **Page J133**

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minifast® PCB Mount Male and Female Receptacles

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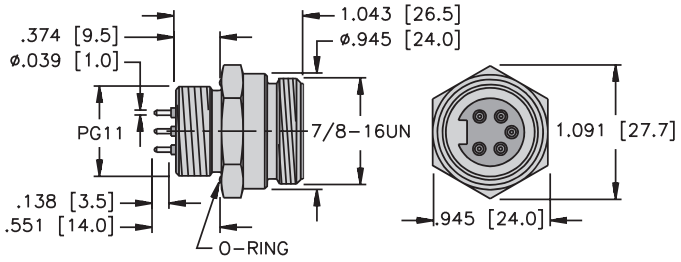

RSF ..PCB **Page J134**

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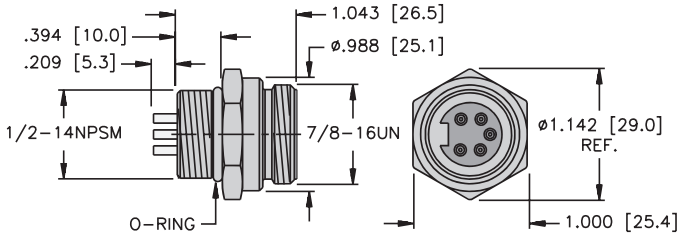

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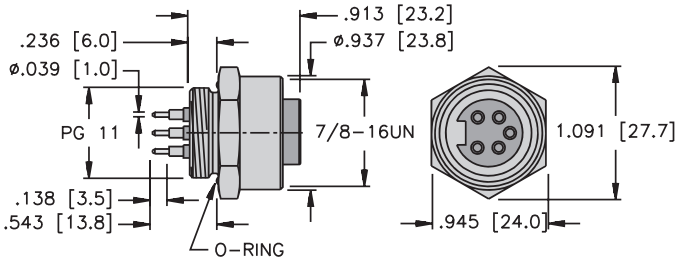

RKF ..PCB **Page J134**

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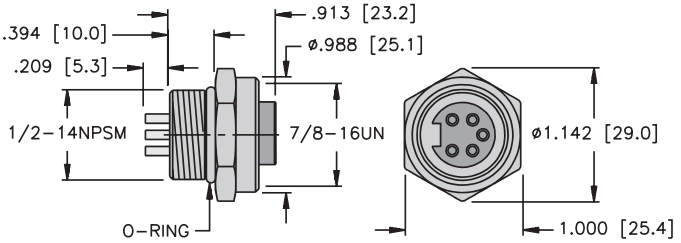
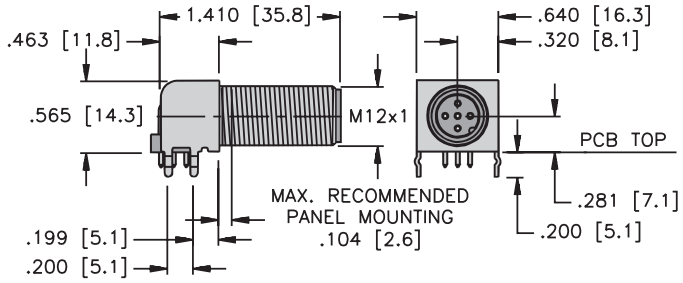


RKF .. **Page J134**

eurofast® PCB Mount Male and Female Receptacles

47



WFS ..PCB **Page J136**

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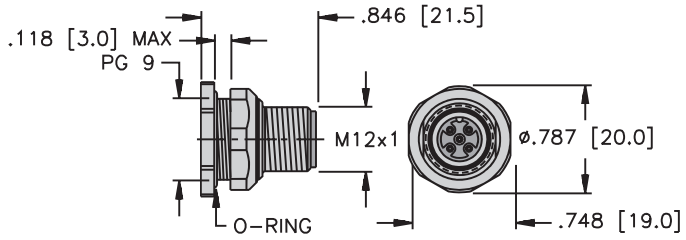
eurofast® PCB Mount Male and Female Receptacles

48



FSFDL .. **Page J136**

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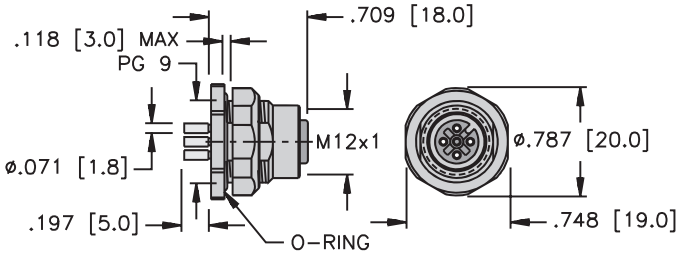

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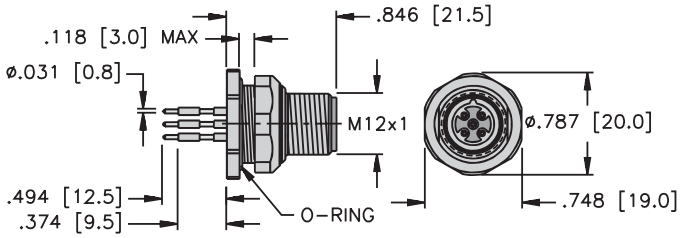

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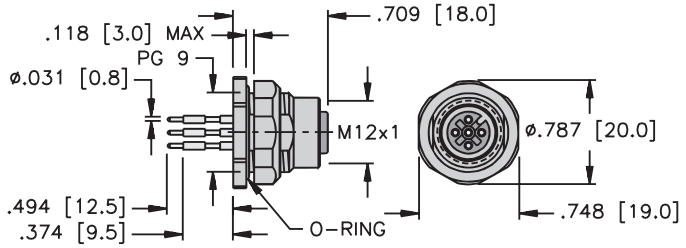

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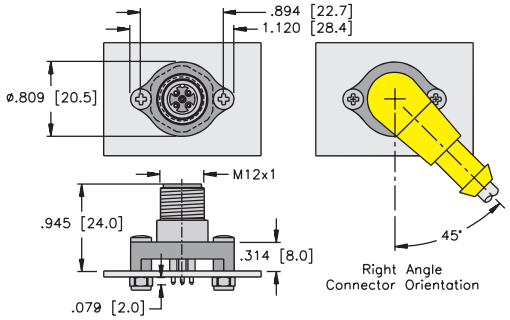

FS ..PCB KIT **Page J135**

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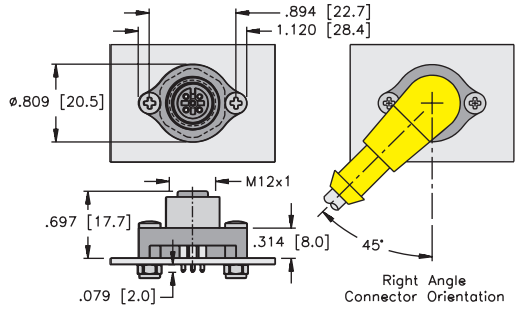

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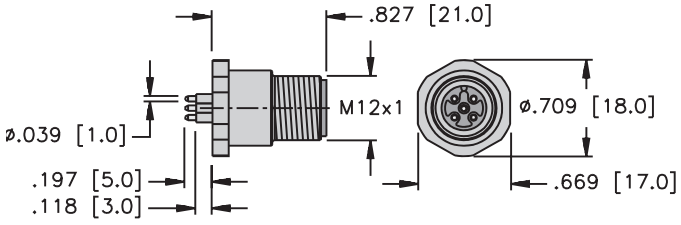

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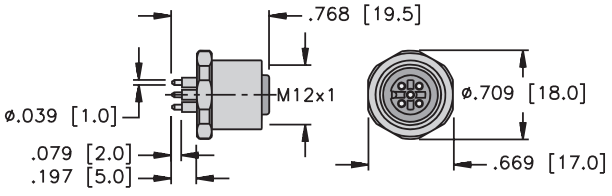

FK ..PCB KIT **Page J135**

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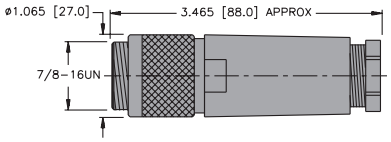
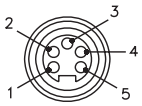
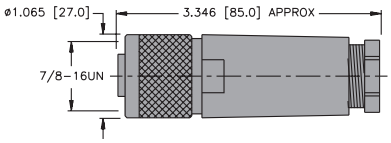
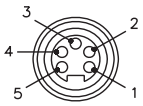
DeviceNet™, *minifast*® Field Wireable Connectors

- Allows for Quick Connection when Pre-Molded Cables not Available
- Available for Male and Female Connectors
- Color Coded Wire Connectors for DeviceNet

Housing	Part Number	Housing Specs.	Application	Pinouts
	BS 4151-0/9/DNET	Glass filled nylon PG 9 cable gland accepts 6-8 mm cable diameter Screw terminals 85°C 250 V, 9 A	Mates with all 5-pin cordsets and receptacles	Male 
	BS 4151-0/13.5/DNET	Glass filled nylon PG 13.5 cable gland accepts 10-12 mm cable diameter Screw terminals 85°C 250 V, 9 A		
	B 4151-0/9/DNET	Glass filled nylon PG 9 cable gland accepts 6-8 mm cable diameter Screw terminals 85°C 250 V, 9 A		Female 
	B 4151-0/13.5/DNET	Glass filled nylon PG 13.5 cable gland accepts 10-12 mm cable diameter Screw terminals 85°C 250 V, 9 A		

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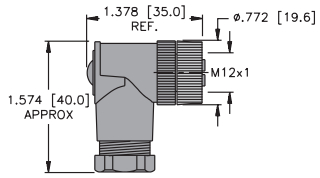
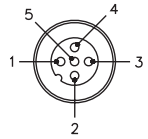
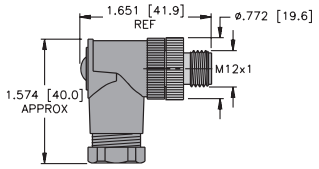
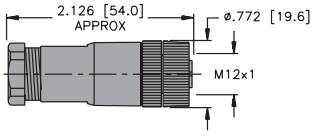
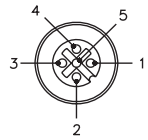
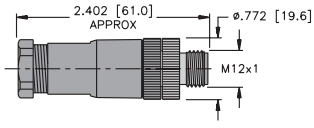
DeviceNet™, *eurofast*® Field Wireable Connectors

- **Allows for Quick Connection when Pre-Molded Cables not Available**
- **Available for Male and Female Connectors in Straight or Right-Angle Configurations**
- **Color Coded Wire Connections for DeviceNet**

Housing	Part Number	Housing Specs.	Application	Pinouts
	B 8251-0/PG9/DNET	PBT, Black PG 9 cable gland accepts 4-8 mm cable diameter Screw terminals 85°C 125 V, 4 A	Mates with 5-pin cordsets and receptacles	Male 
	BS 8251-0/PG9/DNET	PBT, Black PG 9 cable gland accepts 4-8 mm cable diameter Screw terminals 85°C 125 V, 4 A		
	B 8151-0/PG9/DNET	PBT, Black PG 9 cable gland accepts 4-8 mm cable diameter Screw terminals 85°C 250 V, 4 A		Female 
	BS 8151-0/PG9/DNET	PBT, Black PG 9 cable gland accepts 4-8 mm cable diameter Screw terminals 85°C 250 V, 4 A		

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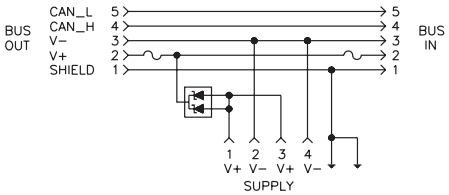
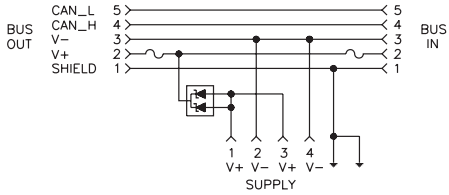
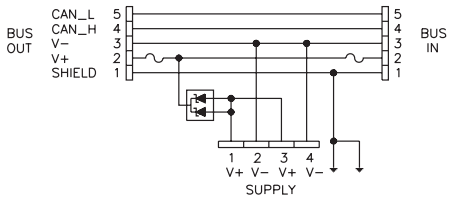
DeviceNet™, Power Taps

- **Allows Connection to Bus Line for Bringing in 12 VDC Power**
- **Available with *minifast*® Bus Line and Drop Connectors or Terminal Connectors**

Part Number	Application	Wiring Diagrams
SPTC1	Power Tap with ***minifast*** Connectors • (7/8-16UN) ***minifast*** male to female bus connector • (7/8-16UN) ***minifast*** female power connector	
SPTC2	Power Tap with ***minifast*** Connectors • (7/8-16UN) ***minifast*** female to female bus connector • (7/8-16UN) ***minifast*** female power connector	
SPTT1	Power Tap with Terminal Connectors • Terminal strip bus connectors • Terminal strip power connector	

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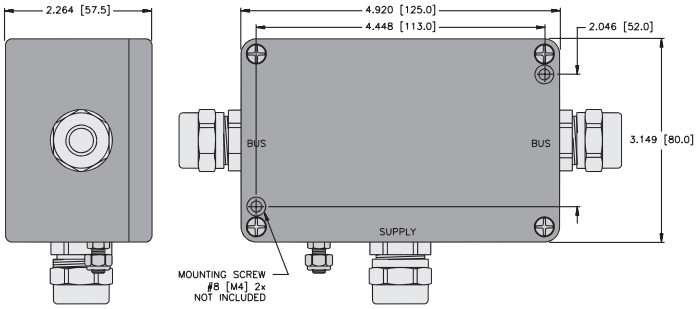
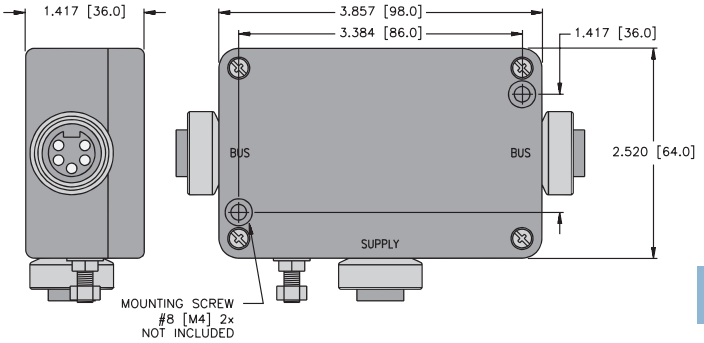
Specifications

Housing:	Anodized Aluminum
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	PUR (Polyurethane)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	300 V
Rated Current:	9 A
Ambient Temperature:	-30° to +75°C (-22° to +167°F)

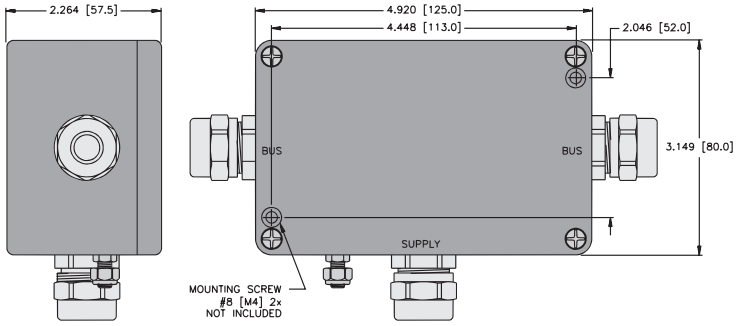
SPTC1



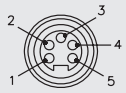
SPTC2



SPTT1



Pinouts

minifast® - Bus Line		*minifast* - Auxiliary Power	
Female 	1. Bare (Shield) 2. Red (+ Voltage) 3. Black (- Voltage) 4. White (CAN_H) 5. Blue (CAN_L)	**Female**	1. + Voltage 2. - Voltage 3. + Voltage 4. - Voltage

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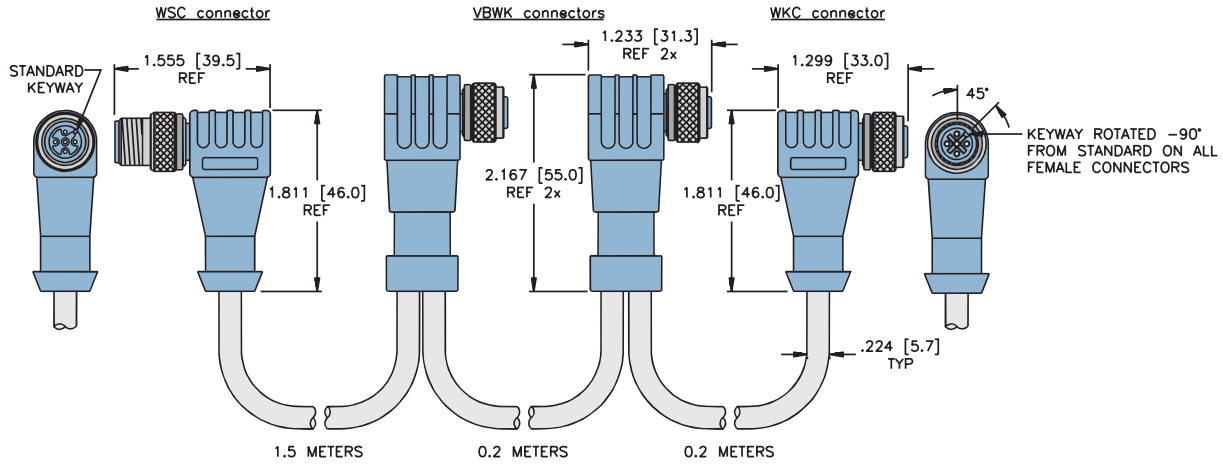
DeviceNet™, *eurofast*® Daisy Chain Configurations

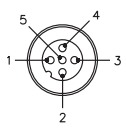
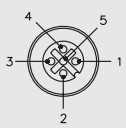
- **Multi-drop Harnesses Designed for OEM Applications**
- **Provides Cost Effective Solution vs. Single Tees and Drops**

Part Number	Specs	Application
WSC-2VBWK-WKC-5724-DCL	PUR (Polyurethane) 250 V, 4 A -40° to +75°C	(M12x1) ***eurofast*** Trunk and Drop Harness • Available in custom configurations including length, number of drops and end connector styles

Consult factory for other designs.



Pinouts

eurofast	
Male	**Female**
	

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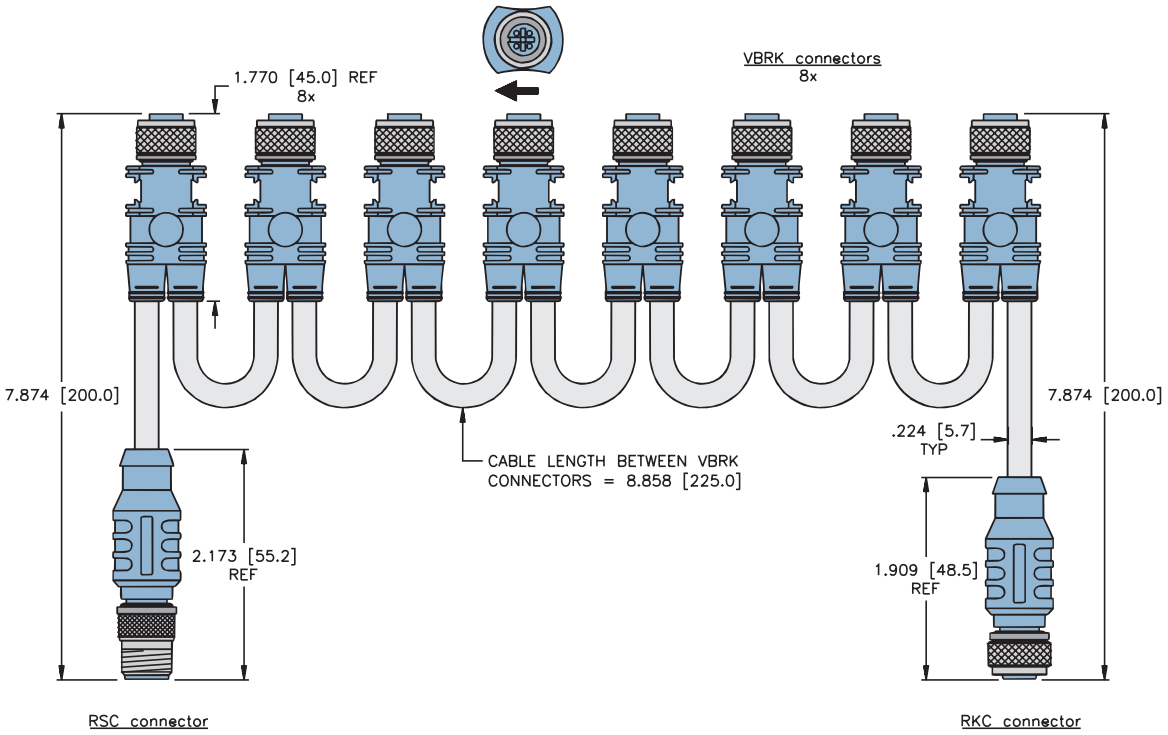
DeviceNet™, *eurofast*® Daisy Chain Configurations

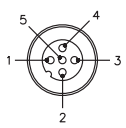
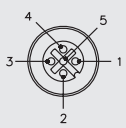
- **Multi-drop Harnesses Designed for OEM Applications**
- **Provides Cost Effective Solution vs. Single Tees and Drops**

Part Number	Specs	Application
RSC-8VBRK-RKC-5724-DCL	PUR (Polyurethane) 250 V, 4 A -40° to +75°C	(M12x1) ***eurofast*** Trunk and Drop Harness • Available in custom configurations including length, number of drops and end connector styles

Consult factory for other designs.



Pinouts

eurofast	
Male	**Female**
	

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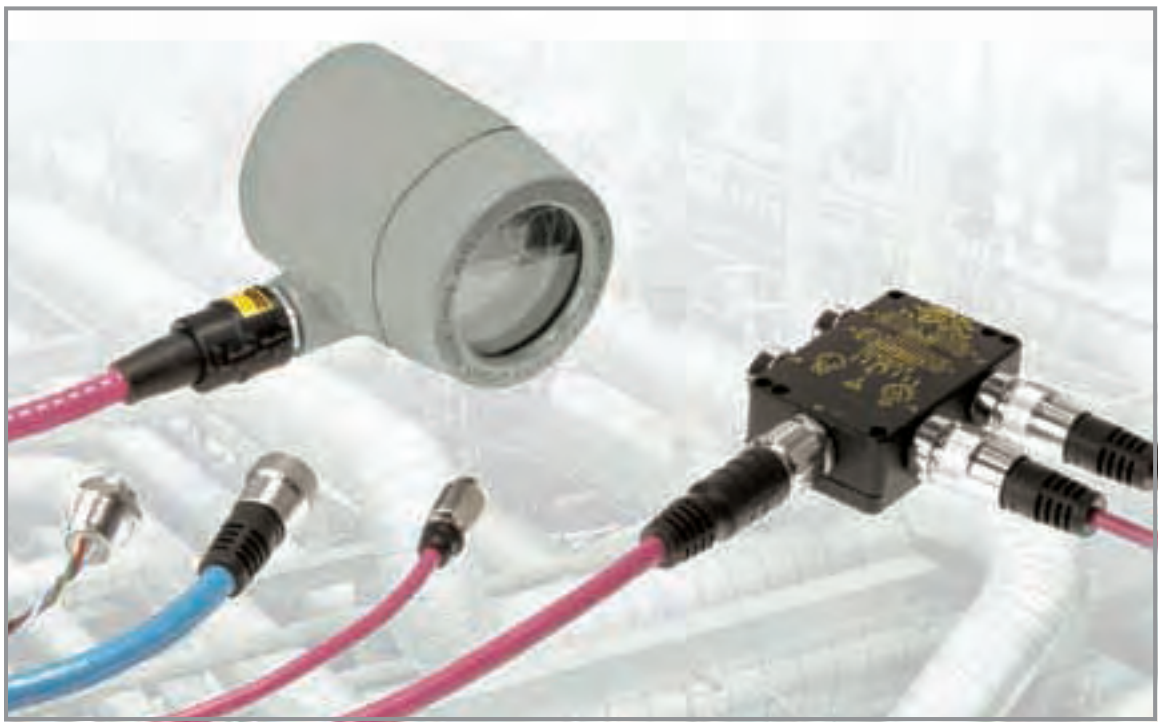
PROCESS WIRING

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

TURCK Process Wiring Solutions

This catalog contains products from **TURCK's** extensive line of industrial wiring products that are optimized for process applications. The receptacles, drop cords, junction boxes, home-run cables and accessories described within, comprise a process wiring system designed for the demanding conditions of process applications.

- Quick-disconnect design eliminates mis-wiring and speeds installation.
- Instrument receptacles, drop cords, junction boxes and home-run cordsets reduce multiple cable runs.
- Shielded-twisted pair construction serves analog and HART applications.
- Cables with premium PVC insulation provide superior chemical resistance and flexibility.
- Choice of stainless steel or nickel-plated brass hardware.
- Rated and approved for installation in process applications.
- Many products are FM approved for installations in hazardous locations.



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2-Wire Analog or HART Control Circuits

M12 *eurofast*®	Page
Part Number Keys	K12
Drop Cordsets	K15
Receptacles with Cable	K20
Receptacles with Leads	K27
Junction Boxes	K33

7/8" *minifast*®	Page
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Drop Cordsets	K47
Receptacles with Cable	K55
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Explosionproof Receptacles	K73
"Y" Fitting Receptacles	K77
Junction Boxes	K79

M23 *multifast*®	Page
Home Run Cordsets	K85
Receptacles with Cable	K93
Receptacles with Leads	K95

Additional Analog or Discrete Control Circuits

M12 *eurofast*	Page
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7/8", 1", & 1-1/8" *minifast*	Page
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Code Requirements for Flexible Process Wiring Products
Ordinary (Nonhazardous) Locations

Figure 1

Type ITC cable, or Instrumentation Tray Cable, provides a cost effective alternative for installation of low power instrumentation and control circuits. The National Electrical Code's (NEC) Article 727 permits the use of ITC- rated cables "in industrial establishments where the conditions of maintenance and supervision ensure that only qualified persons service the installation". It may be used in "instrumentation and control circuits operating at 150 volts or less and 5 amps or less." Permitted uses include installation in cable trays or basket trays (Figure 1), or as Exposed Run wiring in specified circumstances.

One of the permitted uses as of ITC cable is illustrated in Figure 2. NEC, Article 727.4(5) allows ITC cable without metallic sheath or armor between cable tray and equipment in lengths not to exceed 15 m (50 ft.), where the cable is supported and protected against physical damage using mechanical protection, such as struts, angles, or channels.

Figure 2

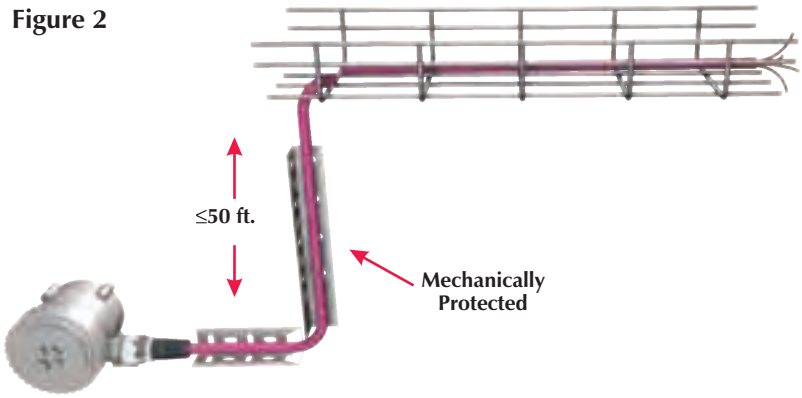

Figure 3

Another permitted use of ITC cable that increases flexibility is illustrated in Figure 3. NEC Article 727.4 (4) allows ITC cable to be used where enclosed in a smooth metallic sheath, continuous corrugated metallic sheath, or interlocking tape armor applied over the nonmetallic sheath in accordance with 727.6. The cable shall be supported and secured at intervals not exceeding 1.8 m (6 ft.)."

When using armored cable, there is no requirement for further mechanical protection or a length limitation. When using ITC cable that complies with the requirements of NEC 727.4(6) no further protection is required.

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Code Requirements for Flexible Process Wiring Products
Ordinary (Nonhazardous) Locations

NEC 727.4(6) allows the installation of ITC cable that complies with the crush and impact of Type MC cable between the cable tray and equipment in lengths not to exceed 15 m (50 ft.) without additional protection. Cable meeting this requirement is identified as "Exposed Run" or "ER" (Figure 1).

This concept enables convenient wiring methods, given that drops from a cable tray may be made without additional auxiliary trays or raceways. Additionally, ITC cable uses 300 volt insulation, resulting in smaller diameter, more flexible cable, with no requirement for special (e.g. Class 2) power supplies. When the ITC cable concept is combined with the **TURCK** process wiring system, the result is an extremely flexible and cost-effective system for process wiring. The basic building blocks of the system are device receptacles, junction boxes, and molded cordsets.

Figure 1

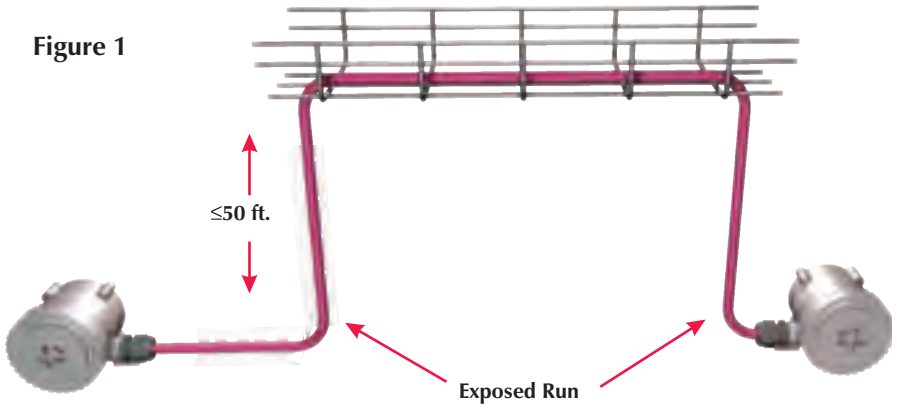
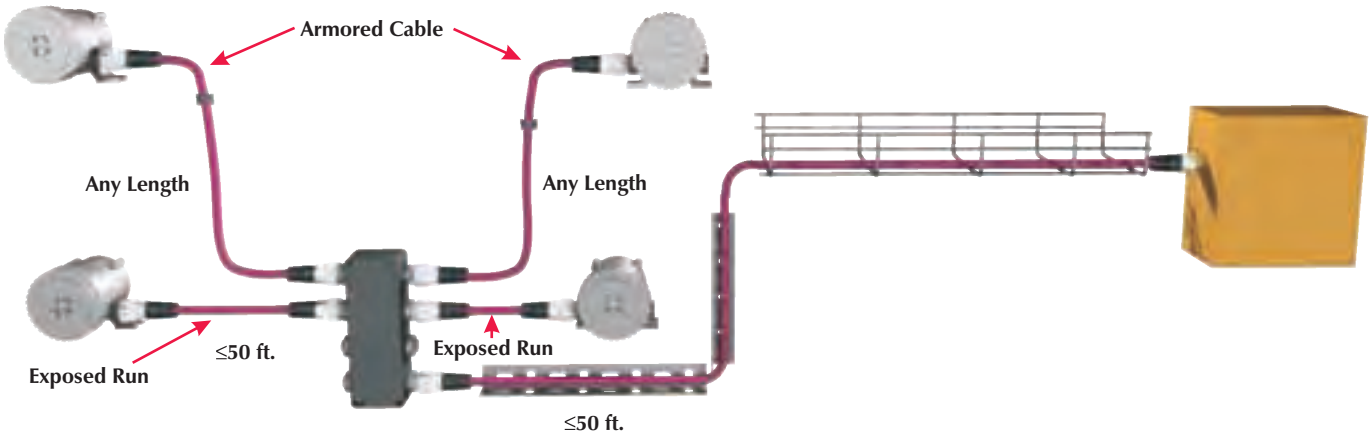


Figure 2



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TURCK
Process Wiring Products

The **TURCK** process wiring system provides an integrated, code-compliant wiring method that adds the benefits of quick-disconnects to the ITC cable installation concepts.

Receptacles with 1/2-14NPT and 3/4-14NPT threads, as well as M20x1.5, easily extend the benefits of quick-disconnect wiring to most process instruments.

Junction boxes can significantly consolidate field wiring. They are available in metal or nylon housings with 4 or 8 ports and home-run quick-disconnects or integral home-run cables.

Molded quick-disconnect cordsets, using ITC cable, provide the ratings and performance characteristics required for process applications.

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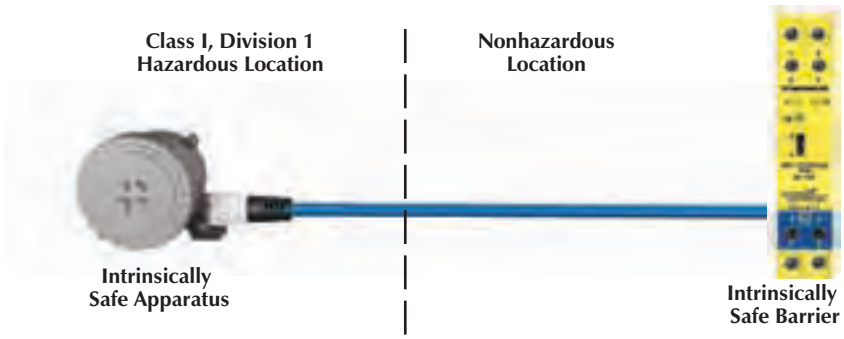
Hazardous Locations

Even more value can be derived from the **TURCK** process wiring system in hazardous locations. The system is now FM approved for use in Class I, Divisions 1 and 2 when installed per **TURCK** drawing QCF-00147 and CSA certified when installed per **TURCK** control drawing Ni-2.404. Contact **TURCK** for a copy of the approval documents or visit www.turck.com/fmcd.

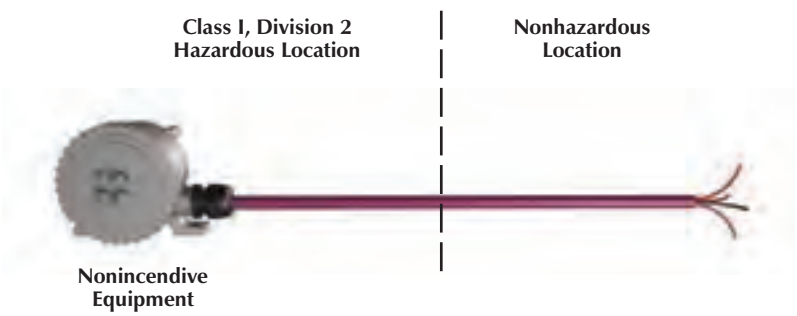
Intrinsically Safe Circuits



Intrinsically safe circuits may be wired using any of the wiring methods suitable for unclassified locations. The use of connectors is allowed as intrinsically safe circuits are safe against faults, including opening, shorting or grounding.

The same requirements for mechanical protection and length limitations apply as in nonhazardous locations.

Nonincendive Equipment*



FM:

ITC cable is a recognized Division 2 wiring method. NEC in Article 501.10 (B)(1)(5) states "Type ITC cable as permitted in 727.4". This is further reinforced by Article 727.4 (3), which states that ITC cable is permitted "in hazardous locations as permitted in 501.10,...".

The same requirements for mechanical protection and length limitations apply as in nonhazardous locations.

CSA:

Canadian installations require the use of specific cable types for non-intrinsically safe circuits in Class I, Division 2 areas. **TURCK** offers CMX-HL cables for unprotected cable runs and CIC cable (Control and Instrumentation Cable) for cable runs in cable trays.

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Quick-disconnects that do not require a tool to disengage are considered “normally arcing”. They are not allowed to be used in Division 2 for incendive circuits without additional protection.

lokfast™ guards enable the use of quick-disconnect technology in Class I, Division 2 hazardous locations. ***lokfast*** guards render quick-disconnects not “normally arcing” by:

- Eliminating access to the coupling nut making disconnection impossible.
- Warning the user to disconnect power before removing.
- Requiring a tool for removal.

lokfast guards are available for 7/8-16UN ***minifast***® and M12 ***eurofast***® molded and field-wireable connectors.

Optional M23 ***multifast***® home-run connectors with set screw locks also render a connection not “normally arcing”.

lokfast guards (or integrally locked ***multifast*** connectors) on all quick disconnects in Division 2 (Figure 1).

The molded construction of the home-run connector and the gas/vapor tight continuous sheath meet the NEC Article 501-15(E)(2) requirements for cable seals in Division 2.

The same requirements for mechanical protection and length limitations apply as in to nonhazardous locations.

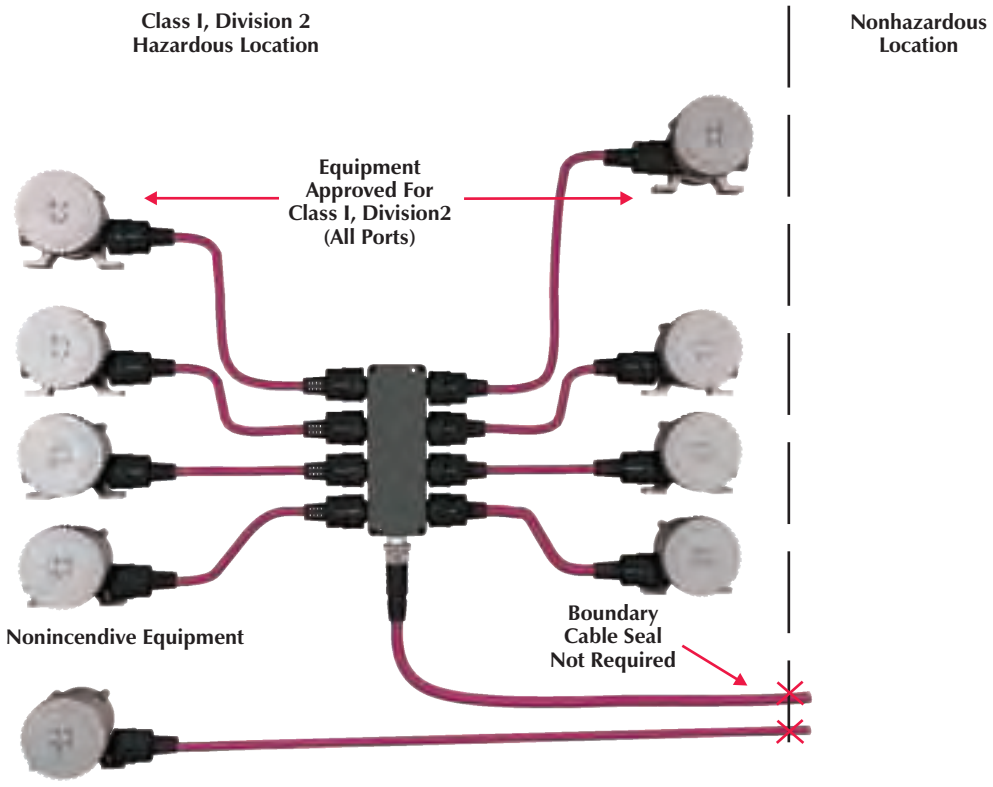

Figure 1

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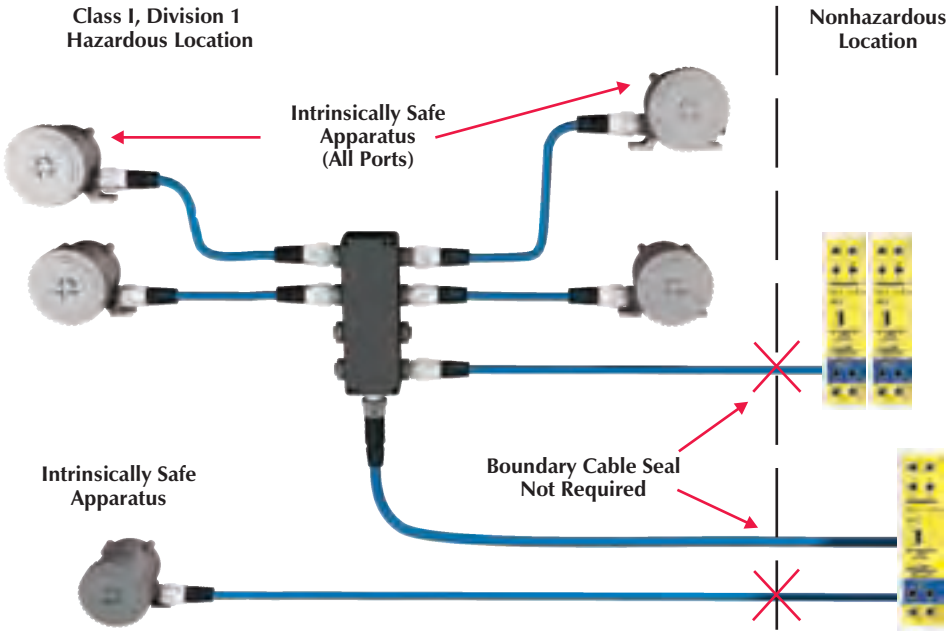
Intrinsic Safety Summary

Intrinsically safe circuits do not require additional protection for quick-disconnects.

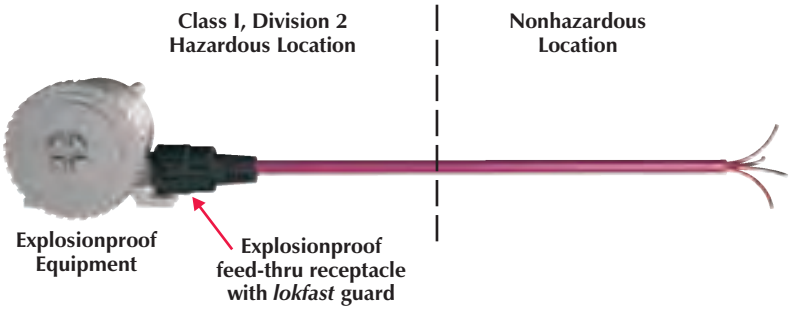
Junction boxes must have FM-approved spacings and entity parameters for intrinsically safe circuits.

Boundary seals are not required for this location, as the molded home-run connecter and the gas/vapor tight continuous cable sheath meet the NEC Article 501-15©) requirements for cable seals in Class I, Divisions 1 and 2.

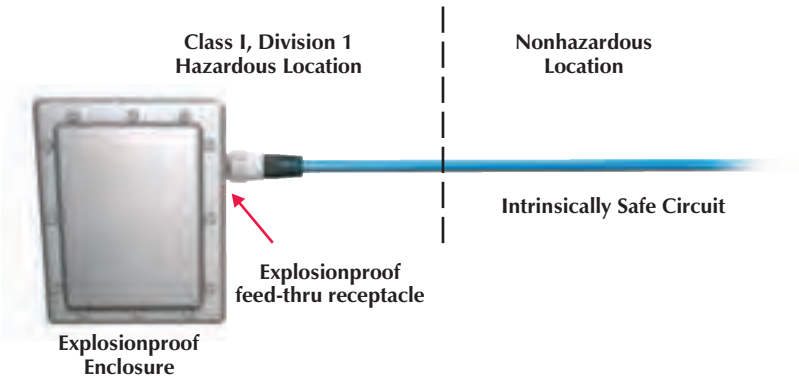
Requirements for mechanical protection and length limitations are equivalent to nonhazardous locations.



Explosionproof Equipment



ITC cable, a recognized Division 2 wiring method, may be used to connect Explosionproof equipment installed in Division 2 when used with an explosionproof feed-through receptacle. The extremely robust receptacle maintains the equipment's explosion containment protection scheme. The external wiring, however, is in Division 2, and can therefore be installed using Division 2 wiring methods.



Explosionproof feed-thru receptacles may also be used to feed intrinsically safe circuits into or out of explosionproof enclosures in Class I, Division 1 hazardous locations.

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2-Wire Analog or HART Control Circuit Selection Guide

M12 *eurofast*® Thread	Drop Cordsets	Receptacles with Cable	Receptacles with Leads	Junction Boxes
Pages	K15 - K19	K20 - K26	K27 - K32	K33 - K42

7/8" *minifast*® Thread	Drop Cordsets	Receptacles with Cable	Receptacles with Leads	Explosionproof Receptacles	"Y" Fitting Receptacles	Junction Boxes
Pages	K47 - K54	K55 - K61	K63 - K72	K73 - K76	K77 - K78	K79 - K84

M23 *multifast*® Thread	Home Run Cordsets	Receptacles with Cable	Receptacles with Leads
Pages	K85 - K92	K93 - K94	K95 - K96

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eurofast® Cordset Part Number Key, 2-Wire Analog or HART Control Circuits

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

P - R K G V | 4 T - 949 - 2 - RSGV 4T

P = Process Cordset

eurofast

R = Straight
W = Right Angle

Gender

K = Female Connector
S = Male Connector

Plug Body Style

E = Large Plug Body
G = Large, Robust Plug Body
R = Armored Plug Body, 22 AWG

Coupling Nut Options

(Blank) = Nickel Plated Brass
V = 316 Stainless Steel

T = T Barb Fitting
A = Armored Cable

Number of Wires / AWG / Color Codes / Cable Type

4T-162 = 3x18 AWG, BU, BN, GN/YE, ITC-Exposed Run/Direct Burial/PLTC PVC
4T-330 = 3x18 AWG, BU, BN, GN/YE, ITC-Exposed Run/Direct Burial/PLTC PVC
4T-949 = 3x18 AWG, BU, BN, GN/YE, ITC/PLTC PVC
4T-950 = 3x18 AWG, BU, BN, GN/YE, ITC/PLTC PVC
4.6T-124 = 3x18 AWG, BK, RD, GN/YE, ITC/PLTC PVC
4.61T-124 = 3x18 AWG, RD, BK, GN/YE, ITC/PLTC PVC
4A-993 = 3x22 AWG, BU, BN, GN/YE, ITC/PLTC Armor PVC

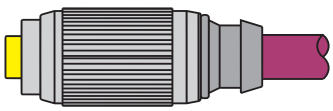
Length in Meters

Insertion Point of Extension Cable and 2nd Prefix*

* Female Connector Listed 1st, Male Connector 2nd
Example: P-RKGV 4T-949-2-RSGV 4T

Single Ended Example:

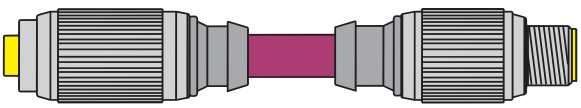
P - R K G | 4 T - 949 - 2



RKG ..

Extension Example:

P - R K G | 4 T - 949 - 2 - R S G | 4 T



RKG .. - RSG ..

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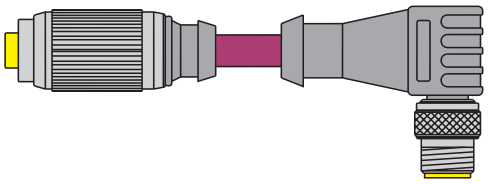
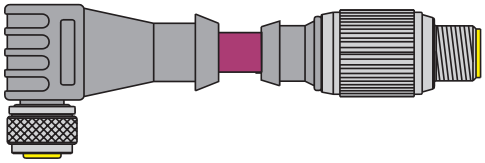
eurofast® Cordset Extension

Other Extension Examples:



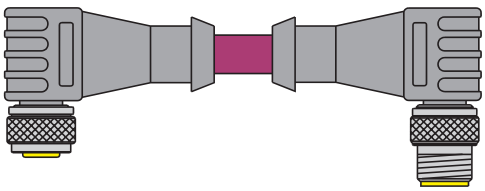
P - R K G | 4 T - 949 - 2 - W S E | 4 T

RKG .. - WSE ..



P - W K E | 4 T - 949 - 2 - R S G | 4 T

WKE .. - RSG ..



P - W K E | 4 T - 949 - 2 - W S E | 4 T

WKE .. - WSE ..

Note: Hybrid connector extensions also available. Consult factory.

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eurofast® Receptacle with Cable Part Number Key, 2-Wire Analog or HART Control Circuits

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

P - F K [ ] V 4- 949 - 0.5 - /14.5/NPT

P = Process Receptacle

Designator for Receptacle

Gender
K = Female Connector
S = Male Connector

Housing Style
(Blank) = Front Mount

Housing Material
(Blank) = Nickel Plated Brass
V = 316 Stainless Steel

Number of Wires / AWG / Color Codes / Cable Type
4-330 = 3x18 AWG, BU, BN, GN/YE, ITC-Exposed Run/Direct Burial/PLTC PVC
4-950 = 3x18 AWG, BU, BN, GN/YE, ITC/PLTC PVC
4-949 = 3x18 AWG, BU, BN, GN/YE, ITC/PLTC PVC
4-162 = 3x18 AWG, BU, BN, GN/YE, ITC-Exposed Run/Direct Burial/PLTC PVC
4.6-124 = 3x18 AWG, BK, RD, GN/YE, ITC/PLTC PVC
4.61-124 = 3x18 AWG, RD, BK, GN/YE, ITC/PLTC PVC

Length in Meters

Thread Type
/14.5/NPT = 1/2-14NPT Threads
/14.75/NPT = 3/4-14NPT Threads
/M20 = M20x1 Threads

eurofast Receptacle with Leads Part Number Key, 2-Wire Analog or HART Control Circuits

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

P - F K [ ] V 4 - 0.5 - /14.5/NPT

P = Process Receptacle

Designator for Receptacle

Gender
K = Female Connector
S = Male Connector

Housing Style
(Blank) = Front Mount
P = Back Panel Mount

Housing Material
(Blank) = Nickel Plated Brass
V = 316 Stainless Steel

Number of Wires
4 = 3
4D = 4 Including Drain
4.4 = 4
4.6D = 4 Including Drain

Length in Meters

Thread Type
/14.5/NPT = 1/2-14NPT Threads
/14.75/NPT = 3/4-14NPT Threads
/M20 = M20x1.5 Threads

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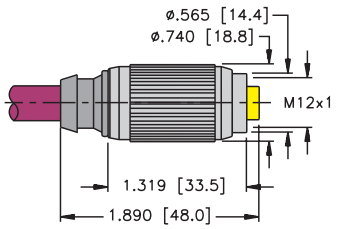
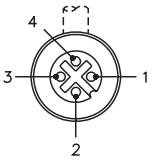
eurofast® Drop Cordsets, 2-Wire Analog or HART Control Circuits

- **Straight Female Connectors**
- **IEC IP 68 Protection**
- **250 V, 4 A (use as ITC limited to 150 V)**

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinout	
P-RKG .. 	P-RKG 4T-949-*	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-RKG 4T-162-*	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-RKG 4.6T-124-*	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-RKG 4.61T-124-*			1. RD 2. BK 3. Drain 4. GN/YE	
	P-RKG 4T-950-*	**ITC/PLTC PVC Blue 3x18 AWG 105°C 7.2 mm OD Cable #RF50950-*M†**	***Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-RKG 4T-330-*	**ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†**			

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RKG.."; "P-RKGV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast eurofast*** guards (Part Number: LOCK-EURO-G) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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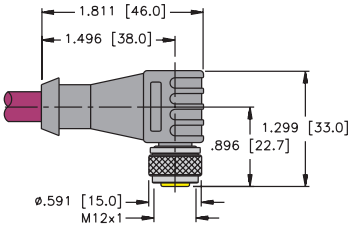
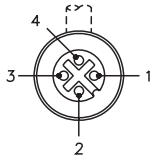
eurofast® Drop Cordsets, 2-Wire Analog or HART Control Circuits

- **Right Angle Female Connectors**
- **IEC IP 68 Protection**
- **250 V, 4 A**
  (use as ITC limited to 150 V)

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinout	
P-WKE .. 	P-WKE 4T-949-*	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**	*Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.*	1. BU 2. BN 3. Drain 4. GN/YE	
	P-WKE 4T-162-*	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-WKE 4.6T-124-*	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-WKE 4.61T-124-*			1. RD 2. BK 3. Drain 4. GN/YE	
	P-WKE 4T-950-*	**ITC/PLTC PVC Blue 3x18 AWG 105°C 7.2 mm OD Cable #RF50950-*M†**	*Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations.*	1. BU 2. BN 3. Drain 4. GN/YE	
	P-WKE 4T-330-*	**ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†**			

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-WKE.."; "P-WKEV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast eurofast*** guards (Part Number: LOCK-EURO) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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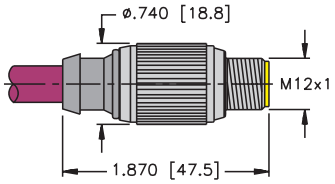
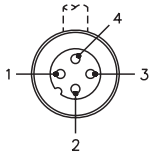
eurofast® Drop Cordsets, 2-Wire Analog or HART Control Circuits

- **Straight Male Connectors**
- **IEC IP 68 Protection**
- **250 V, 4 A (use as ITC limited to 150 V)**

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinout	
P-RSG .. 	P-RSG 4T-949-*	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-RSG 4T-162-*	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-RSG 4.6T-124-*	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-RSG 4.61T-124-*			1. RD 2. BK 3. Drain 4. GN/YE	
	P-RSG 4T-950-*	**ITC/PLTC PVC Blue 3x18 AWG 105°C 7.2 mm OD Cable #RF50950-*M†**	***Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-RSG 4T-330-*	**ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†**			

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RSG.."; "P-RSGV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast eurofast*** guards (Part Number: LOCK-EURO-G) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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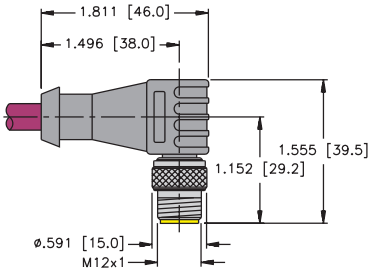
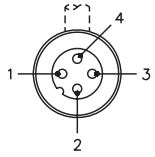
eurofast® Drop Cordsets, 2-Wire Analog or HART Control Circuits

- **Right Angle Male Connectors**
- **IEC IP 68 Protection**
- **250 V, 4 A (use as ITC limited to 150 V)**

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinout	
P-WSE .. 	P-WSE 4T-949-*	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-WSE 4T-162-*	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-WSE 4.6T-124-*	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-WSE 4.61T-124-*			1. RD 2. BK 3. Drain 4. GN/YE	
	P-WSE 4T-950-*	**ITC/PLTC PVC Blue 3x18 AWG 105°C 7.2 mm OD Cable #RF50950-*M†**	***Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-WSE 4T-330-*	**ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†**			

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-WSE.."; "P-WSEV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast eurofast*** guards (Part Number: LOCK-EURO) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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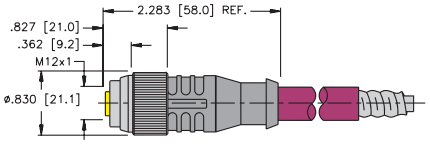
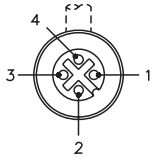
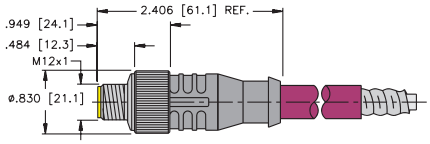
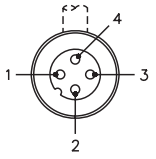
eurofast® Drop Cordsets, 2-Wire Analog or HART Control Circuits

- **Straight Connectors**
- **IEC IP 68 Protection**
- **250 V, 4 A**
  (use as ITC limited to 150 V, 3 A)

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinout	
P-RKR .. 	P-RKR 4A-993-*	**ITC/PLTC ARMOR PVC Plum 3x22 AWG, 1 STP with GND Foil/Drain (24) 105°C 11.2 mm OD Cable #RF50993-*M†**	***Analog or HART control circuits in Extreme Conditions or Class I, Division 2 hazardous locations** or unclassified locations***	1. BU 2. BN 3. Drain 4. GN/YE	**Female** 
P-RSR .. 	P-RSR 4A-993-*				**Male** 

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast eurofast*** guards (Part Number: LOCK-EURO-R) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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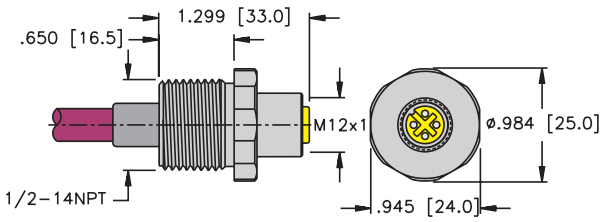
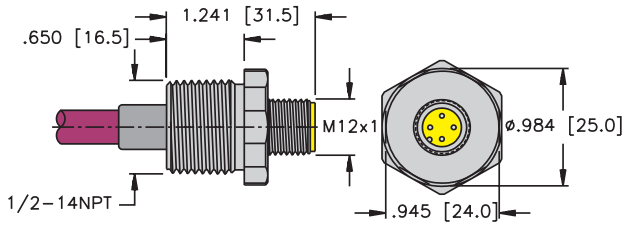
eurofast® Receptacles with Cable, 2-Wire Analog or HART Control Circuits

1



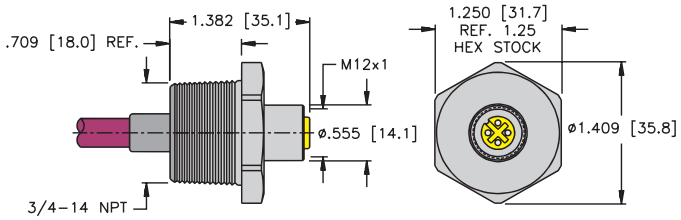
P-FK .. 14.5/NPT **Page K21**

2



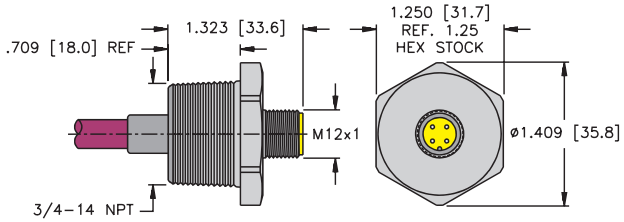
P-FS .. 14.5/NPT **Page K22**

3



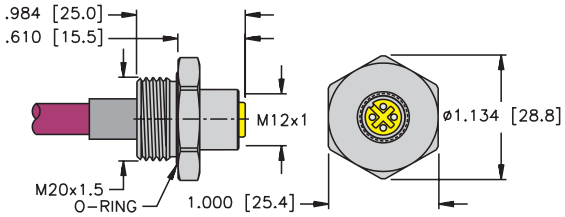
P-FK .. 14.75/NPT **Page K23**

4



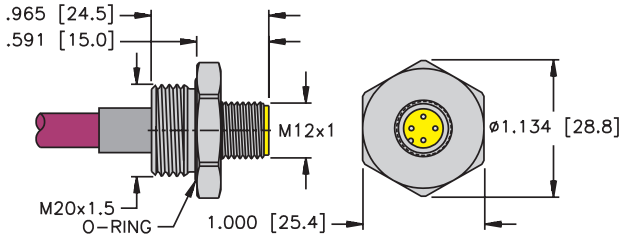
P-FS .. 14.75/NPT **Page K24**

5



P-FK .. M20 **Page K25**

6



P-FS .. M20 **Page K26**

Note: Recommended panel cutout size and panel thickness.

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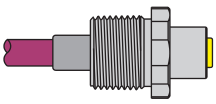
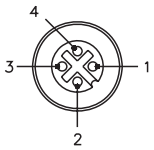
eurofast® Receptacles with Cable, 2-Wire Analog or HART Control Circuits

- **Female Receptacles**
- **IEC IP 68 Protection**
- **250 V, 4 A (use as ITC limited to 150 V)**

Housing Style	Part Number	Cable	Application	Pinout	
1 	P-FK 4-949-*/14.5/NPT	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations or unclassified locations. 1/2-14NPT Threads.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-FK 4-162-*/14.5/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-FK 4.6-124-*/14.5/NPT	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-FK 4.61-124-*/14.5/NPT			1. RD 2. BK 3. Drain 4. GN/YE	
	P-FK 4-950-*/14.5/NPT	**ITC/PLTC PVC Blue 3x18 AWG 105°C 7.2 mm OD Cable #RF50950-*M†**	***Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations. 1/2-14NPT Threads.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-FK 4-330-*/14.5/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†**			

See page K20 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-FK.."; "P-FKV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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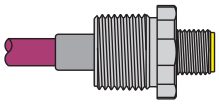
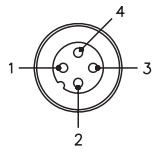
eurofast® Receptacles with Cable, 2-Wire Analog or HART Control Circuits

- **Male Receptacles**
- **IEC IP 68 Protection**
- **250 V, 4 A**
  (use as ITC limited to 150 V)

Housing Style	Part Number	Cable	Application	Pinout	
2 	P-FS 4-949-*/14.5/NPT	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations or unclassified locations. 1/2-14NPT Threads.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-FS 4-162-*/14.5/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-FS 4.6-124-*/14.5/NPT	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-FS 4.61-124-*/14.5/NPT			1. RD 2. BK 3. Drain 4. GN/YE	
	P-FS 4-950-*/14.5/NPT	**ITC/PLTC PVC Blue 3x18 AWG 105°C 7.2 mm OD Cable #RF50950-*M**	***Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations. 1/2-14NPT Threads.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-FS 4-330-*/14.5/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†**			

See page K20 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-FS.."; "P-FSV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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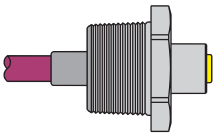
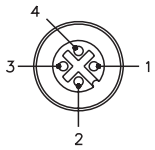
eurofast® Receptacles with Cable, 2-Wire Analog or HART Control Circuits

- **Female Receptacles**
- **IEC IP 68 Protection**
- **250 V, 4 A**
  (use as ITC limited to 150 V)

Housing Style	Part Number	Cable	Application	Pinout	
3 	P-FK 4-949-*/14.75/NPT	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations or unclassified locations. 3/4-14NPT Threads.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-FK 4-162-*/14.75/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-FK 4.6-124-*/14.75/NPT	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-FK 4.61-124-*/14.75/NPT			1. RD 2. BK 3. Drain 4. GN/YE	
	P-FK 4-950-*/14.75/NPT	**ITC/PLTC PVC Blue 3x18 AWG 105°C 7.2 mm OD Cable #RF50950-*M†**	***Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations. 3/4-14NPT Threads.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-FK 4-330-*/14.75/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†**			

See page K20 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-FK.."; "P-FKV.." indicates 316 stainless steel.
Receptacles recommend 1-1/16" (27.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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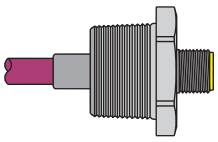
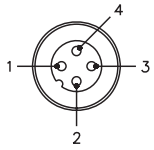
eurofast® Receptacles with Cable, 2-Wire Analog or HART Control Circuits

- **Male Receptacles**
- **IEC IP 68 Protection**
- **250 V, 4 A (use as ITC limited to 150 V)**

Housing Style	Part Number	Cable	Application	Pinout	
4 	P-FS 4-949-*/14.75/NPT	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations or unclassified locations. 3/4-14NPT Threads.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-FS 4-162-*/14.75/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-FS 4.6-124-*/14.75/NPT	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-FS 4.61-124-*/14.75/NPT			1. RD 2. BK 3. Drain 4. GN/YE	
	P-FS 4-950-*/14.75/NPT	**ITC/PLTC PVC Blue 3x18 AWG 105°C 7.2 mm OD Cable #RF50950-*M†**	***Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations. 3/4-14NPT Threads.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-FS 4-330-*/14.75/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†**			

See page K20 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-FS.."; "P-FSV.." indicates 316 stainless steel.
Receptacles recommend 1-1/16" (27.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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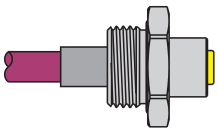
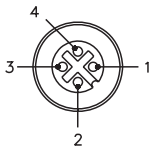
eurofast® Receptacles with Cable, 2-Wire Analog or HART Control Circuits

- **Female Receptacles**
- **IEC IP 68 Protection**
- **250 V, 4 A (use as ITC limited to 150 V)**

Housing Style	Part Number	Cable	Application	Pinout	
5 	P-FK 4-949-*/M20	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**	*Analog or HART control circuits in Class I, Division 2 hazardous locations or unclassified locations. M20 Threads.*	1. BU 2. BN 3. Drain 4. GN/YE	
	P-FK 4-162-*/M20	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-FK 4.6-124-*/M20	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-FK 4.61-124-*/M20			1. RD 2. BK 3. Drain 4. GN/YE	
	P-FK 4-950-*/M20	**ITC/PLTC PVC Blue 3x18 AWG 105°C 7.2 mm OD Cable #RF50950-*M†**	*Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations. M20 Threads.*	1. BU 2. BN 3. Drain 4. GN/YE	
	P-FK 4-330-*/M20	**ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†**			

See page K20 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-FK.."; "P-FKV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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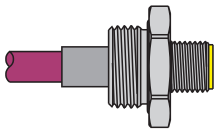
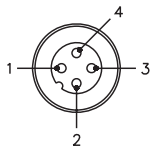
eurofast® Receptacles with Cable, 2-Wire Analog or HART Control Circuits

- **Male Receptacles**
- **IEC IP 68 Protection**
- **250 V, 4 A (use as ITC limited to 150 V)**

Housing Style	Part Number	Cable	Application	Pinout	
6 	P-FS 4-949-*/M20	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**	*Analog or HART control circuits in Class I, Division 2 hazardous locations or unclassified locations. M20 Threads.*	1. BU 2. BN 3. Drain 4. GN/YE	
	P-FS 4-162-*/M20	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-FS 4.6-124-*/M20	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-FS 4.61-124-*/M20			1. RD 2. BK 3. Drain 4. GN/YE	
	P-FS 4-950-*/M20	**ITC/PLTC PVC Blue 3x18 AWG 105°C 7.2 mm OD Cable #RF50950-*M†**	*Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations. M20 Threads.*	1. BU 2. BN 3. Drain 4. GN/YE	
	P-FS 4-330-*/M20	**ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†**			

See page K20 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-FS.."; "P-FSV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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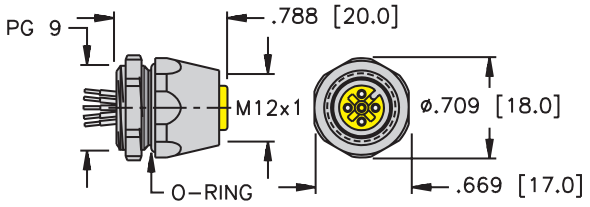
eurofast® Receptacles with Leads, 2-Wire Analog or HART Control Circuits

1



P-FK .. **Page K29**

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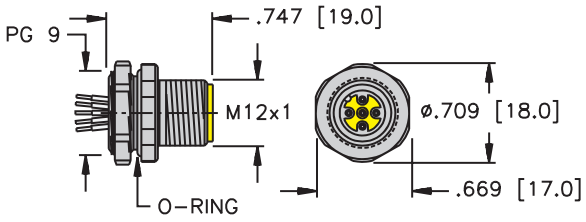

P-FS .. **Page K30**

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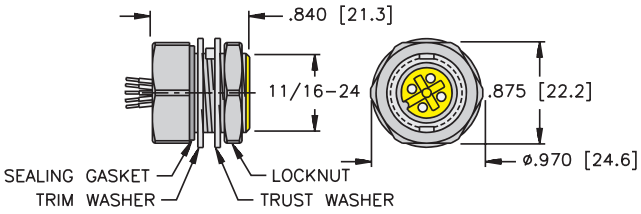
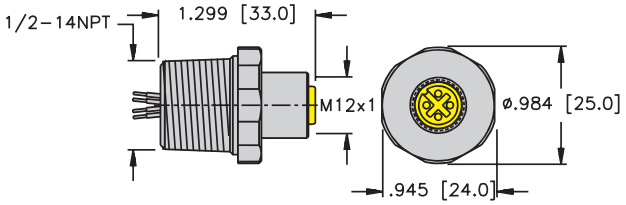


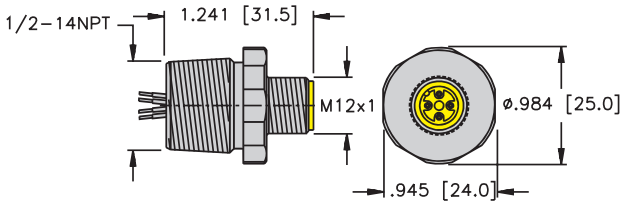
P-FKP .. **Page K29**

4



P-FK ../14.5/NPT **Page K31**

5



P-FS ../14.5/NPT **Page K32**

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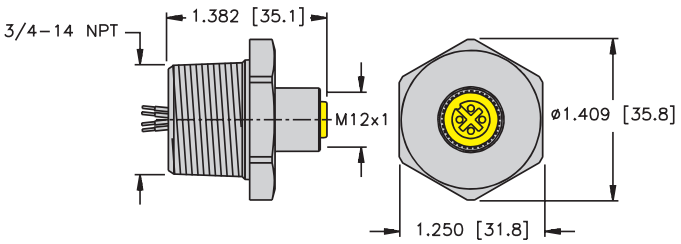
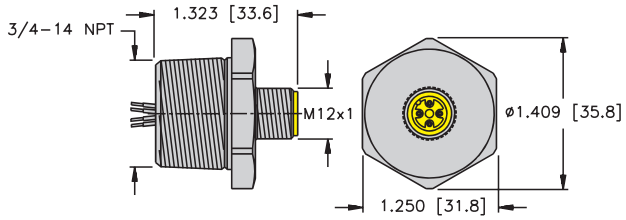
eurofast® Receptacles with Leads, 2-Wire Analog or HART Control Circuits

6



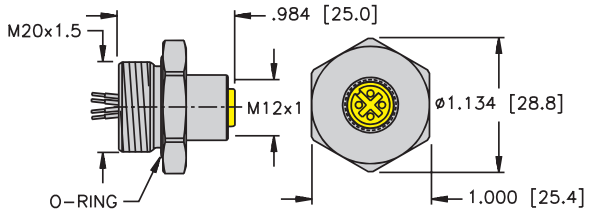
P-FK ../14.75/NPT **Page K31**

7



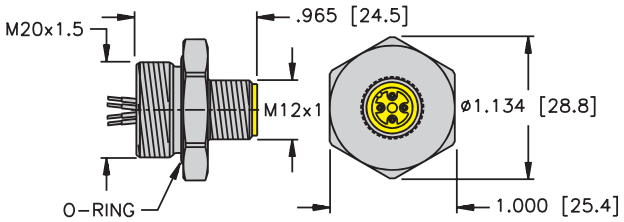
P-FS ../14.75/NPT **Page K32**

8



P-FK ../M20 **Page K31**

9



P-FS ../M20 **Page K32**

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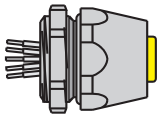
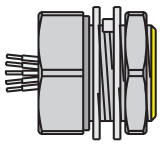
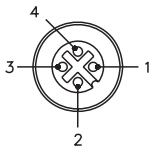
eurofast® Receptacles with Leads, 2-Wire Analog or HART Control Circuits

- **Female Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 68 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout
1 	P-FK 4-*	**UL, CSA 3x18 AWG 105°C 250 V, 4 A**	***PG 9 Threads, Front Panel Mount***	1. BU 2. BN 3. N/C 4. GN/YE
	P-FK 4D-*	**UL, CSA 4x18 AWG 105°C 250 V, 4 A**	***PG 9 Threads, Front Panel Mount, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE
3 	P-FKP 4-*	**UL, CSA 3x18 AWG 105°C 250 V, 4 A**	***Back Panel Mount***	1. BU 2. BN 3. N/C 4. GN/YE
	P-FKP 4D-*	**UL, CSA 4x18 AWG 105°C 250 V, 4 A**	***Back Panel Mount, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE



See page K27 for dimensional drawings.

* Length in meters. Standard lead length is 0.5 meters. Consult factory for other lengths.
Housing material listed is nickel plated brass "P-FK(P)..."; "P-FK(P)V.." indicates 316 stainless steel.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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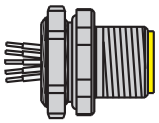
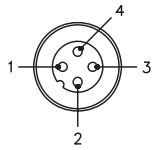
eurofast® Receptacles with Leads, 2-Wire Analog or HART Control Circuits

- **Male Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 68 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
2 	P-FS 4-*	**UL, CSA** **3x18 AWG** **105°C** **250 V, 4 A**	***PG 9 Threads, Front Panel Mount***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-FS 4D-*	**UL, CSA** **4x18 AWG** **105°C** **250 V, 4 A**	***PG 9 Threads, Front Panel Mount, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	

See page K27 for dimensional drawings.

* Length in meters. Standard lead length is 0.5 meters. Consult factory for other lengths.
Housing material listed is nickel plated brass "P-FS.."; "P-FSV.." indicates 316 stainless steel.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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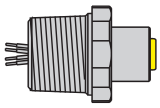
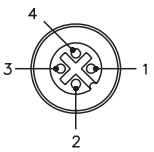
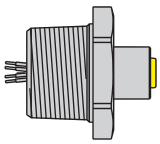
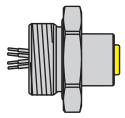
eurofast® Receptacles with Leads, 2-Wire Analog or HART Control Circuits

- **Female Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 68 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
4 	P-FK 4-*/14.5/NPT	**UL, CSA 3x18 AWG 105°C 250 V, 4 A**	***1/2-14NPT Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-FK 4D-*/14.5/NPT	**UL, CSA 4x18 AWG 105°C 250 V, 4 A**	***1/2-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	
	P-FK 4.4-*/14.5/NPT	**UL, CSA 4x18 AWG 105°C 250 V, 4 A**	***1/2-14NPT Threads***	1. BU 2. BN 3. WH 4. BK	
	P-FK 4.6D-*/14.5/NPT	**UL, CSA 4x18 AWG 105°C 250 V, 4 A**	***1/2-14NPT Threads***	1. BK 2. RD 3. GY 4. GN/YE	
6 	P-FK 4-*/14.75/NPT	**UL, CSA 3x18 AWG 105°C 250 V, 4 A**	***3/4-14NPT Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-FK 4D-*/14.75/NPT	**UL, CSA 4x18 AWG 105°C 250 V, 4 A**	***3/4-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	
8 	P-FK 4-*/M20	**UL, CSA 3x18 AWG 105°C 250 V, 4 A**	***M20 Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-FK 4D-*/M20	**UL, CSA 4x18 AWG 105°C 250 V, 4 A**	***M20 Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	

See pages K27 - K28 for dimensional drawings.

* Length in meters. Standard lead length is 0.5 meters. Consult factory for other lengths.
Housing material listed is nickel plated brass "P-FK.."; "P-FKV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting. 1/2-14NPT and M20, 1-1/16" (27.0 mm) for 3/4-14NPT.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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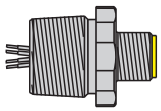
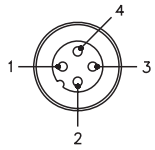
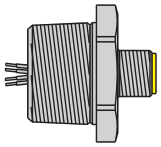
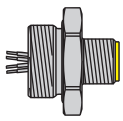
eurofast® Receptacles with Leads, 2-Wire Analog or HART Control Circuits

- Male Receptacles
- NEMA 1, 3, 4, 6P and IEC IP 68 Protection

Housing Style	Part Number	Lead Specs	Features	Pinout	
5 	P-FS 4-*/14.5/NPT	**UL, CSA 3x18 AWG 105°C 250 V, 4 A**	***1/2-14NPT Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-FS 4D-*/14.5/NPT	**UL, CSA 4x18 AWG 105°C 250 V, 4 A**	***1/2-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	
	P-FS 4.4-*/14.5/NPT	**UL, CSA 4x18 AWG 105°C 250 V, 4 A**	***1/2-14NPT Threads***	1. BU 2. BN 3. WH 4. BK	
	P-FS 4.6D-*/14.5/NPT	**UL, CSA 4x18 AWG 105°C 250 V, 4 A**	***1/2-14NPT Threads***	1. BK 2. RD 3. GY 4. GN/YE	
7 	P-FS 4-*/14.75/NPT	**UL, CSA 3x18 AWG 105°C 250 V, 4 A**	***3/4-14NPT Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-FS 4D-*/14.75/NPT	**UL, CSA 4x18 AWG 105°C 250 V, 4 A**	***3/4-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	
9 	P-FS 4-*/M20	**UL, CSA 3x18 AWG 105°C 250 V, 4 A**	***M20 Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-FS 4D-*/M20	**UL, CSA 4x18 AWG 105°C 250 V, 4 A**	***M20 Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	

See pages K27 - K28 for dimensional drawings.

* Length in meters. Standard lead length is 0.5 meters. Consult factory for other lengths.
Housing material listed is nickel plated brass "P-FS.."; "P-FSV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting. 1/2-14NPT and M20, 1-1/16" (27.0 mm) for 3/4-14NPT.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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multibox® *eurofast*® Nylon Junction Boxes w/Integral Home Run Cable

- **Consolidation of 2-wire Analog or HART Control Circuits in Hazardous Locations or Unclassified Locations**

FM APPROVED

FM approved for installation in hazardous locations when installed per **TURCK** Control Drawing QCF-00147 (www.turck.com/fmcd) using specified accessory equipment. "/C" versions CSA certified for installation in hazardous locations when installed per **TURCK** Control Drawing Ni-2.404(www.turck.com/fmcd) using certified accessory equipment.

4-port, 1 Analog Signal Per Port, Common Ground and Shield

Application	Specifications	Pinout	Nickel Plated Brass	Stainless Steel
4-port glass-filled nylon junction box, ***eurofast*** port connectors, integral home-run cable	Home-run cable with 4/22 AWG shielded twisted pairs, each with 22 AWG drain†, plus overall shield with 22 AWG drain and 18 AWG overall ground, 10.0 mm OD	Port, Pin — Wire Color Port 1, Pin 1 — WH/BK Port 1, Pin 2 — BK/WH Port 2, Pin 1 — WH/GN Port 2, Pin 2 — GN/WH Port 3, Pin 1 — WH/RD Port 3, Pin 2 — RD/WH Port 4, Pin 1 — WH/OG Port 4, Pin 2 — OG/WH Ports 1-4, Pin 3 — Drain Ports 1-4, Pin 4 — GN/YE	P-4MB12-4-960-*	P-4MBV12-4-960-*
			P-4MB12-4-415-*/C	P-4MBV12-4-415-*/C

8-port, 1 Analog Signal Per Port, Common Ground and Shield

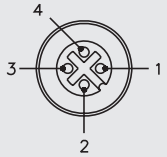
Application	Specifications	Pinout	Nickel Plated Brass	Stainless Steel
8-port glass-filled nylon junction box, ***eurofast*** port connectors, integral home-run cable	Home-run cable with 8/22 AWG shielded twisted pairs, each with 22 AWG drain†, plus overall shield with 22 AWG drain and 18 AWG overall ground, 12.0 mm OD	Port, Pin — Wire Color Port 1, Pin 1 — WH/BK Port 1, Pin 2 — BK/WH Port 2, Pin 1 — WH/GN Port 2, Pin 2 — GN/WH Port 3, Pin 1 — WH/RD Port 3, Pin 2 — RD/WH Port 4, Pin 1 — WH/OG Port 4, Pin 2 — OG/WH Port 5, Pin 1 — WH/BU Port 5, Pin 2 — BU/WH Port 6, Pin 1 — WH/BN Port 6, Pin 2 — BN/WH Port 7, Pin 1 — WH/YE Port 7, Pin 2 — YE/WH Port 8, Pin 1 — WH/VT Port 8, Pin 2 — VT/WH Ports 1-8, Pin 3 — Drain Ports 1-8, Pin 4 — GN/YE	P-8MB12-4-959-*	P-8MBV12-4-959-*
			P-8MB12-4-416-*/C	P-8MBV12-4-416-*/C

* Length in meters.

† Each circuit has dedicated drain wire not connected in the junction box.

Pinouts

Female



4-pin

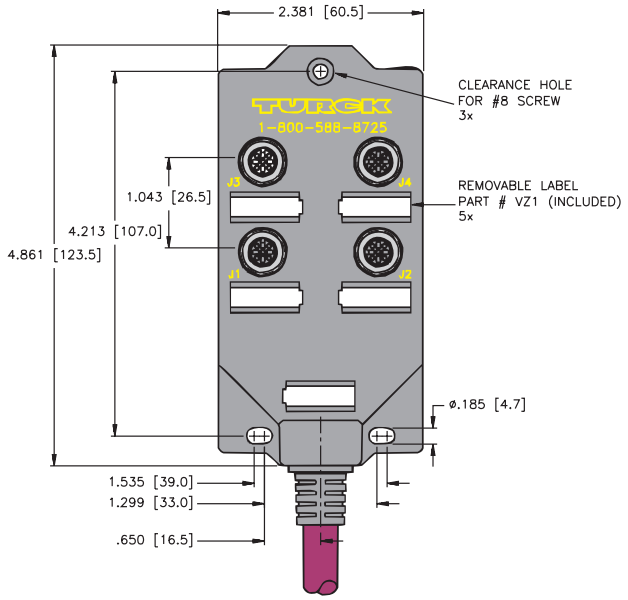
Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Specifications

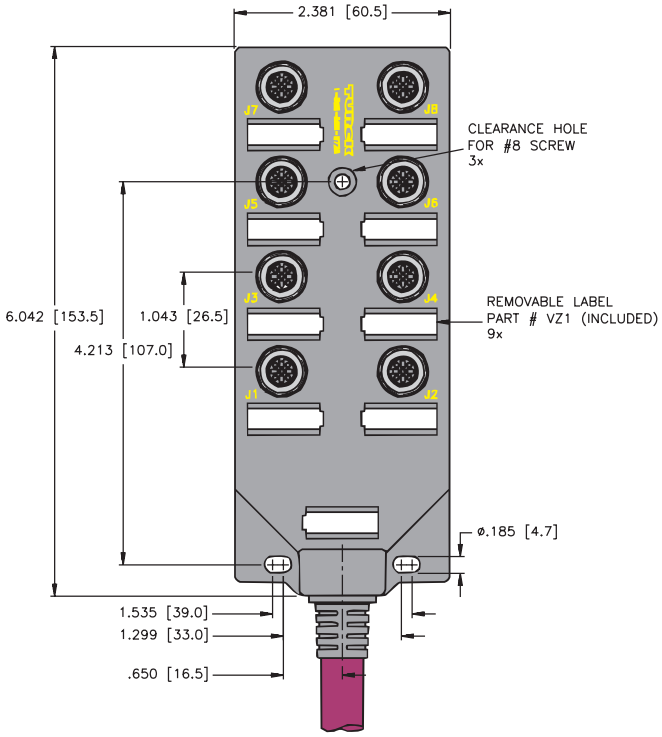
Housing:	Glass filled nylon.	
Connectors	Nickel plated brass or 316 stainless steel housings (see table), Nylon contact carriers.	
Temperature:	-30° to +80°C (-22° to +176°F).	
Contacts:	Gold plated brass.	
Protection:	IP 68.	
Cable:	Standard Version:	Plum PVC jacket, UL ITC/PLTC/AWM, CSA CMX-Outdoor/CMG/AWM FT4, 300 V, 105°C.
	"/C" Versions:	Plum PUR jacket, UL ITC/PLTC, CSA CIC/CMX-Outdoor-CM, 300 V, 105°C, FT1.
Electrical Rating:	Standard Version:	100 V, 4 A per conductor (use as ITC is limited to 3 A for 22 AWG conductors).

Dimensions

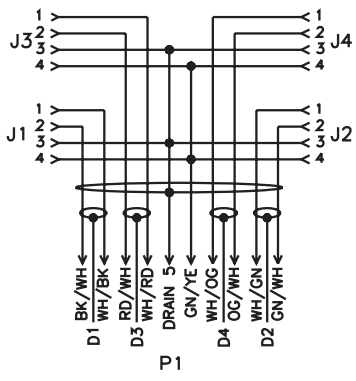
4-Port



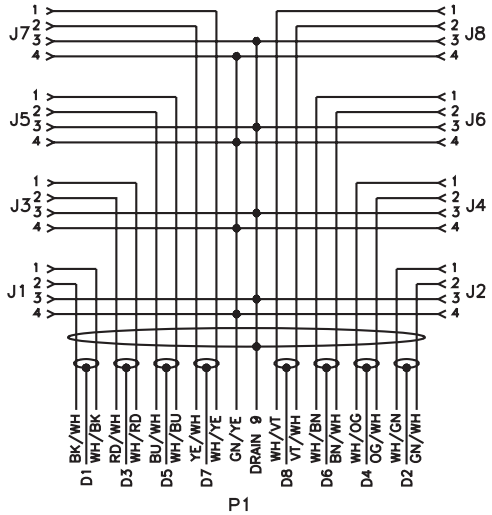
8-Port



4-Port



8-Port



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multibox® eurofast® Nylon Junction Boxes w/Integral Home Run Cable

- **Consolidation of 2-wire Analog or HART Control Circuits in Hazardous Locations or Unclassified Locations**
- **Blue Jacket Color May Be Used as Identification of Intrinsically Safe Circuits**

FM APPROVED

FM approved for installation in hazardous locations when installed per **TURCK** Control Drawing QCF-00147 (www.turck.com/fmcd) using specified accessory equipment. "/C" versions CSA certified for installation in hazardous locations when installed per **TURCK** Control Drawing Ni-2.404(www.turck.com/fmcd) using certified accessory equipment.

4-port, 1 Analog Signal Per Port, Common Ground and Shield

Application	Specifications	Pinout		Nickel Plated Brass	Stainless Steel
4-port glass-filled nylon junction box, ***eurofast*** port connectors, integral home-run cable	Home-run cable with 4/22 AWG shielded twisted pairs, each with 22 AWG drain†, plus overall shield with 22 AWG drain and 18 AWG overall ground, 10.0 mm OD	Port, Pin	Wire Color	P-4MB12-4-978-*	P-4MBV12-4-978-*
		Port 1, Pin 1	WH/BK		
		Port 1, Pin 2	BK/WH		
		Port 2, Pin 1	WH/GN		
		Port 2, Pin 2	GN/WH		
		Port 3, Pin 1	WH/RD		
		Port 3, Pin 2	RD/WH		
		Port 4, Pin 1	WH/OG		
		Port 4, Pin 2	OG/WH	P-4MB12-4-978-*/C	P-4MBV12-4-978-*/C
		Ports 1-4, Pin 3	Drain		
		Ports 1-4, Pin 4	GN/YE		

8-port, 1 Analog Signal Per Port, Common Ground and Shield

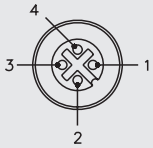
Application	Specifications	Pinout		Nickel Plated Brass	Stainless Steel
8-port glass-filled nylon junction box, ***eurofast*** port connectors, integral home-run cable	Home-run cable with 8/22 AWG shielded twisted pairs, each with 22 AWG drain†, plus overall shield with 22 AWG drain and 18 AWG overall ground, 12.0 mm OD	Port, Pin	Wire Color	P-8MB12-4-977-*	P-8MBV12-4-977-*
		Port 1, Pin 1	WH/BK		
		Port 1, Pin 2	BK/WH		
		Port 2, Pin 1	WH/GN		
		Port 2, Pin 2	GN/WH		
		Port 3, Pin 1	WH/RD		
		Port 3, Pin 2	RD/WH		
		Port 4, Pin 1	WH/OG		
		Port 4, Pin 2	OG/WH		
		Port 5, Pin 1	WH/BU		
		Port 5, Pin 2	BU/WH		
		Port 6, Pin 1	WH/BN		
		Port 6, Pin 2	BN/WH		
		Port 7, Pin 1	WH/YE	P-8MB12-4-977-*/C	P-8MBV12-4-977-*/C
		Port 7, Pin 2	YE/WH		
		Port 8, Pin 1	WH/VT		
		Port 8, Pin 2	VT/WH		
		Ports 1-8, Pin 3	Drain		
		Ports 1-8, Pin 4	GN/YE		

* Length in meters.

† Each circuit has dedicated drain wire not connected in the junction box.

Pinouts

Female



4-Pin

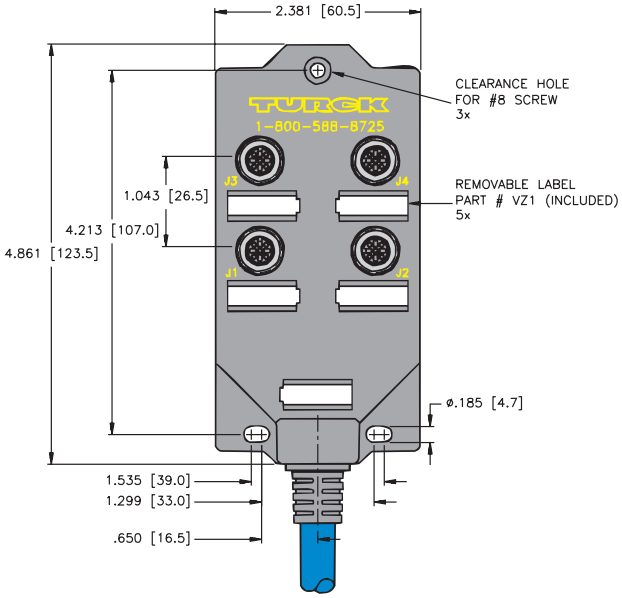
Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Specifications

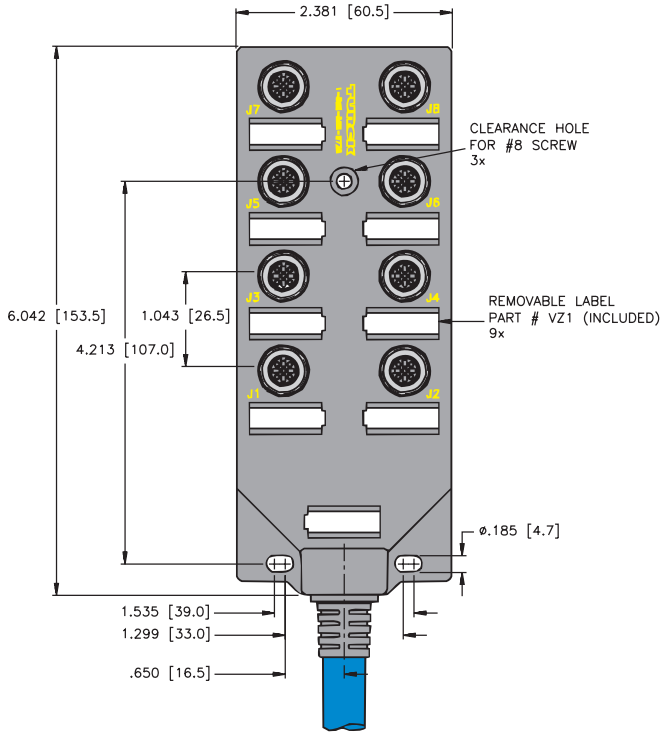
Housing:	Glass filled nylon.
Connectors	Nickel plated brass or 316 stainless steel housings (see table), Nylon contact carriers.
Temperature:	-30° to +80°C (-22° to +176°F).
Contacts:	Gold plated brass.
Protection:	IP 68.
Cable:	Blue PVC jacket, UL UTC/PLTC/AWM, CSA CMX-Outdoor/CMG/AWM FT4, 300 V, 105°C.
Electrical Rating:	Standard Version: 100 V, 4 A per conductor (use as ITC is limited to 3 A for 22 AWG conductors). "/C" Versions: 30 V, 600 mA

Dimensions

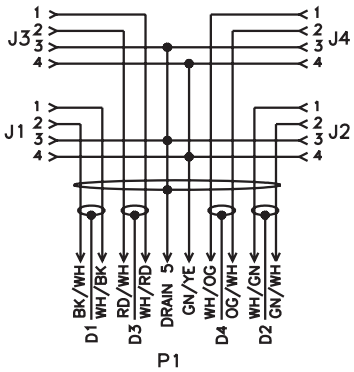
4-Port



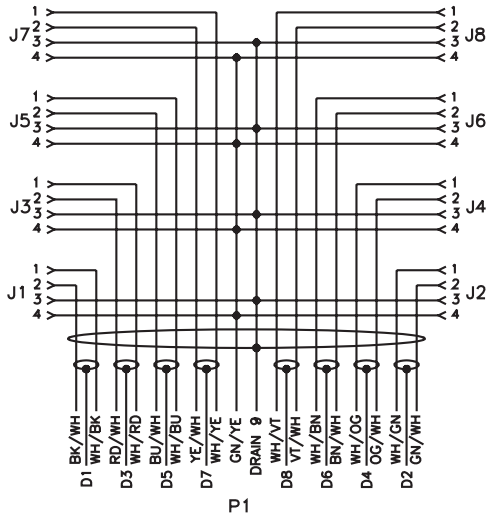
8-Port



4-Port



8-Port



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multibox® *eurofast*® Metal Junction Boxes w/Integral Home Run Cable

- **Consolidation of 2-wire Analog or HART Control Circuits in Hazardous Locations** or Unclassified Locations.**

FM APPROVED

FM approved for installation in hazardous locations when installed per **TURCK** Control Drawing QCF-00147 (www.turck.com/fmcd) using specified accessory equipment.
"/C" versions CSA certified for installation in hazardous locations when installed per **TURCK** Control Drawing Ni-2.404(www.turck.com/fmcd) using certified accessory equipment.

4-port, 1 Analog Signal Per Port, Common Ground and Shield

Application	Specifications	Pinout	Nickel Plated Brass	Stainless Steel
4-port cast aluminum junction box, ***eurofast*** port connectors, integral home-run cable	Home-run cable with 4/22 AWG shielded twisted pairs, each with 22 AWG drain†, plus overall shield with 22 AWG drain and 18 AWG overall ground, 10.0 mm OD	Port, Pin / Wire Color Port 1, Pin 1 — WH/BK Port 1, Pin 2 — BK/WH Port 2, Pin 1 — WH/GN Port 2, Pin 2 — GN/WH Port 3, Pin 1 — WH/RD Port 3, Pin 2 — RD/WH Port 4, Pin 1 — WH/OG Port 4, Pin 2 — OG/WH Ports 1-4, Pin 3 — Drain Ports 1-4, Pin 4 — GN/YE	P-VBM 40-960-*	P-VBMV 40-960-*
			P-VBM 40-415-*/C	P-VBMV 40-415-*/C

8-port, 1 Analog Signal Per Port, Common Ground and Shield

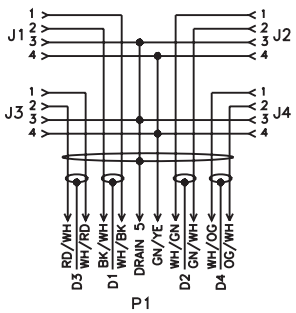
Application	Specifications	Pinout	Nickel Plated Brass	Stainless Steel
8-port cast aluminum junction box, ***eurofast*** port connectors, integral home-run cable	Home-run cable with 8/22 AWG shielded twisted pairs, each with 22 AWG drain†, plus overall shield with 22 AWG drain and 18 AWG overall ground, 12.0 mm OD	Port, Pin / Wire Color Port 1, Pin 1 — WH/BK Port 1, Pin 2 — BK/WH Port 2, Pin 1 — WH/GN Port 2, Pin 2 — GN/WH Port 3, Pin 1 — WH/RD Port 3, Pin 2 — RD/WH Port 4, Pin 1 — WH/OG Port 4, Pin 2 — OG/WH Port 5, Pin 1 — WH/BU Port 5, Pin 2 — BU/WH Port 6, Pin 1 — WH/BN Port 6, Pin 2 — BN/WH Port 7, Pin 1 — WH/YE Port 7, Pin 2 — YE/WH Port 8, Pin 1 — WH/VT Port 8, Pin 2 — VT/WH Ports 1-8, Pin 3 — Drain Ports 1-8, Pin 4 — GN/YE	P-VBM 80-959-*	P-VBMV 80-959-*
			P-VBM 80-416-*/C	P-VBMV 80-416-*/C

* Length in meters.

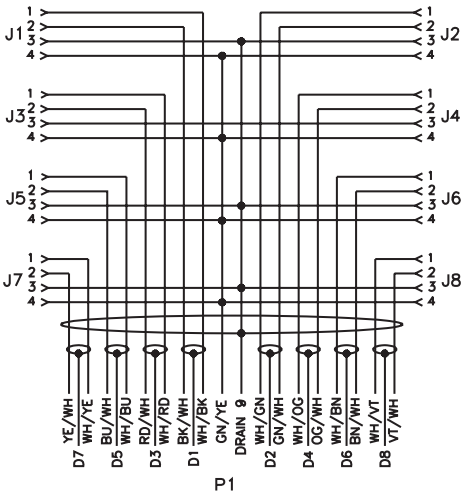
** Use with ***lokfast*** LOCK-EURO-G or LOCK-EURO-FW for port connectors in Class I, Division 2 applications.

† Each circuit has an additional dedicated drain wire not connected in the junction box.

4-Port



8-Port



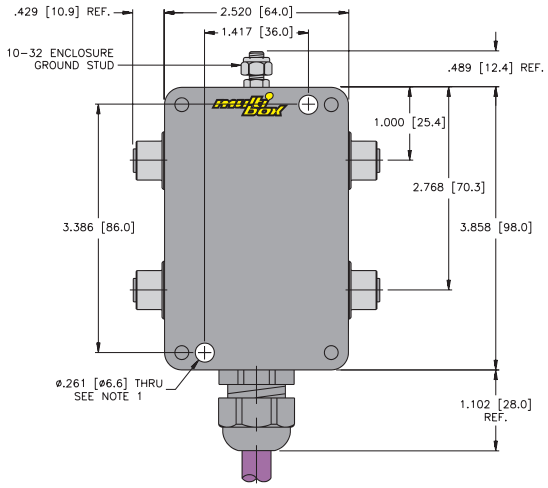
Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Specifications

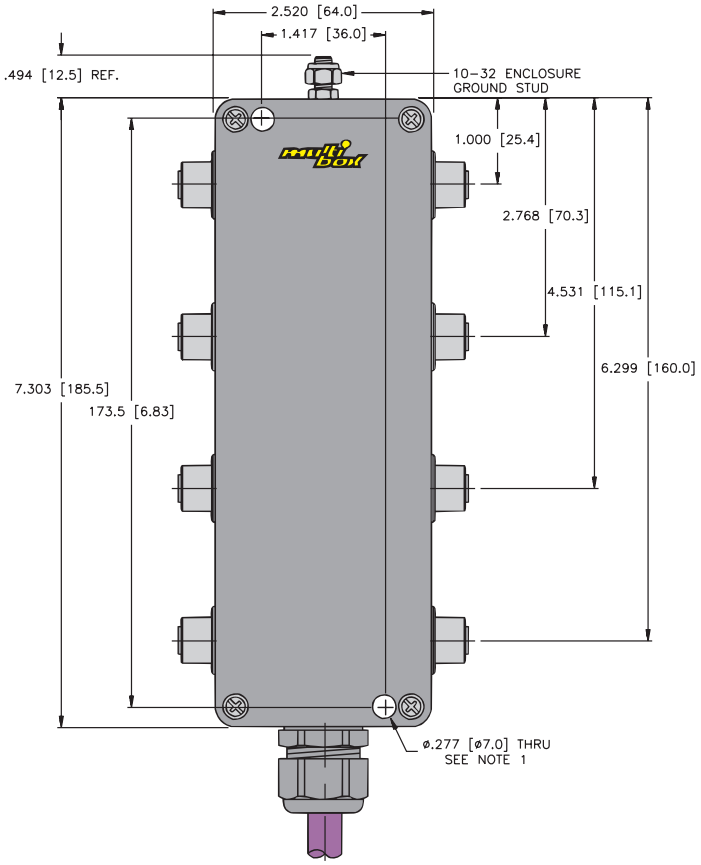
Housing:	Die-cast aluminum alloy.	
Connectors	Nickel plated brass or 316 stainless steel housings (see table), oil resistant PUR contact carrier.	
Temperature:	-30° to +80°C (-22° to +176°F).	
Contacts:	Gold plated brass.	
Protection:	IP 68.	
Cable:	Standard Version:	Plum PVC jacket, UL ITC/PLTC/AWM, CSA CMX-Outdoor/CMG/AWM FT4, 300 V, 105°C.
	"/C" Versions:	Plum PUR jacket, UL ITC/PLTC, CSA CIC/CMX-Outdoor-CM, 300 V, 105°C, FT1.
Electrical Rating:	Standard Version:	250 V, 4 A per conductor (use as ITC is limited to 150 V, 3 A for 22 AWG conductors).
	"/C" Versions:	30 V, 600 mA

Dimensions

4-Port

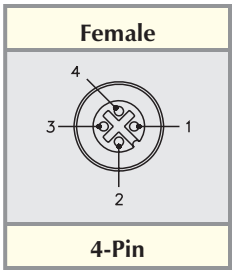


8-Port



Notes:
1. Clearance hole for 1/4-20 mounting screws (2 not included).

Pinouts



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multibox® eurofast® Nylon Junction Boxes

- **Consolidation of 2-wire Analog or HART Control Circuits in Hazardous Locations or Unclassified Locations.**

FM APPROVED

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"/C" versions CSA certified for installation in hazardous locations when installed per **TURCK** Control Drawing Ni-2.404(www.turck.com/fmcd) using certified accessory equipment.

4-port, 1 Analog Signal Per Port, Common Ground and Shield

Application	Specifications	Pinout	Nickel Plated Brass	Stainless Steel
4-port glass-filled nylon junction box, ***eurofast*** port connectors, ***multifast®*** home-run connector	12-pin ***multifast*** connector	Port, Pin / Home-Run: Port 1, Pin 1 – 1; Port 1, Pin 2 – 2; Port 2, Pin 1 – 3; Port 2, Pin 2 – 4; Port 3, Pin 1 – 5; Port 3, Pin 2 – 6; Port 4, Pin 1 – 7; Port 4, Pin 2 – 8; NC – 9; NC – 10; Ports 1-4, Pin 3 – 11; Ports 1-4, Pin 4 – 12	P-4MB12-4-CS12 P-4MB12-4-CS12/C	P-4MBV12-4-CSV12 P-4MBV12-4-CSV12/C

See pages K85 - K92 for mating home-run cordsets.

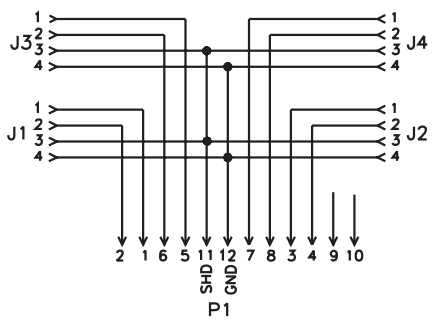
8-port, 1 Analog Signal Per Port, Common Ground and Shield

Application	Specifications	Pinout	Nickel Plated Brass	Stainless Steel
8-port glass-filled nylon junction box, ***eurofast*** port connectors, ***multifast*** home-run connector	19-pin ***multifast*** connector	Port, Pin / Home-Run: Port 1, Pin 1 – 1; Port 1, Pin 2 – 2; Port 2, Pin 1 – 3; Port 2, Pin 2 – 4; Port 3, Pin 1 – 5; Ports 1-8, Pin 3 – 6; Port 3, Pin 2 – 7; Port 4, Pin 1 – 8; Port 4, Pin 2 – 9; Port 5, Pin 1 – 10; Port 5, Pin 2 – 11; Ports 1-8, Pin 4 – 12; Port 6, Pin 1 – 13; Port 6, Pin 2 – 14; Port 7, Pin 1 – 15; Port 7, Pin 2 – 16; Port 8, Pin 1 – 17; Port 8, Pin 2 – 18; NC – 19	P-8MB12-4-CS19 P-8MB12-4-CS19/C	P-8MBV12-4-CSV19 P-8MBV12-4-CSV19/C

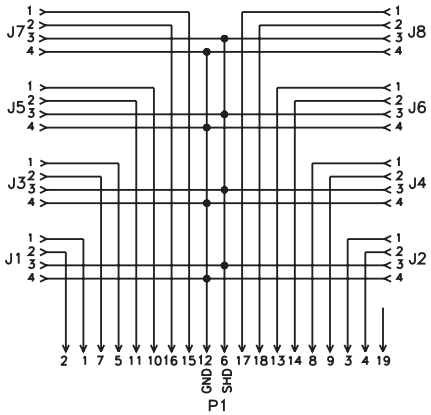
See pages K85 - K92 for mating home-run cordsets.

Wiring Diagrams

4-Port



8-Port



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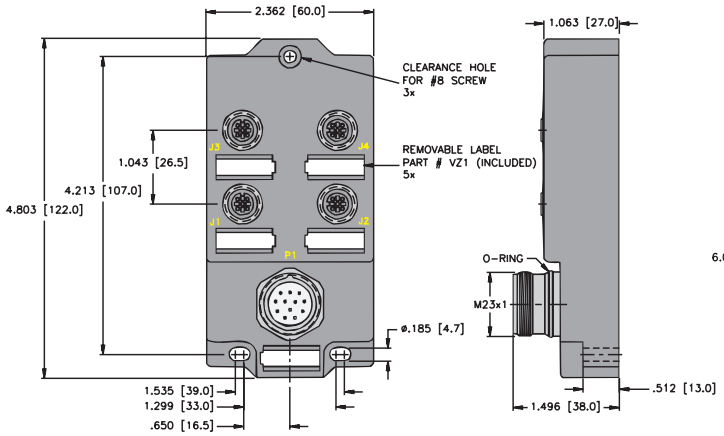
Specifications

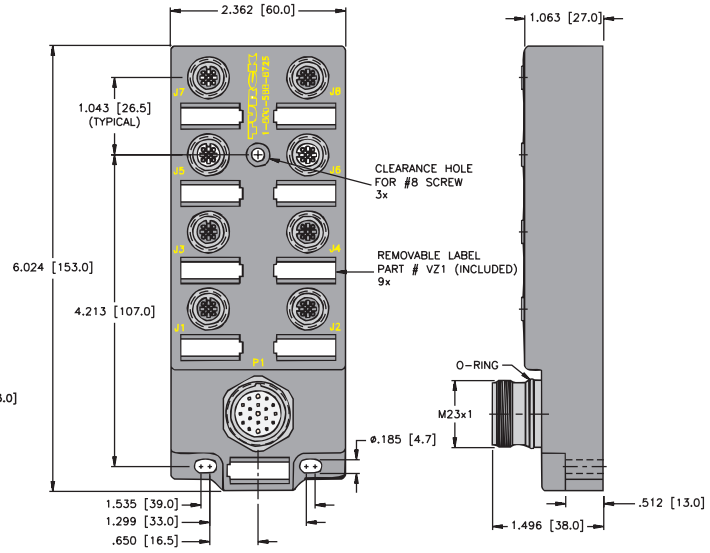
Housing:	Glass filled nylon.
Connectors	Nickel plated brass or 316 stainless steel housings (see table). Nylon contact carriers.
Temperature:	-30° to +80°C (-22° to +176°F).
Contacts:	Gold plated brass.
Protection:	IP 67.
Electrical Rating:	Standard Version: 100 V, 4 A per conductor. "/C" Versions: 30 V, 600 mA

Dimensions

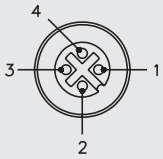
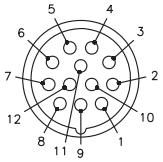
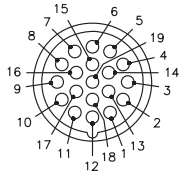
4-Port



8-Port



Pinouts

Female	Male	
		
4-Pin *eurofast*®	**12-Pin *multifast*®**	**19-Pin *multifast*®**

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multibox® eurofast® Metal Junction Boxes

- **Consolidation of 2-wire Analog or HART Control Circuits in Hazardous Locations or Unclassified Locations**

FM approved for installation in hazardous locations when installed per **TURCK** Control Drawing QCF-00147 (www.turck.com/fmcd) using specified accessory equipment.
"/C" versions CSA certified for installation in hazardous locations when installed per **TURCK** Control Drawing Ni-2.404(www.turck.com/fmcd) using certified accessory equipment.

4-port, Common Ground and Shield

Application	Specifications	Pinout	Nickel Plated Brass	Stainless Steel
4-port cast aluminum junction box, ***eurofast*** port connectors, ***multifast*** ® home-run connector, 1 analog signal per port	12-pin ***multifast*** connector	Pin, Port / Home-Run: Port 1, Pin 1 — 1; Port 1, Pin 2 — 2; Port 2, Pin 1 — 3; Port 2, Pin 2 — 4; Port 3, Pin 1 — 5; Port 3, Pin 2 — 6 Port, Pin / Home-Run: Port 4, Pin 1 — 7; Port 4, Pin 2 — 8; NC — 9; NC — 10; Ports 1-4, Pin 3 — 11; Ports 1-4, Pin 4 — 12	P-VBM 40-CS12 P-VBM 40-CS12/C	P-VBMV 40-CSV12 P-VBMV 40-CSV12/C

See pages K85 - K92 for mating home-run cordsets.

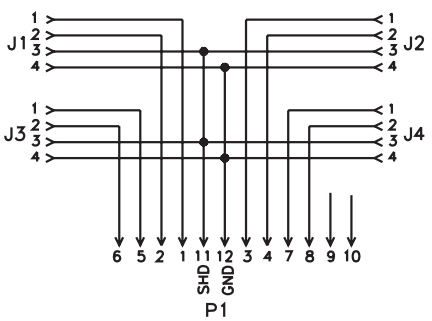
8-port, Common Ground and Shield

Application	Specifications	Pinout	Nickel Plated Brass	Stainless Steel
8-port cast aluminum junction box, ***eurofast*** port connectors, ***multifast*** home-run connector, 1 analog signal per port	19-pin ***multifast*** connector	Port, Pin / Home-Run: Port 1, Pin 1 — 1; Port 1, Pin 2 — 2; Port 2, Pin 1 — 3; Port 2, Pin 2 — 4; Port 3, Pin 1 — 5; Ports 1-8, Pin 3 — 6; Port 3, Pin 2 — 7; Port 4, Pin 1 — 8; Port 4, Pin 2 — 9 Port, Pin / Home-Run: Port 5, Pin 1 — 10; Port 5, Pin 2 — 11; Ports 1-8, Pin 4 — 12; Port 6, Pin 1 — 13; Port 6, Pin 2 — 14; Port 7, Pin 1 — 15; Port 7, Pin 2 — 16; Port 8, Pin 1 — 17; Port 8, Pin 2 — 18; NC — 19	P-VBM 80-CS19 P-VBM 80-CS19/C	P-VBMV 80-CSV19 P-VBMV 80-CSV19/C

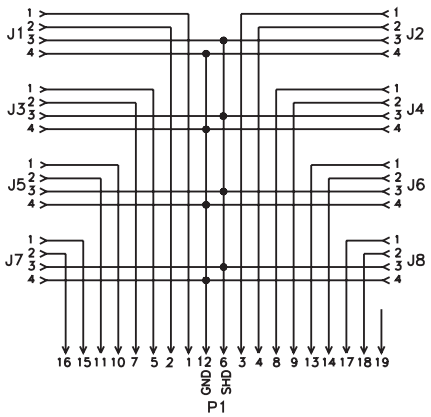
See pages K85 - K92 for mating home-run cordsets.

Wiring Diagrams

4-Port Diagram, 1 Analog Signal Per Port



8-Port Diagram, 1 Analog Signal Per Port



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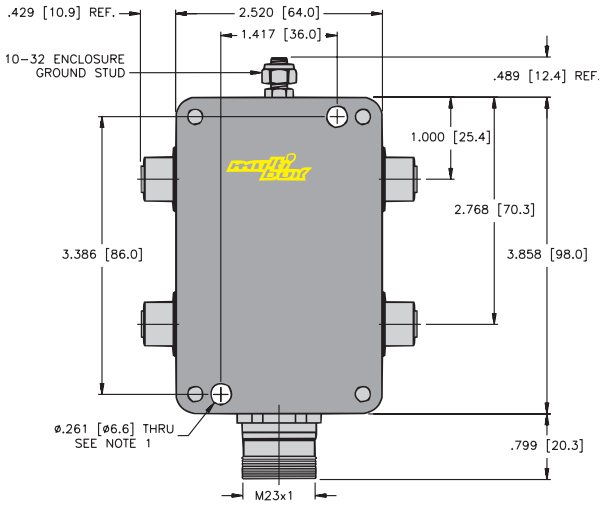
Specifications

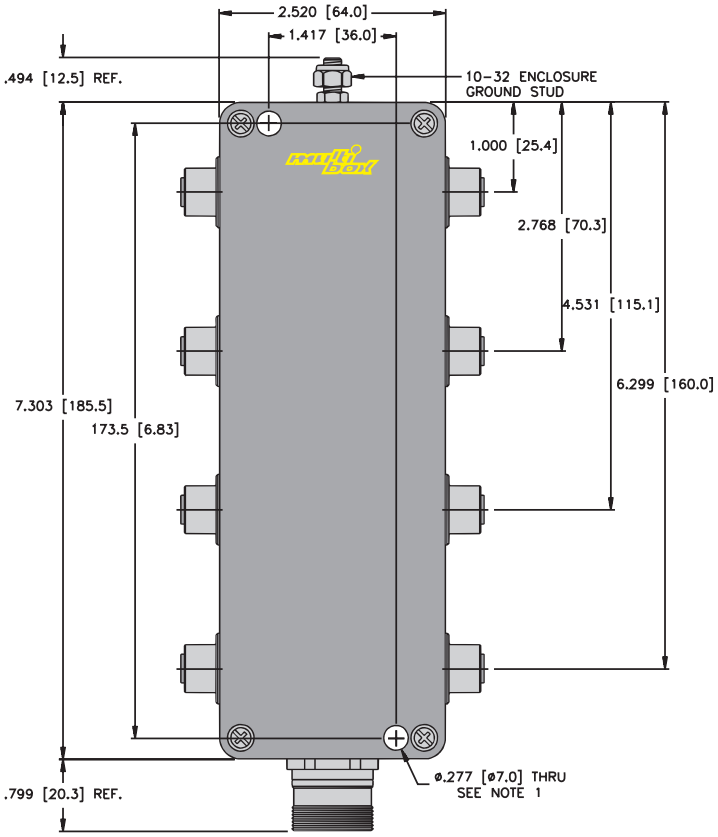
Housing:	Die-cast aluminum alloy.
Connectors	Nickel plated brass or 316 stainless steel housings (see table), oil resistant PUR contact carrier.
Temperature:	-30° to +80°C (-22° to +176°F).
Contacts:	Gold plated brass.
Protection:	IP 67.
Electrical Rating:	Standard Version: 12-pin: 250 V, 4 A per conductor.
	Standard Version: 12-pin: 250 V, 4 A per conductor.
	"/C" Versions: 30 V, 600 mA

Dimensions

4-Port

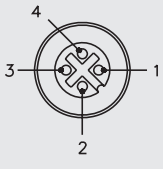
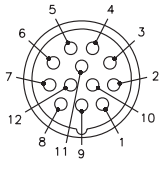
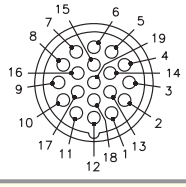


8-Port



Notes:
1. Clearance hole for 1/4-20 mounting screws (2 not included).

Pinouts

Female	Male	
		
4-Pin *eurofast*®	**12-Pin *multifast*®**	**19-Pin *multifast***

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minifast® Cordset Part Number Key, 2-Wire Analog or HART Control Circuits

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

P - R S V R K V 40 - 949 - 2M

P = Process Cordset

minifast

R = Straight
W = Right Angle

Gender

K = Female Connector and Threads
S = Male Connector and Threads
Y = Male Connector, Female Threads

Coupling Nut Options

M = Nickel Plated Brass
V = 316 Stainless Steel

Insertion Point of Extension Cable and 2nd Prefix*

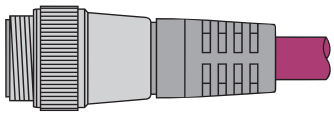
* Female Connector Listed 1st, Male Connector 2nd
Example: P-RSV RKV 40-949-2M

Length in Meters

Number of Wires / AWG / Color Codes / Cable Type

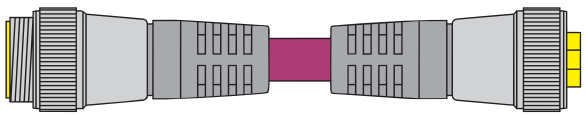
30-026 = 2x18 AWG, BU, BN, ITC/PLTC PVC
40-330 = 3x18 AWG, BU, BN, GN/YE, ITC-Exposed Run/Direct Burial/PLTC PVC
40-949 = 3x18 AWG, BU, BN, GN/YE, ITC/PLTC PVC
40-950 = 3x18 AWG, BU, BN, GN/YE, ITC/PLTC PVC
40-162 = 3x18 AWG, BU, BN, GN/YE, ITC-Exposed Run/Direct Burial/PLTC PVC
45-098 = 3x16 AWG, WH, BK, GN, ITC/PLTC PVC
45-327 = 3x16 AWG, WH, BK, GN, ITC/PLTC PVC
46-124 = 3x18 AWG, BK, RD, GN/YE, ITC/PLTC PVC
461-124 = 3x18 AWG, RD, BK, GN/YE, ITC/PLTC PVC
40A-947 = 3x18 AWG, BU, BN, GN/YE, ITC/PLTC Armor

Single Ended Example: P - R S V 40- 949 - 2M



RSV ..

Extension Example: P - R S V R K V 40- 949 - 2M



RSV .. - RKV ..

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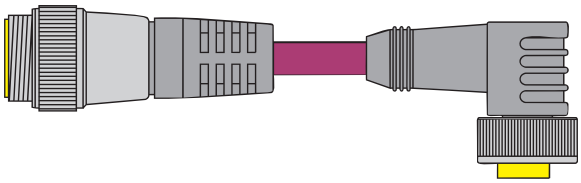
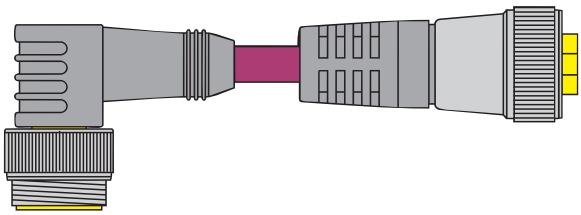
minifast® Cordset Extensions

Other Extension Examples:



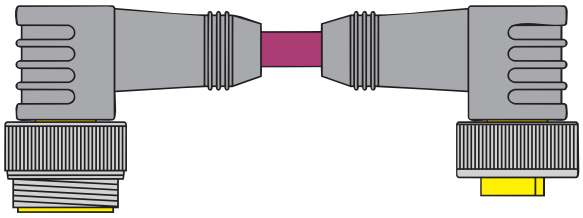
P - R S V | W K V | 40- 949 - 2M

RSV .. - WKV ..



P - W S V | R K V | 40- 949 - 2M

WSV .. - RKV ..



P - W S V | W K V | 40- 949 - 2M

WSV .. - WKV ..

Note: Hybrid connector extensions also available. Consult factory.

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minifast® Receptacle with Cable Part Number Key, 2-Wire Analog or HART Control Circuits

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

P - R K F [ ] V 40 - 949 - 2 - /14.5/NPT

P = Process Receptacle

Designator for Receptacle

Gender

K = Female Connector
S = Male Connector
X = Female Connector, Male Threads

Housing Style

(Blank) = Front Mount
P = Back Panel Mount

Housing Material

(Blank) = Nickel Plated Brass
V = 316 Stainless Steel

Thread Type

/14.5/NPT = 1/2-14NPT Threads
/14.75/NPT = 3/4-14NPT Threads
/M20 = M20x1.5 Threads

Length in Meters

Number of Wires / AWG / Color Codes / Cable Type

30-026 = 2x18 AWG, BU, BN, ITC/PLTC PVC
40-949 = 3x18 AWG, BU, BN, GN/YE, ITC/PLTC PVC
40-162 = 3x18 AWG, BU, BN, GN/YE, ITC-Exposed Run/Direct Burial/PLTC PVC
45-098 = 3x16 AWG, WH, BK, GN, ITC/PLTC PVC
46-124 = 3x18 AWG, BK, RD, GN/YE, ITC/PLTC PVC
461-124 = 3x18 AWG, RD, BK, GN/YE, ITC/PLTC PVC
40-330 = 3x18 AWG, BU, BN, GN/YE, ITC-Exposed Run/Direct Burial/ PLTC PVC
40-950 = 3x18 AWG, BU, BN, GN/YE, ITC/PLTC PVC

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minifast® Receptacle with Leads Part Number Key, 2-Wire Analog or HART Control Circuits

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

P - R K F [ ] V 40 - 0.5 - /14.5/NPT

P = Process Receptacle

Designator for Receptacle

Gender

K = Female Connector
S = Male Connector
X = Female Connector, Male Threads

Housing Style

(Blank) = Front Mount
P = Back Panel Mount

Housing Material

(Blank) = Nickel Plated Brass
V = 316 Stainless Steel

Number of Wires

30 = 2
30D = 3 including drain
321 = 3
40 = 3
40D = 4 including drain

Length in Meters

Thread Type

(Blank) = 1/2-14NPSM
/14.5/NPT = 1/2-14NPT Threads
/14.75/NPT = 3/4-14NPT Threads
/M20 = M20x1.5 Threads

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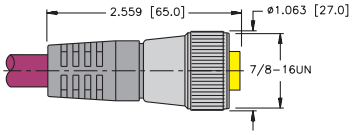
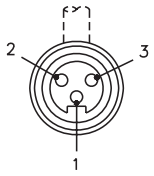
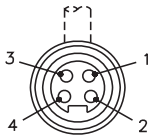
minifast® Drop Cordsets, 2-Wire Analog or HART Control Circuits

- **Straight Female Connectors**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinout	
P-RKM .. 	P-RKM 30-026-*M	**ITC/PLTC PVC Plum 2x18 AWG, 1 STP Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51026-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. Drain	
	P-RKM 40-949-*M	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**		1. BU 2. BN 3. Drain 4. GN/YE	
	P-RKM 40-162-*M	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-RKM 45-098-*M	**ITC/PLTC PVC Plum 3x16 AWG, 1 STP with GND Foil/Drain (18) 105°C 7.6 mm OD Cable #RF51098-*M†**		1. WH 2. BK 3. Drain 4. GN	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RKM.."; "P-RKV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast minifast*** guards (Part Number: LOCK-MINI) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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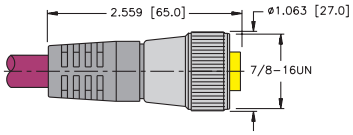
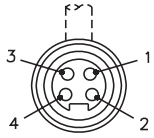
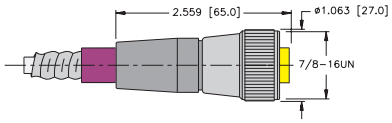
minifast® Drop Cordsets, 2-Wire Analog or HART Control Circuits

- **Straight Female Connectors**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinout	
P-RKM.. 	P-RKM 40-950-*M	**ITC/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50950-*M†**	***Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-RKM 40-330-*M	**ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†**			
	P-RKM 45-327-*M	**ITC/PLTC PVC Blue 3x16 AWG, 1 STP with GND Foil/Drain (18) 105°C 7.6 mm OD Cable #RF51327-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.*	1. WH 2. BK 3. Drain 4. GN	
	P-RKM 46-124-*M	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-RKM 461-124-*M			1. RD 2. BK 3. Drain 4. GN/YE	
P-RKM.. 	P-RKM 40A-947-*M	**ITC/PLTC Armor Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 13.5 mm OD Cable #RF50947-*M†**		1. BU 2. BN 3. Drain 4. GN/YE	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RKM.."; "P-RKV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast minifast*** guards (Part Number: LOCK-MINI) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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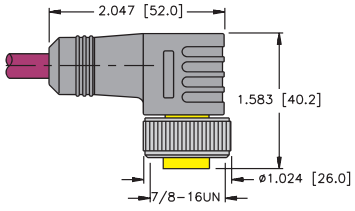
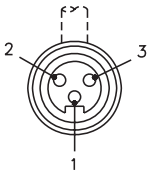
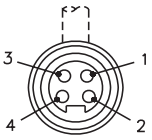
minifast® Drop Cordsets, 2-Wire Analog or HART Control Circuits

- **Right Angle Female Connectors**
- **IEC IP 67 Protection**
- **300 V, 9 A (use as ITC limited to 150 V, 5 A)**

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinout	
P-WKM .. 	P-WKM 30-026-*M	**ITC/PLTC PVC Plum 2x18 AWG, 1 STP Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51026-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. Drain	
	P-WKM 40-949-*M	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**		1. BU 2. BN 3. Drain 4. GN/YE	
	P-WKM 40-162-*M	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-WKM 45-098-*M	**ITC/PLTC PVC Plum 3x16 AWG, 1 STP with GND Foil/Drain (18) 105°C 7.6 mm OD Cable #RF51098-*M†**		1. WH 2. BK 3. Drain 4. GN	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-WKM.."; "P-WKV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast minifast*** guards (Part Number: LOCK-MINI-ANGLE) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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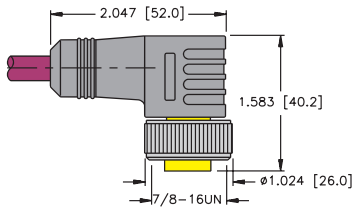
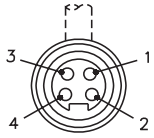
minifast® Drop Cordsets, 2-Wire Analog or HART Control Circuits

- **Right Angle Female Connectors**
- **IEC IP 67 Protection**
- **300 V, 9 A (use as ITC limited to 150 V, 5 A)**

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinout	
P-WKM.. 	P-WKM 40-950-*M	**ITC/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50950-*M†**	***Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-WKM 40-330-*M	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-WKM 45-327-*M	**ITC/PLTC PVC Blue 3x16 AWG, 1 STP with GND Foil/Drain (18) 105°C 7.6 mm OD Cable #RF51327-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. WH 2. BK 3. Drain 4. GN	
	P-WKM 46-124-*M	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-WKM 461-124-*M			1. RD 2. BK 3. Drain 4. GN/YE	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-WKM.."; "P-WKV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast minifast*** guards (Part Number: LOCK-MINI-ANGLE) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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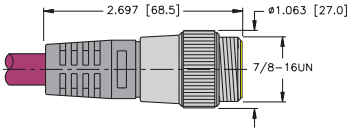
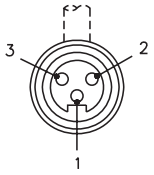
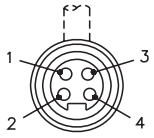
minifast® Drop Cordsets, 2-Wire Analog or HART Control Circuits

- **Straight Male Connectors**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinout	
P-RSM .. 	P-RSM 30-026-*M	**ITC/PLTC PVC Plum 2x18 AWG, 1 STP Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51026-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. Drain	
	P-RSM 40-949-*M	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**		1. BU 2. BN 3. Drain 4. GN/YE	
	P-RSM 40-162-*M	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-RSM 45-098-*M	**ITC/PLTC PVC Plum 3x16 AWG, 1 STP with GND Foil/Drain (18) 105°C 7.6 mm OD Cable #RF51098-*M†**		1. WH 2. BK 3. Drain 4. GN	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RSM.."; "P-RSV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast minifast*** guards (Part Number: LOCK-MINI) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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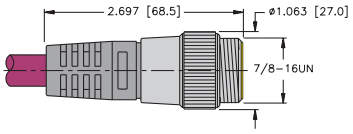
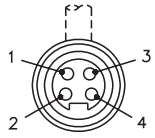
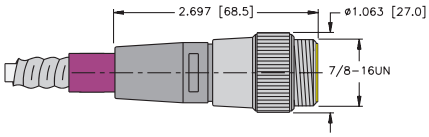
minifast® Drop Cordsets, 2-Wire Analog or HART Control Circuits

- **Straight Male Connectors**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinout	
P-RSM.. 	P-RSM 40-330-*M	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**	***Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-RSM 40-950-*M	**ITC/PLTC PVC Blue 3x18 AWG 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50950-*M†**			
	P-RSM 45-327-*M	**ITC/PLTC PVC Blue 3x16 AWG, 1 STP with GND Foil/Drain (18) 105°C 7.6 mm OD Cable #RF51327-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.*	1. WH 2. BK 3. Drain 4. GN	
	P-RSM 46-124-*M	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-RSM 461-124-*M			1. RD 2. BK 3. Drain 4. GN/YE	
P-RSM.. 	P-RSM 40A-947-*M	**ITC/PLTC Armor Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 13.5 mm OD Cable #RF50947-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.*	1. BU 2. BN 3. Drain 4. GN/YE	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RSM.."; "P-RSV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast minifast*** guards (Part Number: LOCK-MINI) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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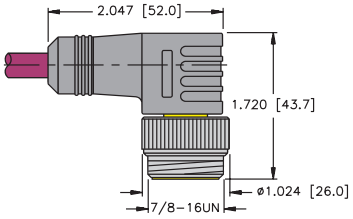
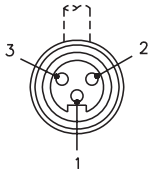
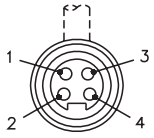
minifast® Drop Cordsets, 2-Wire Analog or HART Control Circuits

- **Right Angle Male Connectors**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinout	
P-WSM .. 	P-WSM 30-026-*M	**ITC/PLTC PVC Plum 2x18 AWG, 1 STP Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51026-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BN 2. BU 3. Drain	
	P-WSM 40-949-*M	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**		1. BU 2. BN 3. Drain 4. GN/YE	
	P-WSM 40-162-*M	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-WSM 45-098-*M	**ITC/PLTC PVC Plum 3x16 AWG, 1 STP with GND Foil/Drain (18) 105°C 7.6 mm OD Cable #RF51098-*M†**		1. WH 2. BK 3. Drain 4. GN	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-WSM.."; "P-WSV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast minifast*** guards (Part Number: LOCK-MINI-ANGLE) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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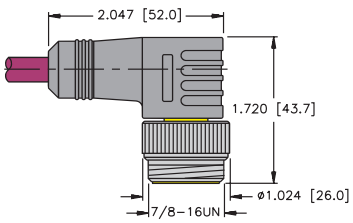
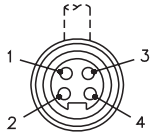
minifast® Drop Cordsets, 2-Wire Analog or HART Control Circuits

- **Right Angle Male Connectors**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinout	
P-WSM..  	P-WSM 40-330-*M	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**	***Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-WSM 40-950-*M	**ITC/PLTC PVC Blue 3x18 AWG 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50950-*M†**			
	P-WSM 45-327-*M	**ITC/PLTC PVC Blue 3x16 AWG, 1 STP with GND Foil/Drain (18) 105°C 7.6 mm OD Cable #RF51327-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. WH 2. BK 3. Drain 4. GN	
	P-WSM 46-124-*M	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-WSM 461-124-*M			1. RD 2. BK 3. Drain 4. GN/YE	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-WSM.."; "P-WSV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast minifast*** guards (Part Number: LOCK-MINI-ANGLE) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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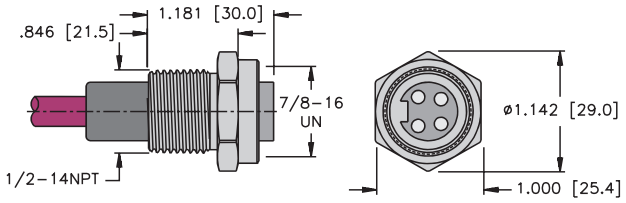
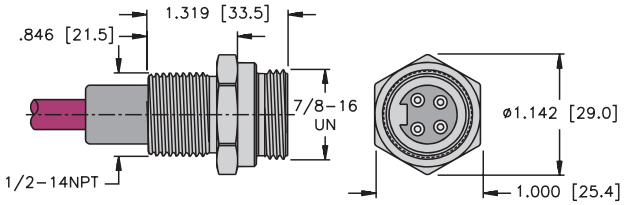
minifast® Receptacles with Cable, 2-Wire Analog or HART Control Circuits

1



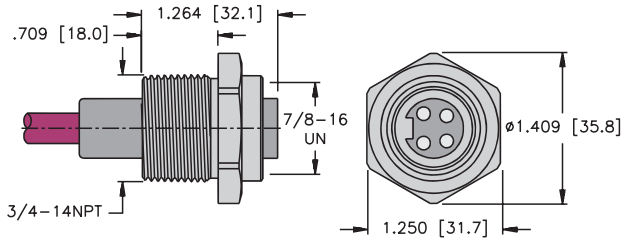
P-RKF .. 14.5/NPT **Page K56**

2



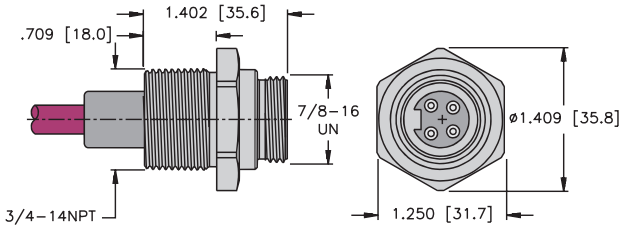
P-RSF .. 14.5/NPT **Page K57**

3



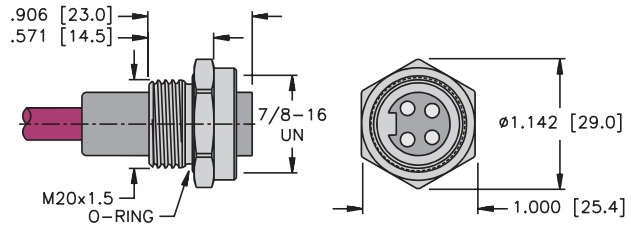
P-RKF .. 14.75/NPT **Page K58**

4



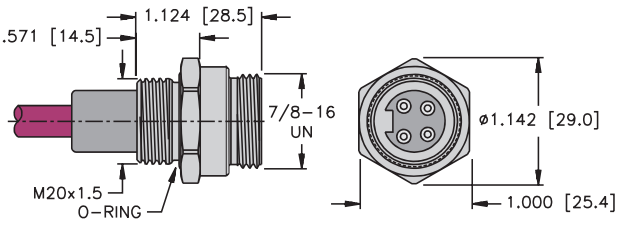
P-RSF .. 14.75/NPT **Page K59**

5



P-RKF .. M20 **Page K60**

6



P-RSF .. M20 **Page K61**

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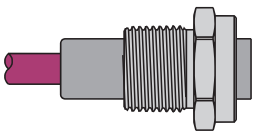
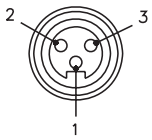
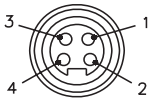
minifast® Receptacles with Cable, 2-Wire Analog or HART Control Circuits

- **Female Receptacles**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

Housing Style	Part Number	Cable	Application	Pinout	
1 	P-RKF 30-026-*/14.5/NPT	**ITC/PLTC PVC Plum 2x18 AWG, 1 STP Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51026-*M†**	*Analog or HART control circuits in Class I, Division 2 hazardous locations or unclassified locations. 1/2-14NPT Conduit Entry Thread.*	1. BU 2. BN 3. Drain	
	P-RKF 40-949-*/14.5/NPT	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**		1. BU 2. BN 3. Drain 4. GN/YE	
	P-RKF 40-162-*/14.5/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-RKF 45-098-*/14.5/NPT	**ITC/PLTC PVC Plum 3x16 AWG, 1 STP with GND Foil/Drain (18) 105°C 7.6 mm OD Cable #RF51098-*M†**		1. WH 2. BK 3. Drain 4. GN	
	P-RKF 46-124-*/14.5/NPT	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-RKF 461-124-*/14.5/NPT			1. RD 2. BK 3. Drain 4. GN/YE	
	P-RKF 40-950-*/14.5/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†**	*Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations. 1/2-14NPT Conduit Entry Thread.*	1. BU 2. BN 3. Drain 4. GN/YE	
	P-RKF 40-330-*/14.5/NPT	**ITC/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50950-*M†**			

See page K55 for dimensional drawings.

* Length in meters. Standard lead length is 0.5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RKF.."; "P-RKFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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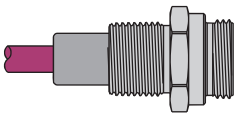
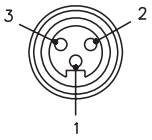
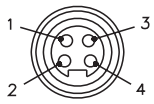
minifast® Receptacles with Cable, 2-Wire Analog or HART Control Circuits

- **Male Receptacles**
- **IEC IP 67 Protection**
- **300 V, 9 A (use as ITC limited to 150 V, 5 A)**

Housing Style	Part Number	Cable	Application	Pinout	
2 	P-RSF 30-026-*/14.5/NPT	**ITC/PLTC PVC Plum 2x18 AWG, 1 STP Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51026-*M†**	*Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations. 1/2-14NPT Conduit Entry Thread.*	1. BU 2. BN 3. Drain	
	P-RSF 40-949-*/14.5/NPT	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**		1. BU 2. BN 3. Drain 4. GN/YE	
	P-RSF 40-162-*/14.5/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-RSF 45-098-*/14.5/NPT	**ITC/PLTC PVC Plum 3x16 AWG, 1 STP with GND Foil/Drain (18) 105°C 7.6 mm OD Cable #RF51098-*M†**		1. WH 2. BK 3. Drain 4. GN	
	P-RSF 46-124-*/14.5/NPT	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-RSF 461-124-*/14.5/NPT			1. RD 2. BK 3. Drain 4. GN/YE	
	P-RSF 40-330-*/14.5/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†**	*Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations. 1/2-14NPT Conduit Entry Thread.*	1. BU 2. BN 3. Drain 4. GN/YE	
	P-RSF 40-950-*/14.5/NPT	**ITC/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50950-*M†**			

See page K55 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RSF.."; "P-RSFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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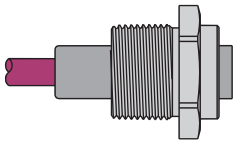
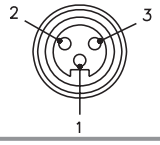
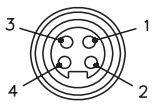
minifast® Receptacles with Cable, 2-Wire Analog or HART Control Circuits

- **Female Receptacles**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

Housing Style	Part Number	Cable	Application	Pinout	
3 	P-RKF 30-026-*/14.75/NPT	**ITC/PLTC PVC Plum 2x18 AWG, 1 STP Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51026-*M†**	*Analog or HART control circuits in Class I, Division 2 hazardous locations or unclassified locations. 3/4-14NPT Conduit Entry Thread.*	1. BU 2. BN 3. Drain	
	P-RKF 40-949-*/14.75/NPT	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**		1. BU 2. BN 3. Drain 4. GN/YE	
	P-RKF 40-162-*/14.75/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-RKF 45-098-*/14.75/NPT	**ITC/PLTC PVC Plum 3x16 AWG, 1 STP with GND Foil/Drain (18) 105°C 7.6 mm OD Cable #RF51098-*M†**		1. WH 2. BK 3. Drain 4. GN	
	P-RKF 46-124-*/14.75/NPT	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-RKF 461-124-*/14.75/NPT			1. RD 2. BK 3. Drain 4. GN/YE	
	P-RKF 40-330-*/14.75/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†**	*Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations. 3/4-14NPT Conduit Entry Thread.*	1. BU 2. BN 3. Drain 4. GN/YE	
	P-RKF 40-950-*/14.75/NPT	**ITC/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50950-*M†**			

See page K55 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RKF.."; "P-RKFV.." indicates 316 stainless steel.
Receptacles recommend 1-1/16" (27.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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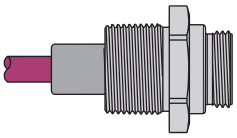
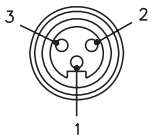
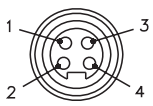
minifast® Receptacles with Cable, 2-Wire Analog or HART Control Circuits

- Male Receptacles
- IEC IP 67 Protection
- 300 V, 9 A
  (use as ITC limited to 150 V, 5 A)

Housing Style	Part Number	Cable	Application	Pinout	
4 	P-RSF 30-026-*/14.75/NPT	ITC/PLTC PVC Plum 2x18 AWG, 1 STP Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51026-*M†	*Analog or HART control circuits in Class I, Division 2 hazardous locations or unclassified locations. 3/4-14NPT Conduit Entry Thread.*	1. BU 2. BN 3. Drain	
	P-RSF 40-949-*/14.75/NPT	ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†		1. BU 2. BN 3. Drain 4. GN/YE	
	P-RSF 40-162-*/14.75/NPT	ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†			
	P-RSF 45-098-*/14.75/NPT	ITC/PLTC PVC Plum 3x16 AWG, 1 STP with GND Foil/Drain (18) 105°C 7.6 mm OD Cable #RF51098-*M†		1. WH 2. BK 3. Drain 4. GN	
	P-RSF 46-124-*/14.75/NPT	ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†		1. BK 2. RD 3. Drain 4. GN/YE	
	P-RSF 461-124-*/14.75/NPT			1. RD 2. BK 3. Drain 4. GN/YE	
	P-RSF 40-330-*/14.75/NPT	ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†	*Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations. 3/4-14NPT Conduit Entry Thread.*	1. BU 2. BN 3. Drain 4. GN/YE	
	P-RSF 40-950-*/14.75/NPT	ITC/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50950-*M†			

See page K55 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RSF.."; "P-RSFV.." indicates 316 stainless steel.
Receptacles recommend 1-1/16" (27.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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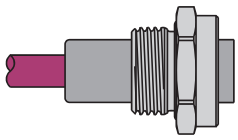
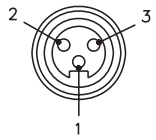
minifast® Receptacles with Cable, 2-Wire Analog or HART Control Circuits

- **Female Receptacles**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

Housing Style	Part Number	Cable	Application	Pinout	
5 	P-RKF 30-026-*/M20	**ITC/PLTC PVC Plum 2x18 AWG, 1 STP Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51026-*M†**	*Analog or HART control circuits in Class I, Division 2 hazardous locations or unclassified locations. M20 Conduit Entry Thread.*	1. BU 2. BN 3. Drain	
	P-RKF 40-949-*/M20	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**		1. BU 2. BN 3. Drain 4. GN/YE	
	P-RKF 40-162-*/M20	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-RKF 45-098-*/M20	**ITC/PLTC PVC Plum 3x16 AWG, 1 STP with GND Foil/Drain (18) 105°C 7.6 mm OD Cable #RF51098-*M†**		1. WH 2. BK 3. Drain 4. GN	
	P-RKF 46-124-*/M20	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-RKF 461-124-*/M20	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. RD 2. BK 3. Drain 4. GN/YE	
	P-RKF 40-330-*/M20	**ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†**	*Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations. M20 Conduit Entry Thread.*	1. BU 2. BN 3. Drain 4. GN/YE	
	P-RKF 40-950-*/M20	**ITC/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50950-*M†**			

See page K55 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RKF.."; "P-RKFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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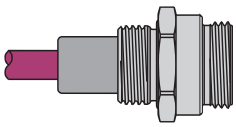
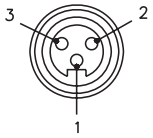
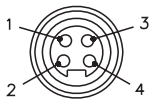
minifast® Receptacles with Cable, 2-Wire Analog or HART Control Circuits

- **Male Receptacles**
- **IEC IP 67 Protection**
- **300 V, 9 A (use as ITC limited to 150 V, 5 A)**

Housing Style	Part Number	Cable	Application	Pinout	
6 	P-RSF 30-026-*/M20	**ITC/PLTC PVC Plum 2x18 AWG, 1 STP Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51026-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations or unclassified locations. M20 Conduit Entry Thread.***	1. BU 2. BN 3. Drain	
	P-RSF 40-949-*/M20	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50949-*M†**		1. BU 2. BN 3. Drain 4. GN/YE	
	P-RSF 40-162-*/M20	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51162-*M†**			
	P-RSF 45-098-*/M20	**ITC/PLTC PVC Plum 3x16 AWG, 1 STP with GND Foil/Drain (18) 105°C 7.6 mm OD Cable #RF51098-*M†**		1. WH 2. BK 3. Drain 4. GN	
	P-RSF 46-124-*/M20	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. BK 2. RD 3. Drain 4. GN/YE	
	P-RSF 461-124-*/M20	**ITC/PLTC PVC Plum 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51124-*M†**		1. RD 2. BK 3. Drain 4. GN/YE	
	P-RSF 40-330-*/M20	**ITC-Exposed Run/Direct Burial/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF51330-*M†**	***Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations. M20 Conduit Entry Thread.***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-RSF 40-950-*/M20	**ITC/PLTC PVC Blue 3x18 AWG, 1 STP with GND Foil/Drain (20) 105°C 7.2 mm OD Cable #RF50950-*M†**			

See page K55 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RSF.."; "P-RSFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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Notes:

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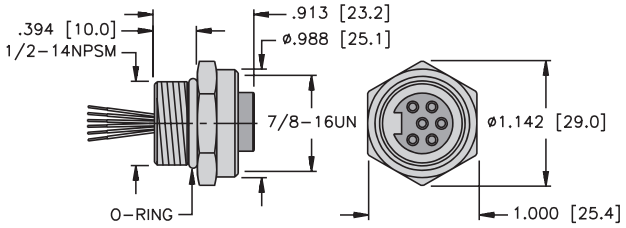
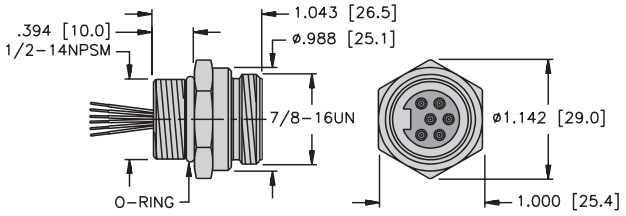
minifast® Receptacles with Leads, 2-Wire Analog or HART Control Circuits

1



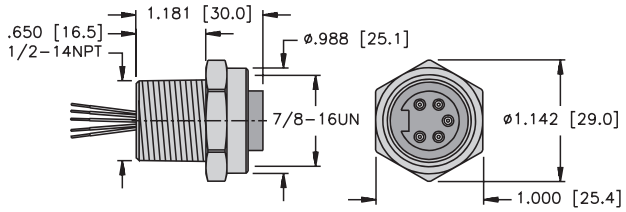
P-RKF .. **Page K65**

2



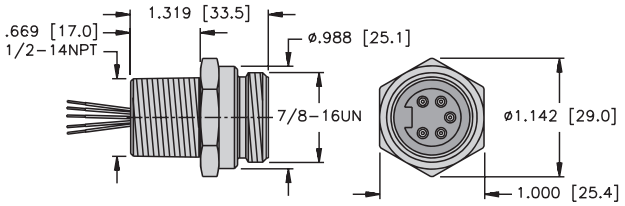
P-RSF .. **Page K66**

3



P-RKF .. 14.5/NPT **Page K67**

4



P-RSF .. 14.5/NPT **Page K68**

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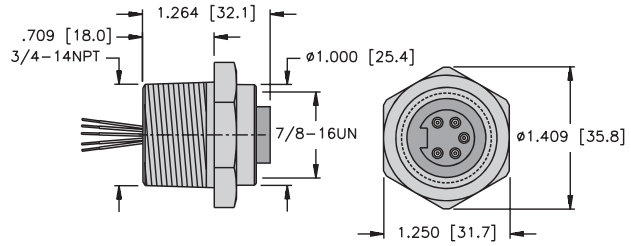
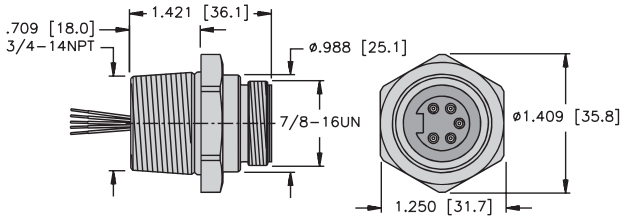


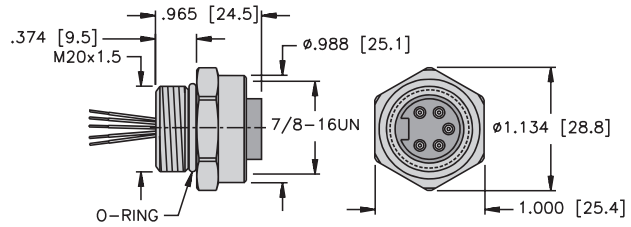
P-RKF .. 14.75/NPT **Page K69**

6



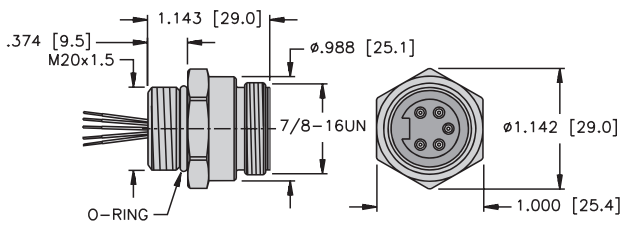
P-RSF .. 14.75/NPT **Page K70**

7



P-RKF .. M20 **Page K71**

8



P-RSF .. M20 **Page K72**

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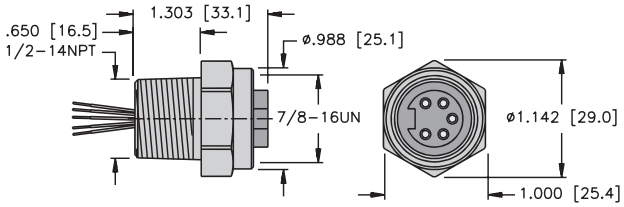
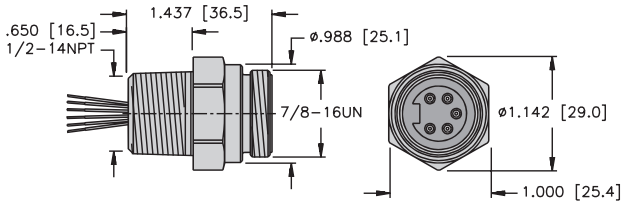
minifast® Explosionproof Receptacles with Leads, 2-Wire Analog or HART Control Circuits

9



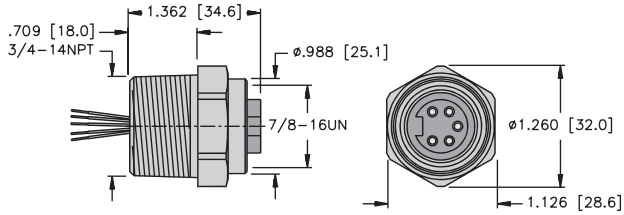
P-RKFV .. EX-*/14.5/NPT **Page K73**

10



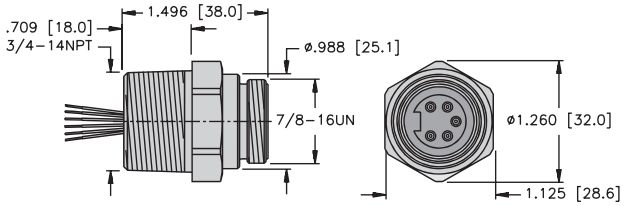
P-RSFV .. EX-*/14.5/NPT **Page K74**

11



P-RKFV .. EX-*/14.75/NPT **Page K75**

12



P-RSFV .. EX-*/14.75/NPT **Page K76**

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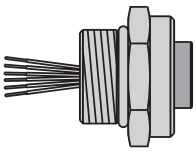
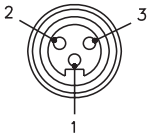
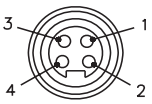
minifast® Receptacles with Leads, 2-Wire Analog or HART Control Circuits

- **Female Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
1 	P-RKF 30-*	**UL, CSA 2x18 AWG 105°C 600 V, 9A**	***1/2-14NPSM***	1. BU 2. BN 3. N/C	
	P-RKF 30D-*	**UL, CSA 3x18 AWG 105°C 600 V, 9A**	***1/2-14NPSM Threads, Drain Wire***	1. BU 2. BN 3. GY	
	P-RKF 321-*		***1/2-14NPSM Threads***	1. GN/YE 2. BN 3. BU	
	P-RKF 40-*	**UL, CSA 3x18 AWG 105°C 600 V, 9A**	***1/2-14NPSM Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-RKF 40D-*	**UL, CSA 4x18 AWG 105°C 600 V, 9A**	***1/2-14NPSM Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	

See page K63 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RKF.."; "P-RKFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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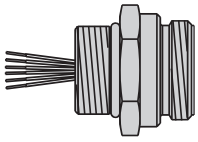
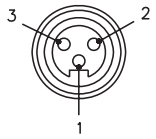
- **Male Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
2 	P-RSF 30-*	**UL, CSA** **2x18 AWG** **105°C** **600 V, 9A**	***1/2-14NPSM***	1. BU 2. BN 3. N/C	
	P-RSF 30D-*	**UL, CSA** **3x18 AWG** **105°C** **600 V, 9A**	***1/2-14NPSM Threads, Drain Wire***	1. BU 2. BN 3. GY	
	P-RSF 321-*		***1/2-14NPSM Threads***	1. GN/YE 2. BN 3. BU	
	P-RSF 40-*	**UL, CSA** **3x18 AWG** **105°C** **600 V, 9A**	***1/2-14NPSM Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-RSF 40D-*	**UL, CSA** **4x18 AWG** **105°C** **600 V, 9A**	***1/2-14NPSM Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	

See page K63 for dimensional drawings.

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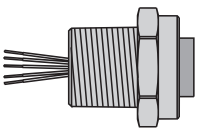
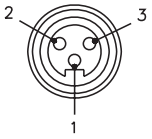
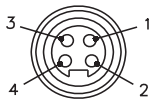
minifast® Receptacles with Leads, 2-Wire Analog or HART Control Circuits

- **Female Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
3 	P-RKF 30-*/14.5/NPT	**UL, CSA** **2x18 AWG** **105°C** **600 V, 9A**	***1/2-14NPT Threads***	1. BU 2. BN 3. N/C	
	P-RKF 30D-*/14.5/NPT	**UL, CSA** **3x18 AWG** **105°C** **600 V, 9A**	***1/2-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY	
	P-RKF 321-*/14.5/NPT		***1/2-14NPT Threads***	1. GN/YE 2. BN 3. BU	
	P-RKF 40-*/14.5/NPT	**UL, CSA** **3x18 AWG** **105°C** **600 V, 9A**	***1/2-14NPT Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-RKF 40D-*/14.5/NPT	**UL, CSA** **4x18 AWG** **105°C** **600 V, 9A**	***1/2-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	

See page K63 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RKF.."; "P-RKFV.." indicates 316 stainless steel.
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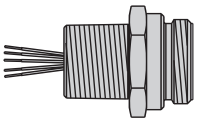
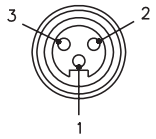
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
4 	P-RSF 30-*/14.5/NPT	UL, CSA 2x18 AWG 105°C 600 V, 9A	*1/2-14NPT Threads*	1. BU 2. BN 3. N/C	
	P-RSF 30D-*/14.5/NPT	UL, CSA 3x18 AWG 105°C 600 V, 9A	*1/2-14NPT Threads, Drain Wire*	1. BU 2. BN 3. GY	
	P-RSF 321-*/14.5/NPT		*1/2-14NPT Threads*	1. GN/YE 2. BN 3. BU	
	P-RSF 40-*/14.5/NPT	UL, CSA 3x18 AWG 105°C 600 V, 9A	*1/2-14NPT Threads*	1. BU 2. BN 3. N/C 4. GN/YE	
	P-RSF 40D-*/14.5/NPT	UL, CSA 4x18 AWG 105°C 600 V, 9A	*1/2-14NPT Threads, Drain Wire*	1. BU 2. BN 3. GY 4. GN/YE	

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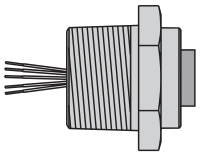
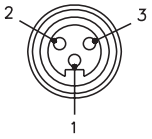
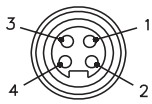
- **Female Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
5 	P-RKF 30-*/14.75/NPT	**UL, CSA 2x18 AWG 105°C 600 V, 9A**	***3/4-14NPT Threads***	1. BU 2. BN 3. N/C	
	P-RKF 30D-*/14.75/NPT	**UL, CSA 3x18 AWG 105°C 600 V, 9A**	***3/4-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY	
	P-RKF 321-*/14.75/NPT		***3/4-14NPT Threads***	1. GN/YE 2. BN 3. BU	
	P-RKF 40-*/14.75/NPT	**UL, CSA 3x18 AWG 105°C 600 V, 9A**	***3/4-14NPT Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-RKF 40D-*/14.75/NPT	**UL, CSA 4x18 AWG 105°C 600 V, 9A**	***3/4-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	

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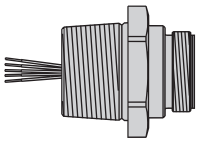
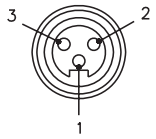
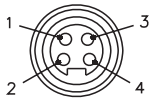
Housing Style	Part Number	Lead Specs	Features	Pinout	
6 	P-RSF 30-*/14.75/NPT	**UL, CSA** **2x18 AWG** **105°C** **600 V, 9A**	***3/4-14NPT Threads***	1. BU 2. BN 3. N/C	
	P-RSF 30D-*/14.75/NPT	**UL, CSA** **3x18 AWG** **105°C** **600 V, 9A**	***3/4-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY	
	P-RSF 321-*/14.75/NPT		***3/4-14NPT Threads***	1. GN/YE 2. BN 3. BU	
	P-RSF 40-*/14.75/NPT	**UL, CSA** **3x18 AWG** **105°C** **600 V, 9A**	***3/4-14NPT Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-RSF 40D-*/14.75/NPT	**UL, CSA** **4x18 AWG** **105°C** **600 V, 9A**	***3/4-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	

See page K63 for dimensional drawings.

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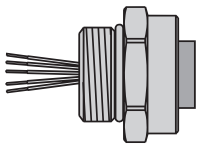
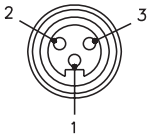
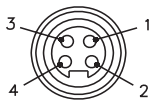
Housing Style	Part Number	Lead Specs	Features	Pinout	
7 	P-RKF 30-*/M20	**UL, CSA** **2x18 AWG** **105°C** **600 V, 9A**	***M20 Threads***	1. BU 2. BN 3. N/C	
	P-RKF 30D-*/M20	**UL, CSA** **3x18 AWG** **105°C** **600 V, 9A**	***M20 Threads, Drain Wire***	1. BU 2. BN 3. GY	
	P-RKF 321-*/M20		***M20 Threads***	1. GN/YE 2. BN 3. BU	
	P-RKF 40-*/M20	**UL, CSA** **3x18 AWG** **105°C** **600 V, 9A**	***M20 Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-RKF 40D-*/M20	**UL, CSA** **4x18 AWG** **105°C** **600 V, 9A**	***M20 Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	

See page K63 for dimensional drawings.

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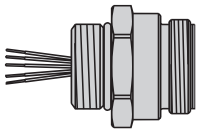
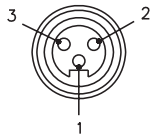
Housing Style	Part Number	Lead Specs	Features	Pinout	
8 	P-RSF 30-*/M20	**UL, CSA 2x18 AWG 105°C 600 V, 9A**	***M20 Threads***	1. BU 2. BN 3. N/C	
	P-RSF 30D-*/M20	**UL, CSA 3x18 AWG 105°C 600 V, 9A**	***M20 Threads, Drain Wire***	1. BU 2. BN 3. GY	
	P-RSF 321-*/M20		***M20 Threads***	1. GN/YE 2. BN 3. BU	
	P-RSF 40-*/M20	**UL, CSA 3x18 AWG 105°C 600 V, 9A**	***M20 Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-RSF 40D-*/M20	**UL, CSA 4x18 AWG 105°C 600 V, 9A**	***M20 Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	

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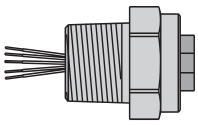
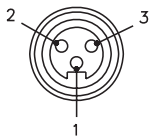
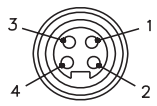
- **Female Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
9 	P-RKFV 30 EX-*/14.5/NPT	**UL, CSA 2x18 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 1/2-14NPT Threads***	1. BU 2. BN 3. N/C	
	P-RKFV 30D EX-*/14.5/NPT	**UL, CSA 3x18 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 1/2-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY	
	P-RKFV 40 EX-*/14.5/NPT	**UL, CSA 3x18 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 1/2-14NPT Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-RKFV 40D EX-*/14.5/NPT	**UL, CSA 4x18 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 1/2-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	

See page K64 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is 316 stainless steel.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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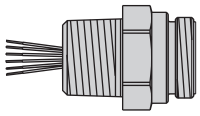
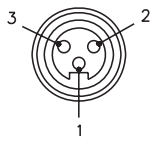
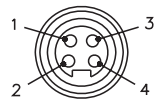
minifast® Explosionproof Receptacles with Leads, 2-Wire Analog or HART Control Circuits

- **Male Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
10 	P-RSFV 30 EX-*/14.5/NPT	**UL, CSA 2x18 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 1/2-14NPT Threads***	1. BU 2. BN 3. N/C	
	P-RSFV 30D EX-*/14.5/NPT	**UL, CSA 3x18 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 1/2-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY	
	P-RSFV 40 EX-*/14.5/NPT	**UL, CSA 3x18 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 1/2-14NPT Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-RSFV 40D EX-*/14.5/NPT	**UL, CSA 4x18 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 1/2-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	

See page K64 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
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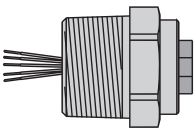
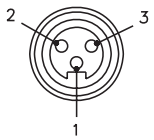
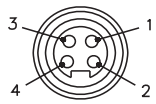
minifast® Explosionproof Receptacles with Leads, 2-Wire Analog or HART Control Circuits

- **Female Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
11 	P-RKFV 30 EX-*/14.75/NPT	**UL, CSA 2x18 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 3/4-14NPT Threads***	1. BU 2. BN 3. N/C	
	P-RKFV 30D EX-*/14.75/NPT	**UL, CSA 3x18 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 3/4-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY	
	P-RKFV 40 EX-*/14.75/NPT	**UL, CSA 3x18 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 3/4-14NPT Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-RKFV 40D EX-*/14.75/NPT	**UL, CSA 4x18 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 3/4-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	

See page K64 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is 316 stainless steel.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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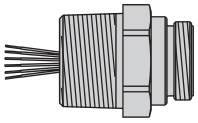
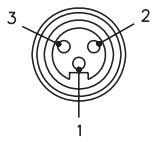
minifast® Explosionproof Receptacles with Leads, 2-Wire Analog or HART Control Circuits

- **Male Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
12 	P-RSFV 30 EX-*/14.75/NPT	**UL, CSA 2x18 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 3/4-14NPT Threads***	1. BU 2. BN 3. N/C	
	P-RSFV 30D EX-*/14.75/NPT	**UL, CSA 3x18 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 3/4-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY	
	P-RSFV 40 EX-*/14.75/NPT	**UL, CSA 3x18 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 3/4-14NPT Threads***	1. BU 2. BN 3. N/C 4. GN/YE	
	P-RSFV 40D EX-*/14.75/NPT	**UL, CSA 4x18 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 3/4-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GY 4. GN/YE	

See page K64 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is 316 stainless steel.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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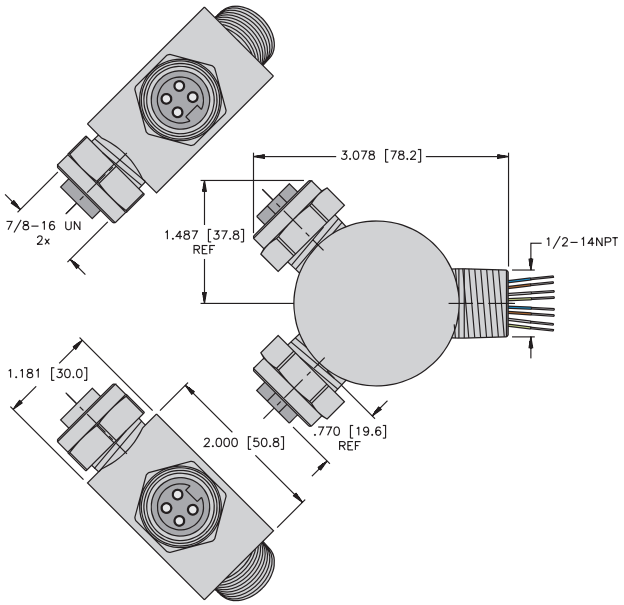
minifast® "Y" Fittings, 2-Wire Analog or HART Control Circuits

- 600 V
- 9 A Per Conductor
- Installs in Standard Conduit Entries
- Stainless Steel Housing

			1/2-14NPT						3/4-14NPT	
			J1	J2	P1	P2	P1	J2	J1	J2
Specifications	**Wiring Dia.**	**Housing Material**	**Female**	**Female**	**Male**	**Male**	**Male**	**Female**	**Female**	**Female**
4/18 AWG leads per connector	1	SS	P-2RKFV-40EX-*/14.5/NPT		P-2RSFV-40EX-*/14.5/NPT		P-RSFV RKFV-40EX-*/14.5/NPT		P-2RKFV-40EX-*/14.75/NPT	
3/18 AWG leads per connector	2	SS	P-2RKFV-40BEX-*/14.5/NPT		P-2RSFV-40BEX-*/14.5/NPT		P-RSFV RKFV-40BEX-*/14.5/NPT		P-2RKFV-40BEX-*/14.75/NPT	

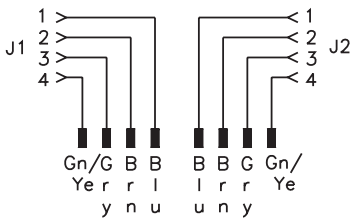
* Length in meters.
SS = Stainless steel

Dimensions



Wiring Diagrams

1



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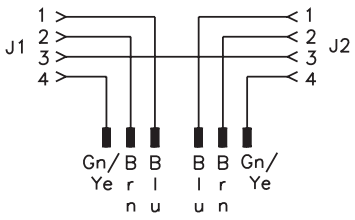

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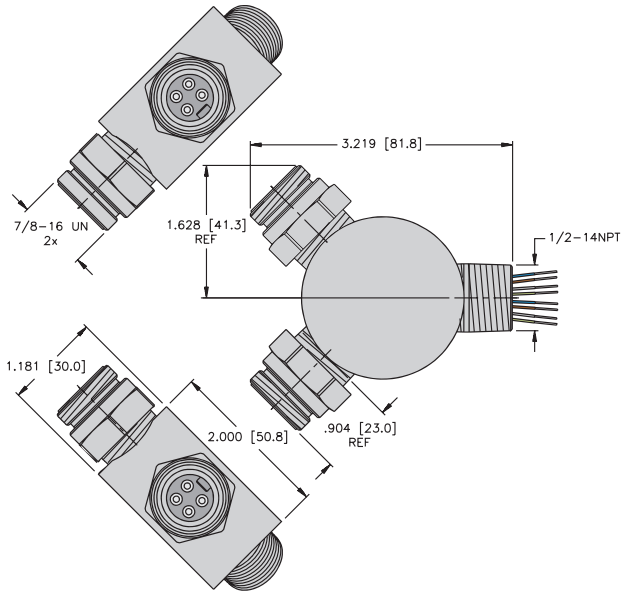
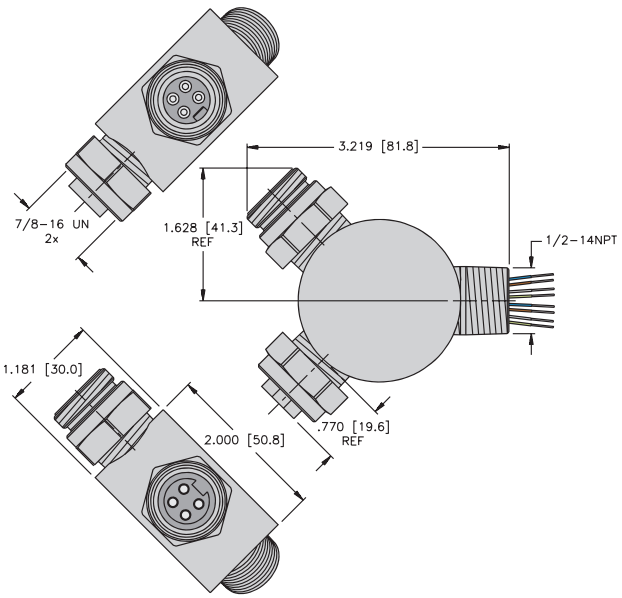
Specifications

Housing: 316 stainless steel (SS), passivated.
Contact Carrier: PUR black.
Electrical Ratings: 600 V, 9 A per conductor.
Temperature: -30° to +105°C (-22° to +221°F).
Contacts: Gold plated brass.
Protection: IP 67 (only when all receptacles are mated or covered with plugs).
Leads: High flex stranding, PVC, insulated, 600 V, UL recognized, CSA certified.

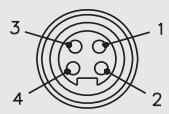
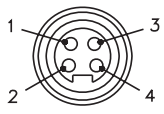
3/4-14NPT				M20x1.5					
P1	P2	P1	J2	J1	J2	P1	P2	P1	J2
Male	Male	Male	Female	Female	Female	Male	Male	Male	Female
P-2RSFV-40EX-*/14.75/NPT		P-RSFV RKFV-40EX-*/14.75/NPT		P-2RKFV-40EX-*/M20		P-2RSFV-40EX-*/M20		P-RSFV RKFV-40EX-*/M20	
P-2RSFV-40BEX-*/14.75/NPT		P-RSFV RKFV-40BEX-*/14.75/NPT		P-2RKFV-40BEX-*/M20		P-2RSFV-40BEX-*/M20		P-RSFV RKFV-40BEX-*/M20	

Dimensions





Pinouts

Female	Male
	
4-Pin	4-Pin

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multibox® minifast® Metal Junction Boxes w/Integral Home Run Cable

- **Consolidation of 2-wire Analog or HART Control Circuits in Hazardous Locations** or Unclassified Locations**

FM APPROVED

FM approved for installation in hazardous locations when installed per **TURCK** Control Drawing QCF-00147 (www.turck.com/fmcd) using specified accessory equipment.
"/C" versions CSA certified for installation in hazardous locations when installed per **TURCK** Control Drawing Ni-2.404(www.turck.com/fmcd) using certified accessory equipment.

4-port, 1 Analog Signal Per Port, Common Ground and Shield

Application	Specifications	Pinout				Nickel Plated Brass	Stainless Steel
		Port, Pin	Wire Color	Port, Pin	Wire Color		
4-port cast aluminum junction box, ***minifast*** port connectors, integral home-run cable	Home-run cable with 4/22 AWG shielded twisted pairs, each with 22 AWG drain†, plus overall shield with 22 AWG drain and 18 AWG overall ground, 10.0 mm OD	Port 1, Pin 1	WH/BK	Port 3, Pin 2	RD/WH	P-4 RKF 40-960-*	P-4 RKFV 40-960-*
		Port 1, Pin 2	BK/WH	Port 4, Pin 1	WH/OG		
		Port 2, Pin 1	WH/GN	Port 4, Pin 2	OG/WH	P-4 RKF 40-415-*/C	P-4 RKFV 40-415-*/C
		Port 2, Pin 2	GN/WH	Ports 1-4, Pin 3	Drain		
		Port 3, Pin 1	WH/RD	Ports 1-4, Pin 4	GN/YE		

8-port, 1 Analog Signal Per Port, Common Ground and Shield

Application	Specifications	Pinout				Nickel Plated Brass	Stainless Steel
		Port, Pin	Wire Color	Port, Pin	Wire Color		
8-port cast aluminum junction box, ***minifast*** port connectors, integral home-run cable	Home-run cable with 8/22 AWG shielded twisted pairs, each with 22 AWG drain†, plus overall shield with 22 AWG drain and 18 AWG overall ground, 12.0 mm OD	Port 1, Pin 1	WH/BK	Port 5, Pin 2	BU/WH	P-8 RKF 40-959-*	P-8 RKFV 40-959-*
		Port 1, Pin 2	BK/WH	Port 6, Pin 1	WH/BN		
		Port 2, Pin 1	WH/GN	Port 6, Pin 2	BN/WH		
		Port 2, Pin 2	GN/WH	Port 7, Pin 1	WH/YE	P-8 RKF 40-416-*/C	P-8 RKFV 40-416-*/C
		Port 3, Pin 1	WH/RD	Port 7, Pin 2	YE/WH		
		Port 3, Pin 2	RD/WH	Port 8, Pin 1	WH/VT		
		Port 4, Pin 1	WH/OG	Port 8, Pin 2	VT/WH		
		Port 4, Pin 2	OG/WH	Ports 1-8, Pin 3	Drain		
		Port 5, Pin 1	WH/BU	Ports 1-8, Pin 4	GN/YE		

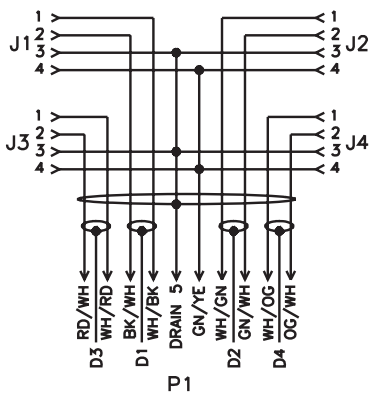
* Length in meters.

** Use with ***lokfast*** LOCK-MINI or LOCK-MINI-FW for port connectors in Class I, Division 2 applications and for mating home run cable use "L" and "T" versions.

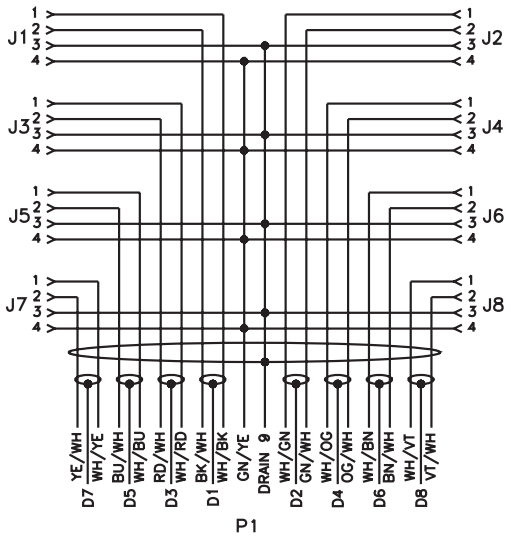
† Each circuit has dedicated drain wire not connected in the junction box.

Wiring Diagrams

4-Port



8-Port



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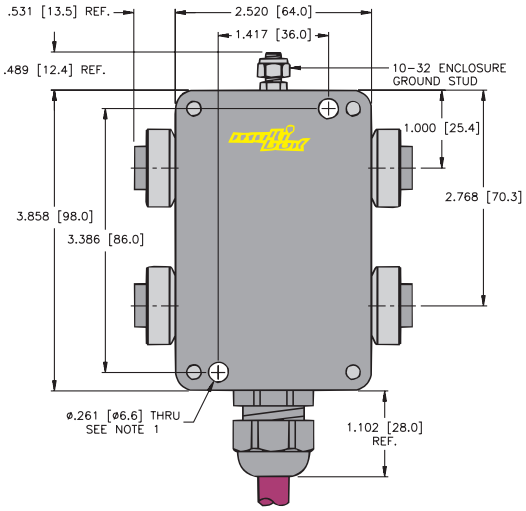
Specifications

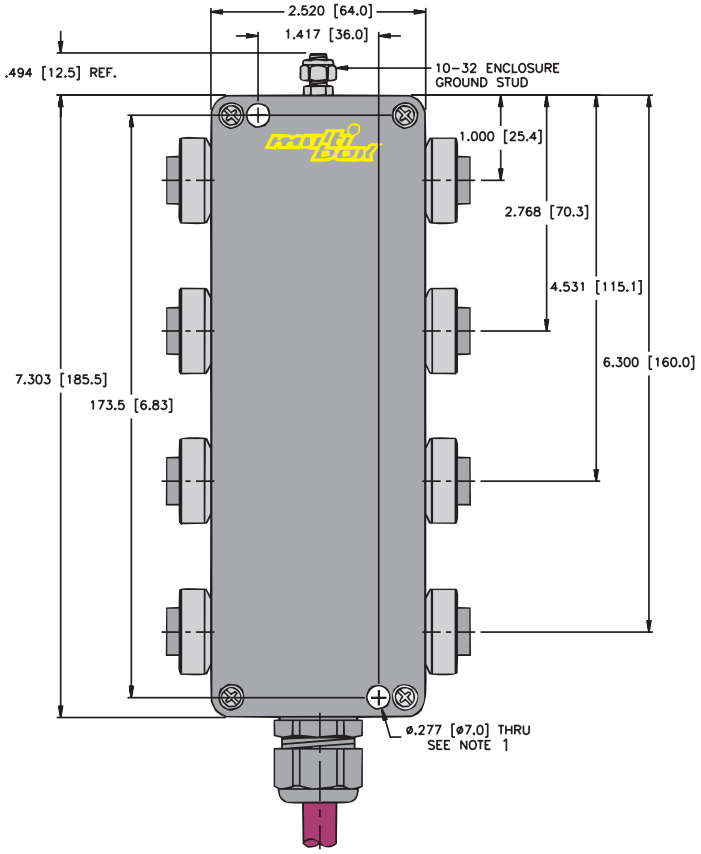
Housing:	Die-cast aluminum alloy.	
Connectors	Nickel plated brass or 316 stainless steel housings (see table), oil resistant PUR contact carrier.	
Temperature:	-30° to +80°C (-22° to +176°F).	
Contacts:	Gold plated brass.	
Cable:	Standard Version:	Plum PVC jacket, UL ITC/PLTC/AWM, CSA CMX-Outdoor/CMG/AWM FT4, 300 V, 105°C.
	"/C" Versions:	Plum PUR jacket, UL ITC/PLTC, CSA CIC/CMX-Outdoor-CM, 300 V, 105°C, FT1.
Protection:	IP 67.	
Electrical Rating:	Standard Version:	300 V, 4 A per conductor (use as ITC is limited to 150 V, 3 A for 22 AWG conductors).
	"/C" Versions:	30 V, 600 mA

Dimensions

4-Port

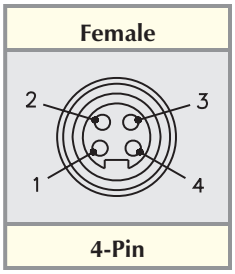


8-Port



Notes:
1. Clearance hole for 1/4-20 mounting screws (2 not included).

Pinouts



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multibox® minifast® Metal Junction Boxes w/Integral Home Run Cable

- **Consolidation of 2-wire Analog or HART Control Circuits in Hazardous Locations or Unclassified Locations**
- **Blue Jacket Color may be used as Identification of Intrinsically Safe Circuits.**

FM APPROVED

FM approved for installation in hazardous locations when installed per **TURCK** Control Drawing QCF-00147 (www.turck.com/fmcd) using specified accessory equipment.
"/C" versions CSA certified for installation in hazardous locations when installed per **TURCK** Control Drawing Ni-2.404(www.turck.com/fmcd) using certified accessory equipment.

4-port, 1 Analog Signal Per Port, Common Ground and Shield

Application	Specifications	Pinout				Nickel Plated Brass	Stainless Steel
4-port cast aluminum junction box, ***minifast*** port connectors, integral home-run cable	Home-run cable with 4/22 AWG shielded twisted pairs, each with 22 AWG drain†, plus overall shield with 22 AWG drain and 18 AWG overall ground, 12.0 mm OD	Port, Pin Port 1, Pin 1 Port 1, Pin 2 Port 2, Pin 1 Port 2, Pin 2 Port 3, Pin 1	Wire Color WH/BK BK/WH WH/GN GN/WH WH/RD	Port, Pin Port 3, Pin 2 Port 4, Pin 1 Port 4, Pin 2 Ports 1-4, Pin 3 Ports 1-4, Pin 4	Wire Color RD/WH WH/OG OG/WH Drain GN/YE	P-4 RKF 40-978-* P-4 RKF 40-978-*/C	P-4 RKFV 40-978-* P-4 RKFV 40-978-*/C

8-port, 1 Analog Signal Per Port, Common Ground and Shield

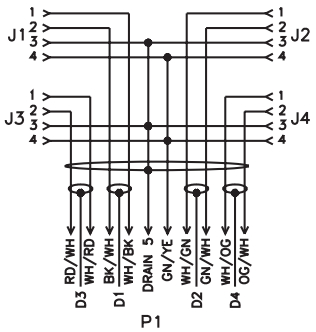
Application	Specifications	Pinout				Nickel Plated Brass	Stainless Steel
8-port cast aluminum junction box, ***minifast*** port connectors, integral home-run cable	Home-run cable with 8/22 AWG shielded twisted pairs, each with 22 AWG drain†, plus overall shield with 22 AWG drain and 18 AWG overall ground, 12.0 mm OD	Port, Pin Port 1, Pin 1 Port 1, Pin 2 Port 2, Pin 1 Port 2, Pin 2 Port 3, Pin 1 Port 3, Pin 2 Port 4, Pin 1 Port 4, Pin 2 Port 5, Pin 1	Wire Color WH/BK BK/WH WH/GN GN/WH WH/RD RD/WH WH/OG OG/WH WH/BU	Port, Pin Port 5, Pin 2 Port 6, Pin 1 Port 6, Pin 2 Port 7, Pin 1 Port 7, Pin 2 Port 8, Pin 1 Port 8, Pin 2 Ports 1-8, Pin 3 Ports 1-8, Pin 4	Wire Color BU/WH WH/BN BN/WH WH/YE YE/WH WH/VT VT/WH Drain GN/YE	P-8 RKF 40-977-* P-8 RKF 40-977-*/C	P-8 RKFV 40-977-* P-8 RKFV 40-977-*/C

* Length in meters.

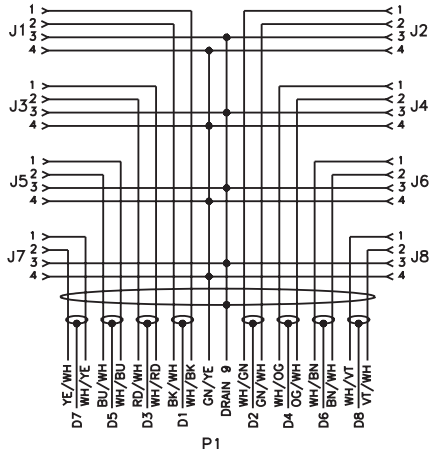
† Each circuit has dedicated drain wire not connected in the junction box.

Wiring Diagrams

4-Port Diagram



8-Port Diagram



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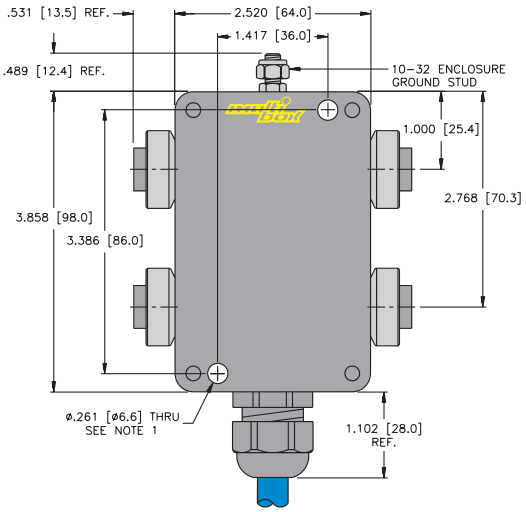
Specifications

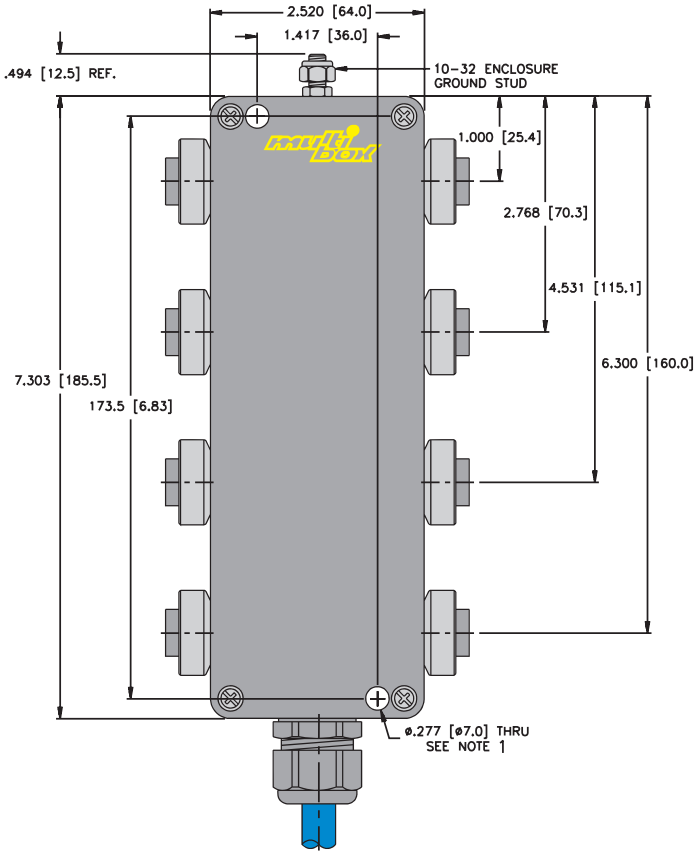
Housing:	Die-cast aluminum alloy.
Connectors	Nickel plated brass or 316 stainless steel housings (see table), oil resistant PUR contact carrier.
Temperature:	-30° to +80°C (-22° to +176°F).
Contacts:	Gold plated brass.
Cable:	Blue PVC jacket, UL ITC/PLTC/AWM, CSA CMX-Outdoor/CMG/AWM FT4, 300 V, 105°C.
Protection:	IP 67.
Electrical Rating:	Standard Version: 300 V, 4 A per conductor (use as ITC is limited to 150 V, 3 A for 22 AWG conductors). "/C" Versions: 30 V, 600 mA

Dimensions

4-Port

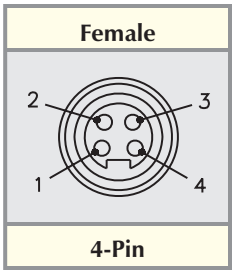


8-Port



Notes:
1. Clearance hole for 1/4-20 mounting screws (2 not included).

Pinouts



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multibox® minifast® Metal Junction Boxes

- **Consolidation of 2-wire Analog or HART Control Circuits in Hazardous Locations* or Unclassified Locations**

FM APPROVED

FM approved for installation in hazardous locations when installed per **TURCK** Control Drawing QCF-00147 (www.turck.com/fmcd) using specified accessory equipment.
"/C" versions CSA certified for installation in hazardous locations when installed per **TURCK** Control Drawing Ni-2.404(www.turck.com/fmcd) using certified accessory equipment.

4-port, Common Ground and Shield

Application	Specifications	Pinout	Nickel Plated Brass	Stainless Steel
4-port cast aluminum junction box, ***minifast*** port connectors, ***multifast*** ® home-run connector, 1 analog signal per port	12-pin ***multifast*** connector, 9 conductors plus drain	Port, Pin / Home Run: Port 1, Pin 1 / 1; Port 1, Pin 2 / 2; Port 2, Pin 1 / 3; Port 2, Pin 2 / 4; Port 3, Pin 1 / 5; Port 3, Pin 2 / 6; Port, Pin / Home Run: Port 4, Pin 1 / 7; Port 4, Pin 2 / 8; NC / 9; NC / 10; Ports 1-4, Pin 3 / 11; Ports 1-4, Pin 4 / 12	P-4 RKF 40-CS12 P-4 RKF 40-CS12/C	P-4 RKFV 40-CSV12 P-4 RKFV 40-CSV12/C

See pages K85 - K92 for mating home run cordsets.

8-port, Common Ground and Shield

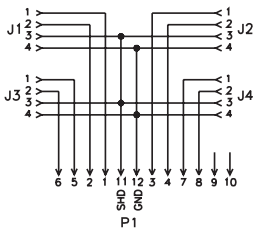
Application	Specifications	Pinout	Nickel Plated Brass	Stainless Steel
8-port cast aluminum junction box, ***minifast*** port connectors, ***multifast*** home-run connector, 1 analog signal per port	19-pin ***multifast*** connector, 17 conductors plus drain	Port, Pin / Home Run: Port 1, Pin 1 / 1; Port 1, Pin 2 / 2; Port 2, Pin 1 / 3; Port 2, Pin 2 / 4; Port 3, Pin 1 / 5; Ports 1-8, Pin 3 / 6; Port 3, Pin 2 / 7; Port 4, Pin 1 / 8; Port 4, Pin 2 / 9; Port, Pin / Home Run: Port 5, Pin 1 / 10; Port 5, Pin 2 / 11; Ports 1-8, Pin 4 / 12; Port 6, Pin 1 / 13; Port 6, Pin 2 / 14; Port 7, Pin 1 / 15; Port 7, Pin 2 / 16; Port 8, Pin 1 / 17; Port 8, Pin 2 / 18; NC / 19	P-8 RKF 40-CS19 P-8 RKF 40-CS19/C	P-8 RKFV 40-CSV19 P-8 RKFV 40-CSV19/C

* Use with ***lokfast*** LOCK-MINI or LOCK-MINI-FW for port connectors in Class I, Division 2 applications and for mating Home-Run cable use "L" and "T" versions.

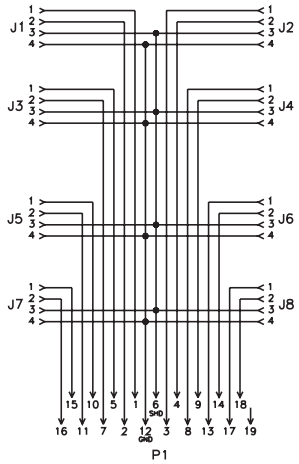
See pages K85 - K92 for mating home run cordsets.

Wiring Diagrams

4-Port Diagram, 1 Analog Signal Per Port



8-Port Diagram, 1 Analog Signal Per Port



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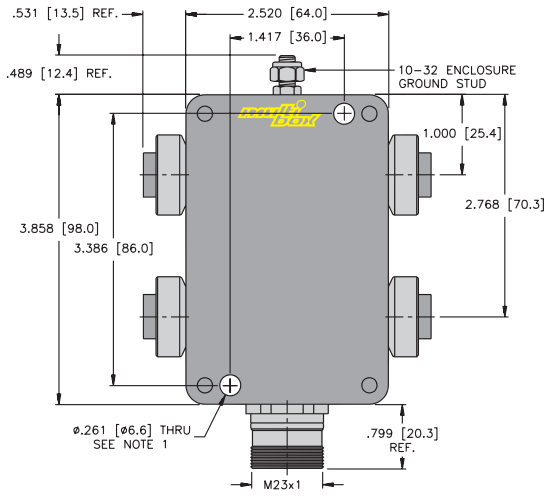
Specifications

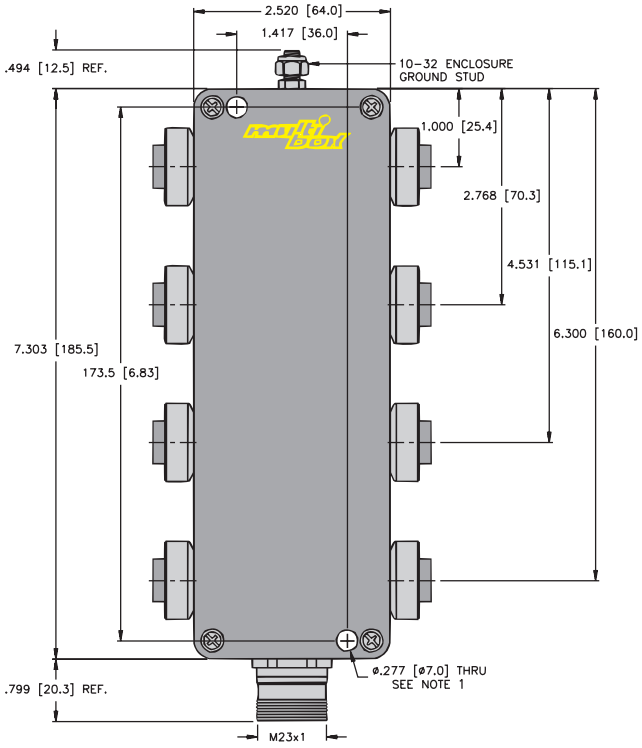
Housing:	Die-cast aluminum alloy.
Connectors	Nickel plated brass or 316 stainless steel housings (see table), oil resistant PUR contact carrier.
Temperature:	-30° to +80°C (-22° to +176°F).
Contacts:	Gold plated brass.
Protection:	IP 67.
Electrical Rating:	Standard Version: 12-pin: 300 V, 4 A per conductor. 19-pin: 150 V, 5 A per conductor. "/C" Versions: 30 V, 600 mA

Dimensions

4-Port

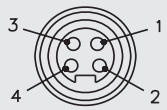
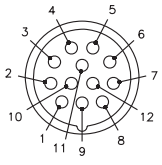
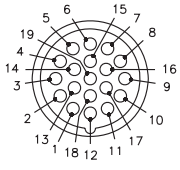


8-Port



Notes:
1. Clearance hole for 1/4-20 mounting screws (2 not included).

Pinouts

Female	Male	
		
4-Pin *minifast*®	**12-Pin *multifast*®**	**19-Pin *multifast***

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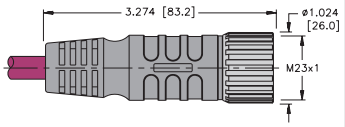
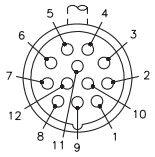
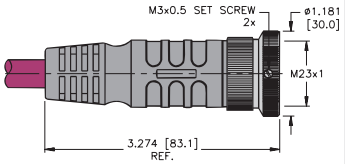
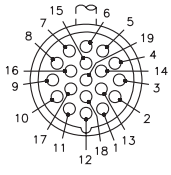
multifast® Home Run Cordsets, 2-Wire Analog or HART Control Circuits

- Straight Female Connectors
- NEMA 1, 3, 4, 6P and IEC IP 67 Protection

Housing Style	Part Number	Cable	Application	Pinout	
P-CKM .. 	P-CKM 12-960-*	ITC/PLTC PVC Plum 8x22 AWG, 4 STP with GND Foil/Drain (22) 105°C 250 V, 4 A 10 mm OD Cable #RF50960-*M†	*Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.*	1. WH/BK 7. WH/OG 2. BK/WH 8. OG/WH 3. WH/GN 9. N/C 4. GN/WH 10. N/C 5. WH/RD 11. Drain 6. RD/WH 12. GN/YE	
	P-CKM 12-229-*	ITC-Exposed Run/Direct Burial/PLTC PVC Plum 8x22 AWG, 4 STP with GND Foil/Drain (22) 105°C 250 V, 4 A 9.6 mm OD Cable #RF51229-*M†			
	P-CKM 12-415-*	CSA CIC/CMX-Outdoor-CM UL ITC/PLTC PUR Plum 8x22 AWG, 4 STP with GND Foil/Drain (22) 105°C 250 V, 4 A 9.6 mm OD Cable #RF5145-*M†			
****P-CKML .. (for Class I, Division 2 applications)** 	P-CKM 19-959-*	ITC/PLTC PVC Plum 16x22 AWG, 8 STP with GND Foil/Drain (22) 105°C 150 V, 2 A 12 mm OD Cable #RF50959-*M†			
	P-CKM 19-230-*	ITC-Exposed Run/Direct Burial/PLTC PVC Plum 16x22 AWG, 8 STP with GND Foil/Drain (22) 105°C 150 V, 2 A 12.7 mm OD Cable #RF51230-*M†		1. WH/BK 11. BU/WH 2. BK/WH 12. GN/YE 3. WH/GN 13. WH/BN 4. GN/WH 14. BN/WH 5. WH/RD 15. WH/YE 6. Drain 16. YE/WH 7. RD/WH 17. WH/VT 8. WH/OG 18. VT/WH 9. OG/WH 19. N/C 10. WH/BU	
	P-CKM 19-416-*	CSA CIC/CMX-Outdoor-CM UL ITC/PLTC PUR Plum 16x22 AWG, 8 STP with GND Foil/Drain (22) 105°C 150 V, 2 A 12.5 mm OD Cable #RF5146-*M†			

* Length in meters. Standard cable length is 5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-CKM(L).."; "P-CKM(T)V.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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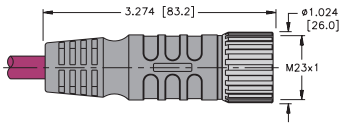
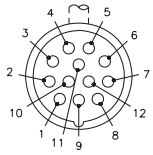
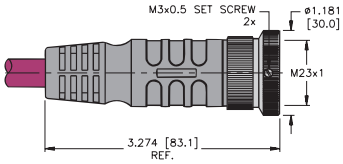
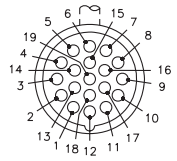
multifast® Home Run Cordsets, 2-Wire Analog or HART Control Circuits

- **Straight Male Connectors**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Cable	Application	Pinout	
P-CSM .. 	P-CSM 12-960-*	**ITC/PLTC PVC Plum 8x22 AWG, 4 STP with GND Foil/Drain (22) 105°C 250 V, 4 A 10 mm OD Cable #RF50960-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. WH/BK 7. WH/OG 2. BK/WH 8. OG/WH 3. WH/GN 9. N/C 4. GN/WH 10. N/C 5. WH/RD 11. Drain 6. RD/WH 12. GN/YE	
	P-CSM 12-229-*	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 8x22 AWG, 4 STP with GND Foil/Drain (22) 105°C 250 V, 4 A 9.6 mm OD Cable #RF51229-*M†**			
	P-CSM 12-415-*	**CSA CIC/CMX-Outdoor-CM UL ITC/PLTC PUR Plum 8x22 AWG, 4 STP with GND Foil/Drain (22) 105°C 250 V, 4 A 9.6 mm OD Cable #RF5145-*M†**			
****P-CSML .. (for Class I, Division 2 applications)** 	P-CSM 19-959-*	**ITC/PLTC PVC Plum 16x22 AWG, 8 STP with GND Foil/Drain (22) 105°C 150 V, 2 A 12 mm OD Cable #RF50959-*M†**		1. WH/BK 11. BU/WH 2. BK/WH 12. GN/YE 3. WH/GN 13. WH/BN 4. GN/WH 14. BN/WH 5. WH/RD 15. WH/YE 6. Drain 16. YE/WH 7. RD/WH 17. WH/VT 8. WH/OG 18. VT/WH 9. OG/WH 19. N/C 10. WH/BU	
	P-CSM 19-230-*	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 16x22 AWG, 8 STP with GND Foil/Drain (22) 105°C 150 V, 2 A 12.7 mm OD Cable #RF51230-*M†**			
	P-CSM 19-416-*	**CSA CIC/CMX-Outdoor-CM UL ITC/PLTC PUR Plum 16x22 AWG, 8 STP with GND Foil/Drain (22) 105°C 150 V, 2 A 12.5 mm OD Cable #RF5146-*M†**			

* Length in meters. Standard cable length is 5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-CSM(L)..."; "P-CSM(T)V.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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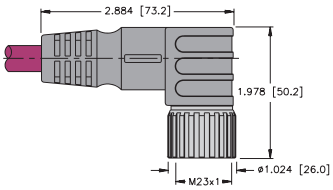
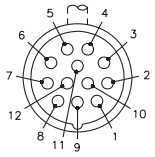
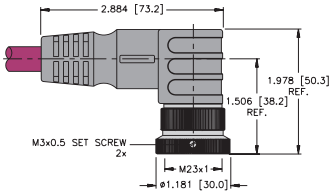
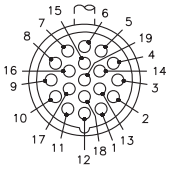
multifast® Home Run Cordsets, 2-Wire Analog or HART Control Circuits

- Right Angle Female Connectors
- NEMA 1, 3, 4, 6P and IEC IP 67 Protection

Housing Style	Part Number	Cable	Application	Pinout	
P-CKWM .. 	P-CKWM 12-960-*	**ITC/PLTC PVC Plum 8x22 AWG, 4 STP with GND Foil/Drain (22) 105°C 250 V, 4 A 10 mm OD Cable #RF50960-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. WH/BK 7. WH/OG 2. BK/WH 8. OG/WH 3. WH/GN 9. N/C 4. GN/WH 10. N/C 5. WH/RD 11. Drain 6. RD/WH 12. GN/YE	
	P-CKWM 12-229-*	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 8x22 AWG, 4 STP with GND Foil/Drain (22) 105°C 250 V, 4 A 9.6 mm OD Cable #RF51229-*M†**			
	P-CKWM 12-415-*	**CSA CIC/CMX-Outdoor-CM UL ITC/PLTC PUR Plum 8x22 AWG, 4 STP with GND Foil/Drain (22) 105°C 250 V, 4 A 9.6 mm OD Cable #RF5145-*M†**			
****P-CKWML .. (for Class I, Division 2 applications)** 	P-CKWM 19-959-*	**ITC/PLTC PVC Plum 16x22 AWG, 8 STP with GND Foil/Drain (22) 105°C 150 V, 2 A 12 mm OD Cable #RF50959-*M†**		1. WH/BK 11. BU/WH 2. BK/WH 12. GN/YE 3. WH/GN 13. WH/BN 4. GN/WH 14. BN/WH 5. WH/RD 15. WH/YE 6. Drain 16. YE/WH 7. RD/WH 17. WH/VT 8. WH/OG 18. VT/WH 9. OG/WH 19. N/C 10. WH/BU	
	P-CKWM 19-230-*	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 16x22 AWG, 8 STP with GND Foil/Drain (22) 105°C 150 V, 2 A 12.7 mm OD Cable #RF51230-*M†**			
	P-CKWM 19-416-*	**CSA CIC/CMX-Outdoor-CM UL ITC/PLTC PUR Plum 16x22 AWG, 8 STP with GND Foil/Drain (22) 105°C 150 V, 2 A 12.5 mm OD Cable #RF5146-*M†**			

* Length in meters. Standard cable length is 5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-CKWM(L)..."; "P-CKWM(T)V.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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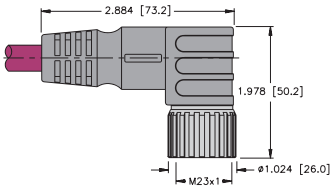
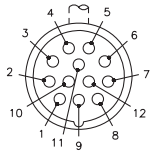
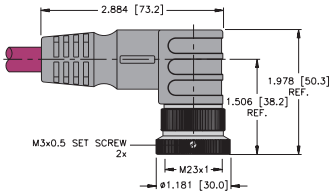
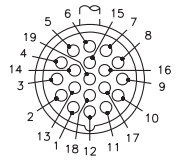
multifast® Home Run Cordsets, 2-Wire Analog or HART Control Circuits

- **Right Angle Male Connectors**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Cable	Application	Pinout	
P-CSWM .. 	P-CSWM 12-960-*	**ITC/PLTC PVC Plum 8x22 AWG, 4 STP with GND Foil/Drain (22) 105°C 250 V, 4 A 10mm OD Cable #RF50960-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. WH/BK 7. WH/OG 2. BK/WH 8. OG/WH 3. WH/GN 9. N/C 4. GN/WH 10. N/C 5. WH/RD 11. Drain 6. RD/WH 12. GN/YE	
	P-CSWM 12-229-*	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 8x22 AWG, 4 STP with GND Foil/Drain (22) 105°C 250 V, 4 A 9.6mm OD Cable #RF51229-*M†**			
	P-CSWM 12-415-*	**CSA CIC/CMX-Outdoor-CM UL ITC/PLTC PUR Plum 8x22 AWG, 4 STP with GND Foil/Drain (22) 105°C 250 V, 4 A 9.6 mm OD Cable #RF5145-*M†**			
****P-CSWML .. (for Class I, Division 2 applications)** 	P-CSWM 19-959-*	**ITC/PLTC PVC Plum 16x22 AWG, 8 STP with GND Foil/Drain (22) 105°C 150 V, 2 A 12mm OD Cable #RF50959-*M†**		1. WH/BK 11. BU/WH 2. BK/WH 12. GN/YE 3. WH/GN 13. WH/BN 4. GN/WH 14. BN/WH 5. WH/RD 15. WH/YE 6. Drain 16. YE/WH 7. RD/WH 17. WH/VT 8. WH/OG 18. VT/WH 9. OG/WH 19. N/C 10. WH/BU	
	P-CSWM 19-230-*	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 16x22 AWG, 8 STP with GND Foil/Drain (22) 105°C 150 V, 2 A 12.7mm OD Cable #RF51230-*M†**			
	P-CSWM 19-416-*	**CSA CIC/CMX-Outdoor-CM UL ITC/PLTC PUR Plum 16x22 AWG, 8 STP with GND Foil/Drain (22) 105°C 150 V, 2 A 12.5 mm OD Cable #RF5146-*M†**			

* Length in meters. Standard cable length is 5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-CSWM(L).."; "P-CSWM(T)V.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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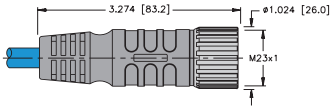
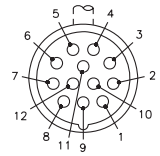
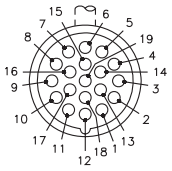
multifast® Home Run Cordsets, 2-Wire Analog or HART Control Circuits

- **Straight Female Connectors**
- **IEC IP 67 Protection**

Housing Style	Part Number	Cable	Application	Pinout	
P-CKM .. 	P-CKM 12-978-*	**ITC/PLTC PVC Blue** **8x22 AWG, 4 STP with GND Foil/Drain (22)** **105°C** **10 mm OD** **250 V, 4 A** **Cable #RF50978-*M†**	***Multiple 2-wire Intrinsically Safe analog or HART control circuits in Class I, Division 1 hazardous locations.***	1. WH/BK 2. BK/WH 3. WH/GN 4. GN/WH 5. WH/RD 6. RD/WH 7. WH/OG 8. OG/WH 9. N/C 10. N/C 11. Drain 12. GN/YE	
	P-CKM 19-977-*	**ITC/PLTC PVC Plum** **16x22 AWG, 8 STP with GND Foil/Drain (22)** **105°C** **12 mm OD** **150 V, 2 A** **Cable #RF50977-*M†**		1. WH/BK 2. BK/WH 3. WH/GN 4. GN/WH 5. WH/RD 6. Drain 7. RD/WH 8. WH/OG 9. OG/WH 10. WH/BU 11. BU/WH 12. GN/YE 13. WH/BN 14. BN/WH 15. WH/YE 16. YE/WH 17. WH/VT 18. VT/WH 19. N/C	

* Length in meters. Standard cable length is 5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-CKWM.."; "P-CKWMV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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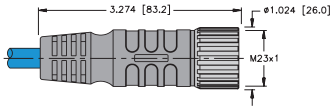
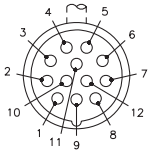
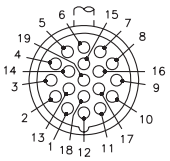
multifast® Home Run Cordsets, 2-Wire Analog or HART Control Circuits

- **Straight Male Connectors**
- **IEC IP 67 Protection**

Housing Style	Part Number	Cable	Application	Pinout	
P-CSM .. 	P-CSM 12-978-*	**ITC/PLTC PVC Blue** **8x22 AWG, 4 STP with GND Foil/Drain (22)** **105°C** **10 mm OD** **250 V, 4 A** **Cable #RF50978-*M†**	***Multiple 2-wire Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations.***	1. WH/BK 7. WH/OG 2. BK/WH 8. OG/WH 3. WH/GN 9. N/C 4. GN/WH 10. N/C 5. WH/RD 11. Drain 6. RD/WH 12. GN/YE	
	P-CSM 19-977-*	**ITC/PLTC PVC Plum** **16x22 AWG, 8 STP with GND Foil/Drain (22)** **105°C** **12 mm OD** **150 V, 2 A** **Cable #RF50977-*M†**		1. WH/BK 11. BU/WH 2. BK/WH 12. GN/YE 3. WH/GN 13. WH/BN 4. GN/WH 14. BN/WH 5. WH/RD 15. WH/YE 6. Drain 16. YE/WH 7. RD/WH 17. WH/VT 8. WH/OG 18. VT/WH 9. OG/WH 19. N/C 10. WH/BU	

* Length in meters. Standard cable length is 5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-CSWM.."; "P-CSWMV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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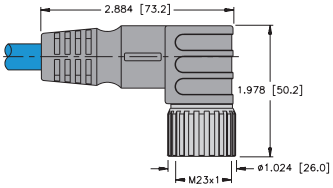
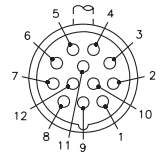
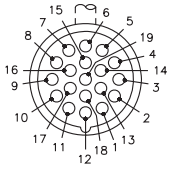
multifast® Home Run Cordsets, 2-Wire Analog or HART Control Circuits

- **Right Angle Female Connectors**
- **IEC IP 67 Protection**

Housing Style	Part Number	Cable	Application	Pinout	
P-CKWM .. 	P-CKWM 12-978-*	**ITC/PLTC PVC Blue** **8x22 AWG, 4 STP with GND Foil/Drain (22)** **105°C** **10 mm OD** **250 V, 4 A** **Cable #RF50978-*M†**	***Multiple 2-wire Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations.***	1. WH/BK 2. BK/WH 3. WH/GN 4. GN/WH 5. WH/RD 6. RD/WH 7. WH/OG 8. OG/WH 9. N/C 10. N/C 11. Drain 12. GN/YE	
	P-CKWM 19-977-*	**ITC/PLTC PVC Plum** **16x22 AWG, 8 STP with GND Foil/Drain (22)** **105°C** **12 mm OD** **150 V, 2 A** **Cable #RF50977-*M†**		1. WH/BK 2. BK/WH 3. WH/GN 4. GN/WH 5. WH/RD 6. Drain 7. RD/WH 8. WH/OG 9. OG/WH 10. WH/BU 11. BU/WH 12. GN/YE 13. WH/BN 14. BN/WH 15. WH/YE 16. YE/WH 17. WH/VT 18. VT/WH 19. N/C	

* Length in meters. Standard cable length is 5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-CKWM.."; "P-CKWMV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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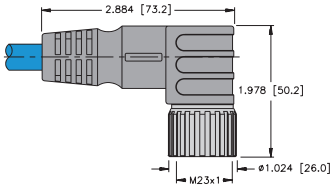
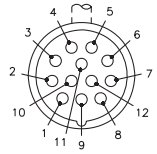
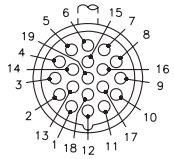
multifast® Home Run Cordsets, 2-Wire Analog or HART Control Circuits

- **Right Angle Male Connectors**
- **IEC IP 67 Protection**

Housing Style	Part Number	Cable	Application	Pinout	
P-CSWM .. 	P-CSWM 12-978-*	**ITC/PLTC PVC Blue** **8x22 AWG, 4 STP with GND Foil/Drain (22)** **105°C** **10 mm OD** **250 V, 4 A** **Cable #RF50978-*M†**	***Multiple 2-wire Intrinsically Safe Analog or HART control circuits in Class I, Division 1 hazardous locations.***	1. WH/BK 2. BK/WH 3. WH/GN 4. GN/WH 5. WH/RD 6. RD/WH 7. WH/OG 8. OG/WH 9. N/C 10. N/C 11. Drain 12. GN/YE	
	P-CSWM 19-977-*	**ITC/PLTC PVC Plum** **16x22 AWG, 8 STP with GND Foil/Drain (22)** **105°C** **12 mm OD** **150 V, 2 A** **Cable #RF50977-*M†**		1. WH/BK 2. BK/WH 3. WH/GN 4. GN/WH 5. WH/RD 6. Drain 7. RD/WH 8. WH/OG 9. OG/WH 10. WH/BU 11. BU/WH 12. GN/YE 13. WH/BN 14. BN/WH 15. WH/YE 16. YE/WH 17. WH/VT 18. VT/WH 19. N/C	

* Length in meters. Standard cable length is 5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-CSWM.."; "P-CSWMV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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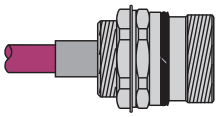
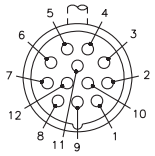
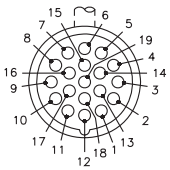
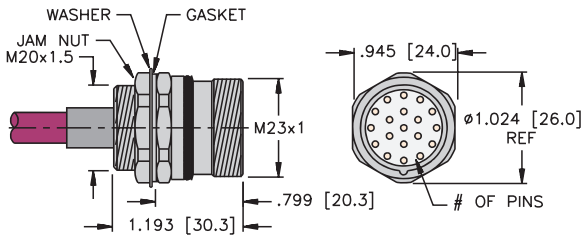
multifast® Home Run Receptacles with Cable, 2-Wire Analog or HART Control Circuits

- **Female Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Cable	Application	Pinout	
P-CKFL .. 	P-CKFL 12-960-*	**ITC/PLTC PVC Plum 8x22 AWG, 4 STP with GND Foil/Drain (22) 105°C 250 V, 4 A 10 mm OD Cable #RF50960-*M†**	***Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. WH/BK 7. WH/OG 2. BK/WH 8. OG/WH 3. WH/GN 9. N/C 4. GN/WH 10. N/C 5. WH/RD 11. Drain 6. RD/WH 12. GN/YE	
	P-CKFL 12-229-*	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 8x22 AWG, 4 STP with GND Foil/Drain (22) 105°C 250 V, 4 A 9.6 mm OD Cable #RF51229-*M†**			
	P-CKFL 19-959-*	**ITC/PLTC PVC Plum 16x22 AWG, 8 STP with GND Foil/Drain (22) 105°C 150 V, 2 A 12mm OD Cable #RF50959-*M†**		1. WH/BK 11. BU/WH 2. BK/WH 12. GN/YE 3. WH/GN 13. WH/BN 4. GN/WH 14. BN/WH 5. WH/RD 15. WH/YE 6. Drain 16. YE/WH 7. RD/WH 17. WH/VT 8. WH/OG 18. VT/WH 9. OG/WH 19. N/C 10. WH/BU	
	P-CKFL 19-230-*	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 16x22 AWG, 8 STP with GND Foil/Drain (22) 105°C 150 V, 2 A 12.7 mm OD Cable #RF51230-*M†**			

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-CKFL.."; "P-CKFLV.." indicates 316 stainless steel.
** Use with "T" or "L" cordsets for Class I, Division 2 applications.
† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

Dimensions



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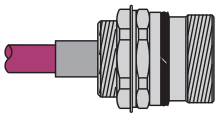
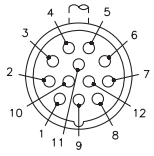
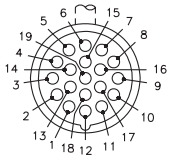
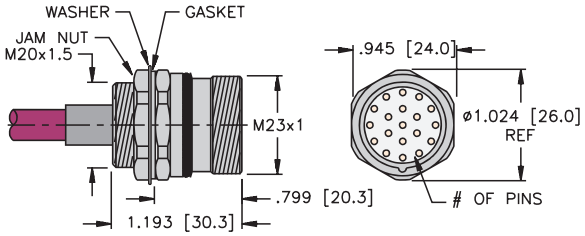
multifast® Home Run Receptacles with Cable, 2-Wire Analog or HART Control Circuits

- Male Receptacles
- NEMA 1, 3, 4, 6P and IEC IP 67 Protection

Housing Style	Part Number	Cable	Application	Pinout	
P-CSFL .. 	P-CSFL 12-960-*	ITC/PLTC PVC Plum 8x22 AWG, 4 STP with GND Foil/Drain (22) 105°C 250 V, 4 A 10 mm OD Cable #RF50960-*M†	*Analog or HART control circuits in Class I, Division 2 hazardous locations** or unclassified locations.*	1. WH/BK 7. WH/OG 2. BK/WH 8. OG/WH 3. WH/GN 9. N/C 4. GN/WH 10. N/C 5. WH/RD 11. Drain 6. RD/WH 12. GN/YE	
	P-CSFL 12-229-*	ITC-Exposed Run/Direct Burial/PLTC PVC Plum 8x22 AWG, 4 STP with GND Foil/Drain (22) 105°C 250 V, 4 A 9.6 mm OD Cable #RF51229-*M†			
	P-CSFL 19-959-*	ITC/PLTC PVC Plum 16x22 AWG, 8 STP with GND Foil/Drain (22) 105°C 150 V, 2 A 12 mm OD Cable #RF50959-*M†		1. WH/BK 11. BU/WH 2. BK/WH 12. GN/YE 3. WH/GN 13. WH/BN 4. GN/WH 14. BN/WH 5. WH/RD 15. WH/YE 6. Drain 16. YE/WH 7. RD/WH 17. WH/VT 8. WH/OG 18. VT/WH 9. OG/WH 19. N/C 10. WH/BU	
	P-CSFL 19-230-*	ITC-Exposed Run/Direct Burial/PLTC PVC Plum 16x22 AWG, 8 STP with GND Foil/Drain (22) 105°C 150 V, 2 A 12.7 mm OD Cable #RF51230-*M†			

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-CSFL.."; "P-CSFLV.." indicates 316 stainless steel.
** Use with "T" or "L" cordsets for Class I, Division 2 applications.
† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

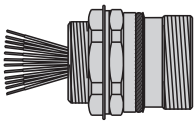
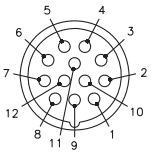
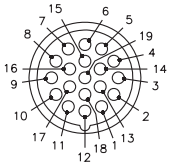
Dimensions



Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

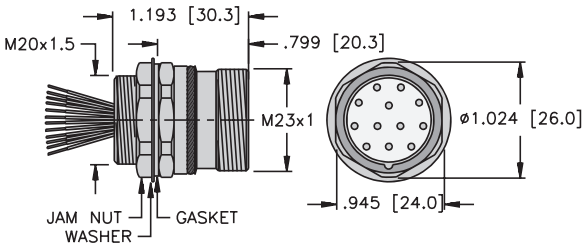
multifast® Home Run Receptacles with Leads, 2-Wire Analog or HART Control Circuits

- **Female Receptacles**
- **IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
P-CKFL .. 	P-CKFL 12-*	**UL, CSA** **10x22 AWG** **105°C** **300 V, 6 A**	***Multiple 2-wire analog or HART control circuits in hazardous locations or unclassified locations.***	1. WH/BK 7. WH/OG 2. BK/WH 8. OG/WH 3. WH/GN 9. N/C 4. GN/WH 10. N/C 5. WH/RD 11. GY 6. RD/WH 12. GN/YE	
	P-CKFL 19-*	**UL, CSA** **18x22 AWG** **105°C** **150 V, 2 A**		1. WH/BK 11. BU/WH 2. BK/WH 12. GN/YE 3. WH/GN 13. WH/BN 4. GN/WH 14. BN/WH 5. WH/RD 15. WH/YE 6. GY 16. YE/WH 7. RD/WH 17. WH/VT 8. WH/OG 18. VT/WH 9. OG/WH 19. N/C 10. WH/BU	

* Length in meters. Standard lead length is 1 meter. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-CKFL.."; "P-CKFLV.." indicates 316 stainless steel.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

Dimensions



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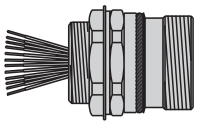
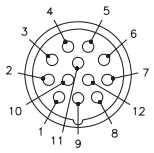
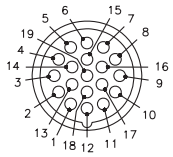
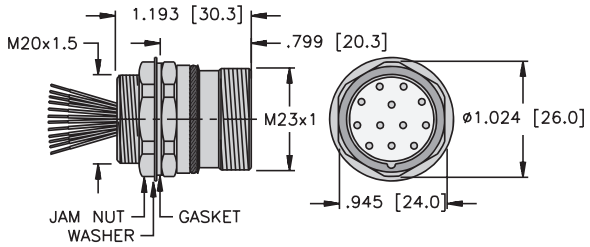
multifast® Home Run Receptacles with Leads, 2-Wire Analog or HART Control Circuits

- Male Receptacles
- IEC IP 67 Protection

Housing Style	Part Number	Lead Specs	Features	Pinout	
P-CSFL .. 	P-CSFL 12-*	**UL, CSA** **10x22 AWG** **105°C** **300 V, 6 A**	***Multiple 2-wire analog or HART control circuits in hazardous locations or unclassified locations.***	1. WH/BK 7. WH/OG 2. BK/WH 8. OG/WH 3. WH/GN 9. N/C 4. GN/WH 10. N/C 5. WH/RD 11. GY 6. RD/WH 12. GN/YE	
	P-CSFL 19-*	**UL, CSA** **18x22 AWG** **105°C** **150 V, 2 A**		1. WH/BK 11. BU/WH 2. BK/WH 12. GN/YE 3. WH/GN 13. WH/BN 4. GN/WH 14. BN/WH 5. WH/RD 15. WH/YE 6. GY 16. YE/WH 7. RD/WH 17. WH/VT 8. WH/OG 18. VT/WH 9. OG/WH 19. N/C 10. WH/BU	

* Length in meters. Standard lead length is 1 meter. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-CSFL.."; "P-CSFLV.." indicates 316 stainless steel.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

Dimensions



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Additional Analog or Discrete Control Circuits Selection Guide

M12 *eurofast*® Thread	Drop Cordsets	Receptacles with Cable	Receptacles with Leads	Junction Boxes
Pages	K101 - K104	K105 - K108	K109 - K112	K113 - K116

7/8", 1, & 1-1/8" *minifast*® Thread	Drop Cordsets	Receptacles with Cable	Receptacles with Leads	Explosionproof Receptacles	"Y" Fitting Receptacles	Junction Boxes
Pages	K121 - K128	K129 - K142	K144 - K160	K161 - K168	K169 - K170	K171 - K172

M23 *multifast*® Thread	Home Run Cordsets
Pages	K173 - K174

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eurofast® Cordset Part Number Key, Additional Analog or Discrete Control Circuits

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

P - R K G V | 5.1 T - 108 | - 2 - | R S G V | 5.1T

P = Process Cordset

eurofast

R = Straight
W = Right Angle

Gender

K = Female Connector
S = Male Connector

Plug Body Style

E = Large Plug Body, Right Angle
G = Large, Robust Plug Body

Coupling Nut Options

(Blank) = Nickle Plated Brass
V = 316 Stainless Steel

T = T Barb Fitting
A = Armored Cable

Number of Wires / AWG / Color Codes / Cable Type

5.1T-108 = 4x18 AWG, BU, BN, GN/YE, BK, ITC/PLTC PVC
4.4T-698 = 4x22 AWG, BU, BN, WH, BK, ITC/PLTC PVC
5.3T-095 = 3x18 AWG, BN, WH, BU, BK, ITC/PLTC PUR

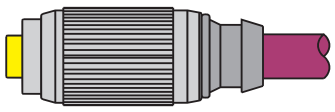
Length in Meters

Insertion Point of Extension Cable and 2nd Prefix*

* Female Connector Listed 1st, Male Connector 2nd
Example: P-RKGV 5.1T-108-2-RSGV 5.1T

Single Ended Example:

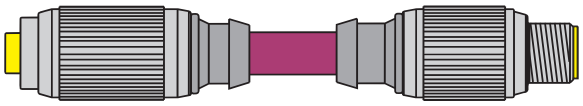
P - R K G V | 5.1 T - 108 - 2



RKGV ..

Extension Example:

P - R K G | 5.1 T - 108 - 2 - R S G | 5.1 T



RKG .. - RSG ..

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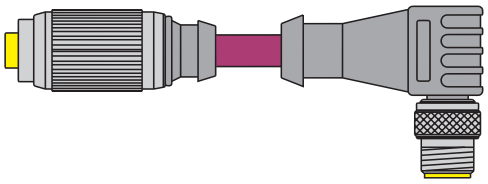
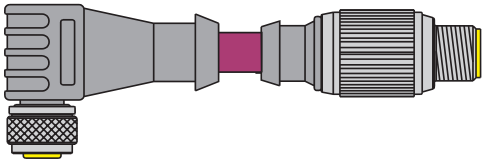
eurofast® Cordset Part Number Key, Additional Analog or Discrete Control Circuits

Other Extension Examples:



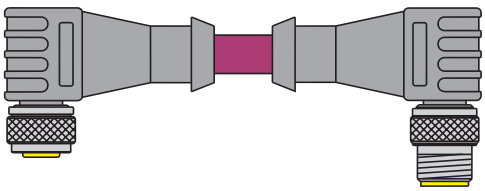
P - R K G | 5.1 T - 108 - 2 - W S E | 5.1 T

RKG .. - WSE ..



P - W K E | 5.1 T - 108 - 2 - R S G | 5.1 T

WKE .. - RSG ..



P - W K E | 5.1 T - 108 - 2 - W S E | 5.1 T

WKE .. - WSE ..

Note: Hybrid connector extensions also available. Consult factory.

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eurofast® Receptacle w/Cable Part Number Key, Additional Analog or Discrete Control Circuits

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

P - F K [ ] V 5.1-108 - 2 - /14.5/NPT

P = Process Receptacle

Designator for Receptacle

Gender

K = Female Connector
S = Male Connector

Housing Style

(Blank) = Front Mount

Housing Material

(Blank) = Nickel Plated Brass
V = 316 Stainless Steel

Number of Wires / AWG / Color Codes / Cable Type

5.1-108 = 4x18 AWG, BU, BN, GN/YE, BK, ITC/PLTC PVC
4.4-698 = 4x22 AWG, BU, BN, WH, BK, ITC/PLTC PVC
5.3-095 = 3x18 AWG, BN, WH, BU, BK, ITC/PLTC PUR

Length in Meters

Thread Type

/14.5/NPT = 1/2-14NPT Threads
/14.75/NPT = 3/4-14NPT Threads
/M20 = M20x1.5 Threads

eurofast Receptacle with Leads Part Number Key, Additional Analog or Discrete Control Circuits

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

P - F K [ ] V 4 - 0.5 - /14.5/NPT

P = Process Receptacle

Designator for Receptacle

Gender

K = Female Connector
S = Male Connector

Housing Style

(Blank) = Front Mount
P = Back Panel Mount

Housing Material

(Blank) = Nickel Plated Brass
V = 316 Stainless Steel

Number of Wires

4.4 = 4
5.1 = 4
5.3 = 4

Length in Meters

Thread Type

/14.5/NPT = 1/2-14NPT Threads
/14.75/NPT = 3/4-14NPT Threads
/M20 = M20x1.5 Threads

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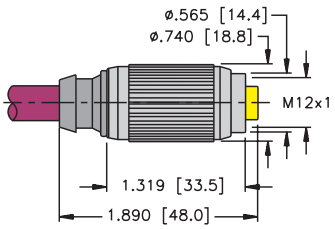
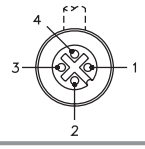
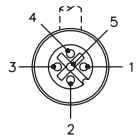
eurofast® Drop Cordsets, Additional Analog or Discrete Control Circuits

- **Straight Female Connectors**
- **IEC IP 68 Protection**
- **250 V, 4 A (Use as ITC Limited to 150 V, 3 A for 22 AWG Conductors)**

Housing Style	Part Number	Cable	Features	Pinout	
P-RKG .. 	P-RKG 4.4T-698-*	**ITC/PLTC PVC Grey 4x22 AWG 105°C 5.2 mm OD Cable #RF50698-*M†**	***4-wire RTD control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. WH 4. BK	
	P-RKG 5.1T-108-*	**ITC/PLTC PVC Plum 4x18 AWG, 1 Triad with GND Foil/Drain (20) 105°C 8.1 mm OD Cable #RF51108-*M†**	***Discrete or Analog 3-wire circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. Drain 4. BK 5. GN/YE	
	P-RKG 5.3T-095-*	**ITC/PLTC PUR Black 4x22 AWG Foil/Drain (22) 105°C 6.8 mm OD Cable #RF51095-*M†**	***4-wire RTD control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BN 2. WH 3. BU 4. BK 5. Drain	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RKG .."; "P-RKGV .." indicates 316 stainless steel.

** Use with ***lokfast eurofast*** guards (part number: LOCK-EURO-G) in Class I, Division 2 applications.

† See pages K236 - K244 for ***reelfast***® cable information.

Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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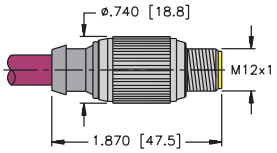
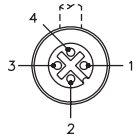
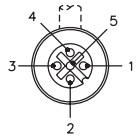
eurofast® Drop Cordsets, Additional Analog or Discrete Control Circuits

- **Straight Male Connectors**
- **IEC IP 68 Protection**
- **250 V, 4 A (Use as ITC Limited to 150 V, 3 A for 22 AWG Conductors)**

Housing Style	Part Number	Cable	Features	Pinout	
P-RSG .. 	P-RSG 4.4T-698-*	**ITC/PLTC PVC Grey 4x22 AWG 105°C 5.2 mm OD Cable #RF50698-*M†**	***4-wire RTD control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. WH 4. BK	
	P-RSG 5.1T-108-*	**ITC/PLTC PVC Plum 4x18 AWG, 1 Triad with GND Foil/Drain (20) 105°C 8.1 mm OD Cable #RF51108-*M†**	***Discrete or Analog 3-wire circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. Drain 4. BK 5. GN/YE	
	P-RSG 5.3T-095-*	**ITC/PLTC PUR Black 4x22 AWG Foil/Drain (22) 105°C 6.8 mm OD Cable #RF51095-*M†**	***4-wire RTD control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BN 2. WH 3. BU 4. BK 5. Drain	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RSG .."; "P-RSGV .." indicates 316 stainless steel.

** Use with ***lokfast eurofast*** guards (part number: LOCK-EURO-G) in Class I, Division 2 applications.

† See pages K236 - K244 for ***reelfast***® cable information.

Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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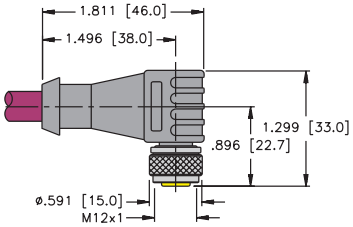
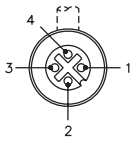
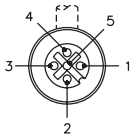
eurofast® Drop Cordsets, Additional Analog or Discrete Control Circuits

- **Right Angle Female Connectors**
- **IEC IP 68 Protection**
- **250 V, 4 A (Use as ITC Limited to 150 V, 3 A for 22 AWG Conductors)**

Housing Style	Part Number	Cable	Features	Pinout	
P-WKE .. 	P-WKE 4.4T-698-*	**ITC/PLTC PVC Grey 4x22 AWG 105°C 5.2 mm OD Cable #RF50698-*M†**	***4-wire RTD control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. WH 4. BK	
	P-WKE 5.1T-108-*	**ITC/PLTC PVC Plum 4x18 AWG, 1 Triad with GND Foil/Drain (20) 105°C 8.1 mm OD Cable #RF51108-*M†**	***Discrete or Analog 3-wire circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. Drain 4. BK 5. GN/YE	
	P-WKE 5.3T-095-*	**ITC/PLTC PUR Black 4x22 AWG Foil/Drain (22) 105°C 6.8 mm OD Cable #RF51095-*M†**	***4-wire RTD control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BN 2. WH 3. BU 4. BK 5. Drain	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-WKE .."; "P-WKEV .." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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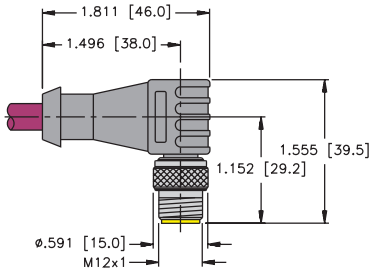
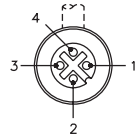
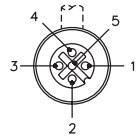
eurofast® Drop Cordsets, Additional Analog or Discrete Control Circuits

- **Right Angle Male Connectors**
- **IEC IP 68 Protection**
- **250 V, 4 A (Use as ITC Limited to 150 V, 3 A for 22 AWG Conductors)**

Housing Style	Part Number	Cable	Features	Pinout	
P-WSE .. 	P-WSE 4.4T-698-*	**ITC/PLTC PVC Grey 4x22 AWG 105°C 5.2 mm OD Cable #RF50698-*M†**	***4-wire RTD control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. WH 4. BK	
	P-WSE 5.1T-108-*	**ITC/PLTC PVC Plum 4x18 AWG, 1 Triad with GND Foil/Drain (20) 105°C 8.1 mm OD Cable #RF51108-*M†**	***Discrete or Analog 3-wire circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. Drain 4. BK 5. GN/YE	
	P-WSE 5.3T-095-*	**ITC/PLTC PUR Black 4x22 AWG Foil/Drain (22) 105°C 6.8 mm OD Cable #RF51095-*M†**	***4-wire RTD control circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BN 2. WH 3. BU 4. BK 5. Drain	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-WSE .."; "P-WSEV .." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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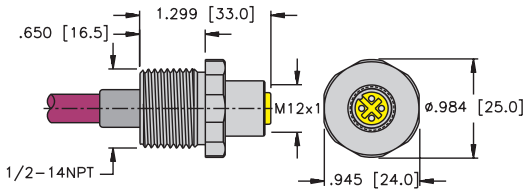
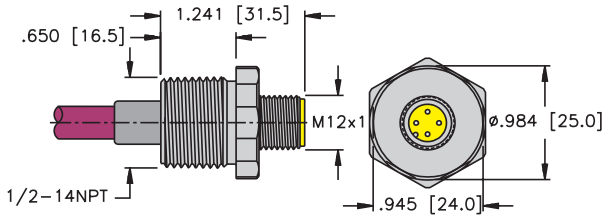
eurofast® Receptacles with Cable, Additional Analog or Discrete Control Circuits

1



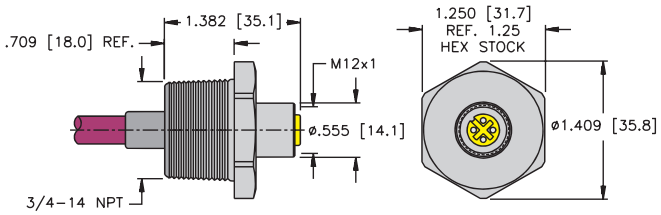
P-FK .. 14.5/NPT **Pages K106 - K108**

2



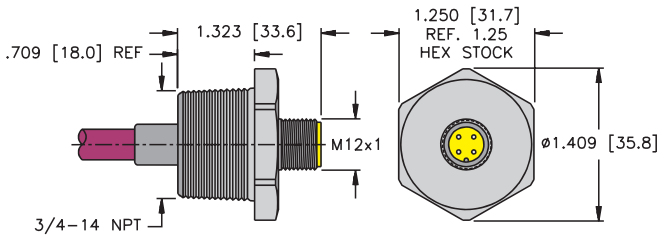
P-FS .. 14.5/NPT **Pages K106 - K108**

3



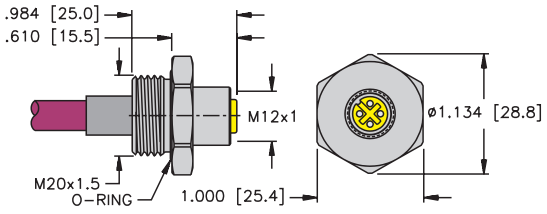
P-FK .. 14.75/NPT **Pages K106 - K108**

4



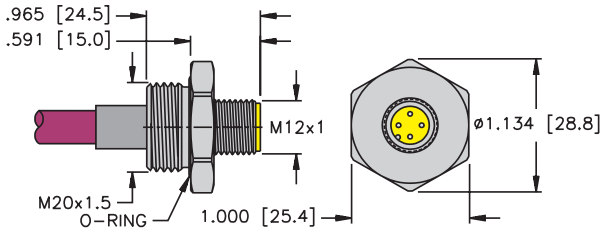
P-FS .. 14.75/NPT **Pages K106 - K108**

5



P-FK .. M20 **Pages K106 - K108**

6



P-FS .. M20 **Pages K106 - K108**

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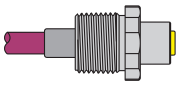
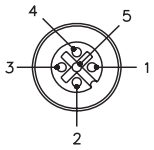
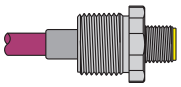
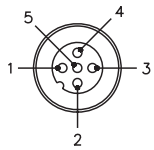
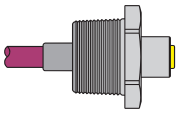
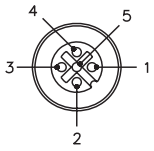
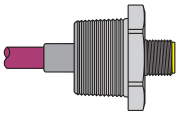
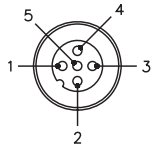
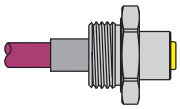
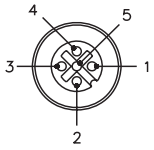
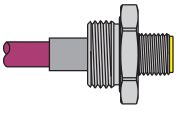
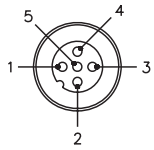
eurofast® Receptacles with Cable, Additional Analog or Discrete Control Circuits

- **Male and Female Receptacles**
- **IEC IP 68 Protection**
- **250 V, 4 A**
  (Use as ITC Limited to 150 V)

Housing Style	Part Number	Cable	Application	Pinout	
1 	P-FK 5.1-108-*/14.5/NPT	**ITC/PLTC PVC Plum 4x18 AWG, 1 Shielded Triad with GND Foil/Drain (20) 105°C 8.1 mm OD Cable #RF51108-*M†**	***Discrete or Analog 3-wire circuits in Class I, Division 2 hazardous locations or unclassified locations. 1/2-14NPT Threads.***	1. BU 2. BN 3. Drain 4. BK 5. GN/YE	
2 	P-FS 5.1-108-*/14.5/NPT				
3 	P-FK 5.1-108-*/14.75/NPT		***Discrete or Analog 3-wire circuits in Class I, Division 2 hazardous locations or unclassified locations. 3/4-14NPT Threads.***		
4 	P-FS 5.1-108-*/14.75/NPT				
5 	P-FK 5.1-108-*/M20		***Discrete or Analog 3-wire circuits in Class I, Division 2 hazardous locations or unclassified locations. M20 Threads.***		
6 	P-FS 5.1-108-*/M20				

See page K105 for dimensional drawings.

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-FK(S).."; "P-FK(S)V.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting. 1/2-14NPT and M20. 1-1/16" (27.0 mm) for 3/4-14NPT.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

† See pages K236 - K244 for ***reelfast***® cable information.

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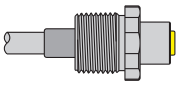
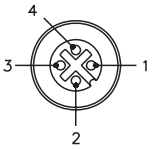
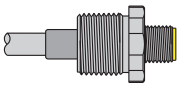
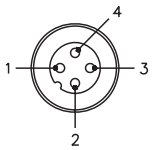
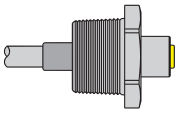
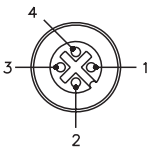
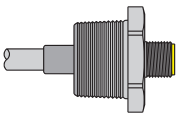
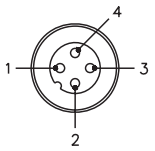
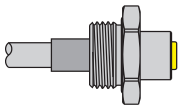
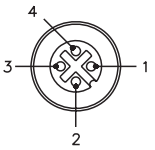
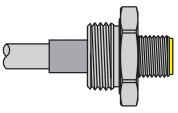
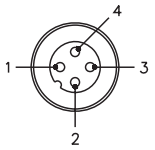
eurofast® Receptacles with Cable, Additional Analog or Discrete Control Circuits

- **Male and Female Receptacles**
- **IEC IP 68 Protection**
- **250 V, 4 A**
  (Use as ITC Limited to 150 V)

Housing Style	Part Number	Cable	Application	Pinout	
1 	P-FK 4.4-698-*/14.5/NPT	**ITC/PLTC PVC Grey 4x22 AWG 105°C 5.2 mm OD Cable #RF50698-*M†**	***4-wire RTD control circuits in Class I, Division 2 hazardous locations or unclassified locations. 1/2-14NPT Threads.***	1. BU 2. BN 3. WH 4. BK	
2 	P-FS 4.4-698-*/14.5/NPT				
3 	P-FK 4.4-698-*/14.75/NPT		***4-wire RTD control circuits in Class I, Division 2 hazardous locations or unclassified locations. 3/4-14NPT Threads.***		
4 	P-FS 4.4-698-*/14.75/NPT				
5 	P-FK 4.4-698-*/M20		***4-wire RTD control circuits in Class I, Division 2 hazardous locations or unclassified locations. M20 Threads.***		
6 	P-FS 4.4-698-*/M20				

See page K105 for dimensional drawings.

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-FK(S).."; "P-FK(S)V.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting. 1/2-14NPT and M20. 1-1/16" (27.0 mm) for 3/4-14NPT.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

† See pages K236 - K244 for ***reelfast***® cable information.

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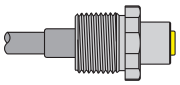
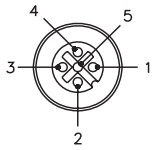
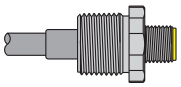
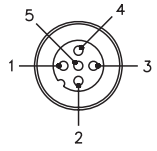
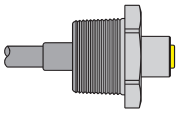
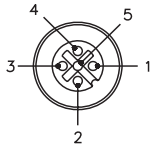
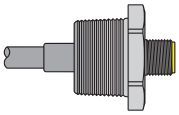
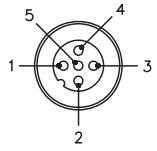
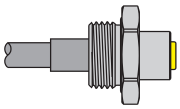
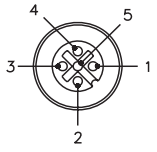
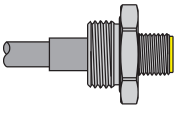
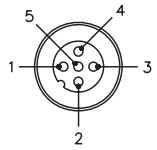
eurofast® Receptacles with Cable, Additional Analog or Discrete Control Circuits

- **Male and Female Receptacles**
- **IEC IP 68 Protection**
- **250 V, 4 A**
  (Use as ITC Limited to 150 V)

Housing Style	Part Number	Cable	Application	Pinout	
1 	P-FK 5.3-095-*/14.5/NPT	**ITC/PLTC PUR Black** **4x22 AWG** **Foil/Drain (22)** **105°C** **6.8 mm OD** **Cable #RF51095-*M†**	***4-wire RTD control circuits in Class I, Division 2 hazardous locations or unclassified locations. 1/2-14NPT Threads.***	1. BU 2. WH 3. BU 4. BK 5. Drain	
2 	P-FS 5.3-095-*/14.5/NPT				
3 	P-FK 5.3-095-*/14.75/NPT		***4-wire RTD control circuits in Class I, Division 2 hazardous locations or unclassified locations. 3/4-14NPT Threads.***		
4 	P-FS 5.3-095-*/14.75/NPT				
5 	P-FK 5.3-095-*/M20		***4-wire RTD control circuits in Class I, Division 2 hazardous locations or unclassified locations. M20 Threads.***		
6 	P-FS 5.3-095-*/M20				

See page K105 for dimensional drawings.

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-FK(S).."; "P-FK(S)V.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting. 1/2-14NPT and M20. 1-1/16" (27.0 mm) for 3/4-14NPT.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

† See pages K236 - K244 for ***reelfast***® cable information.

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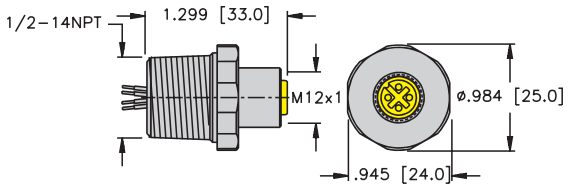
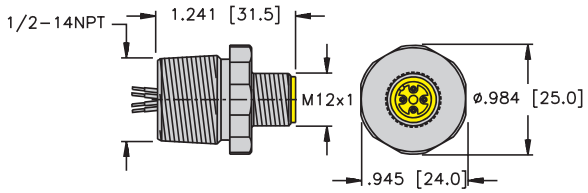
eurofast® Receptacles with Leads, Additional Analog or Discrete Control Circuits

1



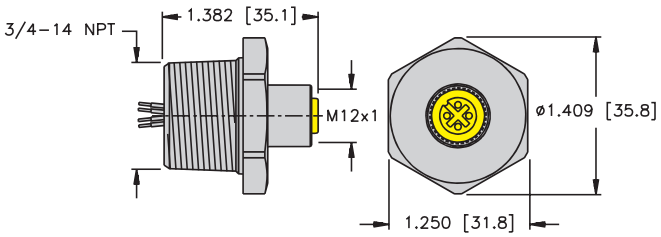
P-FK .. 14.5/NPT **Pages K110 - K112**

2



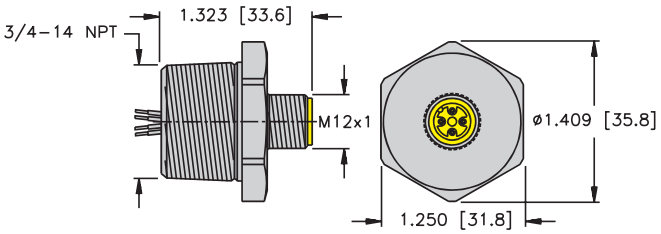
P-FS .. 14.5/NPT **Pages K110 - K112**

3



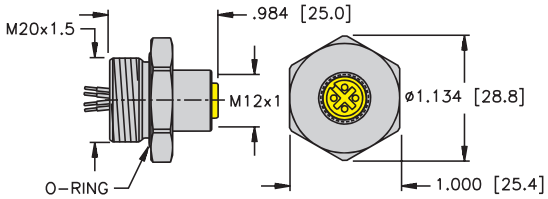
P-FK .. 14.75/NPT **Pages K110 - K112**

4



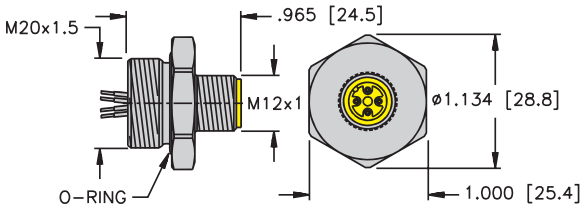
P-FS .. 14.75/NPT **Pages K110 - K112**

5



P-FK .. M20 **Pages K110 - K112**

6



P-FS .. M20 **Pages K110 - K112**

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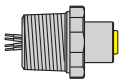
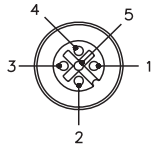
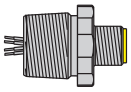
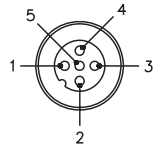
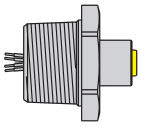
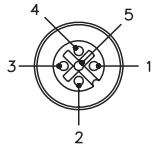
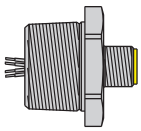
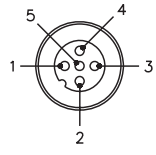
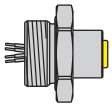
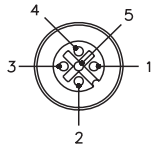
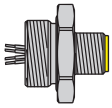
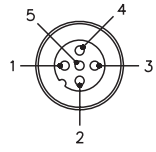
eurofast® Receptacles with Leads, Additional Analog or Discrete Control Circuits

- Male and Female Receptacles
- IEC IP 68 Protection
- 250 V, 4 A

Housing Style	Part Number	Cable	Application	Pinout	
1 	P-FK 5.1-*/14.5/NPT	UL, CSA 4x18 AWG 105°C	*1/2-14NPT Threads*	1. BU 2. BN 3. N/C 4. BK 5. GN/YE	
2 	P-FS 5.1-*/14.5/NPT				
3 	P-FK 5.1-*/14.75/NPT		*3/4-14NPT Threads*		
4 	P-FS 5.1-*/14.75/NPT				
5 	P-FK 5.1-*/M20		*M20 Threads*		
6 	P-FS 5.1-*/M20				

See page K109 for dimensional drawings.

* Length in meters. Standard lead length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-FK(S).."; "P-FK(S)V.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting. 1/2-14NPT and M20. 1-1/16" (27.0 mm) for 3/4-14NPT.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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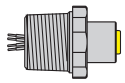
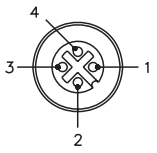
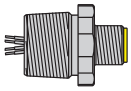
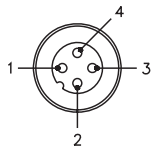
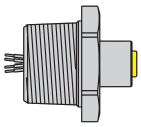
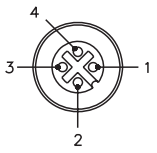
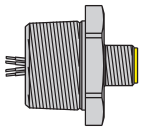
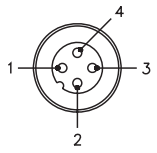
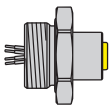
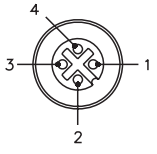
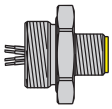
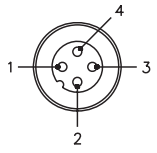
eurofast® Receptacles with Leads, Additional Analog or Discrete Control Circuits

- Male and Female Receptacles
- IEC IP 68 Protection
- 250 V, 4 A

Housing Style	Part Number	Cable	Application	Pinout	
1 	P-FK 4.4-*/14.5/NPT	UL, CSA 4x22 AWG 105°C	*1/2-14NPT Threads*	1. BU 2. BN 3. WH 4. BK	
2 	P-FS 4.4-*/14.5/NPT				
3 	P-FK 4.4-*/14.75/NPT		*3/4-14NPT Threads*		
4 	P-FS 4.4-*/14.75/NPT				
5 	P-FK 4.4-*/M20		*M20 Threads*		
6 	P-FS 4.4-*/M20				

See page K109 for dimensional drawings.

* Length in meters. Standard lead length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-FK(S).."; "P-FK(S)V.." indicates 316 stainless steel.
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Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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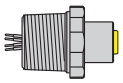
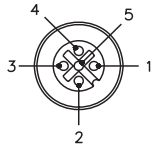
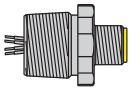
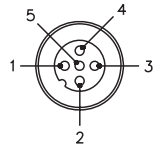
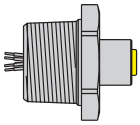
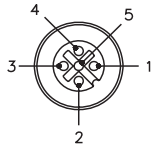
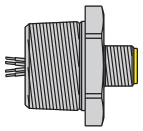
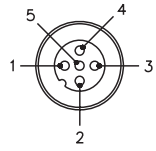
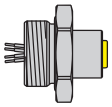
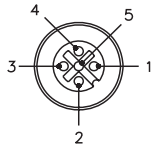
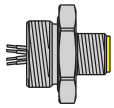
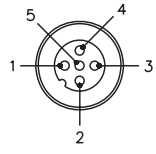
eurofast® Receptacles with Leads, Additional Analog or Discrete Control Circuits

- Male and Female Receptacles
- IEC IP 68 Protection
- 250 V, 4 A

Housing Style	Part Number	Cable	Application	Pinout	
1 	P-FK 5.3-*/14.5/NPT	UL, CSA 4x22 AWG 105°C	*1/2-14NPT Threads*	1. BU 2. WH 3. BU 4. BK 5. N/C	
2 	P-FS 5.3-*/14.5/NPT				
3 	P-FK 5.3-*/14.75/NPT		*3/4-14NPT Threads*		
4 	P-FS 5.3-*/14.75/NPT				
5 	P-FK 5.3-*/M20		*M20 Threads*		
6 	P-FS 5.3-*/M20				

See page K109 for dimensional drawings.

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multibox® eurofast® Metal Junction Boxes w/Integral Home Run Cable

- **Consolidation of Analog or Discrete Circuits in Hazardous Locations or Unclassified Locations**
- **Blue Jacket Color may be used as Identification of Intrinsically Safe Circuits**

FM APPROVED

FM approved for installation in hazardous locations when installed per **TURCK** Control Drawing QCF-00147 (www.turck.com/fmcd) using specified accessory equipment.
"/C" versions CSA certified for installation in hazardous locations when installed per **TURCK** Control Drawing Ni-2.404(www.turck.com/fmcd) using certified accessory equipment.

4-port, 1 Analog Signal Per Port, Common Ground and Shield

Application	Specifications	Pinout				Nickel Plated Brass	Stainless Steel
4-port cast aluminum junction box, ***eurofast*** port connectors, integral home-run cable	Home-run cable with 4/22 AWG shielded twisted pairs, each with 22 AWG drain†, plus overall shield with 22 AWG drain and 18 AWG overall ground, 10.0 mm OD	Port, Pin Port 1, Pin 1 Port 1, Pin 2 Port 2, Pin 1 Port 2, Pin 2 Port 3, Pin 1	Wire Color WH/BK BK/WH WH/GN GN/WH WH/RD	Port, Pin Port 3, Pin 2 Port 4, Pin 1 Port 4, Pin 2 Ports 1-4, Pin 3 Ports 1-4, Pin 4	Wire Color RD/WH WH/OG OG/WH Drain GN/YE	P-VBM 40-978-*	P-VBMV 40-978-*
						P-VBM 40-978-*/C	P-VBMV 40-978-*/C

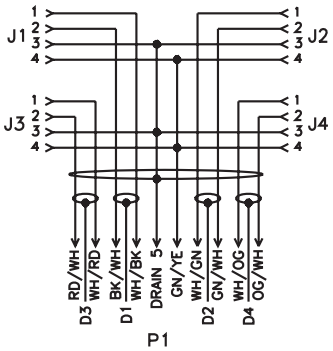
8-port, 1 Analog Signal Per Port, Common Ground and Shield

Application	Specifications	Pinout				Nickel Plated Brass	Stainless Steel
8-port cast aluminum junction box, ***eurofast*** port connectors, integral home-run cable	Home-run cable with 8/22 AWG shielded twisted pairs, each with 22 AWG drain†, plus overall shield with 22 AWG drain and 18 AWG overall ground, 12.0 mm OD	Port, Pin Port 1, Pin 1 Port 1, Pin 2 Port 2, Pin 1 Port 2, Pin 2 Port 3, Pin 1 Port 3, Pin 2 Port 4, Pin 1 Port 4, Pin 2 Port 5, Pin 1 Port 5, Pin 2	Wire Color WH/BK BK/WH WH/GN GN/WH WH/RD RD/WH WH/OG OG/WH WH/BU BU/WH	Port, Pin Port 6, Pin 1 Port 6, Pin 2 Port 7, Pin 1 Port 7, Pin 2 Port 8, Pin 1 Port 8, Pin 2 Ports 1-8, Pin 3 Ports 1-8, Pin 4	Wire Color WH/BN BN/WH WH/YE YE/WH WH/VT VT/WH Drain GN/YE	P-VBM 80-977-*	P-VBMV 80-977-*
						P-VBM 80-977-*/C	P-VBMV 80-977-*/C

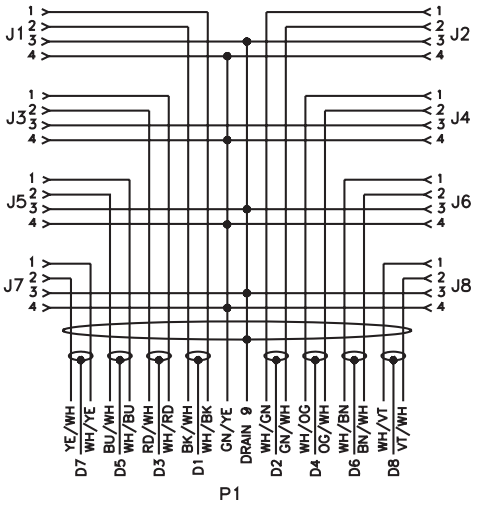
* Length in meters.
† Each circuit has dedicated drain wire not connected in the junction box.

Wiring Diagrams

4-Port



8-Port



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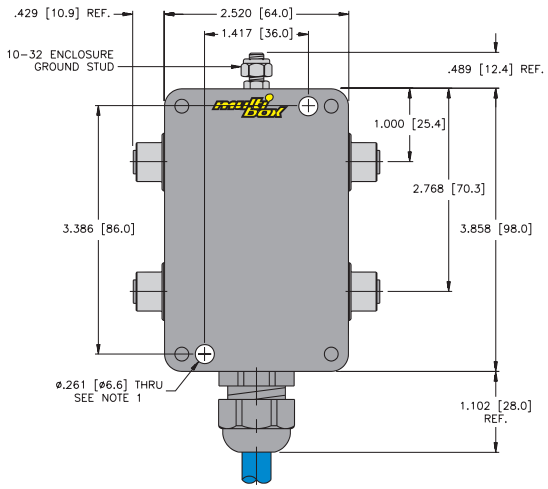
Specifications

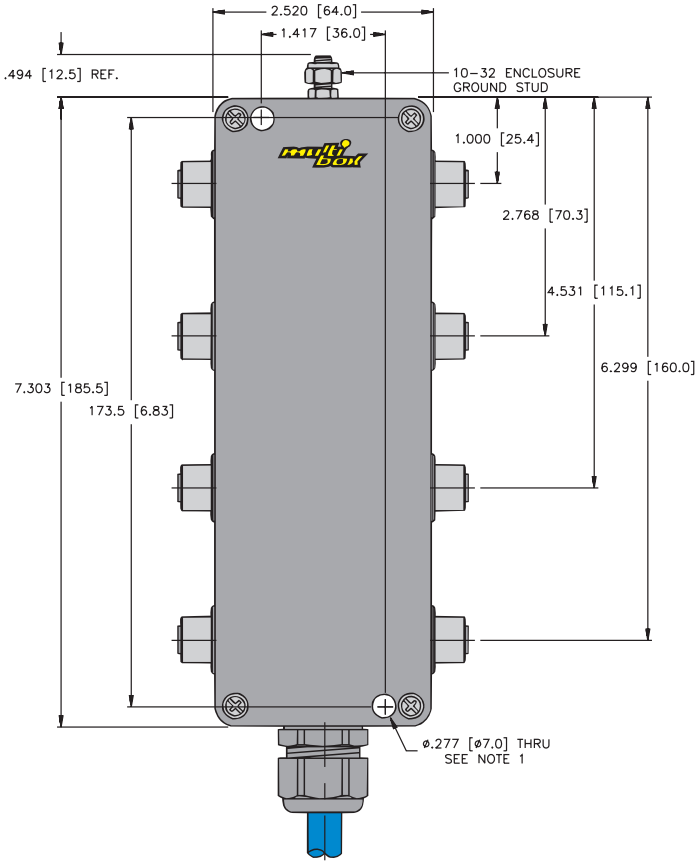
Housing:	Die-cast aluminum alloy.
Connectors	Nickel plated brass or 316 stainless steel housings (see table), oil resistant PUR contact carrier.
Temperature:	-30° to +80°C (-22° to +176°F).
Contacts:	Gold plated brass.
Protection:	IP 68.
Cable:	Blue PVC jacket, UL ITC/PLTC/AWM, CSA CMX-Outdoor/CMG/AWM FT4, 300 V, 105°C.
Electrical Rating:	Standard Version: 250 V, 4 A per conductor (use as ITC is limited to 150 V, 3 A for 22 AWG conductors). "/C" Versions: 30 V, 600 mA

Dimensions

4-Port

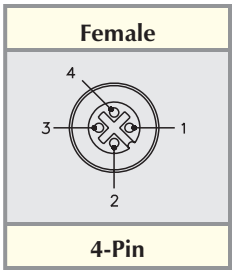


8-Port



Notes:
1. Clearance hole for 1/4-20 mounting screws (2 not included).

Pinouts



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multibox® eurofast® Metal Junction Boxes

- **Consolidation of Analog or Discrete Circuits in Hazardous Locations** or Unclassified Locations**

FM APPROVED

FM approved for installation in hazardous locations when installed per **TURCK** Control Drawing QCF-00147 (www.turck.com/fmcd) using specified accessory equipment.
"/C" versions CSA certified for installation in hazardous locations when installed per **TURCK** Control Drawing Ni-2.404(www.turck.com/fmcd) using certified accessory equipment.

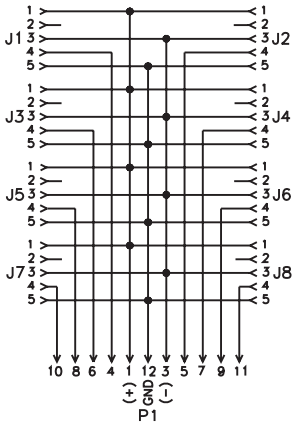
8-port, Common Ground and Shield

Application	Specifications	Pinout	Nickel Plated Brass	Stainless Steel
8-port cast aluminum junction box, ***eurofast*** port connectors, ***multifast*** home-run connector, 1 discrete signal per port	12-pin ***multifast*** connector	Port, Pin / Home-Run: V+ 1; NC 2; V- 3; Port 1, Pin 4 4; Port 2, Pin 4 5; Port 3, Pin 4 6; Port 4, Pin 4 7; Port 5, Pin 4 8; Port 6, Pin 4 9; Port 7, Pin 4 10; Port 8, Pin 4 11; Ports 1-8, Pin 5 12	P-VBM 84-CS12	P-VBMV 84-CSV12
			P-VBM 84-CS12/C	P-VBMV 84-CSV12/C

** Use with ***lokfast*** LOCK-EURO-G for port connectors in Class I, Division 2 applications and for mating Home-Run cable use "L" and "T" versions
See page K173 for mating home run cable.

Wiring Diagram

8-Port Diagram, 1 Discrete Signal Per Port



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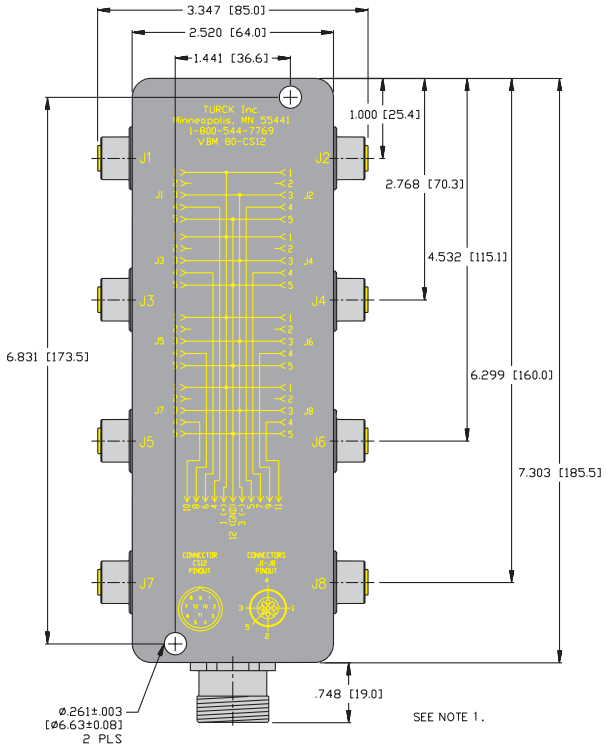
Specifications

Housing:	Die-cast aluminum alloy.
Connectors	Nickel plated brass or 316 stainless steel housings (see table), oil resistant PUR contact carrier.
Temperature:	-30° to +80°C (-22° to +176°F).
Contacts:	Gold plated brass.
Protection:	IP 67.
Electrical Rating:	Standard Version: 150 V, 4 A per conductor.
	"/C" Versions: 30 V, 600 mA

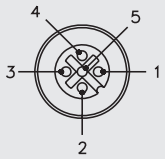
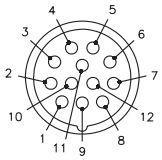
Dimensions

4-Port



Notes:
1. Clearance hole for 1/4-20 mounting screws (2 not included).

Pinouts

Female	Male
	
4-Pin *eurofast*®	**12-Pin *multifast*®**

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minifast® Cordset Part Number Key, Additional Analog or Discrete Control Circuits

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

P - R S V | R K V | 51 - 108 - 2

P = Process Cordset

minifast

R = Straight
W = Right Angle

Gender

K = Female Connector, plus Threads
S = Male Connector, plus Threads
Y = Male Connector, Female Threads

Coupling Nut Options

(Blank) = Nickel Plated Brass
V = 316 Stainless Steel

Insertion Point of Extension Cable and 2nd Prefix*

* Male Connector Listed 1st, Female Connector 2nd
Example: P-RSV RKV 51-108-2

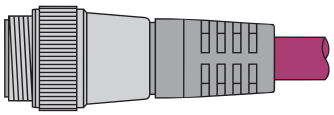
Length in Meters

Number of Wires / AWG / Color Codes / Cable Type

51-108 = 4x18 AWG, AWG, BU, BN, GN/YE, BK, ITC/PLTC PVC
55-099 = 4x16 AWG, WH, BK, GN, RD, ITC/PLTC PVC
55-328 = 4x16 AWG, WH, BK, GN, RD, ITC/PLTC PVC
60-025 = 5x16 AWG, BU, BN, GN/YE, WH, BK, ITC/PLTC PVC
63-233 = 6x16 AWG, WH, RD, GN, OG, BK, BU, ITC-Exposed Run/Direct Burial/PLTC PVC
71-219 = 6x16 AWG, WH, BK, RD, OG, BU, GN, ITC/PLTC PVC
71-329 = 6x16 AWG, WH, BK, RD, OG, BU, GN, ITC/PLTC PVC
321-088 = 3x18 AWG, GN/YE, BN, BU, ITC/PLTC PVC
33-187 = 3x18 AWG, GN, BK, WH, ITC/PLTC PVC
442A-041 = 4x18 AWG, BK, WH, RD, GN, PVC Armor
52-972 = 5x18 AWG, BK, WH, GY, BN, BU, ITC/PLTC PVC
63-030 = 6x16 AWG, WH, RD, GN, OG, BK, BU, ITC/PLTC PVC
66-318 = 5x18 AWG, BU, BN, GN/YE, WH, BK, ITC/PLTC PVC

Single Ended Example:

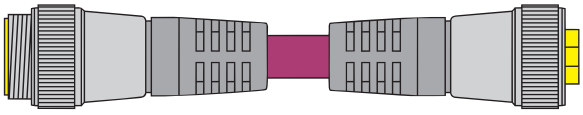
P - R S V | 51- 108 - 2M



RSV ..

Extension Example:

P - R S V | R K V | 51- 108 - 2M



RSV .. - RKV ..

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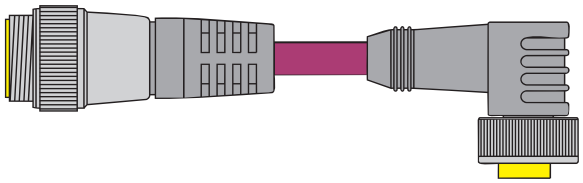
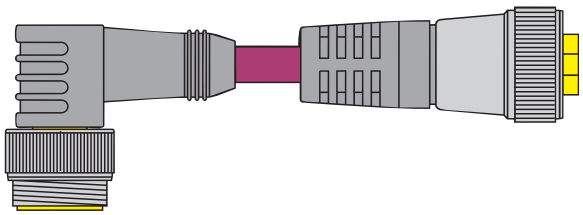
minifast® Cordset Part Number Key, Additional Analog or Discrete Control Circuits

Other Extension Examples:



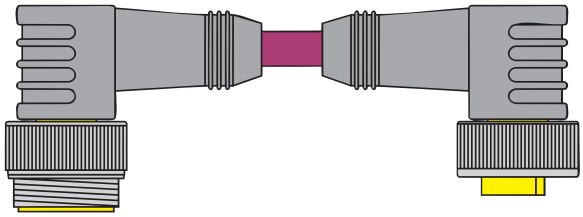
RSV .. - WKV ..

P - R S V | W K V | 51 - 108 - 2M



WSV .. - RKV ..

P - W S V | R K V | 51 - 108 - 2M



WSV .. - WKV ..

P - W S V | W K V | 51 - 108 - 2M

Note: Hybrid connector extensions also available. Consult factory.

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minifast® Receptacles with Cable Part Number Key, Additional Analog or Discrete Control Circuits

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

P - R K F [ ] V 51 - 108 - 2 - /14.5/NPT

P = Process Receptacle

Designator for Receptacle

Gender

K = Female Connector
S = Male Connector
X = Female Connector, Male Threads

Housing Style

(Blank) = Front Mount
P = Back Panel Mount

Housing Material

(Blank) = Nickel Plated Brass
V = 316 Stainless Steel

Thread Type

/14.5/NPT = 1/2-14NPT Threads
/14.75/NPT = 3/4-14NPT Threads
/M20 = M20x1.5 Threads

Length in Meters

Number of Wires / AWG / Color Codes / Cable Type

51-108 = 4x18 AWG, AWG, BU, BN, GN/YE, BK, ITC/PLTC PVC
55-099 = 4x16 AWG, WH, BK, GN, RD, ITC/PLTC PVC
55-328 = 4x16 AWG, WH, BK, GN, RD, ITC/PLTC PVC
60-025 = 5x16 AWG, BU, BN, GN/YE, WH, BK, ITC/PLTC PVC
63-233 = 6x16 AWG, WH, RD, GN, OG, BK, BU, ITC-Exposed Run/Direct Burial/PLTC PVC
71-219 = 6x16 AWG, WH, BK, RD, OG, BU, GN, ITC/PLTC PVC
71-329 = 6x16 AWG, WH, BK, RD, OG, BU, GN, ITC/PLTC PVC
321-088 = 3x18 AWG, GN/YE, BN, BU, ITC/PLTC PVC
33-187 = 3x18 AWG, GN, BK, WH, ITC/PLTC PVC
442A-041 = 4x18 AWG, BK, WH, RD, GN, PVC Armor
52-972 = 5x18 AWG, BK, WH, GY, BN, BU, ITC/PLTC PVC
63-030 = 6x16 AWG, WH, RD, GN, OG, BK, BU, ITC/PLTC PVC
66-318 = 5x18 AWG, BU, BN, GN/YE, WH, BK, ITC/PLTC PVC

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minifast® Receptacles with Leads Part Number Key, Additional Analog or Discrete Control Circuits

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

P - R K F [ ] V 44 - 0.2 - /14.5/NPT

P = Process Receptacle

Designator for Receptacle

Gender

K = Female Connector
S = Male Connector
X = Female Connector, Male Threads

Housing Style

(Blank) = Front Mount
P = Back Panel Mount

Housing Material

(Blank) = Nickel Plated Brass
V = 316 Stainless Steel

Number of Wires

44 = 4
442 = 4
45 = 3
52 = 5
56 = 5
60 = 5
60D = 6 including drain
63 = 6
70 = 7
80 = 8
100 = 10

Length in Meters

Thread Type

(Blank) = 1/2-14NPSM Threads
/14.5/NPT = 1/2-14NPT Threads
/14.75/NPT = 3/4-14NPT Threads
/M20 = M20x1.5 Threads

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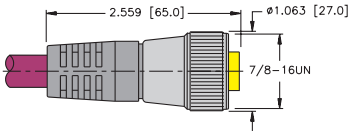
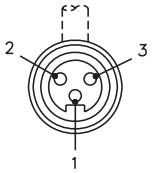
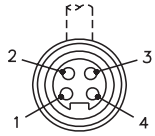
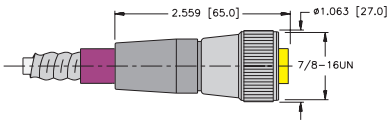
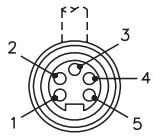
minifast® Drop Cordsets, Additional Analog or Discrete Control Circuits

- **Straight Female Connectors**
- **IEC IP 67 Protection**
- **300 V, 9 A (use as ITC limited to 150 V, 5 A)**

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinouts	
P-RKM .. 	P-RKM 321-880-*M	**ITC/PLTC PVC Yellow 3x18 AWG 105°C 7.2 mm OD Cable #RF50880-*M†**	***Discrete I/O devices in Class I, Division 2 hazardous locations** or unclassified locations.***	1. GN/YE 2. BN 3. BU	
	P-RKM 33-187-*M	**ITC/PLTC PVC Grey 3x18 AWG 105°C 7.2 mm OD Cable #RF51187-*M†**		1. GN 2. BK 3. WH	
	P-RKM 442A-041-*M	**ITC/PLTC ARMOR PVC Yellow 4x18 AWG 105°C 13.5 mm OD Cable #RF51041-*M†**		1. BK 2. WH 3. RD 4. GN	
	P-RKM 51-108-*M	**ITC/PLTC PVC Plum 4x18 AWG, 1 Shielded Triad with GND Foil/Drain (20) 105°C 8.1 mm OD Cable #RF51108-*M†**	***Discrete or Analog 3-wire circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. GN/YE 4. Drain 5. BK	
P-RKM 442A-041 .. 	P-RKM 52-972-*M	**ITC/PLTC PVC Grey 5x18 AWG 105°C 7.2 mm OD Cable #RF50972-*M†**	***Discrete I/O Devices in Class I, Division 2 Hazardous Locations** or Unclassified Locations.***	1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RKM 55-099-*M	**ITC/PLTC PVC Plum 4x16 AWG, 1 Shielded Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51099-*M†**	***Discrete or Analog 3-wire circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. WH 2. BK 3. GN 4. RD 5. Drain	
	P-RKM 55-328-*M	**ITC/PLTC PVC Blue 4x16 AWG, 1 Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51328-*M†**		1. WH 2. BK 3. GN 4. RD 5. Drain	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RKM.."; "P-RKV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast minifast*** guards (Part Number: LOCK-MINI) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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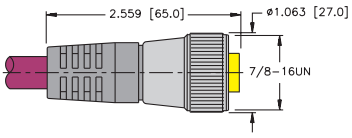
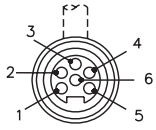
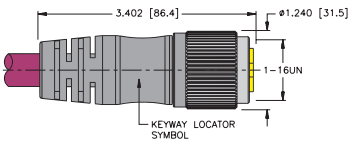
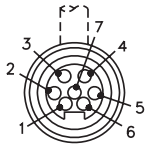
minifast® Drop Cordsets, Additional Analog or Discrete Control Circuits

- **Straight Female Connectors**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinouts	
P-RKM .. 	P-RKM 60-025-*M	**ITC/PLTC PVC Plum 5x16 AWG, 1 STP plus 1 Triad Foil/Drain (18) 105°C 12.5 mm OD Cable #RF51025-*M†**	***Instruments with separate power or signal circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
	P-RKM 63-030-*M	**ITC/PLTC PVC Yellow 6x16 AWG 105°C 9.6 mm OD Cable #RF51030-*M†**	***Discrete I/O devices in Class I, Division 2 hazardous locations** or unclassified locations.***	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RKM 63-233-*M	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 6x16 AWG 105°C 11.2 mm OD Cable #RF51233-*M†**		1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RKM 66-318-*M	**ITC/PLTC PVC Plum 5x18 AWG, 2 STP with GND Foil/Drain (20) 105°C 7.9 mm OD Cable #RF51318-*M†**		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
P-RKM .. 	P-RKM 71-219-*M	**ITC/PLTC PVC Plum 6x16 AWG Foil Drain (18) 105°C 9.6 mm OD Cable #RF51219-*M†**		1. WH 2. BK 3. Drain 4. RD 5. OG 6. BU 7. GN	
	P-RKM 71-329-*M	**ITC/PLTC PVC Blue 6x16 AWG Foil Drain (18) 105°C 9.6 mm OD Cable #RF51329-*M†**			

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RKM.."; "P-RKV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast minifast*** guards (Part Number: LOCK-MINI + LOCK-MINI-B&C) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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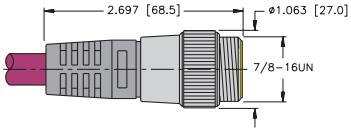
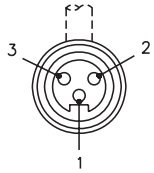
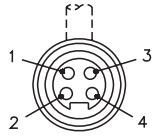
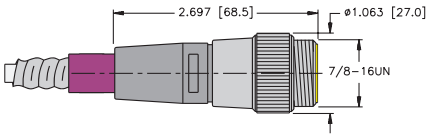
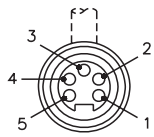
minifast® Drop Cordsets, Additional Analog or Discrete Control Circuits

- **Straight Male Connectors**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinouts	
P-RSM .. 	P-RSM 321-880-*M	**ITC/PLTC PVC Yellow 3x18 AWG 105°C 7.2 mm OD Cable #RF50880-*M†**	*Discrete I/O devices in Class I, Division 2 hazardous locations** or unclassified locations.*	1. GN/YE 2. BN 3. BU	
	P-RSM 33-187-*M	**ITC/PLTC PVC Grey 3x18 AWG 105°C 7.2 mm OD Cable #RF51187-*M†**		1. GN/YE 2. BN 3. BU	
	P-RSM 442A-041-*M	**ITC/PLTC ARMOR PVC Yellow 4x18 AWG 105°C 13.5 mm OD Cable #RF51041-*M†**		1. BK 2. WH 3. RD 4. GN	
P-RSM 442A-041 .. 	P-RSM 51-108-*M	**ITC/PLTC PVC Plum 4x18 AWG, 1 Shielded Triad with GND Foil/Drain (20) 105°C 8.1 mm OD Cable #RF51108-*M†**	*Discrete or Analog 3-wire circuits in Class I, Division 2 hazardous locations** or unclassified locations.*	1. BU 2. BN 3. GN/YE 4. Drain 5. BK	
	P-RSM 52-972-*M	**ITC/PLTC PVC Grey 5x18 AWG 105°C 7.2 mm OD Cable #RF50972-*M†**	*Discrete I/O Devices in Class I, Division 2 Hazardous Locations** or Unclassified Locations.*	1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RSM 55-099-*M	**ITC/PLTC PVC Plum 4x16 AWG, 1 Shielded Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51099-*M†**		1. WH 2. BK 3. GN 4. RD 5. Drain	
	P-RSM 55-328-*M	**ITC/PLTC PVC Blue 4x16 AWG, 1 Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51328-*M†**	*Discrete or Analog 3-wire circuits in Class I, Division 2 hazardous locations** or unclassified locations.*		

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RSM.."; "P-RSV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast minifast*** guards (Part Number: LOCK-MINI) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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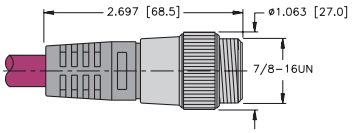
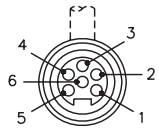
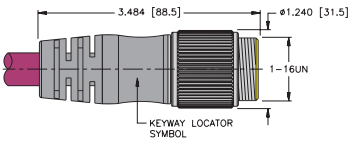
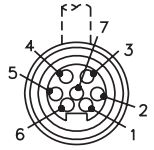
minifast® Drop Cordsets, Additional Analog or Discrete Control Circuits

- **Straight Male Connectors**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinouts	
P-RSM .. 	P-RSM 60-025-*M	**ITC/PLTC PVC Plum 5x16 AWG, 1 STP plus 1 Triad Foil/Drain (18) 105°C 12.5 mm OD Cable #RF51025-*M†**	***Instruments with separate power or signal circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
	P-RSM 63-030-*M	**ITC/PLTC PVC Yellow 6x16 AWG 105°C 9.6 mm OD Cable #RF51030-*M†**	***Discrete I/O Devices in Class I, Division 2 Hazardous Locations** or Unclassified Locations.***	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RSM 63-233-*M	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 6x16 AWG 105°C 11.2 mm OD Cable #RF51233-*M†**		1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RSM 66-318-*M	**ITC/PLTC PVC Plum 5x18 AWG, 2 STP with GND Foil/Drain (20) 105°C 7.9 mm OD Cable #RF51318-*M†**		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
P-RSM .. 	P-RSM 71-219-*M	**ITC/PLTC PVC Plum 6x16 AWG Foil Drain (18) 105°C 9.6 mm OD Cable #RF51219-*M†**		1. WH 2. BK 3. Drain 4. RD 5. OG 6. BU 7. GN	
	P-RSM 71-329-*M	**ITC/PLTC PVC Blue 6x16 AWG Foil Drain (18) 105°C 9.6 mm OD Cable #RF51329-*M†**			

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-RSM.."; "P-RSV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast minifast*** guards (Part Number: LOCK-MINI + LOCK-MINI-B&C) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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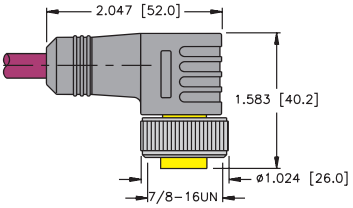
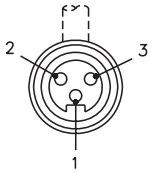
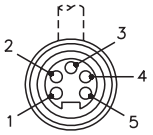
minifast® Drop Cordsets, Additional Analog or Discrete Control Circuits

- **Right Angle Female Connectors**
- **IEC IP 67 Protection**
- **300 V, 9 A (use as ITC limited to 150 V, 5 A)**

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinouts	
P-WKM .. 	P-WKM 321-880-*M	**ITC/PLTC PVC Yellow 3x18 AWG 105°C 7.2 mm OD Cable #RF50880-*M†**	***Discrete I/O devices in Class I, Division 2 hazardous locations** or unclassified locations.***	1. GN/YE 2. BN 3. BU	
	P-WKM 33-187-*M	**ITC/PLTC PVC Grey 3x18 AWG 105°C 7.2 mm OD Cable #RF51187-*M†**		1. GN 2. BK 3. WH	
	P-WKM 51-108-*M	**ITC/PLTC PVC Plum 4x18 AWG, 1 Shielded Triad with GND Foil/Drain (20) 105°C 8.1 mm OD Cable #RF51108-*M†**	***Discrete or Analog 3-wire circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. GN/YE 4. Drain 5. BK	
	P-WKM 52-972-*M	**ITC/PLTC PVC Grey 5x18 AWG 105°C 7.2 mm OD Cable #RF50972-*M†**	***Discrete I/O Devices in Class I, Division 2 Hazardous Locations** or Unclassified Locations.***	1. BK 2. WH 3. GY 4. BN 5. BU	
	P-WKM 55-099-*M	**ITC/PLTC PVC Plum 4x16 AWG, 1 Shielded Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51099-*M†**	***Discrete or Analog 3-wire circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. WH 2. BK 3. GN 4. RD 5. Drain	
	P-WKM 55-328-*M	**ITC/PLTC PVC Blue 4x16 AWG, 1 Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51328-*M†**			

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-WKM.."; "P-WKV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast minifast*** guards (Part Number: LOCK-MINI-ANGLE) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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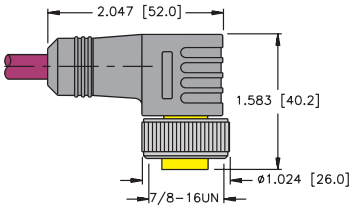
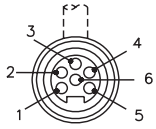
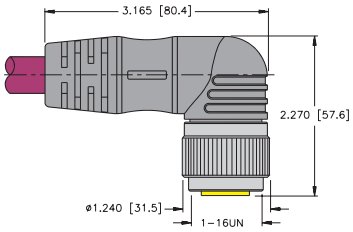
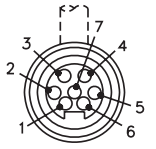
minifast® Drop Cordsets, Additional Analog or Discrete Control Circuits

- **Right Angle Female Connectors**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinouts	
P-WKM .. 	P-WKM 60-025-*M	**ITC/PLTC PVC Plum 5x16 AWG, 1 STP plus 1 Triad Foil/Drain (18) 105°C 12.5 mm OD Cable #RF51025-*M†**	***Instruments with separate power or signal circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
	P-WKM 63-030-*M	**ITC/PLTC PVC Yellow 6x16 AWG 105°C 9.6 mm OD Cable #RF51030-*M†**		1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-WKM 63-233-*M	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 6x16 AWG 105°C 11.2 mm OD Cable #RF51233-*M†**		1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-WKM 66-318-*M	**ITC/PLTC PVC Plum 5x18 AWG, 2 STP with GND Foil/Drain (20) 105°C 7.9 mm OD Cable #RF51318-*M†**	***Discrete I/O devices in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
P-WKM .. 	P-WKM 71-219-*M	**ITC/PLTC PVC Plum 6x16 AWG Foil Drain (18) 105°C 9.6 mm OD Cable #RF51219-*M†**		1. WH 2. BK 3. Drain 4. RD 5. OG 6. BU 7. GN	
	P-WKM 71-329-*M	**ITC/PLTC PVC Blue 6x16 AWG Foil Drain (18) 105°C 9.6 mm OD Cable #RF51329-*M†**			

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-WKM.."; "P-WKV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast minifast*** guards (Part Number: LOCK-MINI-ANGLE + LOCK-MINI-B&C-ANGLE) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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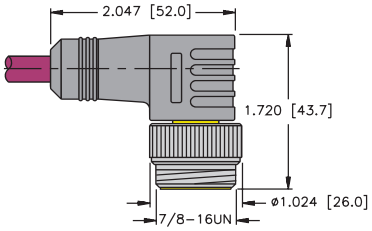
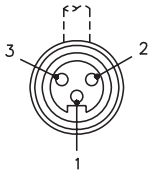
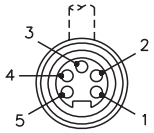
minifast® Drop Cordsets, Additional Analog or Discrete Control Circuits

- **Right Angle Male Connectors**
- **IEC IP 67 Protection**
- **300 V, 9 A (use as ITC limited to 150 V, 5 A)**

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinouts	
P-WSM .. 	P-WSM 321-880-*M	**ITC/PLTC PVC Yellow 3x18 AWG 105°C 7.2 mm OD Cable #RF50880-*M†**	***Discrete I/O devices in Class I, Division 2 hazardous locations** or unclassified locations.***	1. GN/YE 2. BN 3. BU	
	P-WSM 33-187-*M	**ITC/PLTC PVC Grey 3x18 AWG 105°C 7.2 mm OD Cable #RF51187-*M†**		1. GN 2. BK 3. WH	
	P-WSM 51-108-*M	**ITC/PLTC PVC Plum 4x18 AWG, 1 Shielded Triad with GND Foil/Drain (20) 105°C 8.1 mm OD Cable #RF51108-*M†**	***Discrete or Analog 3-wire circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. GN/YE 4. Drain 5. BK	
	P-WSM 52-972-*M	**ITC/PLTC PVC Grey 5x18 AWG 105°C 7.2 mm OD Cable #RF50972-*M†**	***Discrete I/O Devices in Class I, Division 2 Hazardous Locations** or Unclassified Locations.***	1. BK 2. WH 3. GY 4. BN 5. BU	
	P-WSM 55-099-*M	**ITC/PLTC PVC Plum 4x16 AWG, 1 Shielded Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51099-*M†**	***Discrete or Analog 3-wire circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. WH 2. BK 3. GN 4. RD 5. Drain	
	P-WSM 55-328-*M	**ITC/PLTC PVC Blue 4x16 AWG, 1 Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51328-*M†**			

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-WSM.."; "P-WSV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast minifast*** guards (Part Number: LOCK-MINI-ANGLE) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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minifast® Drop Cordsets, Additional Analog or Discrete Control Circuits

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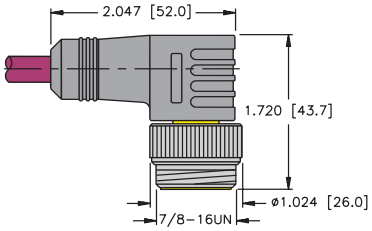
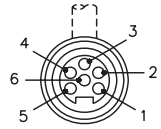
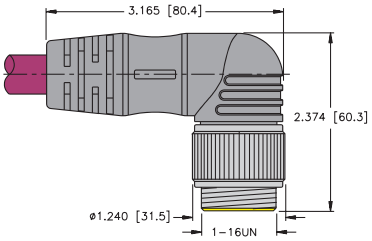
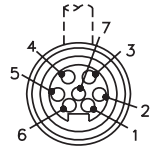
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

FM tested to the cable sealing requirements of NEC Article 501-5(E)(2)

Housing Style	Part Number	Cable	Application	Pinouts	
P-WSM .. 	P-WSM 60-025-*M	**ITC/PLTC PVC Plum 5x16 AWG, 1 STP Foil/Drain (18) 105°C 12.5 mm OD Cable #RF51025-*M†**	***Instruments with separate power or signal circuits in Class I, Division 2 hazardous locations** or unclassified locations.***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
	P-WSM 63-030-*M	**ITC/PLTC PVC Yellow 6x16 AWG 105°C 9.6 mm OD Cable #RF51030-*M†**	***Discrete I/O Devices in Class I, Division 2 Hazardous Locations** or Unclassified Locations.***	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-WSM 63-233-*M	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 6x16 AWG 105°C 11.2 mm OD Cable #RF51233-*M†**		1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-WSM 66-318-*M	**ITC/PLTC PVC Plum 5x18 AWG, 2 STP with GND Foil/Drain (20) 105°C 7.9 mm OD Cable #RF51318-*M†**		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
P-WSM .. 	P-WSM 71-219-*M	**ITC/PLTC PVC Plum 6x16 AWG Foil Drain (18) 105°C 9.6 mm OD Cable #RF51219-*M†**		1. WH 2. BK 3. Drain 4. RD 5. OG 6. BU 7. GN	
	P-WSM 71-329-*M	**ITC/PLTC PVC Blue 6x16 AWG Foil Drain (18) 105°C 9.6 mm OD Cable #RF51329-*M†**			

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "P-WSM.."; "P-WSV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

** Use with ***lokfast minifast*** guards (Part Number: LOCK-MINI-ANGLE + LOCK-MINI-B&C-ANGLE) in Class I, Division 2 applications.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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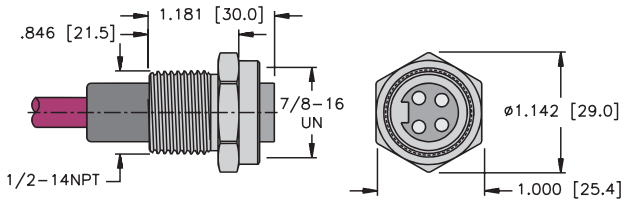
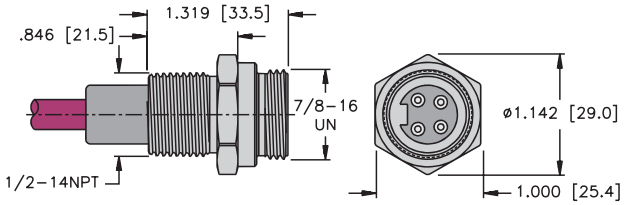
minifast® Receptacles with Cable, Additional Analog or Discrete Control Circuits

1



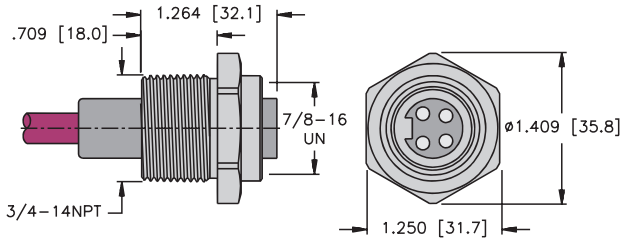
P-RKF .. 14.5/NPT — **Pages K131 - K132**

2



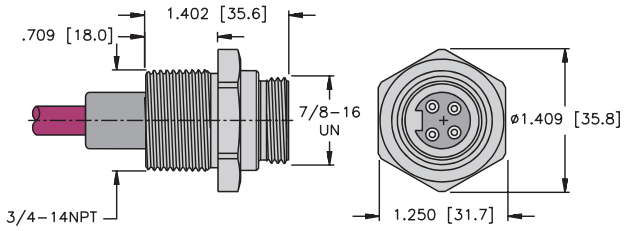
P-RSF .. 14.5/NPT — **Pages K133 - K134**

3



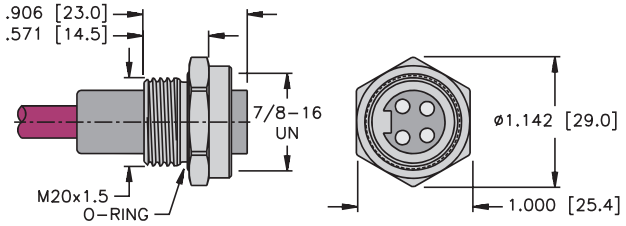
P-RKF .. 14.75/NPT — **Pages K136 - K136**

4



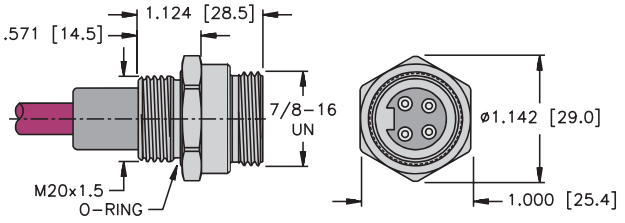
P-RSF .. 14.75/NPT — **Pages K137 - K138**

5



P-RKF .. M20 — **Pages K139 - K140**

6



P-RSF .. M20 — **Pages K141 - K142**

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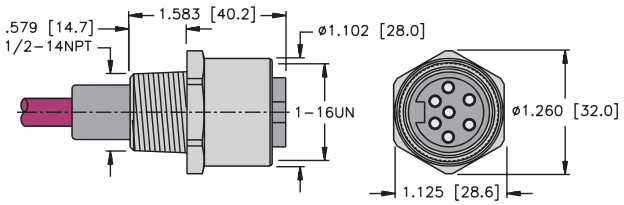
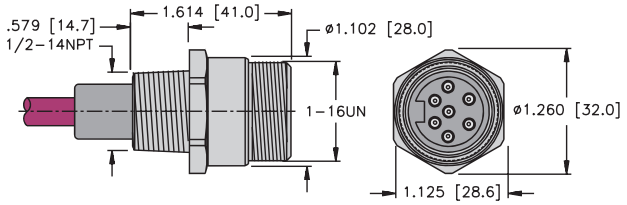
minifast® Receptacles with Cable, Additional Analog or Discrete Control Circuits

7



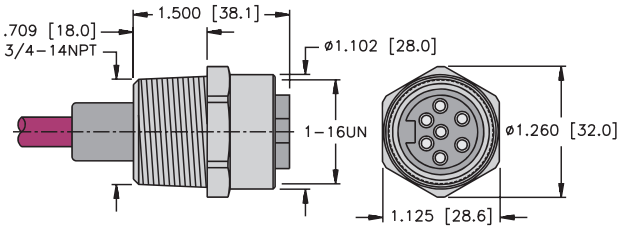
"B" Style P-RKF .. 14.5/NPT Page K132

8



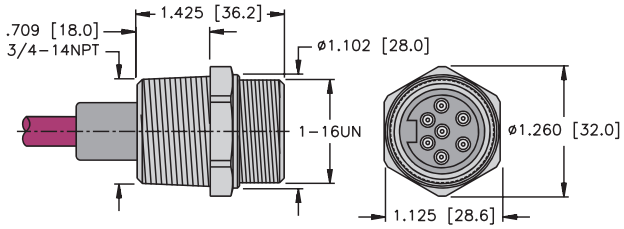
"B" Style P-RSF .. 14.5/NPT Page K134

9



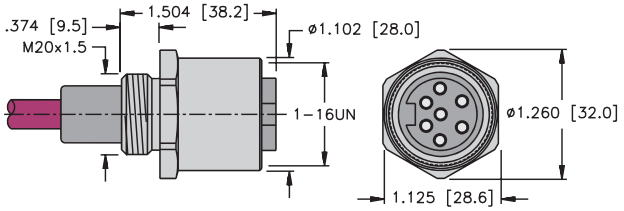
"B" Style P-RKF .. 14.75/NPT Page K136

10



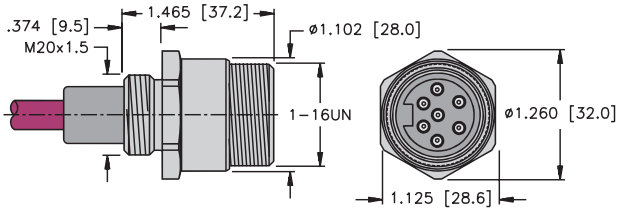
"B" Style P-RSF .. 14.75/NPT Page K138

11



"B" Style P-RKF .. M20 Page K140

12



"B" Style P-RSF .. M20 Page K142

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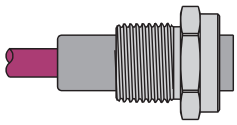
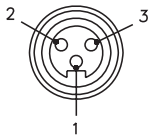
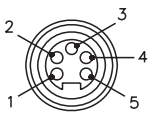
minifast® Receptacles with Cable, Additional Analog or Discrete Control Circuits

- **Female Receptacles**
- **IEC IP 67 Protection**
- **300 V, 9 A (use as ITC limited to 150 V, 5 A)**

Housing Style	Part Number	Cable	Application	Pinouts	
1 	P-RKF 321-880-*/14.5/NPT	**ITC/PLTC PVC Yellow 3x18 AWG 105°C 7.2 mm OD Cable #RF50880-*M†**	***Discrete I/O devices in Class I, Division 2 hazardous locations** or unclassified locations. 1/2-14NPT Conduit Entry Thread.*	1. GN/YE 2. BN 3. BU	
	P-RKF 33-187-*/14.5/NPT	**ITC/PLTC PVC Grey 3x18 AWG 105°C 7.2 mm OD Cable #RF51187-*M†**		1. GN 2. BK 3. WH	
	P-RKF 51-108-*/14.5/NPT	**ITC/PLTC PVC Plum 4x18 AWG, 1 Shielded Triad with GND Foil/Drain (20) 105°C 8.1 mm OD Cable #RF51108-*M†**	***Discrete or analog 3-wire circuits in Class I, Division 2 hazardous locations or unclassified locations. 1/2-14NPT Conduit Entry Thread.***	1. BU 2. BN 3. GN/YE 4. Drain 5. BK	
	P-RKF 52-972-*/14.5/NPT	**ITC/PLTC PVC Grey 5x18 AWG 105°C 7.2 mm OD Cable #RF50972-*M†**	***Discrete I/O Devices in Class I, Division 2 Hazardous Locations** or Unclassified Locations.*	1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RKF 55-099-*/14.5/NPT	**ITC/PLTC PVC Plum 4x16 AWG, 1 Shielded Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51099-*M†**	***Discrete or analog 3-wire circuits in Class I, Division 2 hazardous locations or unclassified locations. 1/2-14NPT Conduit Entry Thread.***	1. WH 2. BK 3. GN 4. RD 5. Drain	
	P-RKF 55-328-*/14.5/NPT	**ITC/PLTC PVC Blue 4x16 AWG, 1 Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51328-*M†**		1. WH 2. BK 3. GN 4. RD 5. Drain	

See page K129 for dimensional drawings.

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RKM.."; "P-RKV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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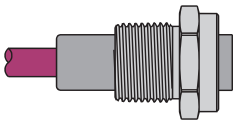
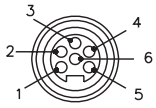
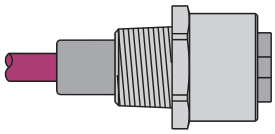
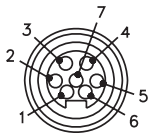
minifast® Receptacles with Cable, Additional Analog or Discrete Control Circuits

- **Female Receptacles**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

Housing Style	Part Number	Cable	Application	Pinout	
1 	P-RKF 60-025-*/14.5/NPT	**ITC/PLTC PVC Plum 5x16 AWG, 1 STP plus 1 Triad Foil/Drain (18) 105°C 12.5 mm OD Cable #RF51025-*M†**	***Instruments with separate power and signal circuits in Class I, Division 2 hazardous locations or unclassified locations. 1/2-14NPT Conduit Entry Thread.***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
	P-RKF 63-030-*/14.5/NPT	**ITC/PLTC PVC Yellow 6x16 AWG 105°C 9.6 mm OD Cable #RF51030-*M†**	***Discrete I/O devices in Class I, Division 2 hazardous locations or unclassified locations. 1/2-14NPT Conduit Entry Thread.***	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RKF 63-233-*/14.5/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 6x16 AWG 105°C 11.2 mm OD Cable #RF51233-*M†**		1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RKF 66-318-*/14.5/NPT	**ITC/PLTC PVC Plum 5x18 AWG, 2 STP with GND Foil/Drain (20) 105°C 7.9 mm OD Cable #RF51318-*M†**		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
7 	P-RKF 71-219-*/14.5/NPT	**ITC/PLTC PVC Plum 6x16 AWG Foil/Drain (18) 105°C 9.6 mm OD Cable #RF51219-*M†**		1. WH 2. BK 3. Drain 4. RD 5. OG 6. BU 7. GN	
	P-RKF 71-329-*/14.5/NPT	**ITC/PLTC PVC Blue 6x16 AWG Foil Drain (18) 105°C 9.6 mm OD Cable #RF51329-*M†**			

See page K129 - K130 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RKF.."; "P-RKFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting; 7-pin recommends 7/8" (22.0 mm).

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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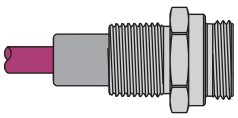
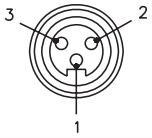
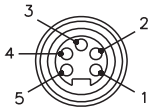
minifast® Receptacles with Cable, Additional Analog or Discrete Control Circuits

- **Male Receptacles**
- **IEC IP 67 Protection**
- **300 V, 9 A (use as ITC limited to 150 V, 5 A)**

Housing Style	Part Number	Cable	Application	Pinout	
2 	P-RSF 321-880-*/14.5/NPT	**ITC/PLTC PVC Yellow 3x18 AWG 105°C 7.2 mm OD Cable #RF50880-*M†**	***Discrete I/O devices in Class I, Division 2 hazardous locations or unclassified locations. 1/2-14NPT Conduit Entry Thread.***	1. GN/YE 2. BN 3. BU	
	P-RSF 33-187-*/14.5/NPT	**ITC/PLTC PVC Grey 3x18 AWG 105°C 7.2 mm OD Cable #RF51187-*M†**		1. GN 2. BK 3. WH	
	P-RSF 51-108-*/14.5/NPT	**ITC/PLTC PVC Plum 4x18 AWG, 1 Shielded Triad with GND Foil/Drain (20) 105°C 8.1 mm OD Cable #RF51108-*M†**	***Discrete or analog 3-wire circuits in Class I, Division 2 hazardous locations or unclassified locations. 1/2-14NPT Conduit Entry Thread.***	1. BU 2. BN 3. GN/YE 4. Drain 5. BK	
	P-RSF 52-972-*/14.5/NPT	**ITC/PLTC PVC Grey 5x18 AWG 105°C 7.2 mm OD Cable #RF50972-*M†**	***Discrete I/O Devices in Class I, Division 2 Hazardous Locations or Unclassified Locations.***	1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RSF 55-099-*/14.5/NPT	**ITC/PLTC PVC Plum 4x16 AWG, 1 Shielded Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51099-*M†**	***Discrete or analog 3-wire circuits in Class I, Division 2 hazardous locations or unclassified locations. 1/2-14NPT Conduit Entry Thread.***	1. WH 2. BK 3. GN 4. RD 5. Drain	
	P-RSF 55-328-*/14.5/NPT	**ITC/PLTC PVC Blue 4x16 AWG, 1 Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51328-*M†**			

See page K129 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RSF.."; "P-RSFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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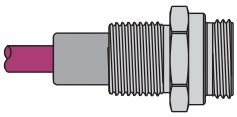
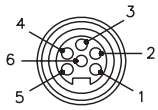
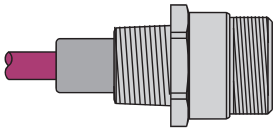
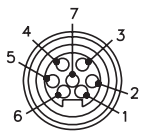
- **Male Receptacles**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

Housing Style	Part Number	Cable	Application	Pinout	
2 	P-RSF 60-025-*/14.5/NPT	**ITC/PLTC PVC Plum 5x16 AWG, 1 STP plus 1 Triad Foil/Drain (18) 105°C 12.5 mm OD Cable #RF51025-*M†**	***Instruments with separate power and signal circuits in Class I, Division 2 hazardous locations or unclassified locations. 1/2-14NPT Conduit Entry Thread.***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
	P-RSF 63-030-*/14.5/NPT	**ITC/PLTC PVC Yellow 6x16 AWG 105°C 9.6 mm OD Cable #RF51030-*M†**		1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RSF 63-233-*/14.5/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 6x16 AWG 105°C 11.2 mm OD Cable #RF51233-*M†**		1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RSF 66-318-*/14.5/NPT	**ITC/PLTC PVC Plum 5x18 AWG, 2 STP with GND Foil/Drain (20) 105°C 7.9 mm OD Cable #RF51318-*M†**	***Discrete I/O devices in Class I, Division 2 hazardous locations or unclassified locations. 1/2-14NPT Conduit Entry Thread.***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
8 	P-RSF 71-219-*/14.5/NPT	**ITC/PLTC PVC Plum 6x16 AWG Foil/Drain (18) 105°C 9.6 mm OD Cable #RF51219-*M†**		1. WH 2. BK 3. Drain 4. RD 5. OG 6. BU 7. GN	
	P-RSF 71-329-*/14.5/NPT	**ITC/PLTC PVC Blue 6x16 AWG Foil Drain (18) 105°C 9.6 mm OD Cable #RF51329-*M†**			

See page K129 - K130 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RSF.."; "P-RSFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting; 7-pin recommends 7/8" (22.0 mm).

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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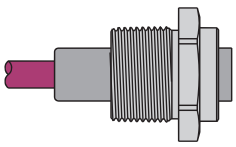
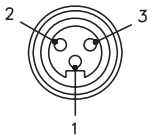
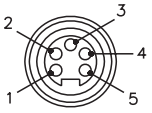
- **Female Receptacles**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

Housing Style	Part Number	Cable	Application	Pinout	
3 	P-RKF 321-880-*/14.75/NPT	**ITC/PLTC PVC Yellow 3x18 AWG 105°C 7.2 mm OD Cable #RF50880-*M†**	***Discrete I/O devices in Class I, Division 2 hazardous locations or unclassified locations. 3/4-14NPT Conduit Entry Thread.***	1. GN/YE 2. BN 3. BU	
	P-RKF 33-187-*/14.75/NPT	**ITC/PLTC PVC Grey 3x18 AWG 105°C 7.2 mm OD Cable #RF51187-*M†**		1. GN 2. BK 3. WH	
	P-RKF 51-108-*/14.75/NPT	**ITC/PLTC PVC Plum 4x18 AWG, 1 Shielded Triad with GND Foil/Drain (20) 105°C 8.1 mm OD Cable #RF51108-*M†**	***Discrete or analog 3-wire circuits in Class I, Division 2 hazardous locations or unclassified locations. 3/4-14NPT Conduit Entry Thread.***	1. BU 2. BN 3. GN/YE 4. Drain 5. BK	
	P-RKF 52-972-*/14.75/NPT	**ITC/PLTC PVC Grey 5x18 AWG 105°C 7.2 mm OD Cable #RF50972-*M†**	***Discrete I/O Devices in Class I, Division 2 Hazardous Locations or Unclassified Locations.***	1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RKF 55-099-*/14.75/NPT	**ITC/PLTC PVC Plum 4x16 AWG, 1 Shielded Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51099-*M†**	***Discrete or analog 3-wire circuits in Class I, Division 2 hazardous locations or unclassified locations. 3/4-14NPT Conduit Entry Thread.***	1. WH 2. BK 3. GN 4. RD 5. Drain	
	P-RKF 55-328-*/14.75/NPT	**ITC/PLTC PVC Blue 4x16 AWG, 1 Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51328-*M†**			

See page K129 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RKF.."; "P-RKFV.." indicates 316 stainless steel.
Receptacles recommend 1-1/16" (27.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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- **Female Receptacles**
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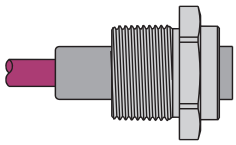
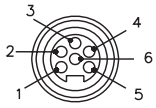
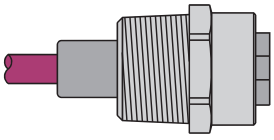
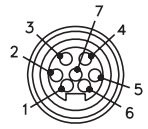
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

Housing Style	Part Number	Cable	Application	Pinout	
3 	P-RKF 60-025-*/14.75/NPT	**ITC/PLTC PVC Plum 5x16 AWG, 1 STP plus 1 Triad Foil/Drain (18) 105°C 12.5 mm OD Cable #RF51025-*M†**	***Instruments with separate power and signal circuits in Class I, Division 2 hazardous locations or unclassified locations. 3/4-14NPT Conduit Entry Thread.***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
	P-RKF 63-030-*/14.75/NPT	**ITC/PLTC PVC Yellow 6x16 AWG 105°C 9.6 mm OD Cable #RF51030-*M†**	***Discrete I/O devices in Class I, Division 2 hazardous locations or unclassified locations. 3/4-14NPT Conduit Entry Thread.***	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RKF 63-233-*/14.75/NPT	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 6x16 AWG 105°C 11.2 mm OD Cable #RF51233-*M†**		1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RKF 66-318-*/14.75/NPT	**ITC/PLTC PVC Plum 5x18 AWG, 2 STP with GND Foil/Drain (20) 105°C 7.9 mm OD Cable #RF51318-*M†**		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
9 	P-RKF 71-219-*/14.75/NPT	**ITC/PLTC PVC Plum 6x16 AWG Foil/Drain (18) 105°C 9.6 mm OD Cable #RF51219-*M†**		1. WH 2. BK 3. Drain 4. RD 5. OG 6. BU 7. GN	
	P-RKF 71-329-*/14.75/NPT	**ITC/PLTC PVC Blue 6x16 AWG Foil Drain (18) 105°C 9.6 mm OD Cable #RF51329-*M†**			

See page K129 - K130 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RKF.."; "P-RKFV.." indicates 316 stainless steel.
Receptacles recommend 1-1/16" (27.0 mm) hole for panel mounting; 7-pin recommends 1-1/16" (27.0 mm).

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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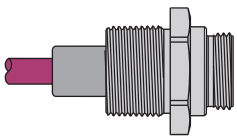
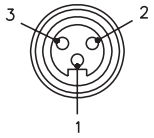
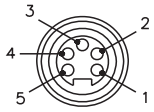
minifast® Receptacles with Cable, Additional Analog or Discrete Control Circuits

- Male Receptacles
- IEC IP 67 Protection
- 300 V, 9 A
  (use as ITC limited to 150 V, 5 A)

Housing Style	Part Number	Cable	Application	Pinout	
4 	P-RSF 321-880-*/14.75/NPT	ITC/PLTC PVC Yellow 3x18 AWG 105°C 7.2 mm OD Cable #RF50880-*M†	*Discrete I/O devices in Class I, Division 2 hazardous locations** or unclassified locations.* *3/4-14NPT Conduit Entry Thread.*	1. GN/YE 2. BN 3. BU	
	P-RSF 33-187-*/14.75/NPT	ITC/PLTC PVC Grey 3x18 AWG 105°C 7.2 mm OD Cable #RF51187-*M†		1. GN 2. BK 3. WH	
	P-RSF 51-108-*/14.75/NPT	ITC/PLTC PVC Plum 4x18 AWG, 1 Shielded Triad with GND Foil/Drain (20) 105°C 8.1 mm OD Cable #RF51108-*M†	*Discrete or analog 3-wire circuits in Class I, Division 2 hazardous locations or unclassified locations.* *3/4-14NPT Conduit Entry Thread.*	1. BU 2. BN 3. GN/YE 4. Drain 5. BK	
	P-RSF 52-972-*/14.75/NPT	ITC/PLTC PVC Grey 5x18 AWG 105°C 7.2 mm OD Cable #RF50972-*M†	*Discrete I/O Devices in Class I, Division 2 Hazardous Locations** or Unclassified Locations.*	1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RSF 55-099-*/14.75/NPT	ITC/PLTC PVC Plum 4x16 AWG, 1 Shielded Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51099-*M†	*Discrete or analog 3-wire circuits in Class I, Division 2 hazardous locations or unclassified locations.* *3/4-14NPT Conduit Entry Thread.*	1. WH 2. BK 3. GN 4. RD 5. Drain	
	P-RSF 55-328-*/14.75/NPT	ITC/PLTC PVC Blue 4x16 AWG, 1 Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51328-*M†			

See page K129 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RSF.."; "P-RSFV.." indicates 316 stainless steel.
Receptacles recommend 1-1/16" (27.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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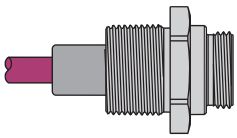
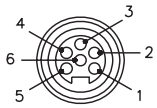
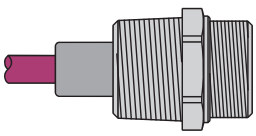
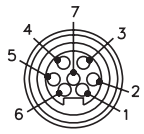
minifast® Receptacles with Cable, Additional Analog or Discrete Control Circuits

- Male Receptacles
- IEC IP 67 Protection
- 300 V, 9 A
  (use as ITC limited to 150 V, 5 A)

Housing Style	Part Number	Cable	Application	Pinout	
4 	P-RSF 60-025-*/14.75/NPT	ITC/PLTC PVC Plum 5x16 AWG, 1 STP plus 1 Triad Foil/Drain (18) 105°C 12.5 mm OD Cable #RF51025-*M†	*Instruments with separate power and signal circuits in Class I, Division 2 hazardous locations or unclassified locations. 3/4-14NPT Conduit Entry Thread.*	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
	P-RSF 63-030-*/14.75/NPT	ITC/PLTC PVC Yellow 6x16 AWG 105°C 9.6 mm OD Cable #RF51030-*M†	*Discrete I/O devices in Class I, Division 2 hazardous locations or unclassified locations. 3/4-14NPT Conduit Entry Thread.*	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RSF 63-233-*/14.75/NPT	ITC-Exposed Run/Direct Burial/PLTC PVC Plum 6x16 AWG 105°C 11.2 mm OD Cable #RF51233-*M†		1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RSF 66-318-*/14.75/NPT	ITC/PLTC PVC Plum 5x18 AWG, 2 STP with GND Foil/Drain (20) 105°C 7.9 mm OD Cable #RF51318-*M†		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
10 	P-RSF 71-219-*/14.75/NPT	ITC/PLTC PVC Plum 6x16 AWG Foil/Drain (18) 105°C 9.6 mm OD Cable #RF51219-*M†		1. WH 2. BK 3. Drain 4. RD 5. OG 6. BU 7. GN	
	P-RSF 71-329-*/14.75/NPT	ITC/PLTC PVC Blue 6x16 AWG Foil Drain (18) 105°C 9.6 mm OD Cable #RF51329-*M†			

See page K129 - K130 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RSF.."; "P-RSFV.." indicates 316 stainless steel.
Receptacles recommend 1-1/16" (27.0 mm) hole for panel mounting; 7-pin recommends 1-1/16" (27.0 mm).

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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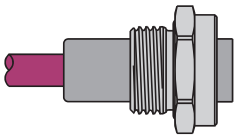
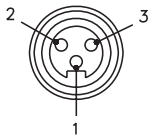
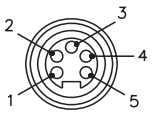
minifast® Receptacles with Cable, Additional Analog or Discrete Control Circuits

- **Female Receptacles**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

Housing Style	Part Number	Cable	Application	Pinout	
5 	P-RKF 321-880-*/M20	**ITC/PLTC PVC Yellow 3x18 AWG 105°C 7.2 mm OD Cable #RF50880-*M†**	***Discrete I/O devices in Class I, Division 2 hazardous locations or unclassified locations. M20 Conduit Entry Thread.***	1. GN/YE 2. BN 3. BU	
	P-RKF 33-187-*/M20	**ITC/PLTC PVC Grey 3x18 AWG 105°C 7.2 mm OD Cable #RF51187-*M†**		1. GN 2. BK 3. WH	
	P-RKF 51-108-*/M20	**ITC/PLTC PVC Plum 4x18 AWG, 1 Shielded Triad with GND Foil/Drain (20) 105°C 8.1 mm OD Cable #RF51108-*M†**	***Discrete or analog 3-wire circuits in Class I, Division 2 hazardous locations or unclassified locations. M20 Conduit Entry Thread.***	1. BU 2. BN 3. GN/YE 4. Drain 5. BK	
	P-RKF 52-972-*/M20	**ITC/PLTC PVC Grey 5x18 AWG 105°C 7.2 mm OD Cable #RF50972-*M†**	***Discrete I/O Devices in Class I, Division 2 Hazardous Locations or Unclassified Locations.***	1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RKF 55-099-*/M20	**ITC/PLTC PVC Plum 4x16 AWG, 1 Shielded Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51099-*M†**	***Discrete or analog 3-wire circuits in Class I, Division 2 hazardous locations or unclassified locations. M20 Conduit Entry Thread.***	1. WH 2. BK 3. GN 4. RD 5. Drain	
	P-RKF 55-328-*/M20	**ITC/PLTC PVC Blue 4x16 AWG, 1 Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51328-*M†**			

See page K129 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RKF.."; "P-RKFV.." indicates 316 stainless steel.
Receptacles recommend 1-1/16" (27.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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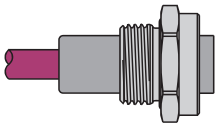
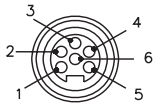
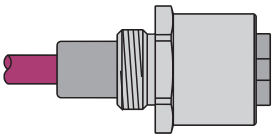
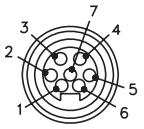
minifast® Receptacles with Cable, Additional Analog or Discrete Control Circuits

- **Female Receptacles**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

Housing Style	Part Number	Cable	Application	Pinout	
5 	P-RKF 60-025-*/M20	**ITC/PLTC PVC Plum 5x16 AWG, 1 STP plus 1 Triad Foil/Drain (18) 105°C 12.5 mm OD Cable #RF51025-*M†**	***Instruments with separate power and signal circuits in Class I, Division 2 hazardous locations or unclassified locations. M20 Conduit Entry Thread.***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
	P-RKF 63-030-*/M20	**ITC/PLTC PVC Yellow 6x16 AWG 105°C 9.6 mm OD Cable #RF51030-*M†**	***Discrete I/O devices in Class I, Division 2 hazardous locations or unclassified locations. M20 Conduit Entry Thread.***	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RKF 63-233-*/M20	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 6x16 AWG 105°C 11.2 mm OD Cable #RF51233-*M†**		1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RKF 66-318-*/M20	**ITC/PLTC PVC Plum 5x18 AWG, 2 STP with GND Foil/Drain (20) 105°C 7.9 mm OD Cable #RF51318-*M†**		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
11 	P-RKF 71-219-*/M20	**ITC/PLTC PVC Plum 6x16 AWG Foil/Drain (18) 105°C 9.6 mm OD Cable #RF51219-*M†**		1. WH 2. BK 3. Drain 4. RD 5. OG 6. BU 7. GN	
	P-RKF 71-329-*/M20	**ITC/PLTC PVC Blue 6x16 AWG Foil Drain (18) 105°C 9.6 mm OD Cable #RF51329-*M†**			

See page K129 - K130 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RKF.."; "P-RKFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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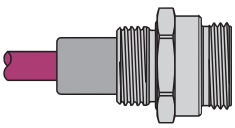
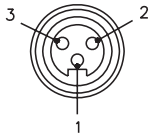
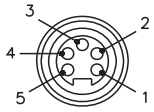
minifast® Receptacles with Cable, Additional Analog or Discrete Control Circuits

- Male Receptacles
- IEC IP 67 Protection
- 300 V, 9 A
  (use as ITC limited to 150 V, 5 A)

Housing Style	Part Number	Cable	Application	Pinout	
6 	P-RSF 321-880-*/M20	**ITC/PLTC PVC Yellow 3x18 AWG 105°C 7.2 mm OD Cable #RF50880-*M†**	***Discrete I/O devices in Class I, Division 2 hazardous locations** or unclassified locations.***	1. GN/YE 2. BN 3. BU	
	P-RSF 33-187-*/M20	**ITC/PLTC PVC Grey 3x18 AWG 105°C 7.2 mm OD Cable #RF51187-*M†**		1. GN 2. BK 3. WH	
	P-RSF 51-108-*/M20	**ITC/PLTC PVC Plum 4x18 AWG, 1 Shielded Triad with GND Foil/Drain (20) 105°C 8.1 mm OD Cable #RF51108-*M†**	***Discrete or analog 3-wire circuits in Class I, Division 2 hazardous locations or unclassified locations. M20 Conduit Entry Thread.***	1. BU 2. BN 3. GN/YE 4. Drain 5. BK	
	P-RSF 52-972-*/M20	**ITC/PLTC PVC Grey 5x18 AWG 105°C 7.2 mm OD Cable #RF50972-*M†**	***Discrete I/O Devices in Class I, Division 2 Hazardous Locations** or Unclassified Locations.***	1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RSF 55-099-*/M20	**ITC/PLTC PVC Plum 4x16 AWG, 1 Shielded Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51099-*M†**	***Discrete or analog 3-wire circuits in Class I, Division 2 hazardous locations or unclassified locations. M20 Conduit Entry Thread.***	1. WH 2. BK 3. GN 4. RD 5. Drain	
	P-RSF 55-328-*/M20	**ITC/PLTC PVC Blue 4x16 AWG, 1 Triad with GND Foil/Drain (18) 105°C 10.4 mm OD Cable #RF51328-*M†**			

See page K129 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RSF.."; "P-RSFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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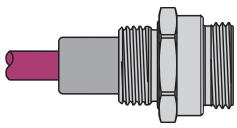
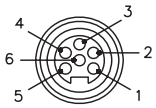
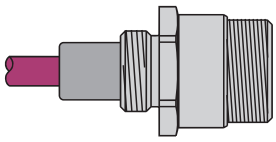
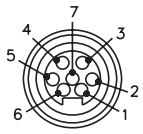
minifast® Receptacles with Cable, Additional Analog or Discrete Control Circuits

- **Male Receptacles**
- **IEC IP 67 Protection**
- **300 V, 9 A**
  (use as ITC limited to 150 V, 5 A)

Housing Style	Part Number	Cable	Application	Pinout	
6 	P-RSF 60-025-*/M20	**ITC/PLTC PVC Plum 5x16 AWG, 1 STP plus 1 Triad Foil/Drain (18) 105°C 12.5 mm OD Cable #RF51025-*M†**	***Instruments with separate power and signal circuits in Class I, Division 2 hazardous locations or unclassified locations. M20 Conduit Entry Thread.***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
	P-RSF 63-030-*/M20	**ITC/PLTC PVC Yellow 6x16 AWG 105°C 9.6 mm OD Cable #RF51030-*M†**	***Discrete I/O devices in Class I, Division 2 hazardous locations or unclassified locations. M20 Conduit Entry Thread.***	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RSF 63-233-*/M20	**ITC-Exposed Run/Direct Burial/PLTC PVC Plum 6x16 AWG 105°C 11.2 mm OD Cable #RF51233-*M†**		1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RSF 66-318-*/M20	**ITC/PLTC PVC Plum 5x18 AWG, 2 STP with GND Foil/Drain (20) 105°C 7.9 mm OD Cable #RF51318-*M†**		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. Drain	
12 	P-RSF 71-219-*/M20	**ITC/PLTC PVC Plum 6x16 AWG Foil/Drain (18) 105°C 9.6 mm OD Cable #RF51219-*M†**		1. WH 2. BK 3. Drain 4. RD 5. OG 6. BU 7. GN	
	P-RSF 71-329-*/M20	**ITC/PLTC PVC Blue 6x16 AWG Foil Drain (18) 105°C 9.6 mm OD Cable #RF51329-*M†**			

See page K129 - K130 for dimensional drawings.

* Length in meters. Standard cable length is 0.5 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RSF.."; "P-RSFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.

† See pages K236 - K244 for ***reelfast***® cable information.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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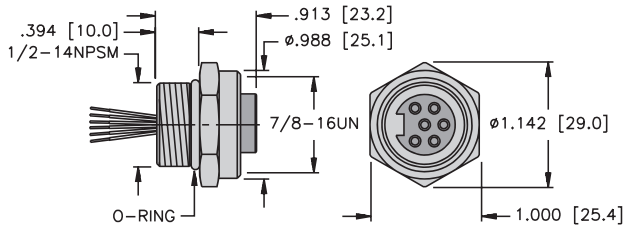
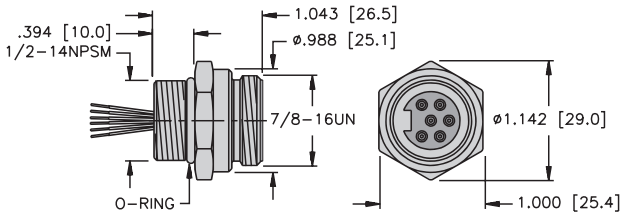
minifast® Receptacles with Leads, Additional Analog or Discrete Control Circuits

1



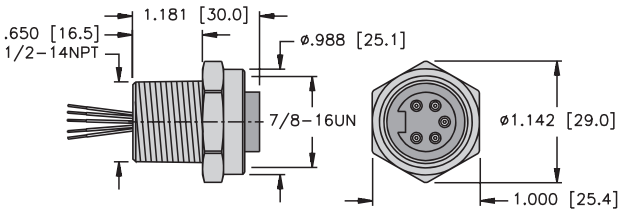
P-RKF .. **Page K147**

2



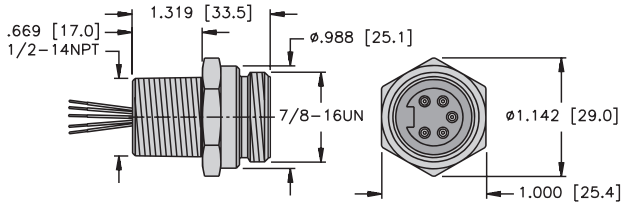
P-RSF .. **Page K148**

3



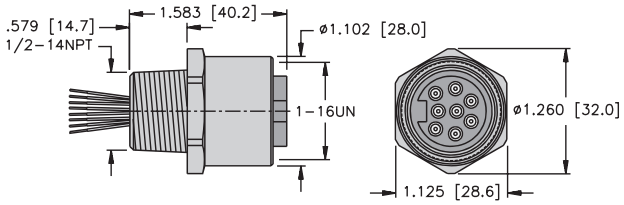
"A" P-RKF .. 14.5/NPT **Page K149**

4



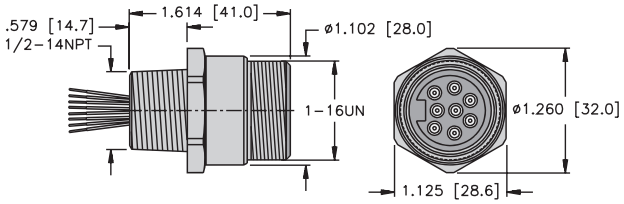
"A" P-RSF .. 14.5/NPT **Page K151**

5



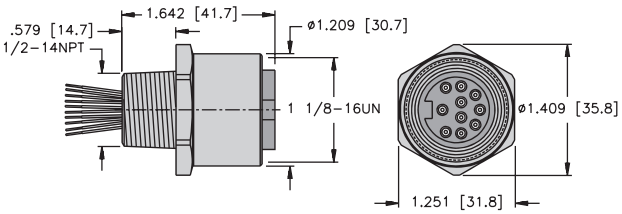
"B" P-RKF .. 14.5/NPT **Page K150**

6



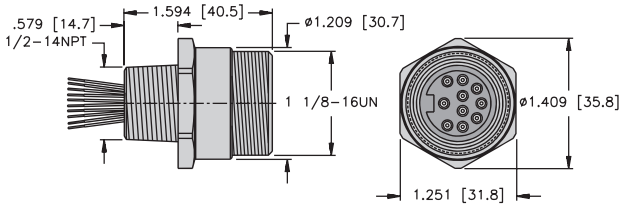
"B" P-RSF .. 14.5/NPT **Page K152**

7



"C" P-RKF .. 14.5/NPT **Page K150**

8



"C" P-RSF .. 14.5/NPT **Page K152**

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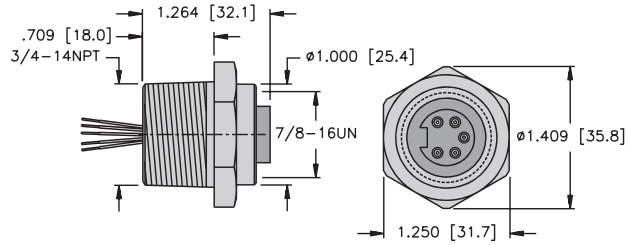
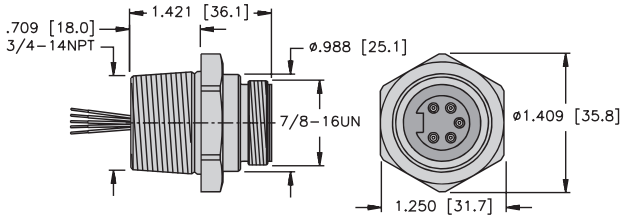
minifast® Receptacles with Leads, Additional Analog or Discrete Control Circuits

9



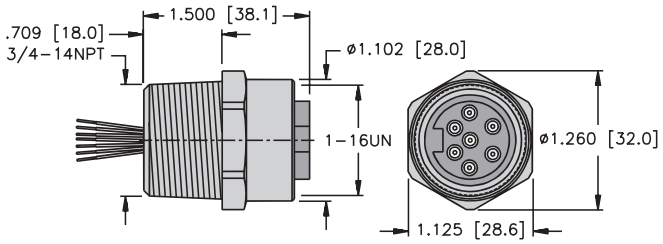
"A" P-RKF .. 14.75/NPT Page K153

10



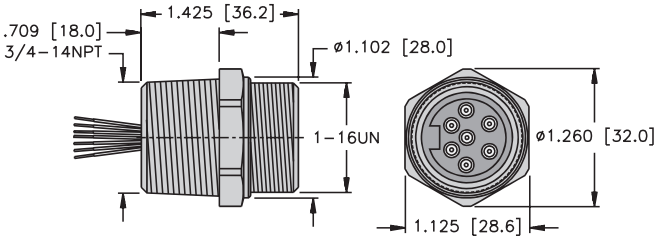
"A" P-RSF .. 14.75/NPT Page K155

11



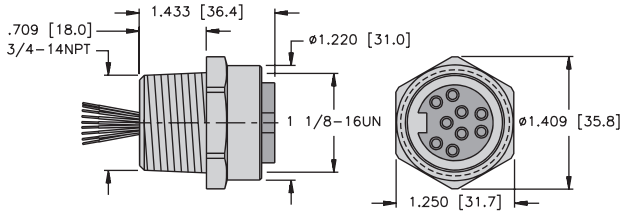
"B" P-RKF .. 14.75/NPT Page K154

12



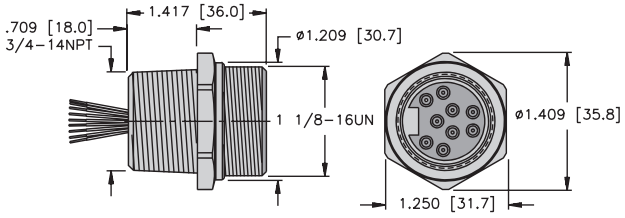
"B" P-RSF .. 14.75/NPT Page K156

13



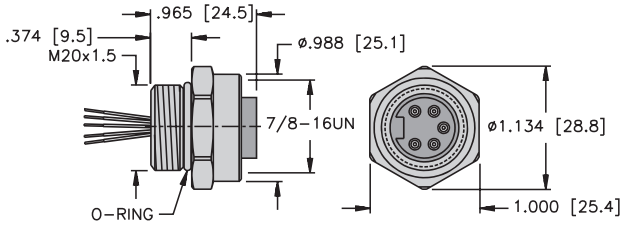
"C" P-RKF .. 14.75/NPT Page K154

14



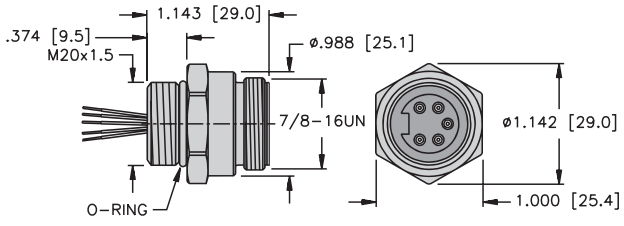
"C" P-RSF .. 14.75/NPT Page K156

15



"A" P-RKF .. M20 Page K157

16



"A" P-RSF .. M20 Page K159

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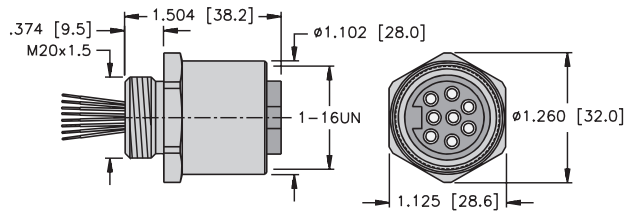
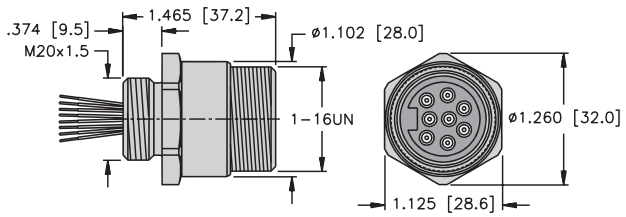
minifast® Receptacles with Leads, Additional Analog or Discrete Control Circuits

17



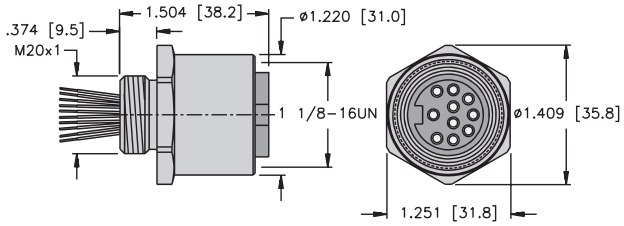
"B" P-RKF .. M20 — Page K158

18



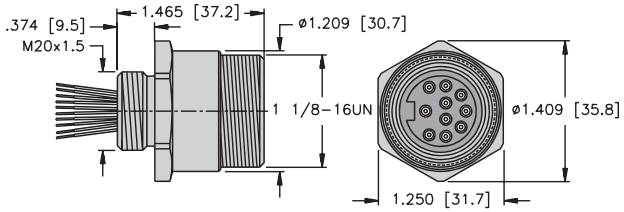
"B" P-RSF .. M20 — Page K160

19



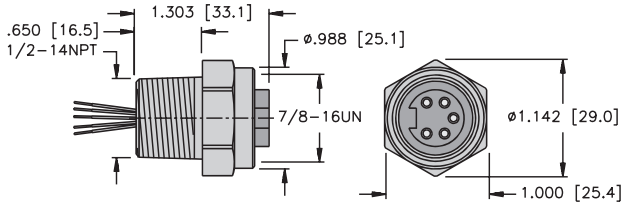
"C" P-RKF .. M20 — Page K158

20



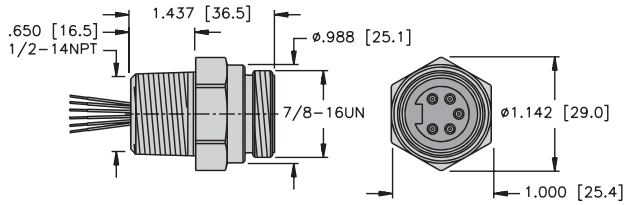
"C" P-RSF .. M20 — Page K160

21



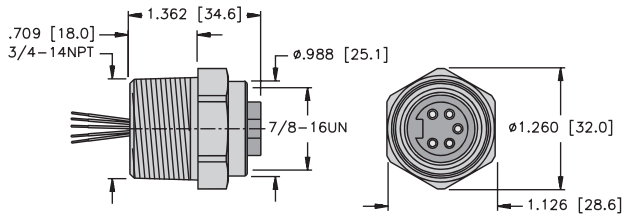
"A" P-RKF .. EX-14.5/NPT — Pages K161 - K162

22



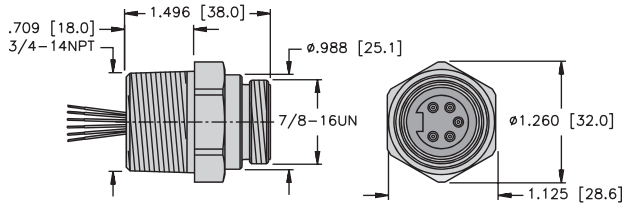
"A" P-RSF .. EX-14.5/NPT — Pages K163 - K164

23



"A" P-RKF .. EX-14.75/NPT — Pages K165 - K166

24



"A" P-RSF .. EX-14.75/NPT — Pages K167 - K168

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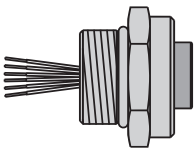
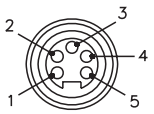
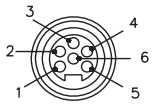
minifast® Receptacles with Leads, Additional Analog or Discrete Control Circuits

- **Female Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
1 	P-RKF 442-*	**UL, CSA 4x18 AWG 105°C 600 V, 9 A**	***1/2-14NPSM Threads***	1. BK 2. WH 3. RD 4. GN	
	P-RKF 45-*	**UL, CSA 3x16 AWG 105°C 600 V, 9 A**		1. WH 2. BK 3. N/C 4. GN	
	P-RKF 52-*	**UL, CSA 5x18 AWG 105°C 600 V, 9 A**		1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RKF 60D-*	**UL, CSA 6x16 AWG 105°C 600 V, 9 A**	***1/2-14NPSM Threads, Drain Wire***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. GY	
	P-RKF 63-*		***1/2-14NPSM Threads***	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	

See page K144 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RKF.."; "P-RKFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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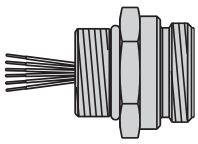
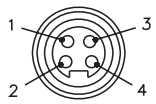
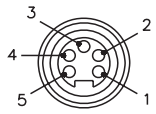
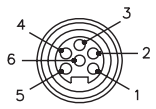
minifast® Receptacles with Leads, Additional Analog or Discrete Control Circuits

- **Male Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
2 	P-RSF 442-*	**UL, CSA 4x18 AWG 105°C 600 V, 9 A**	***1/2-14NPSM Threads***	1. BK 2. WH 3. RD 4. GN	
	P-RSF 45-*	**UL, CSA 3x16 AWG 105°C 600 V, 9 A**		1. WH 2. BK 3. N/C 4. GN	
	P-RSF 52-*	**UL, CSA 5x18 AWG 105°C 600 V, 9 A**		1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RSF 60D-*	**UL, CSA 6x16 AWG 105°C 600 V, 9 A**	***1/2-14NPSM Threads, Drain Wire***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. GY	
	P-RSF 63-*		***1/2-14NPSM Threads***	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	

See page K144 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RSF.."; "P-RSFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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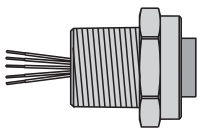
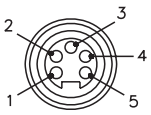
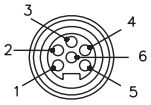
minifast® Receptacles with Leads, Additional Analog or Discrete Control Circuits

- **Female Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
3 	P-RKF 44-*/14.5/NPT	**UL, CSA 4x18 AWG 105°C 600 V, 9 A**	***1/2-14NPT Threads***	1. BU 2. BN 3. WH 4. BK	
	P-RKF 442-*/14.5/NPT			1. BK 2. WH 3. RD 4. GN	
	P-RKF 45-*/14.5/NPT	**UL, CSA 3x16 AWG 105°C 600 V, 9 A**		1. WH 2. BK 3. N/C 4. GN	
	P-RKF 52-*/14.5/NPT	**UL, CSA 5x18 AWG 105°C 600 V, 9 A**		1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RKF 56-*/14.5/NPT	**UL, CSA 5x18 AWG 105°C 600 V, 9 A**		1. BK 2. BU 3. GN/YE 4. BN 5. WH	
	P-RKF 60-*/14.5/NPT	**UL, CSA 5x16 AWG 105°C 600 V, 9 A**		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. N/C	
	P-RKF 60D-*/14.5/NPT	**UL, CSA 6x16 AWG 105°C 600 V, 9 A**	***1/2-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. GY	
	P-RKF 63-*/14.5/NPT		***1/2-14NPT Threads***	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	

See page K144 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RKF.."; "P-RKFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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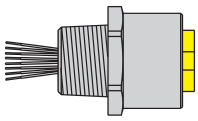
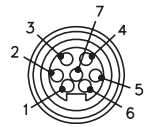
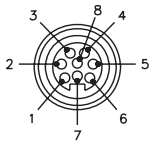
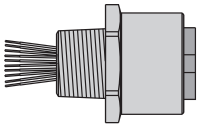
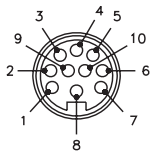
minifast® Receptacles with Leads, Additional Analog or Discrete Control Circuits

- **Female Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
5 	P-RKF 70-*/14.5/NPT	**UL, CSA** **7x18 AWG** **105°C** **600 V, 8 A**	***1/2-14NPT Threads***	1. BU 2. BN 3. GY 4. WH 5. BK 6. GY 7. GN/YE	
	P-RKF 80-*/14.5/NPT	**UL, CSA** **8x18 AWG** **105°C** **600 V, 8 A**		1. BK 2. WH 3. BU 4. RD 5. YE 6. BN 7. GY 8. GN	
7 	P-RKF 100-*/14.5/NPT	**UL, CSA** **10x18 AWG** **105°C** **600 V, 8 A**		1. WH/BK 2. BK/WH 3. WH/GN 4. GN/WH 5. WH/RD 6. RD/WH 7. GY 8. GN/YE 9. WH/OG 10. OG/WH	

See page K144 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RKF.."; "P-RKFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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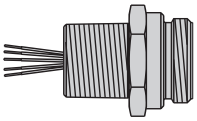
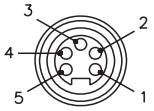
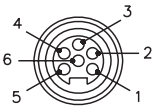
minifast® Receptacles with Leads, Additional Analog or Discrete Control Circuits

- Male Receptacles
- NEMA 1, 3, 4, 6P and IEC IP 67 Protection

Housing Style	Part Number	Lead Specs	Features	Pinout	
4 	P-RSF 44-*/14.5/NPT	UL, CSA 4x18 AWG 105°C 600 V, 9 A	*1/2-14NPT Threads*	1. BU 2. BN 3. WH 4. BK	
	P-RSF 442-*/14.5/NPT			1. BK 2. WH 3. RD 4. GN	
	P-RSF 45-*/14.5/NPT	UL, CSA 3x16 AWG 105°C 600 V, 9 A		1. WH 2. BK 3. N/C 4. GN	
	P-RSF 52-*/14.5/NPT	UL, CSA 5x18 AWG 105°C 600 V, 9 A		1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RSF 56-*/14.5/NPT	UL, CSA 5x18 AWG 105°C 600 V, 9 A		1. BK 2. BU 3. GN/YE 4. BN 5. WH	
	P-RSF 60-*/14.5/NPT	UL, CSA 5x16 AWG 105°C 600 V, 9 A		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. N/C	
	P-RSF 60D-*/14.5/NPT	UL, CSA 6x16 AWG 105°C 600 V, 9 A	*1/2-14NPT Threads, Drain Wire*	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. GY	
	P-RSF 63-*/14.5/NPT		*1/2-14NPT Threads*	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	

See page K144 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RSF.."; "P-RSFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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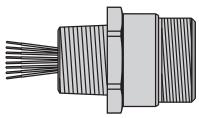
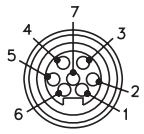
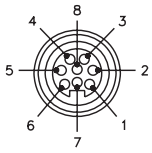
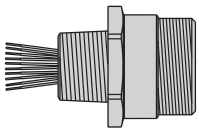
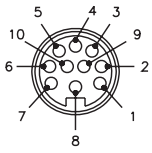
minifast® Receptacles with Leads, Additional Analog or Discrete Control Circuits

- **Male Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
6 	P-RSF 70-*/14.5/NPT	**UL, CSA** **7x18 AWG** **105°C** **600 V, 8 A**	*1/2-14NPT Threads*	1. BU 2. BN 3. GY 4. WH 5. BK 6. GY 7. GN/YE	
	P-RSF 80-*/14.5/NPT	**UL, CSA** **8x18 AWG** **105°C** **600 V, 8 A**		1. BK 2. WH 3. BU 4. RD 5. YE 6. BN 7. GY 8. GN	
8 	P-RSF 100-*/14.5/NPT	**UL, CSA** **10x18 AWG** **105°C** **600 V, 8 A**		1. WH/BK 2. BK/WH 3. WH/GN 4. GN/WH 5. WH/RD 6. RD/WH 7. GY 8. GN/YE 9. WH/OG 10. OG/WH	

See page K144 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RSF.."; "P-RSFV.." indicates 316 stainless steel.
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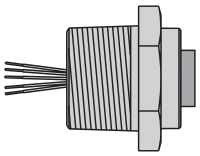
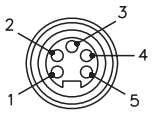
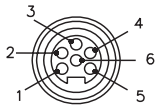
minifast® Receptacles with Leads, Additional Analog or Discrete Control Circuits

- **Female Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
9 	P-RKF 44-*/14.75/NPT	**UL, CSA 4x18 AWG 105°C 600 V, 9 A**	***3/4-14NPT Threads***	1. BU 2. BN 3. WH 4. BK	
	P-RKF 442-*/14.75/NPT			1. BK 2. WH 3. RD 4. GN	
	P-RKF 45-*/14.75/NPT	**UL, CSA 3x16 AWG 105°C 600 V, 9 A**		1. WH 2. BK 3. N/C 4. GN	
	P-RKF 52-*/14.75/NPT	**UL, CSA 5x18 AWG 105°C 600 V, 9 A**		1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RKF 56-*/14.75/NPT			1. BK 2. BU 3. GN/YE 4. BN 5. WH	
	P-RKF 60-*/14.75/NPT	**UL, CSA 5x16 AWG 105°C 600 V, 9 A**	***3/4-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. N/C	
	P-RKF 60D-*/14.75/NPT	**UL, CSA 6x16 AWG 105°C 600 V, 9 A**		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. GY	
	P-RKF 63-*/14.75/NPT		***3/4-14NPT Threads***	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	

See page K145 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RKF.."; "P-RKFV.." indicates 316 stainless steel.
Receptacles recommend 1-1/16" (27.0 mm) hole for panel mounting.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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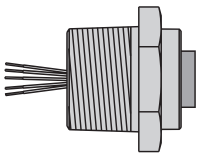
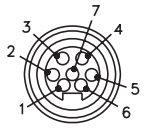
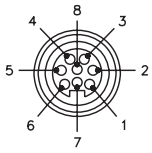
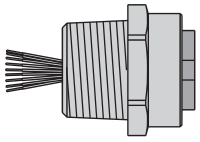
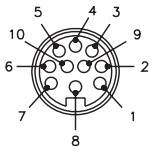
minifast® Receptacles with Leads, Additional Analog or Discrete Control Circuits

- **Female Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
11 	P-RKF 70-*/14.75/NPT	**UL, CSA 7x18 AWG 105°C 600 V, 8 A**	***3/4-14NPT Threads***	1. BU 2. BN 3. GY 4. WH 5. BK 6. GY 7. GN/YE	
	P-RKF 80-*/14.75/NPT	**UL, CSA 8x18 AWG 105°C 600 V, 8 A**		1. BK 2. WH 3. BU 4. RD 5. YE 6. BN 7. GY 8. GN	
13 	P-RKF 100-*/14.75/NPT	**UL, CSA 10x18 AWG 105°C 600 V, 8 A**		1. WH/BK 2. BK/WH 3. WH/GN 4. GN/WH 5. WH/RD 6. RD/WH 7. GY 8. GN/YE 9. WH/OG 10. OG/WH	

See page K145 for dimensional drawings.

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- **Male Receptacles**
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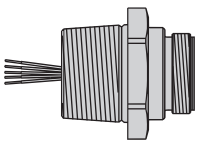
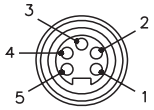
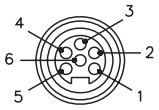
Housing Style	Part Number	Lead Specs	Features	Pinout	
10 	P-RSF 44-*/14.75/NPT	**UL, CSA 4x18 AWG 105°C 600 V, 9 A**	*3/4-14NPT Threads*	1. BU 2. BN 3. WH 4. BK	
	P-RSF 442-*/14.75/NPT			1. BK 2. WH 3. RD 4. GN	
	P-RSF 45-*/14.75/NPT	**UL, CSA 3x16 AWG 105°C 600 V, 9 A**		1. WH 2. BK 3. N/C 4. GN	
	P-RSF 52-*/14.75/NPT	**UL, CSA 5x18 AWG 105°C 600 V, 9 A**		1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RSF 56-*/14.75/NPT			1. BK 2. BU 3. GN/YE 4. BN 5. WH	
	P-RSF 60-*/14.75/NPT	**UL, CSA 5x16 AWG 105°C 600 V, 9 A**		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. N/C	
	P-RSF 60D-*/14.75/NPT	**UL, CSA 6x16 AWG 105°C 600 V, 8 A**	*3/4-14NPT Threads, Drain Wire*	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. GY	
	P-RSF 63-*/14.75/NPT		*3/4-14NPT Threads*	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	

See page K145 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RSF.."; "P-RSFV.." indicates 316 stainless steel.
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- **Male Receptacles**
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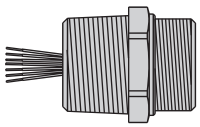
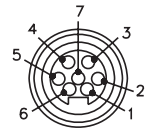
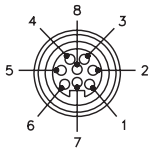
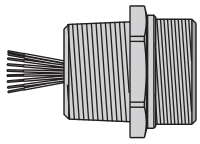
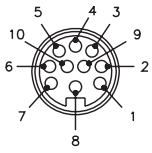
Housing Style	Part Number	Lead Specs	Features	Pinout	
12 	P-RSF 70-*/14.75/NPT	**UL, CSA** **7x18 AWG** **105°C** **600 V, 8 A**	***3/4-14NPT Threads***	1. BU 2. BN 3. GY 4. WH 5. BK 6. GY 7. GN/YE	
	P-RSF 80-*/14.75/NPT	**UL, CSA** **8x18 AWG** **105°C** **600 V, 8 A**		1. BK 2. WH 3. BU 4. RD 5. YE 6. BN 7. GY 8. GN	
14 	P-RSF 100-*/14.75/NPT	**UL, CSA** **10x18 AWG** **105°C** **600 V, 8 A**		1. WH/BK 2. BK/WH 3. WH/GN 4. GN/WH 5. WH/RD 6. RD/WH 7. GY 8. GN/YE 9. WH/OG 10. OG/WH	

See page K145 for dimensional drawings.

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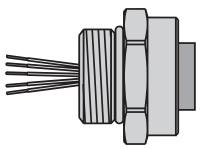
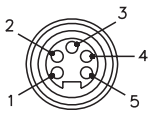
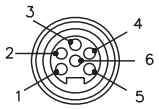
Housing Style	Part Number	Lead Specs	Features	Pinout	
15 	P-RKF 44-*/M20	UL, CSA 4x18 AWG 105°C 600 V, 9 A	*M20 Threads*	1. BU 2. BN 3. WH 4. BK	
	P-RKF 442-*/M20			1. BK 2. WH 3. RD 4. GN	
	P-RKF 45-*/M20	UL, CSA 3x16 AWG 105°C 600 V, 9 A		1. WH 2. BK 3. N/C 4. GN	
	P-RKF 52-*/M20	UL, CSA 5x18 AWG 105°C 600 V, 9 A		1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RKF 56-*/M20	UL, CSA 5x18 AWG 105°C 600 V, 9 A		1. BK 2. BU 3. GN/YE 4. BN 5. WH	
	P-RKF 60-*/M20	UL, CSA 5x16 AWG 105°C 600 V, 9 A		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. N/C	
	P-RKF 60D-*/M20	UL, CSA 6x16 AWG 105°C 600 V, 9 A	*M20 Threads, Drain Wire*	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. GY	
	P-RKF 63-*/M20		*M20 Threads*	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	

See page K145 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RKF.."; "P-RKFV.." indicates 316 stainless steel.
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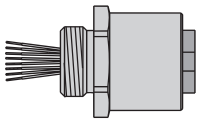
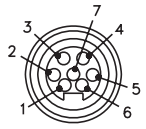
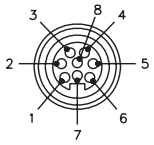
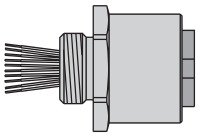
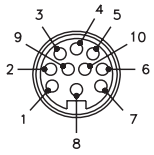
Housing Style	Part Number	Lead Specs	Features	Pinout	
17 	P-RKF 70-*/M20	**UL, CSA** **7x18 AWG** **105°C** **600 V, 8 A**	***M20 Threads***	1. BU 2. BN 3. GY 4. WH 5. BK 6. GY 7. GN/YE	
	P-RKF 80-*/M20	**UL, CSA** **8x18 AWG** **105°C** **600 V, 8 A**		1. BK 2. WH 3. BU 4. RD 5. YE 6. BN 7. GY 8. GN	
19 	P-RKF 100-*/M20	**UL, CSA** **10x18 AWG** **105°C** **600 V, 8 A**		1. WH/BK 2. BK/WH 3. WH/GN 4. GN/WH 5. WH/RD 6. RD/WH 7. GY 8. GN/YE 9. WH/OG 10. OG/WH	

See page K146 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RKF.."; "P-RKFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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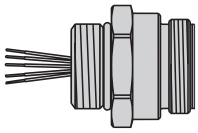
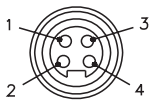
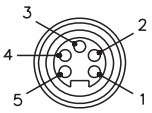
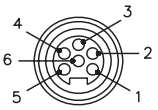
minifast® Receptacles with Leads, Additional Analog or Discrete Control Circuits

- **Male Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
16 	P-RSF 44-*/M20	**UL, CSA 4x18 AWG 105°C 600 V, 9 A**	***M20 Threads***	1. BU 2. BN 3. WH 4. BK	
	P-RSF 442-*/M20			1. BK 2. WH 3. RD 4. GN	
	P-RSF 45-*/M20	**UL, CSA 3x16 AWG 105°C 600 V, 9 A**		1. WH 2. BK 3. N/C 4. GN	
	P-RSF 52-*/M20	**UL, CSA 5x18 AWG 105°C 600 V, 9 A**		1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RSF 56-*/M20	**UL, CSA 5x18 AWG 105°C 600 V, 9 A**		1. BK 2. BU 3. GN/YE 4. BN 5. WH	
	P-RSF 60-*/M20	**UL, CSA 5x16 AWG 105°C 600 V, 9 A**		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. N/C	
	P-RSF 60D-*/M20	**UL, CSA 6x16 AWG 105°C 600 V, 9 A**	***M20 Threads, Drain Wire***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. GY	
	P-RSF 63-*/M20		***M20 Threads***	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	

See page K145 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RSF.."; "P-RSFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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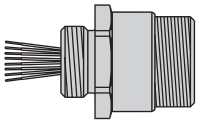
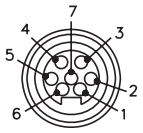
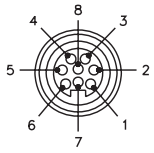
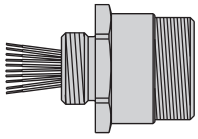
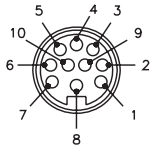
- **Male Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing Style	Part Number	Lead Specs	Features	Pinout	
18 	P-RSF 70-*/M20	**UL, CSA** **7x18 AWG** **105°C** **600 V, 8 A**	***M20 Threads***	1. BU 2. BN 3. GY 4. WH 5. BK 6. GY 7. GN/YE	
	P-RSF 80-*/M20	**UL, CSA** **8x18 AWG** **105°C** **600 V, 8 A**		1. BK 2. WH 3. BU 4. RD 5. YE 6. BN 7. GY 8. GN	
20 	P-RSF 100-*/M20	**UL, CSA** **10x18 AWG** **105°C** **600 V, 8 A**		1. WH/BK 2. BK/WH 3. WH/GN 4. GN/WH 5. WH/RD 6. RD/WH 7. GY 8. GN/YE 9. WH/OG 10. OG/WH	

See page K146 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is nickel plated brass "P-RSF.."; "P-RSFV.." indicates 316 stainless steel.
Receptacles recommend 13/16" (21.0 mm) hole for panel mounting.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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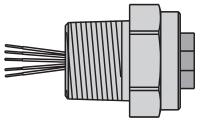
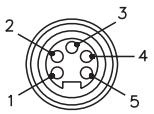
- **Female Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**
- **For installation of explosionproof devices in Division 2 or feeding intrinsically safe circuits into or out of explosionproof enclosures**

Housing Style	Part Number	Lead Specs	Features	Pinout	
21 	P-RKFV 44 EX-*/14.5/NPT	UL, CSA 4x18 AWG 105°C 600 V, 9 A	*Explosionproof Receptacle, 1/2-14NPT Threads*	1. BU 2. BN 3. WH 4. BK	
	P-RKFV 45 EX-*/14.5/NPT	UL, CSA 3x16 AWG 105°C 600 V, 9 A		1. WH 2. BK 3. N/C 4. GN	
	P-RKFV 52 EX-*/14.5/NPT	UL, CSA 5x18 AWG 105°C 600 V, 9 A		1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RKFV 55 EX-*/14.5/NPT	UL, CSA 4x16 AWG 105°C 600 V, 9 A		1. WH 2. BK 3. GN 4. RD 5. N/C	
	P-RKFV 56 EX-*/14.5/NPT	UL, CSA 5x18 AWG 105°C 600 V, 9 A		1. BK 2. BU 3. GN/YE 4. BN 5. WH	

See page K146 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is 316 stainless steel.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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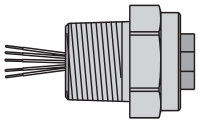
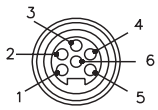
Housing Style	Part Number	Lead Specs	Features	Pinout	
21 	P-RKFV 60 EX-*/14.5/NPT	**UL, CSA 5x16 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 1/2-14NPT Threads***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. N/C	
	P-RKFV 60D EX-*/14.5/NPT	**UL, CSA 6x16 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 1/2-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. GY	
	P-RKFV 63 EX-*/14.5/NPT	**UL, CSA 6x16 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 1/2-14NPT Threads***	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RKFV 65 EX-*/14.5/NPT	**UL, CSA 5x16 AWG 105°C 600 V, 9 A**		1. BK 2. BU 3. GN/YE 4. BN 5. WH 6. N/C	
	P-RKFV 66 EX-*/14.5/NPT	**UL, CSA 5x18 AWG 105°C 600 V, 9 A**		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. N/C	

See page K146 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is 316 stainless steel.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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minifast® Explosionproof Feed-Thru Recept w/Leads, Add. Analog or Discrete Control Circuits

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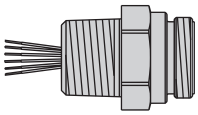
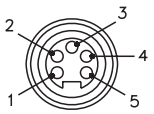
- NEMA 1, 3, 4, 6P and IEC IP 67 Protection
- For installation of explosionproof devices in Division 2 or feeding intrinsically safe circuits into or out of explosionproof enclosures

Housing Style	Part Number	Lead Specs	Features	Pinout	
22 	P-RSFV 44 EX-*/14.5/NPT	UL, CSA 4x18 AWG 105°C 600 V, 9 A	*Explosionproof Receptacle, 1/2-14NPT Threads*	1. BU 2. BN 3. WH 4. BK	
	P-RSFV 45 EX-*/14.5/NPT	UL, CSA 3x16 AWG 105°C 600 V, 9 A		1. WH 2. BK 3. N/C 4. GN	
	P-RSFV 52 EX-*/14.5/NPT	UL, CSA 5x18 AWG 105°C 600 V, 9 A		1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RSFV 55 EX-*/14.5/NPT	UL, CSA 4x16 AWG 105°C 600 V, 9 A		1. WH 2. BK 3. GN 4. RD 5. N/C	
	P-RSFV 56 EX-*/14.5/NPT	UL, CSA 5x18 AWG 105°C 600 V, 9 A		1. BK 2. BU 3. GN/YE 4. BN 5. WH	

See page K146 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
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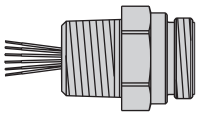
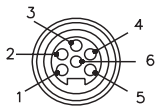
- NEMA 1, 3, 4, 6P and IEC IP 67 Protection
- For installation of explosionproof devices in Division 2 or feeding intrinsically safe circuits into or out of explosionproof enclosures

Housing Style	Part Number	Lead Specs	Features	Pinout	
22 	P-RSFV 60 EX-*/14.5/NPT	**UL, CSA 5x16 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 1/2-14NPT Threads***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. N/C	
	P-RSFV 60D EX-*/14.5/NPT	**UL, CSA 6x16 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 1/2-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. GY	
	P-RSFV 63 EX-*/14.5/NPT	**UL, CSA 6x16 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 1/2-14NPT Threads***	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RSFV 65 EX-*/14.5/NPT	**UL, CSA 5x16 AWG 105°C 600 V, 9 A**		1. BK 2. BU 3. GN/YE 4. BN 5. WH 6. N/C	
	P-RSFV 66 EX-*/14.5/NPT	**UL, CSA 5x18 AWG 105°C 600 V, 9 A**		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. N/C	

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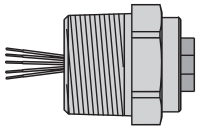
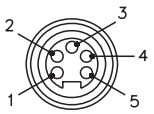
Housing Style	Part Number	Lead Specs	Features	Pinout	
23 	P-RKFV 44 EX-*/14.75/NPT	UL, CSA 4x18 AWG 105°C 600 V, 9 A	*Explosionproof Receptacle, 3/4-14NPT Threads*	1. BU 2. BN 3. WH 4. BK	
	P-RKFV 45 EX-*/14.75/NPT	UL, CSA 3x16 AWG 105°C 600 V, 9 A		1. WH 2. BK 3. N/C 4. GN	
	P-RKFV 52 EX-*/14.75/NPT	UL, CSA 5x18 AWG 105°C 600 V, 9 A		1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RKFV 55 EX-*/14.75/NPT	UL, CSA 4x16 AWG 105°C 600 V, 9 A		1. WH 2. BK 3. GN 4. RD 5. N/C	
	P-RKFV 56 EX-*/14.75/NPT	UL, CSA 5x18 AWG 105°C 600 V, 9 A		1. BK 2. BU 3. GN/YE 4. BN 5. WH	

See page K146 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
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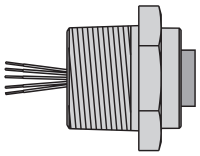
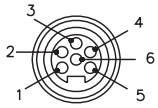
Housing Style	Part Number	Lead Specs	Features	Pinout	
23 	P-RKFV 60 EX-*/14.75/NPT	**UL, CSA 5x16 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 3/4-14NPT Threads***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. N/C	
	P-RKFV 60D EX-*/14.75/NPT	**UL, CSA 6x16 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 3/4-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. GY	
	P-RKFV 63 EX-*/14.75/NPT	**UL, CSA 6x16 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 3/4-14NPT Threads***	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RKFV 65 EX-*/14.75/NPT	**UL, CSA 5x16 AWG 105°C 600 V, 9 A**		1. BK 2. BU 3. GN/YE 4. BN 5. WH 6. N/C	
	P-RKFV 66 EX-*/14.75/NPT	**UL, CSA 5x18 AWG 105°C 600 V, 9 A**		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. N/C	

See page K146 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is 316 stainless steel.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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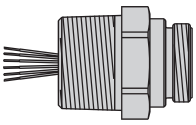
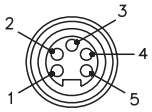
minifast® Explosionproof Feed-Thru Recept w/Leads, Add. Analog or Discrete Control Circuits

- Male Receptacles
- NEMA 1, 3, 4, 6P and IEC IP 67 Protection
- For installation of explosionproof devices in Division 2 or feeding intrinsically safe circuits into or out of explosionproof enclosures

Housing Style	Part Number	Lead Specs	Features	Pinout	
24 	P-RSFV 44 EX-*/14.75/NPT	UL, CSA 4x18 AWG 105°C 600 V, 9 A	*Explosionproof Receptacle, 3/4-14NPT Threads*	1. BU 2. BN 3. WH 4. BK	
	P-RSFV 45 EX-*/14.75/NPT	UL, CSA 3x16 AWG 105°C 600 V, 9 A		1. WH 2. BK 3. N/C 4. GN	
	P-RSFV 52 EX-*/14.75/NPT	UL, CSA 5x18 AWG 105°C 600 V, 9 A		1. BK 2. WH 3. GY 4. BN 5. BU	
	P-RSFV 55 EX-*/14.75/NPT	UL, CSA 4x16 AWG 105°C 600 V, 9 A		1. WH 2. BK 3. GN 4. RD 5. N/C	
	P-RSFV 56 EX-*/14.75/NPT	UL, CSA 5x18 AWG 105°C 600 V, 9 A		1. BK 2. BU 3. GN/YE 4. BN 5. WH	

See page K146 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is 316 stainless steel.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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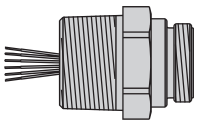
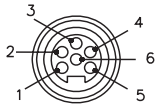
minifast® Explosionproof Feed-Thru Recept w/Leads, Add. Analog or Discrete Control Circuits

- **Male Receptacles**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**
- **For installation of explosionproof devices in Division 2 or feeding intrinsically safe circuits into or out of explosionproof enclosures**

Housing Style	Part Number	Lead Specs	Features	Pinout	
24 	P-RSFV 60 EX-*/14.75/NPT	**UL, CSA 5x16 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 3/4-14NPT Threads***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. N/C	
	P-RSFV 60D EX-*/14.75/NPT	**UL, CSA 6x16 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 3/4-14NPT Threads, Drain Wire***	1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. GY	
	P-RSFV 63 EX-*/14.75/NPT	**UL, CSA 6x16 AWG 105°C 600 V, 9 A**	***Explosionproof Receptacle, 3/4-14NPT Threads***	1. WH 2. RD 3. GN 4. OG 5. BK 6. BU	
	P-RSFV 65 EX-*/14.75/NPT	**UL, CSA 5x16 AWG 105°C 600 V, 9 A**		1. BK 2. BU 3. GN/YE 4. BN 5. WH 6. N/C	
	P-RSFV 66 EX-*/14.75/NPT	**UL, CSA 5x18 AWG 105°C 600 V, 9 A**		1. BU 2. BN 3. GN/YE 4. WH 5. BK 6. N/C	

See page K146 for dimensional drawings.

* Length in meters. Standard lead length is 0.3 meters. Consult factory for other lengths.
Standard housing material is 316 stainless steel.
Note: See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd for guidance on installation in hazardous locations.

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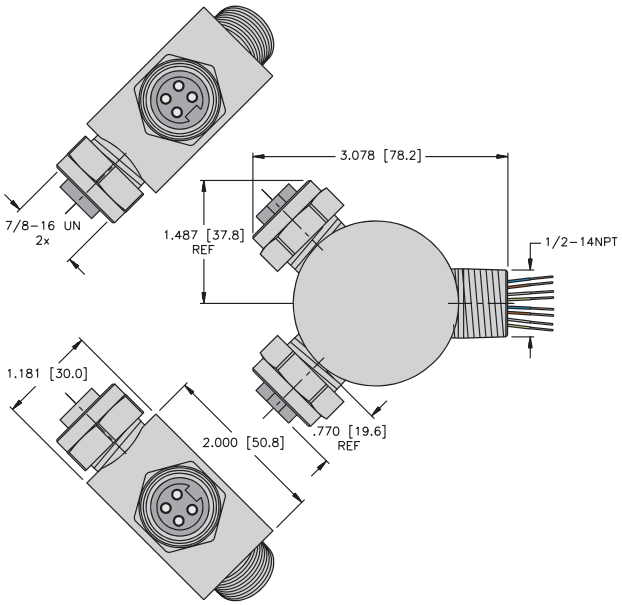
minifast ® "Y" Fittings, Additional Analog or Discrete Circuits

- 600 V
- 9 A Per Conductor
- Installs in Standard Conduit Entries
- Stainless Steel Housing

			1/2-14NPT						3/4-14NPT	
			J1	J2	P1	P2	P1	J2	J1	J2
Specifications	**Wiring Dia.**	**Housing Material**	**Female**	**Female**	**Male**	**Male**	**Male**	**Female**	**Female**	**Female**
4/18 AWG leads per connector	1	SS	P-2RKFV-44EX-*/14.5/NPT		P-2RSFV-44EX-*/14.5/NPT		P-RSFV RKFV-44EX-*/14.5/NPT		P-2RKFV-44EX-*/14.75/NPT	

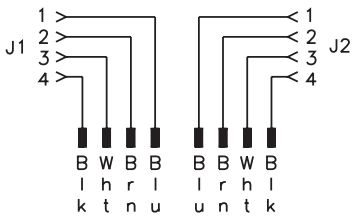
* Length in meters.
SS = Stainless steel

Dimensions



Wiring Diagram

1



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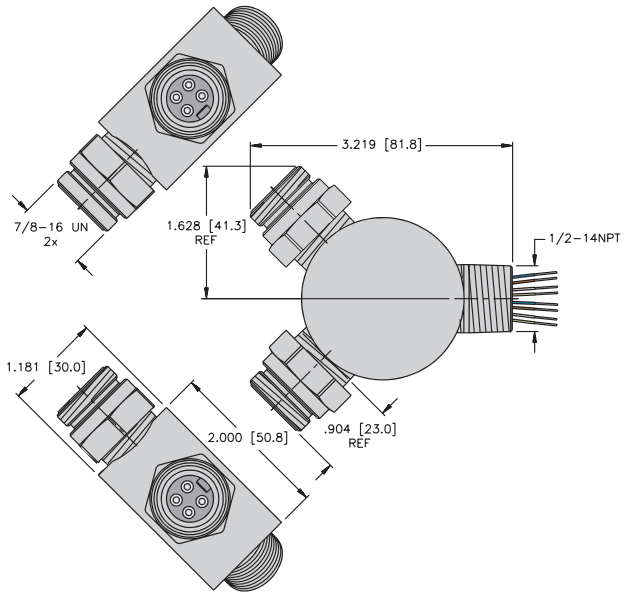
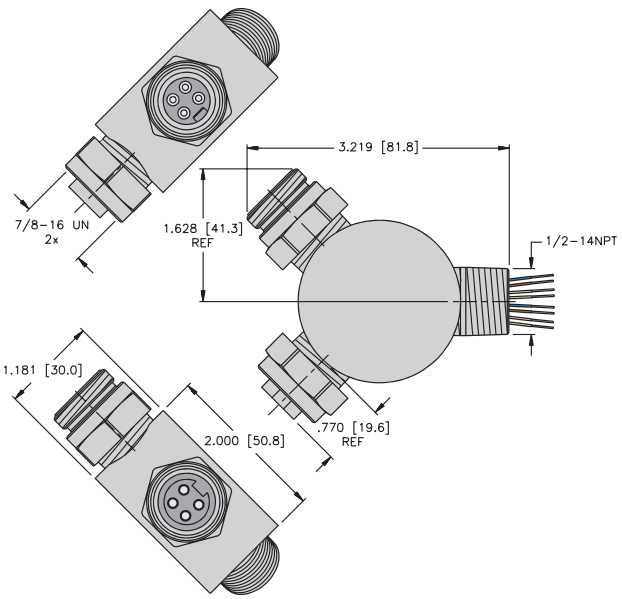
Specifications

Housing: 316 stainless steel (SS), passivated.
Contact Carrier: PUR black.
Electrical Ratings: 600 V, 9 A per conductor.
Temperature: -30° to +105°C (-22° to +221°F).
Contacts: Gold plated brass.
Protection: IP 67 (only when all receptacles are mated or covered with plugs).
Leads: High flex stranding, PVC, insulated, 600 V, UL recognized, CSA certified.

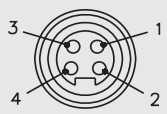
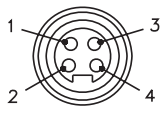
3/4-14NPT				M20x1.5					
P1	P2	P1	J2	J1	J2	P1	P2	P1	J2
Male	Male	Male	Female	Female	Female	Male	Male	Male	Female
P-2RSFV-44EX-*/14.75/NPT		P-RSFV RKFV-44EX-*/14.75/NPT		P-2RKFV-44EX-*/M20		P-2RSFV-44EX-*/M20		P-RSFV RKFV-44EX-*/M20	

Dimensions





Pinouts

Female	Male
	
4-Pin	4-Pin

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multibox® minifast® Metal Junction Boxes

- **Consolidation of Analog or Discrete Circuits in Hazardous Locations or Unclassified Locations**

FM approved for installation in hazardous locations when installed per **TURCK** Control Drawing QCF-00147 (www.turck.com/fmcd) using specified accessory equipment.
"/C" versions CSA certified for installation in hazardous locations when installed per **TURCK** Control Drawing Ni-2.404(www.turck.com/fmcd) using certified accessory equipment.

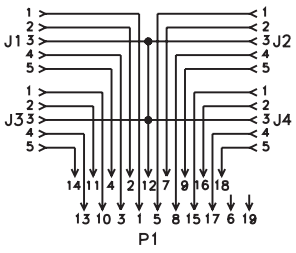
4-port, Common Ground and Shield

Application	Specifications	Pinout	Nickel Plated Brass	Stainless Steel
4-port cast aluminum junction box, ***minifast*** port connectors, ***multifast*** ® home-run connector, 4-wire discrete signal per port	19-pin ***multifast*** connector, 19 conductors	Port, Pin / Home-Run: Port 1, Pin 1 – 1; Port 1, Pin 2 – 2; Port 1, Pin 4 – 3; Port 1, Pin 5 – 4; Port 2, Pin 1 – 5; NC – 6; Port 2, Pin 2 – 7; Port 2, Pin 4 – 8; Port 2, Pin 5 – 9; Port 3, Pin 1 – 10; Port 3, Pin 2 – 11; Ports 1-8, Pin 3 – 12; Port 3, Pin 4 – 13; Port 3, Pin 5 – 14; Port 4, Pin 1 – 15; Port 4, Pin 2 – 16; Port 4, Pin 4 – 17; Port 4, Pin 5 – 18; NC – 19	P-4 RKF 56-CS19 P-4 RKF 56-CS19/C	P-4 RKFV 56-CSV19 P-4 RKFV 56-CSV19/C
4-port cast aluminum junction box, ***minifast*** port connectors, ***multifast*** home-run connector, 2 analog signals per port	19-pin ***multifast*** connector, 16 conductors plus drain	Port, Pin / Home-Run: Port 1, Pin 1 – 1; Port 1, Pin 2 – 2; Port 1, Pin 4 – 3; Port 1, Pin 5 – 4; Port 2, Pin 1 – 5; Shield – 6; Port 2, Pin 2 – 7; Port 2, Pin 4 – 8; Port 2, Pin 5 – 9; Port 3, Pin 1 – 10; Port 3, Pin 2 – 11; Ground – 12; Port 3, Pin 4 – 13; Port 3, Pin 5 – 14; Port 4, Pin 1 – 15; Port 4, Pin 2 – 16; Port 4, Pin 4 – 17; Port 4, Pin 5 – 18; NC – 19	P-4 RKF 66-CS19 P-4 RKF 66-CS19/C	P-4 RKFV 66-CSV19 P-4 RKFV 66-CSV19/C

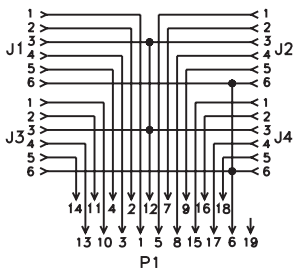
See pages K85 and K89 for mating home run cordsets.

Wiring Diagrams

4-Wire Discrete



2 Analog Signals Per Port



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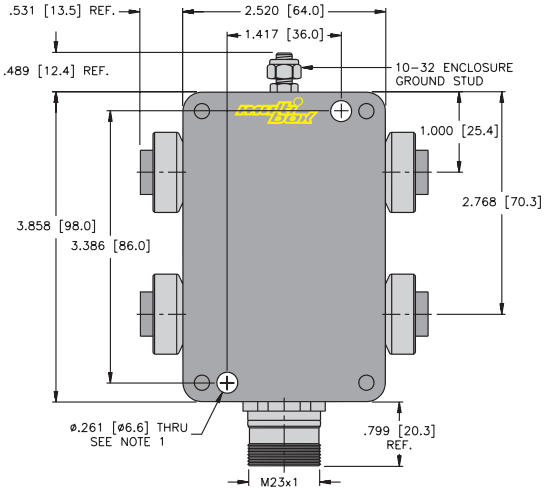
Specifications

Housing:	Die-cast aluminum alloy.
Connectors	Nickel plated brass or 316 stainless steel housings (see table), oil resistant PUR contact carrier.
Temperature:	-30° to +80°C (-22° to +176°F).
Contacts:	Gold plated brass.
Protection:	IP 67.
Electrical Rating:	Standard Version: 150 V, 4 A per conductor.
	"/C" Versions: 30 V, 600 mA

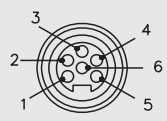
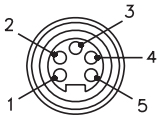
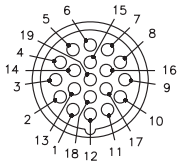
Dimensions

4-Port



Notes:
1. Clearance hole for 1/4-20 mounting screws (2 not included)

Pinouts

Female		Male
		
6-Pin *minifast*®	**5-Pin *minifast***	**19-Pin *multifast***

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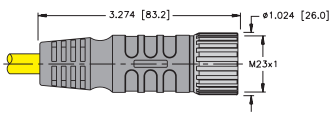
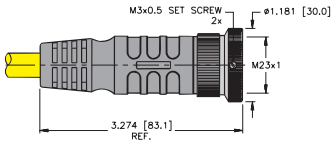
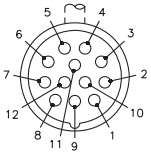
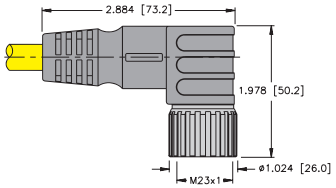
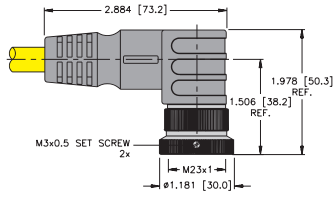
multifast® Home Run Cordsets, Additional Analog or Discrete Control Circuits

- **Female Connectors**
- **IEC IP 67 Protection**

Housing Style	Part Number	Cable	Features	Pinout	
P-CKM ..  **P-CKML .. (for Class I, Division 2 applications)**  	P-CKM 12-088-*	**ITC/PLTC PVC Yellow** **11x18 AWG** **Foil/Drain (20)** **105°C** **10 mm OD** **300 V, 6 A** **Cable #RF51088-*M†**	***Discrete control circuits in Class I, Division 2 hazardous locations or unclassified locations.***	1. BN 2. N/C 3. BU 4. WH 5. GN 6. YE 7. GY 8. PK 9. RD 10. BK 11. VT 12. GN/YE	
P-CKWM ..  **P-CKWML .. (for Class I, Division 2 applications)**  	P-CKWM 12-088-*				

* Length in meters. Standard cable lengths are 2, 4, 6, 8, and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "CKM(L).."/"CKWM(L).."; "CKM(L)V.."/"CKWM(L)V" indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

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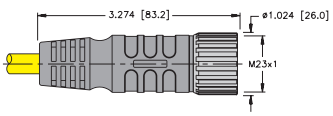
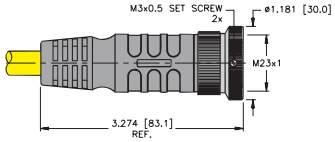
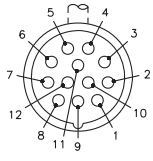
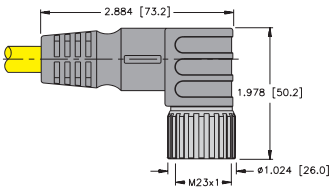
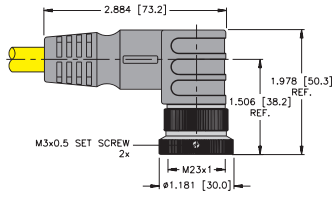
multifast® Home Run Cordsets, Additional Analog or Discrete Control Circuits

- Male Connectors
- IEC IP 67 Protection

Housing Style	Part Number	Cable	Features	Pinout	
P-CSM ..  **P-CSML .. (for Class I, Division 2 applications)**  	P-CSM 12-088-*	**ITC/PLTC PVC Yellow** **11x18 AWG** **Foil/Drain (20)** **105°C** **10 mm OD** **300 V, 6 A** **Cable #RF51088-*M†**	***Discrete control circuits in Class I, Division 2 hazardous locations or unclassified locations.***	1. BN 2. N/C 3. BU 4. WH 5. GN 6. YE 7. GY 8. PK 9. RD 10. BK 11. VT 12. GN/YE	
P-CSWM ..  **P-CSWML .. (for Class I, Division 2 applications)**  	P-CSWM 12-088-*				

* Length in meters. Standard cable lengths are 2, 4, 6, 8, and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "CSM(L).."/"CSWM(L).."; "CSM(L)V.."/"CSWM(L)V" indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

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Notes:

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NAMUR Circuits Selection Guide

M12 *eurofast*® Thread	Drop Cordsets	2-Branch Molded Junctions	Junction Boxes
Pages	D179 - D182	D183 - D186	D187 - D190

M23 *multifast*® Thread	Cordsets
Pages	D191 - D193

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eurofast® NAMUR Cordset Part Number Key, Class I, Division 1 Hazardous Locations

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

R	K			4.21	T	-	2	-	RS 4.21T	

eurofast
R = Straight
W = Right Angle

Gender
K = Female Connector
S = Male Connector

Body Plug Style
(Blank) = Standard Plug Body
C = Medium Plug Body

Coupling Nut Options
(Blank) = Nickel Plated Brass
V = 316 Stainless Steel

Number of Wires / AWG / Color Codes
4.21 = 2x20 AWG, BU, BN
4.41 = 4x22 AWG, BN, WH, BU, BK
5 = 5x22 AWG, GN, WH, OG, BK, RD
6 = 5x24 AWG, OG, RD, YE, BK, BU

T = T Barb Fitting

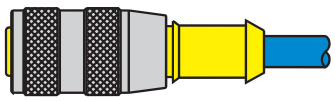
Length in Meters

Insertion Point of Extension Cable and 2nd Prefix*
* Female Connector Listed 1st, Male Connector 2nd
Example: RK 4.21T-2-RS 4.21T

Varieties
(Blank) = PVC Jacket
/S.. = Consult Factory, Special
/S90 = PUR Jacket

Single Ended Example:

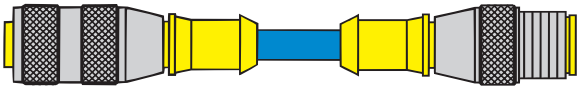
R	K	4.21	T	-	2



RK ..

Extension Example:

R	K	4.21	T	-	2	-	RS	4.21	T



RK .. - RS ..

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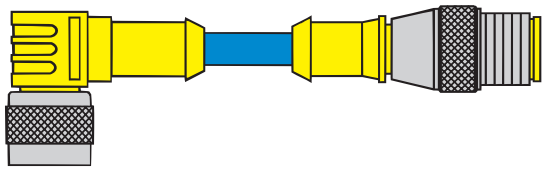
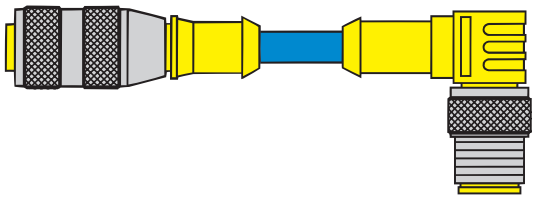
eurofast® NAMUR Cordset Extensions

Other Extension Examples:



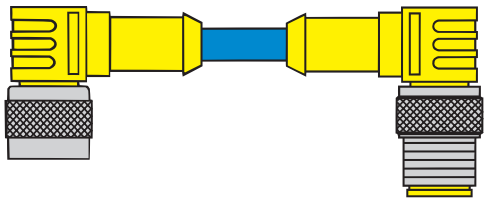
WK .. - RS ..

W K | 4.21 T | - | 2 | - | RS | 4.21 T



RK .. - WS ..

R K | 4.21 T | - | 2 | - | WS | 4.21 T



WK .. - WS ..

W K | 4.21 T | - | 2 | - | WS | 4.21 T

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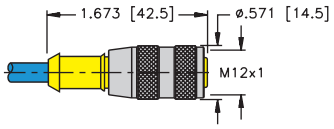
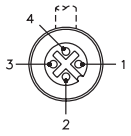
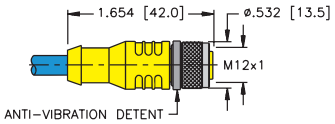
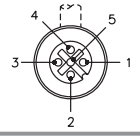
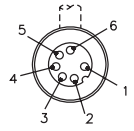
2, 4, 5 and 6-Wire *eurofast*® Drop Cordsets, NAMUR

- Straight Female Connectors
- For Use With NAMUR Sensors
- NEMA 1, 3, 4, 6P and IEC IP 68 Protection

Housing Style	Part Number	Cable	Features	Pinout	
RK .. 	RK 4.21T-*	**AWM PVC NAMUR Blue 2x20 AWG 105°C 5.2 mm OD Cable #RF20003-*M†**	***flexlife*®**	1. BN 2. BU 3. N/C 4. N/C	
	RK 4.21T-*/S90	**AWM PUR NAMUR Blue 2x20 AWG 105°C 5.2 mm OD Cable #RF50657-*M†**	***Cut/Abrasion Immune***		
	RK 4.41T-*	**AWM PVC NAMUR Blue 4x22 AWG 105°C 5.2 mm OD Cable #RF50598-*M†**	***flexlife***	1. BN 2. WH 3. BU 4. BK	
RKC .. 	RKCN 5T-*	**PLTC PVC NAMUR Blue 5x22 AWG 105°C 6.8 mm OD Cable #RF50767-*M†**	***flexlife, 22 AWG, Over 2 million cycles, for VBN 40-H1141 multibox***	1. GN 2. WH 3. OG 4. BK 5. RD	
	RKC 6T-*/S90/CS10476	**AWM PUR NAMUR Blue 5x24 AWG Foil/Drain 105°C 60 VAC/75 VDC, 2 A 5.7 mm OD Cable #RF50928-*M†**	***Cut/Abrasion Immune***	1. OR 2. RD 3. YE 4. BK 5. BU 6. Drain	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "RK©)"; "RK(C)V.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

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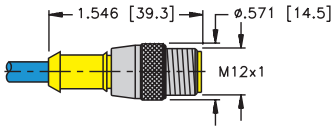
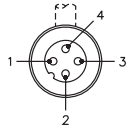
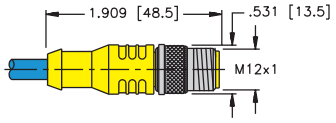
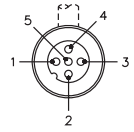
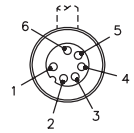
2, 4, 5 and 6-Wire *eurofast*® Drop Cordsets, NAMUR

- Straight Male Connectors
- For Use With NAMUR Sensors
- NEMA 1, 3, 4, 6P and IEC IP 68 Protection

Housing Style	Part Number	Cable	Features	Pinout	
RS .. 	RS 4.21T-*	**AWM PVC NAMUR Blue 2x20 AWG 105°C 5.2 mm OD Cable #RF20003-*M†**	***flexlife*®**	1. BN 2. BU 3. N/C 4. N/C	
	RS 4.21T-*/S90	**AWM PUR NAMUR Blue 2x20 AWG 105°C 5.2 mm OD Cable #RF50657-*M†**	***Cut/Abrasion Immune***		
	RS 4.41T-*	**AWM PVC NAMUR Blue 4x22 AWG 105°C 5.2 mm OD Cable #RF50598-*M†**	***flexlife***	1. BN 2. WH 3. BU 4. BK	
RSC .. 	RSCN 5T-*	**PLTC PVC NAMUR Blue 5x22 AWG 105°C 6.8 mm OD Cable #RF50767-*M†**	***flexlife, 22 AWG, Over 2 million cycles, for VBN 40-H1141 multibox***	1. GN 2. WH 3. OG 4. BK 5. RD	
	RSC 6T-*/S90/CS10476	**AWM PUR NAMUR Blue 5x24 AWG Foil/Drain 105°C 60 VAC/75 VDC, 2 A 5.7 mm OD Cable #RF50928-*M†**	***Cut/Abrasion Immune***	1. OG 2. RD 3. YE 4. BK 5. BU 6. Drain	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "RS©)"; "RS(C)V.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

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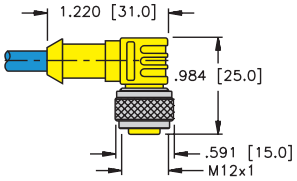
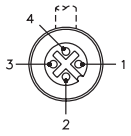
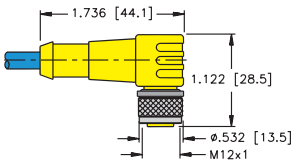
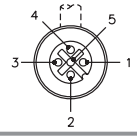
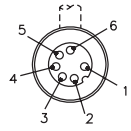
2, 4, 5 and 6-Wire *eurofast*® Drop Cordsets, NAMUR

- Right Angle Female Connectors
- For Use With NAMUR Sensors
- NEMA 1, 3, 4, 6P and IEC IP 68 Protection

Housing Style	Part Number	Cable	Features	Pinout	
WK .. 	WK 4.21T-*	**AWM PVC NAMUR Blue 2x20 AWG 105°C 5.2 mm OD Cable #RF20003-*M†**	***flexlife*®**	1. BN 2. BU 3. N/C 4. N/C	
	WK 4.21T-*/S90	**AWM PUR NAMUR Blue 2x20 AWG 105°C 5.2 mm OD Cable #RF50657-*M†**	***Cut/Abrasion Immune***		
	WK 4.41T-*	**AWM PVC NAMUR Blue 4x22 AWG 105°C 5.2 mm OD Cable #RF50598-*M†**	***flexlife***	1. BN 2. WH 3. BU 4. BK	
WKC .. 	WKCN 5T-*	**PLTC PVC NAMUR Blue 5x22 AWG 105°C 6.8 mm OD Cable #RF50767-*M†**	***flexlife, 22 AWG, Over 2 million cycles, for VBN 40-H1141 multibox***	1. GN 2. WH 3. OG 4. BK 5. RD	
	WKC 6T-*/S90/CS10476	**AWM PUR NAMUR Blue 5x24 AWG Foil/Drain 105°C 60 VAC/75 VDC, 2 A 5.7 mm OD Cable #RF50928-*M†**	***Cut/Abrasion Immune***	1. OG 2. RD 3. YE 4. BK 5. BU 6. Drain	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "WK©)"; "WK(C)V.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

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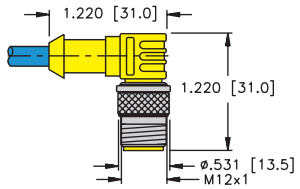
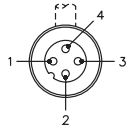
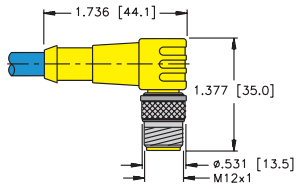
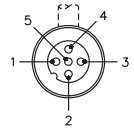
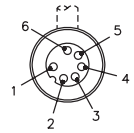
2, 4, 5 and 6-Wire *eurofast*® Drop Cordsets, NAMUR

- Right Angle Male Connectors
- For Use With NAMUR Sensors
- NEMA 1, 3, 4, 6P and IEC IP 67 Protection

Housing Style	Part Number	Cable	Features	Pinout	
WS .. 	WS 4.21T-*	**AWM PVC NAMUR Blue 2x20 AWG 105°C 5.2 mm OD Cable #RF20003-*M†**	***flexlife*®**	1. BN 2. BU 3. N/C 4. N/C	
	WS 4.21T-*/S90	**AWM PUR NAMUR Blue 2x20 AWG 105°C 5.2 mm OD Cable #RF50657-*M†**	***Cut/Abrasion Immune***		
	WS 4.41T-*	**AWM PVC NAMUR Blue 4x22 AWG 105°C 5.2 mm OD Cable #RF50598-*M†**	***flexlife***	1. BN 2. WH 3. BU 4. BK	
WSC .. 	WSCN 5T-*	**PLTC PVC NAMUR Blue 5x22 AWG 105°C 6.8 mm OD Cable #RF50767-*M†**	***flexlife, 22 AWG, Over 2 million cycles, for VBN 40-H1141 multibox***	1. GN 2. WH 3. OG 4. BK 5. RD	
	WSC 6T-*/S90/CS10476	**AWM PUR NAMUR Blue 5x24 AWG Foil/Drain 105°C 60 VAC/75 VDC, 2 A 5.7 mm OD Cable #RF50928-*M†**	***Cut/Abrasion Immune***	1. OG 2. RD 3. YE 4. BK 5. BU 6. Drain	

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "WS©)"; "WS(C)V.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

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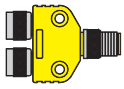
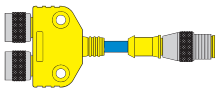
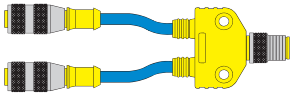
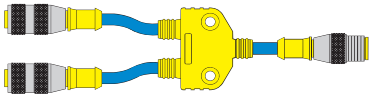
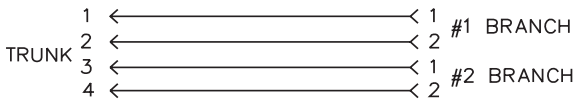
eurofast® 2 - Branch Molded Junctions, NAMUR Wiring

- Combine Two NAMUR Sensors into One Cable
- Tough Polyurethane Construction
- For use with NAMUR Junction Boxes

Application	Specifications	Wiring	Housing	Part Number
Combine 2 NAMUR sensors into one cable	250 V 4 A	NAMUR		VB2-FSM 4.41/2FKM 4.21
Combine 2 NAMUR sensors into one cable	250 V 4 A RS 4.41T = Blue PVC 5.2 mm OD, 4/22 AWG			VB2-RS 4.41T-*/2FKM 4.21
Combine 2 NAMUR sensors into one cable	250 V 4 A RK 4.21T = Blue PVC 5.2 mm OD, 2/20 AWG			VB2-FSM 4.41/2RK 4.21T-*/*
Combine 2 NAMUR sensors into one cable	250 V 4 A Blue PVC, 5.2 mm OD RK 4.21T – 2/20 AWG RS 4.41T – 4/22 AWG			VB2-RS 4.41T-*/2RK 4.21T-*/*

* Length in meters.

NAMUR Diagram



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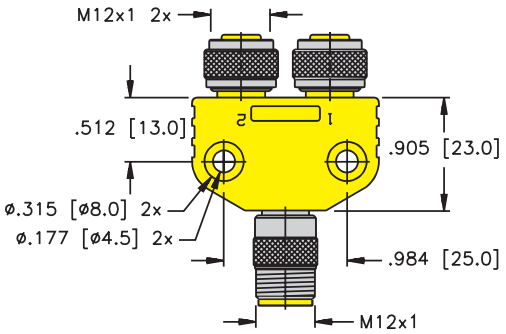
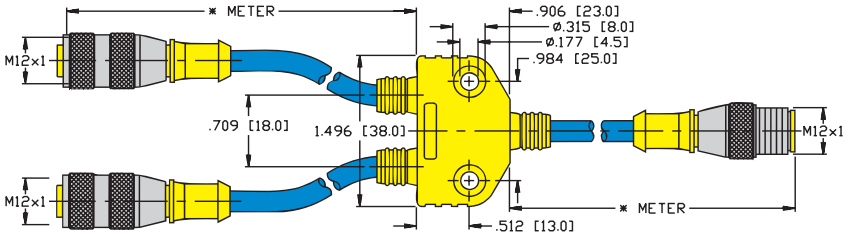
Junction Body:	Oil resistant yellow polyurethane.
Connector:	Oil resistant polyurethane body material, Nylon or PUR contact carrier, spacings to VDE 0110 Group C.
Contacts:	Gold plated brass.
Coupling Nuts:	Nickel plated brass.
Cable:	See table.
Temperature:	-40° to +105°C (-40° to +221°F).
Protection:	NEMA 1,3,4,6P and IEC IP 68.

Cable Length: Trunk - nominal 1 meter. Branches - nominal 0.3 meters. Other lengths available by request - consult factory.
Connector Options: (for legs with cable)
Stainless steel coupling nut add "V" to part number (RS to RSV, RK to RKV).
Nylon coupling nut add "K" to part number (RS to RSK, RK to RKK).
Right angle connectors, change part number (RS to WS, RK to WK).
Notes: Mounting holes accept #8 screw.

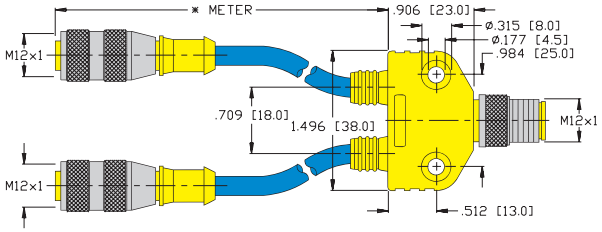
VB2-FSM 4.41/2FKM 4.21



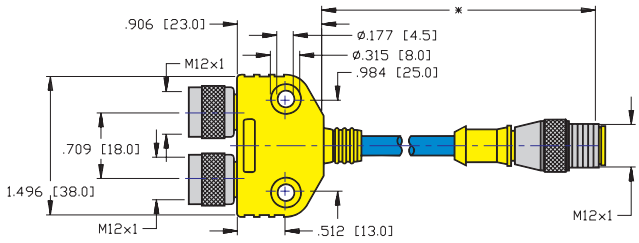
VB2-RS 4.41T-*/2RK 4.21T-*/*



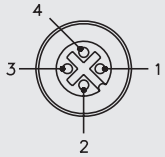
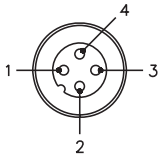
VB2-FSM 4.41/2RK 4.21T-*/*



VB2-RS 4.41T-*/2FKM 4.21



Pinouts

Female	Male
	
4-Pin *eurofast*®	**4-Pin *eurofast***

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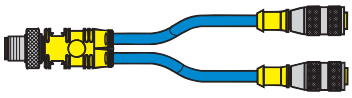
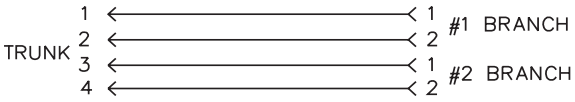
eurofast® 2 - Branch Molded Junctions, NAMUR Wiring

- **Combine Two NAMUR Sensors into One Cable**
- ***eurofast* Connection Features Anti-Vibration Coupling Nut** (main leg only)

Application	Specifications	Wiring	Housing	Part Number
Combine 2 NAMUR sensors into one cable. Connects directly to *eurofast* junction box.	**250 V 4 A 2/20 AWG Blue PVC 5.2 mm OD**	**NAMUR**		VBRS 4.41-2RK 4.21T-*/*

* Length in meters.
To add mounting hole; add /S857 to the end of the part number.

NAMUR Diagram

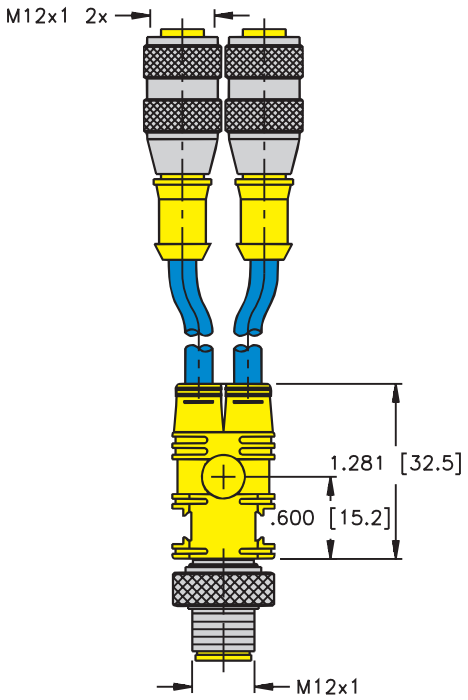


Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

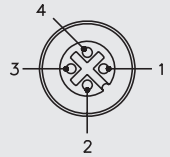
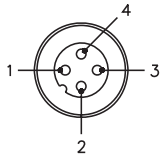
Connector:	Oil resistant yellow polyurethane Nylon or PUR contact carrier, spacings to VDE 0110 Group C.
Contacts:	Gold plated brass, machined from solid stock.
Coupling Nuts:	Nickel plated brass.
Cable:	See table.
Conductors:	High flex stranding, PVC insulation.
Temperature:	-40° to +105°C (-40° to +221°F).
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67.
Accessories:	KS 5/10 labels included.

Cable Length: Branches - nominal 0.3 meters. Other lengths available by request - consult factory.

VBRS 4.41-2RK 4.21T-*/*



Pinouts

Female	Male
	
4-Pin *eurofast*®	**4-Pin *eurofast***

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

multibox® *eurofast*® Junction Boxes, NAMUR, 1 Circuit Per Port

- 4 Port
- Rugged Plastic Housing with Flush Connectors
- Quick Disconnect or Integral Home Run Cable
- For use with NAMUR Sensors

1 Circuit Per Port, Common Positive, 100 VDC

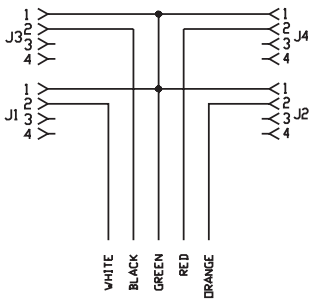
Application	Specifications	Pinout	Part Number
4-port J-box 1 circuit per port Integral cable	4 A/port, 9 A total Blue PVC cable, PLTC 5/22 AWG	Function / Color: +V / GN Function / Color: J1/Pin 2 / WH; J2/Pin 2 / OG; J3/Pin 2 / BK; J4/Pin 2 / RD	VB 40N-*
4-port J-box 1 circuit per port ***eurofast*** connector	4 A/port, 4 A total 5-pin ***eurofast*** connector 5 conductors Mates with RKCN 5T-*	Function / Pin / Color: +V / 1/GN Function / Pin / Color: J1/Pin 2 / 2/WH; J2/Pin 2 / 3/OG; J3/Pin 2 / 4/BK; J4/Pin 2 / 5/RD	VB 40N-H1151

1 Circuit Per Port, Isolated Circuits, 100 VDC

Application	Specifications	Pinout	Part Number
4-port J-box 1 circuit per port Integral cable	4 A/port, 9 A total Blue PVC cable, PLTC 9/22 AWG	Function / Color: J1/Pin 1 / WH; J1/Pin 2 / BK; J2/Pin 1 / GN; J2/Pin 2 / RD; Brown not used Function / Color: J3/Pin 1 / OG; J3/Pin 2 / BU; J4/Pin 1 / YE; J4/Pin 2 / VT	VB 4X1N-*
4-port J-box 1 circuit per port ***multifast*** ® connector	4 A/port, 8 A total 12-pin ***multifast*** connector 9 conductors Mates with CKNWM 12-9-*	Function / Pin / Color: J1/Pin 1 / 2/WH; J1/Pin 2 / 3/BK; J2/Pin 1 / 4/GN; J2/Pin 2 / 5/RD; Pin 1/Bn not used Function / Pin / Color: J3/Pin 1 / 6/OG; J3/Pin 2 / 7/BU; J4/Pin 1 / 8/YE; J4/Pin 2 / 9/VT	VB 4X1N-CS12

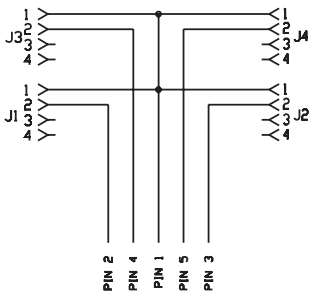
Functional Wiring Diagrams

Common Positive Integral Cable



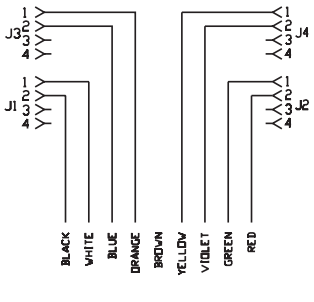
VB 40N-*

Common Positive *eurofast* Connector



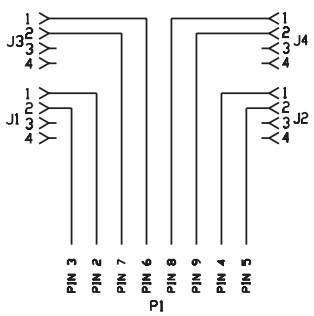
VB 40N-H1151

Isolated Circuit Integral Cable



VB 4X1N-*

Isolated Circuit *multifast* Connector



VB 4X1N-CS12

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Specifications

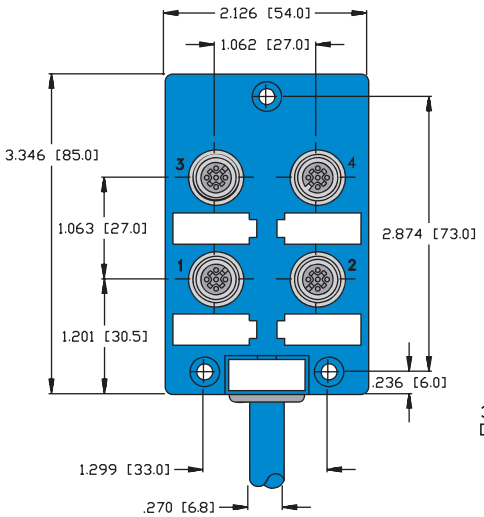
Housing:	Nylon.
Connectors:	***eurofast*®**: Nylon or PUR, spacings to VDE 0110 Group C.
Contacts:	Gold plated brass, machined from solid stock.
Thread Inserts:	Nickel plated brass.
Cable:	See table.
Temperature:	-30° to +80°C (-22° to +176°F).
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67.
Accessories:	(2) VZ 3 closure caps and one VZ 1 label kit (8 labels) included.

Cable Length:

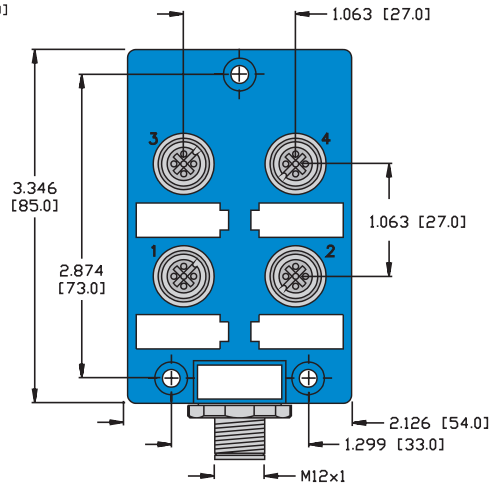
Standard length for junction boxes and ***multifast*®** series quick disconnect cordsets is nominal 5 meters. Other lengths available by request. Consult factory.

Dimensions

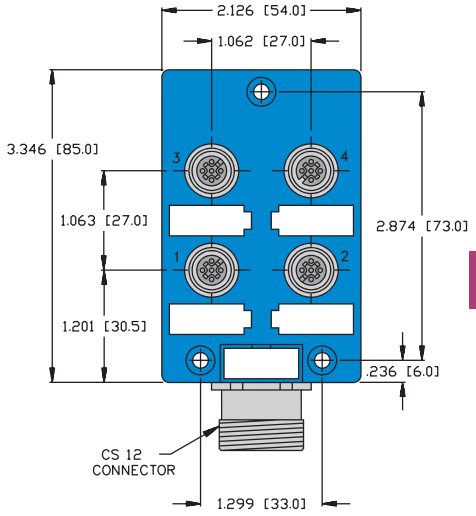
VB 40N-*
VB 4X1N-*



VB 40N-H1151



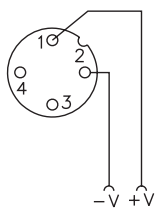
VB 4X1N-CS12



Notes:

1. Removable labels included (Part number VZ 1).
2. Clearance hole for #8 screw (3 places).
3. Housings with integral cable: 23.0 mm thickness. Housings with quick disconnect: 33.0 mm thickness.

Pinout Diagram



Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

multibox® eurofast® Junction Boxes, NAMUR, 2 Circuits Per Port

- 4 Ports
- Rugged Plastic Housing with Flush Connectors
- Quick Disconnect or Integral Home Run Cable
- For use with NAMUR Sensors

2 Circuits Per Port, Common Positive, 100 VDC

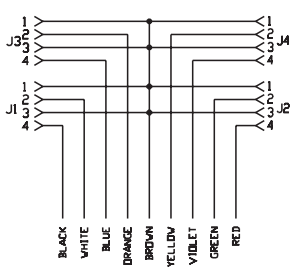
Application	Specifications	Pinout	Part Number
4-port J-box 2 circuits per port Integral cable	4 A/port, 9 A total Blue PVC cable, PLTC 9/22 AWG	Function / Color V+ BN J1/Pin 2 WH J1/Pin 4 BK J2/Pin 2 GN J2/Pin 4 RD J3/Pin 2 OG J3/Pin 4 BU J4/Pin 2 YE J4/Pin 4 VT	VB 40.5N-*
4-port J-box 2 circuits per port ***multifast*** ® connector	4 A/port, 8 A total 12-pin ***multifast*** connector 9 conductors Mates with CKNWM 12-9-*	Function / Pin / Color V+ 1/BN J1/Pin 2 2/WH J1/Pin 4 3/BK J2/Pin 2 4/GN J2/Pin 4 5/RD J3/Pin 2 6/OG J3/Pin 4 7/BU J4/Pin 2 8/YE J4/Pin 4 9/VT	VB 40.5N-CS12

2 Circuits Per Port, Isolated Circuits, 100 VDC

Application	Specifications	Pinout	Part Number
4-port J-box 2 circuits per port Integral cable	4 A/port, 9 A total Blue PVC cable, PLTC 16/22 AWG	Function / Color J1/Pin 1 WH J1/Pin 2 BK J1/Pin 3 GN J1/Pin 4 RD J2/Pin 1 OG J2/Pin 2 BU J2/Pin 3 BN J2/Pin 4 YE J3/Pin 1 VT J3/Pin 2 GY J3/Pin 3 PK J3/Pin 4 TN J4/Pin 1 WH/BK J4/Pin 2 WH/GN J4/Pin 3 WH/RD J4/Pin 4 WH/BU	VB 4X1.5N-*
4-port J-box 2 circuits per port ***multifast*** connector	4 A/port, 8 A total 16-pin ***multifast*** connector 16 conductors Mates with CKNWM 16-16-*	Function / Pin / Color J1/Pin 1 1/WH J1/Pin 2 2/BK J1/Pin 3 3/GN J1/Pin 4 4/RD J2/Pin 1 5/OG J2/Pin 2 6/BU J2/Pin 3 7/BN J2/Pin 4 8/YE J3/Pin 1 9/VT J3/Pin 2 10/GY J3/Pin 3 11/PK J3/Pin 4 12/TN J4/Pin 1 13/WH/BK J4/Pin 2 14/WH/GN J4/Pin 3 15/WH/RD J4/Pin 4 16/WH/BU	VB 4X1.5N-CS16

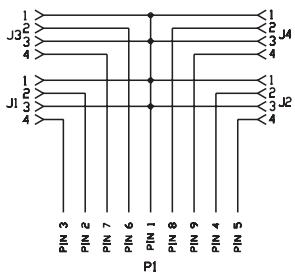
Functional Wiring Diagrams

Common Positive Integral Cable



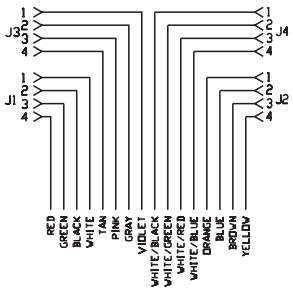
VB 40.5N-*

Common Positive *multifast* Connector



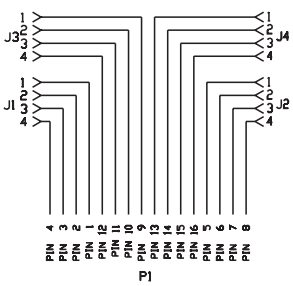
VB 40.5N-CS12

Isolated Circuit Integral Cable



VB 4X1.5N-*

Isolated Circuit *multifast* Connector



VB 4X1.5N-CS16

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Specifications

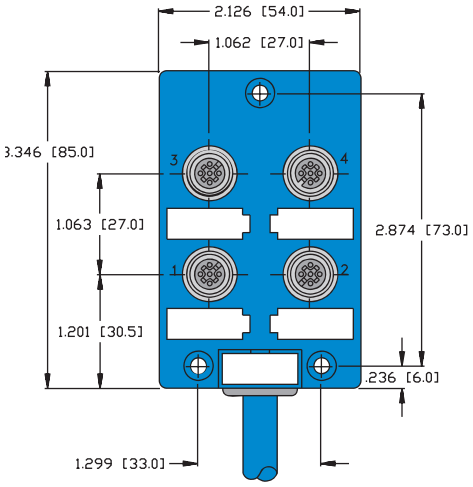
Housing:	Nylon.
Connectors:	***eurofast*®**: Nylon or PUR, spacings to VDE 0110 Group C.
Contacts:	Gold plated brass, machined from solid stock.
Thread Inserts:	Nickel plated brass.
Cable:	See table.
Temperature:	-30° to +80°C (-22° to +176°F).
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67.
Accessories:	(2) VZ 3 closure caps and one VZ 1 label kit (8 labels) included.

Cable Length:

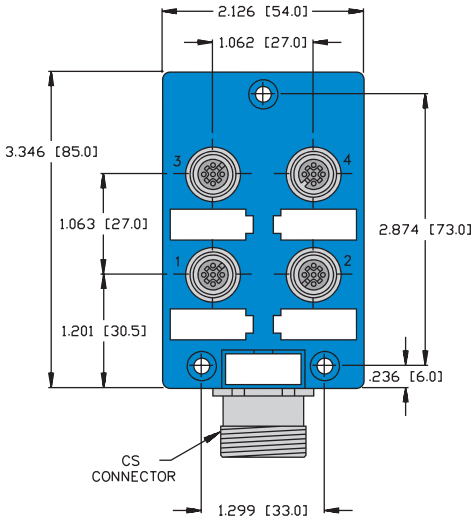
Standard length for junction boxes and ***multifast*®** series quick disconnect cordsets is nominal 5 meters.
Other lengths available by request. Consult factory.

Dimensions

VB 40.5N-*
VB 4X1.5N-*



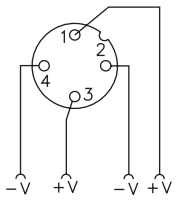
VB 40.5N-CS12
VB 4X1.5N-CS16



Notes:

1. Removable labels included (Part number VZ 1).
2. Clearance hole for #8 screw (3 places).
3. Housings with integral cable: 23.0 mm thickness. Housings with quick disconnect: 33.0 mm thickness.

Pinout Diagram



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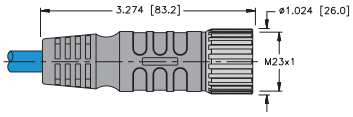
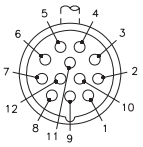
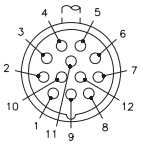
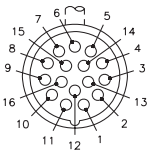
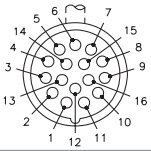
12 and 16-Pin *multifast*® Cordsets-NAMUR

- **Straight Male and Female Connectors**
- **IEC IP 67 Protection**
- **300 V, 3 A**

Housing Style	Part Number	Cable	Features	Pinout	
CKNM.. CSNM.. 	CKNM 12-9-*	**PLTC PVC Blue 9x22 AWG 105°C 6.9 mm OD Cable #RF50741-*M†**	***For use with junction boxes and for multi-conductor applications***	1. BN 7. BU 2. WH 8. YE 3. BK 9. VT 4. GN 10. N/C 5. RD 11. N/C 6. OG 12. N/C	
	CSNM 12-9-*				
	CKNM 16-16-*	**PLTC PVC Blue 16x22 AWG 105°C 8.3 mm OD Cable #RF50744-*M†**		1. WH 9. VT 2. BK 10. GY 3. GN 11. PK 4. RD 12. TN 5. OG 13. WH/BK 6. BU 14. WH/GN 7. BN 15. WH/RD 8. YE 16. WH/BU	
	CSNM 16-16-*				

* Length in meters.
Standard cable length is 5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "CK(S)NM.."; "CK(S)NMV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

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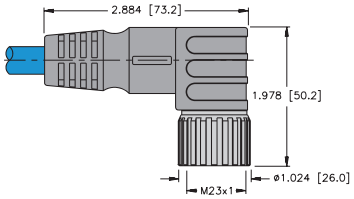
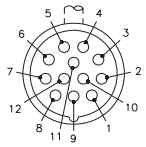
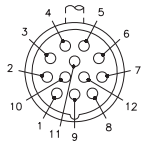
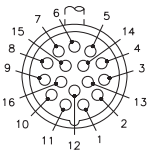
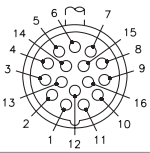
12 and 16-Pin *multifast*® Cordsets-NAMUR

- **Right Angle Male and Female Connectors**
- **IEC IP 67 Protection**
- **300 V, 3 A**

CKNWM.. CSNWM..



Housing Style	Part Number	Cable	Features	Pinout	
CKNWM.. CSNWM..	CKNWM 12-9-*	**PLTC PVC Blue 9x22 AWG 105°C 6.9 mm OD Cable #RF50741-*M†**	***For use with junction boxes and for multi-conductor applications***	1. BN 2. WH 3. BK 4. GN 5. RD 6. OG 7. BU 8. YE 9. VT 10. N/C 11. N/C 12. N/C	
	CSNWM 12-9-*				
	CKNWM 16-16-*	**PLTC PVC Blue 16x22 AWG 105°C 8.3 mm OD Cable #RF50744-*M†**		1. WH 2. BK 3. GN 4. RD 5. OG 6. BU 7. BN 8. YE 9. VT 10. GY 11. PK 12. TN 13. WH/BK 14. WH/GN 15. WH/RD 16. WH/BU	
	CSNWM 16-16-*				

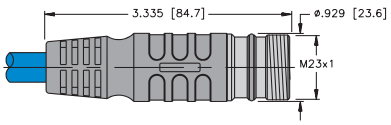
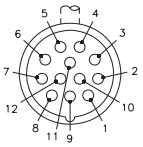
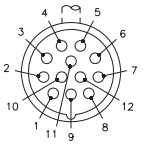
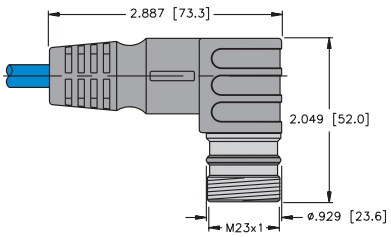
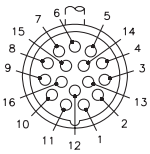
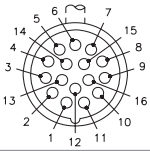
* Length in meters.
Standard cable length is 5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "CK(S)NWM.."; "CK(S)NWMV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

12 and 16-Pin *multifast*® Cordsets-NAMUR

- Straight and Right Angle Male Connectors
- IEC IP 67 Protection
- 300 V, 3 A

Housing Style	Part Number	Cable	Features	Pinout	
CSSNM.. 	CSSNM 12-9-*	**PLTC PVC Blue 9x22 AWG 105°C 6.9 mm OD Cable #RF50741-*M†**	***For use with junction boxes and for multi-conductor applications***	1. BN 7. BU 2. WH 8. YE 3. BK 9. VT 4. GN 10. N/C 5. RD 11. N/C 6. OG 12. N/C	
	CSSNWM 12-9-*				
CSSNWM.. 	CSSNM 16-16-*	**PLTC PVC Blue 16x22 AWG 105°C 8.3 mm OD Cable #RF50744-*M†**		1. WH 9. VT 2. BK 10. GY 3. GN 11. PK 4. RD 12. TN 5. OG 13. WH/BK 6. BU 14. WH/GN 7. BN 15. WH/RD 8. YE 16. WH/BU	
	CSSNWM 16-16-*				

* Length in meters.
Standard cable length is 5 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass "CSSNM.."; "CSSNMV/CSSNWMV.." indicates 316 stainless steel.

† See pages K236 - K244 for ***reelfast***® cable information.

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Cables and Cordsets for Extreme Applications

TURCK *extremelife* connectors are approved by DNV and ABS for use in marine shipboard environments. **TURCK** also has an entire line of junction boxes for wiring consolidation. From off-the-shelf junctions for 4-20 mA transmitters, to custom boxes for any application, **TURCK** reduces costs by making wiring faster, easier and more reliable.

- ABS Approved
- Certified petr IEEE-45
- UL listed for Marine Applications to STD UL 1309
- Meets IEC 332-3 Category A Flame Test
- CSA listed to C22.2 No. 245
- Jacket Material Provides Impact Protection to -50°C (-58°F)
- Available in Multiple Configurations

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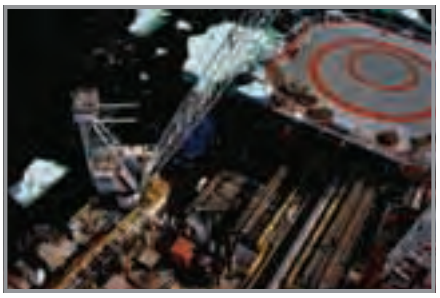
extremelife ® cables are heavy duty for extreme temperature environments and provide excellent resistance to extreme cold temperatures and oilfield drilling muds. **TURCK** offers multiple single and twisted pair conductor options. ***extremelife*** cables are available in two jacket types, ***extremelife-25*** and ***extremelife-55***.
The following characteristics are specific to each cable.

Characteristics	*extremelife-25*	*extremelife-55*
Cable Gage Range	16 to 22	
UL Rating	UL1309	
CSA Rating	CSA 22.2 No. 245	
ABS Approval No.	03-HS400763-PDA	
IEEE Approvals	IEEE 45-1998 and IEEE 1580-2001	
Flexible Stranding	Yes	
Standard Insulation	T75 and T90 UL and CSA, T75 IEEE	
XLPE Insulation	110X for increased electrical properties required for network applications	
Flame Retardancy	IEEE 1202/FT4 and IEC 332-3 Category A	
Cold Bend Pass Temperature	-40°C (-40°F)	-55°C (-67°F)
Cold Impact Pass Temperature	Good	-50°C (-58°F)
Cut through and Abrasion Resistance	Good	Excellent
Moisture and Oil Resistance	Excellent	
Installation Handling	Good	
Oilfield Drilling Mud Resistance	Excellent	
Braided Armor	Available with or without	
Sunlight Resistance	Yes	



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extremelife ® cables have been extensively tested in various drilling muds/fluids. Samples of five different drilling fluids were used to evaluate how ***extremelife*** cables handle harsh environments. Cable samples were placed in the muds and put in a test oven at +65.6°C (+150°F). Shrink/swell and tensile strength/elongation were monitored throughout a 28 day aging test.

The ***extremelife*** cables, with their exclusive jacket materials, were compared with the industry standard neoprene cables. All tested cables passed the tensile strength and elongation tests. The ***extremelife*** cables proved to be much more stable in size through the tests when compared to the neoprene jacketed cables.

Drilling Mud Types Used:

- Water based
- Synthetic based (two types)
- Diesel based
- Mineral oil based

extremelife Cables:

- Standard cables are stocked for quick delivery, and custom designs ship within 6 to 10 weeks.
- Multiple designs and custom configurations can be built using 16 to 22 AWG wires.
- Bronze armor styles combined with stable tinned-copper armor.
- Cost effective cables, since ***extremelife*** can be made with 22 AWG conductors and tinned-copper armor.
- Assorted conductor sizes and insulation materials allow usage in network applications.

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minifast® *extremelife*® Extension Cordset Part Number Key - Control Cable

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult Factory for catalog items not identified.

P - R S V R K V 40-180 - 4M

Process Cordset

minifast

R = Straight
W = Right Angle

Gender

K = Female Connector, Female Threads
S = Male Connector, Male Threads
Y = Male Connector, Female Threads

Coupling Nut Material

(Blank) = Nylon
M = Nickel Plated Brass
V = 316 Stainless Steel

Insertion Point of Extension Cable 2nd Prefix*

* Male Connector Listed 1st, Female Connector 2nd
Example: P-RSV RKV 40-180-4M

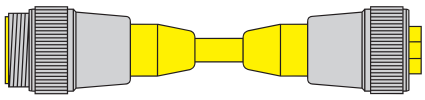
Length in Meters

Number of Wires / AWG / Conductor Colors

40-180	3/18 AWG	BN, BU, GN/YE
40-181	3/18 AWG	BN, BU, GN/YE
40-188	3/18 AWG	BN, BU, GN/YE
56-964	5/18 AWG	BK, BU, GN/YE, BN, WH
70-182	5/18 AWG	BU, BN, WH, BK, GN/YE
80-073	8/18 AWG	BK, WH, BU, RD, YE, BN, GY, GN
80-158	8/18 AWG	BK, WH, BU, RD, YE, BN, GY, GN
100-183	9/18 AWG	WH/BK, BK/WH, WH/GN, GN/WH, WH/RD, RD/WH, N/C, GN/YE, WH/OG, OG/WH
100-189	9/18 AWG	WH/BK, BK/WH, WH/GN, GN/WH, WH/RD, RD/WH, N/C, GN/YE, WH/OG, OG/WH

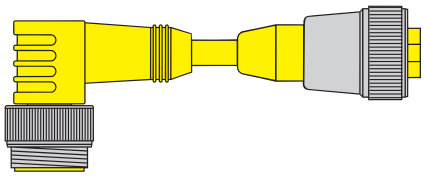
Extension Examples:

P - R S V R K V 40-180 - 4M



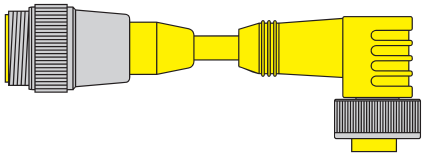
RSV .. - RKV ..

P - W S V R K V 40-180 - 4M



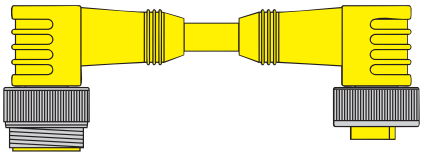
WSV .. - RKV ..

P - R S V W K V 40-180 - 4M



RSV .. - WKV ..

P - W S V W K V 40-180 - 4M



WSV .. - WKV ..

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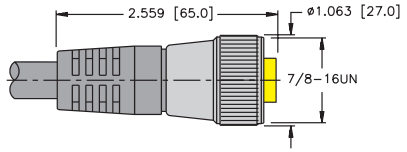
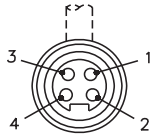
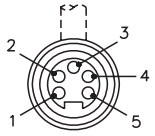
4 and 5-Wire *minifast*® *extremelife*® Control Cordsets

- **Straight Female Connectors**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing	Part Number	Cable	Features	Pinouts	
	P-RKV 40-180-*M	**PVC Black 3x18 AWG, 1 STP with GND Foil/Drain 90°C 300 V, 9 A 8.4 mm OD Cable #RF51180-*M†**	***extremelife-25 UL 1309 approved 2-wire Analog***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-RKV 40-181-*M	**PVC Black, Braided Armor 3x18 AWG, 1 STP with GND Foil/Drain 90°C 300 V, 9 A 12.5 mm OD Cable #RF51181-*M†**	***extremelife-25 Braided Armor Cable UL 1309 approved 2-wire Analog***		
	P-RKV 40-188-*M	**TPE Black 3x18 AWG, 1 STP with GND Foil/Drain 90°C 300 V, 9 A 8.4 mm OD Cable #RF51188-*M†**	***extremelife-55 UL 1309 approved 2-wire Analog***		
	P-RKV 56-964-*M	**PVC Blue 5x18 AWG, Foil/Drain 90°C 300 V, 9 A 10.4 mm OD Cable #RF50964-*M†**	***extremelife-25 UL 1309 approved 5-wire shielded***	1. BK 2. BU 3. GN/YE 4. BN 5. WH	

* Length in meters. Standard cable lengths are 2, 4, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is 316 stainless steel "P-RKV .."; "P-RKM .." indicates nickel plated brass.

† See pages K236 - K244 for ***reelfast***® cable information.

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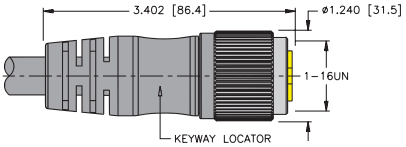
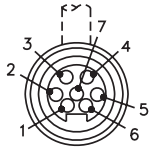
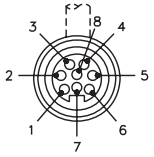
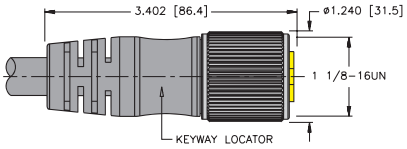
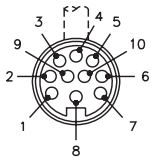
7, 8, and 9-Wire *minifast*® *extremelife*® Control Cordsets

- **Straight Female Connectors**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing	Part Number	Cable	Features	Pinout	
	P-RKV 70-182-*M	**PVC Black** **5x18 AWG, 2 STP with GND** **90°C** **300 V, 9 A** **10.4 mm OD** **Cable #RF51182-*M**†	***extremelife-25*** ***UL 1309 approved*** ***2-wire Analog x 2***	1. BU 2. BN 3. Drain 4. WH 5. BK 6. Drain 7. GN/YE	
	P-RKV 80-073-*M	**PVC Blue, Braided Armor** **8x18 AWG, 4 STP** **90°C** **300 V, 9 A** **17.8 mm OD** **Cable #RF51073-*M**†	***extremelife-25*** ***Braided Armor Cable*** ***UL 1309 approved*** ***2-wire Analog x 4***	1. BK 2. WH 3. BU 4. RD 5. YE 6. BN 7. GY 8. GN	
	P-RKV 80-158-*M	**TPE Black** **8x18 AWG, 4 STP** **90°C** **300 V, 9 A** **15.1 mm OD** **Cable #RF51158-*M**†	***extremelife-55*** ***UL 1309 approved*** ***2-wire Analog x 4***		
	P-RKV 100-183-*M	**PVC Black** **9x18 AWG, 4 STP with GND** **90°C** **300 V, 7 A** **13.2 mm OD** **Cable #RF51183-*M**†	***extremelife-25*** ***UL 1309 approved*** ***2-wire Analog x 4***	1. WH/BK 2. BK/WH 3. WH/GN 4. GN/WH 5. WH/RD 6. RD/WH 7. N/C 8. GN/YE 9. WH/OG 10. OG/WH	
	P-RKV 100-189-*M	**TPE Black** **9x18 AWG, 4 STP with GND** **90°C** **300 V, 7 A** **15.1 mm OD** **Cable #RF51189-*M**†	***extremelife-55*** ***UL 1309 approved*** ***2-wire Analog x 4***		

* Length in meters. Standard cable lengths are 2, 4, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is 316 stainless steel "P-RKV .."; "P-RKM .." indicates nickel plated brass.

† See pages K236 - K244 for ***reelfast***® cable information.

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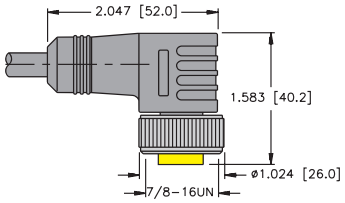
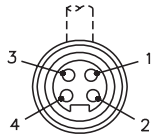
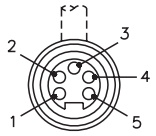
4 and 5-Wire *minifast*® *extremelife*® Control Cordsets

- **Right Angle Female Connectors**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing	Part Number	Cable	Features	Pinouts	
	P-WKV 40-180-*M	**PVC Black 3x18 AWG, 1 STP with GND Foil/Drain 90°C 300 V, 9 A 8.4 mm OD Cable #RF51180-*M†**	***extremelife-25 UL 1309 approved 2-wire Analog***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-WKV 40-181-*M	**PVC Black, Braided Armor 3x18 AWG, 1 STP with GND Foil/Drain 90°C 300 V, 9 A 12.5 mm OD Cable #RF51181-*M†**	***extremelife-25 Braided Armor Cable UL 1309 approved 2-wire Analog***		
	P-WKV 40-188-*M	**TPE Black 3x18 AWG, 1 STP with GND Foil/Drain 90°C 300 V, 9 A 8.4 mm OD Cable #RF51188-*M†**	***extremelife-55 UL 1309 approved 2-wire Analog***		
	P-WKV 56-964-*M	**PVC Blue 5x18 AWG, Foil/Drain 90°C 300 V, 9 A 10.4 mm OD Cable #RF50964-*M†**	***extremelife-25 UL 1309 approved 5-wire shielded***	1. BK 2. BU 3. GN/YE 4. BN 5. WH	

* Length in meters. Standard cable lengths are 2, 4, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is 316 stainless steel "P-WKV .."; "P-WKM .." indicates nickel plated brass.

† See pages K236 - K244 for ***reelfast***® cable information.

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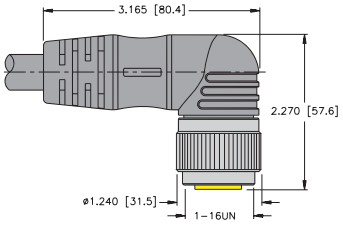
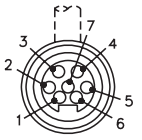
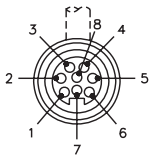
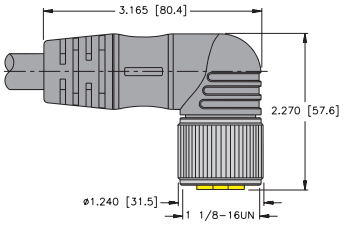
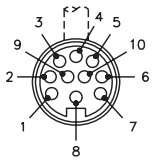
7, 8, and 9-Wire *minifast*® *extremelife*® Control Cordsets

- **Right Angle Female Connectors**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing	Part Number	Cable	Features	Pinouts	
	P-WKV 70-182-*M	**PVC Black 5x18 AWG, 2 STP with GND 90°C 300 V, 9 A 10.4 mm OD Cable #RF51182-*M†**	***extremelife-25 UL 1309 approved 2-wire Analog x 2***	1. BU 2. BN 3. Drain 4. WH 5. BK 6. Drain 7. GN/YE	
	P-WKV 80-073-*M	**PVC Blue, Braided Armor 8x18 AWG, 4 STP 90°C 300 V, 9 A 17.8 mm OD Cable #RF51073-*M†**	***extremelife-25 Braided Armor Cable UL 1309 approved 2-wire Analog x 4***	1. BK 2. WH 3. BU 4. RD 5. YE 6. BN 7. GY 8. GN	
	P-WKV 80-158-*M	**TPE Black 8x18 AWG, 4 STP 90°C 300 V, 9 A 15.1 mm OD Cable #RF51158-*M†**	***extremelife-55 UL 1309 approved 2-wire Analog x 4***		
	P-WKV 100-183-*M	**PVC Black 9x18 AWG, 4 STP with GND 90°C 300 V, 7 A 13.2 mm OD Cable #RF51183-*M†**	***extremelife-25 UL 1309 approved 2-wire Analog x 4***	1. WH/BK 2. BK/WH 3. WH/GN 4. GN/WH 5. WH/RD 6. RD/WH 7. N/C 8. GN/YE 9. WH/OG 10. OG/WH	
	P-WKV 100-189-*M	**TPE Black 9x18 AWG, 4 STP with GND 90°C 300 V, 7 A 15.1 mm OD Cable #RF51189-*M†**	***extremelife-55 UL 1309 approved 2-wire Analog x 4***		

* Length in meters. Standard cable lengths are 2, 4, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is 316 stainless steel "P-WKV .."; "P-WKM .." indicates nickel plated brass.

† See pages K236 - K244 for ***reelfast***® cable information.

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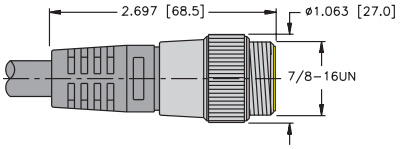
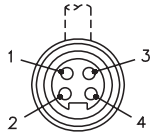
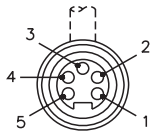
4 and 5-Wire *minifast*® *extremelife*® Control Cordsets

- **Straight Male Connectors**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing	Part Number	Cable	Features	Pinouts	
	P-RSV 40-180-*M	**PVC Black 3x18 AWG, 1 STP with GND Foil/Drain 90°C 300 V, 9 A 8.4 mm OD Cable #RF51180-*M†**	***extremelife-25 UL 1309 approved 2-wire Analog***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-RSV 40-181-*M	**PVC Black, Braided Armor 3x18 AWG, 1 STP with GND Foil/Drain 90°C 300 V, 9 A 12.5 mm OD Cable #RF51181-*M†**	***extremelife-25 Braided Armor Cable UL 1309 approved 2-wire Analog***		
	P-RSV 40-188-*M	**TPE Black 3x18 AWG, 1 STP with GND Foil/Drain 90°C 300 V, 9 A 8.4 mm OD Cable #RF51188-*M†**	***extremelife-55 UL 1309 approved 2-wire Analog***		
	P-RSV 56-964-*M	**PVC Blue 5x18 AWG, Foil/Drain 90°C 300 V, 9 A 10.4 mm OD Cable #RF50964-*M†**	***extremelife-25 UL 1309 approved 5-wire shielded***	1. BK 2. BU 3. GN/YE 4. BN 5. WH	

* Length in meters. Standard cable lengths are 2, 4, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is 316 stainless steel "P-RSV .."; "P-RSM .." indicates nickel plated brass.

† See pages K236 - K244 for ***reelfast***® cable information.

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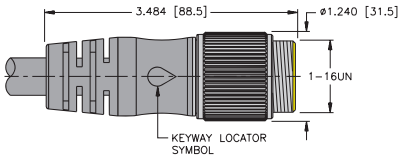
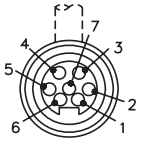
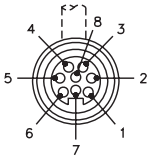
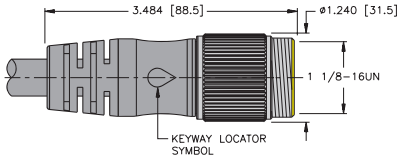
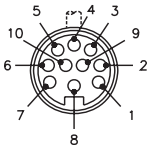
7, 8, and 9-Wire *minifast*® *extremelife*® Control Cordsets

- **Straight Male Connectors**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing	Part Number	Cable	Features	Pinouts	
	P-RSV 70-182-*M	**PVC Black** **5x18 AWG, 2 STP with GND** **90°C** **300 V, 9 A** **10.4 mm OD** **Cable #RF51182-*M**†	***extremelife-25*** ***UL 1309 approved*** ***2-wire Analog x 2***	1. BU 2. BN 3. Drain 4. WH 5. BK 6. Drain 7. GN/YE	
	P-RSV 80-073-*M	**PVC Blue, Braided Armor** **8x18 AWG, 4 STP** **90°C** **300 V, 9 A** **17.8 mm OD** **Cable #RF51073-*M**†	***extremelife-25*** ***Braided Armor Cable*** ***UL 1309 approved*** ***2-wire Analog x 4***	1. BK 2. WH 3. BU 4. RD 5. YE 6. BN 7. GY 8. GN	
	P-RSV 80-158-*M	**TPE Black** **8x18 AWG, 4 STP** **90°C** **300 V, 9 A** **15.1 mm OD** **Cable #RF51158-*M**†	***extremelife-55*** ***UL 1309 approved*** ***2-wire Analog x 4***		
	P-RSV 100-183-*M	**PVC Black** **9x18 AWG, 4 STP with GND** **90°C** **300 V, 7 A** **13.2 mm OD** **Cable #RF51183-*M**†	***extremelife-25*** ***UL 1309 approved*** ***2-wire Analog x 4***	1. WH/BK 2. BK/WH 3. WH/GN 4. GN/WH 5. WH/RD 6. RD/WH 7. N/C 8. GN/YE 9. WH/OG 10. OG/WH	
	P-RSV 100-189-*M	**TPE Black** **9x18 AWG, 4 STP with GND** **90°C** **300 V, 7 A** **15.1 mm OD** **Cable #RF51189-*M**†	***extremelife-55*** ***UL 1309 approved*** ***2-wire Analog x 4***		

* Length in meters. Standard cable lengths are 2, 4, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is 316 stainless steel "P-RSV .."; "P-RSM .." indicates nickel plated brass.

† See pages K236 - K244 for ***reelfast***® cable information.

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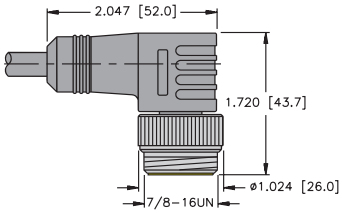
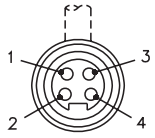
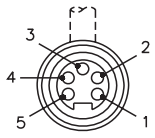
4 and 5-Wire *minifast*® *extremelife*® Control Cordsets

- **Right Angle Male Connectors**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing	Part Number	Cable	Features	Pinouts	
	P-WSV 40-180-*M	**PVC Black 3x18 AWG, 1 STP with GND Foil/Drain 90°C 300 V, 9 A 8.4 mm OD Cable #RF51180-*M†**	***extremelife-25 UL 1309 approved 2-wire Analog***	1. BU 2. BN 3. Drain 4. GN/YE	
	P-WSV 40-181-*M	**PVC Black, Braided Armor 3x18 AWG, 1 STP with GND Foil/Drain 90°C 300 V, 9 A 12.5 mm OD Cable #RF51181-*M†**	***extremelife-25 Braided Armor Cable UL 1309 approved 2-wire Analog***		
	P-WSV 40-188-*M	**TPE Black 3x18 AWG, 1 STP with GND Foil/Drain 90°C 300 V, 9 A 8.4 mm OD Cable #RF51188-*M†**	***extremelife-55 UL 1309 approved 2-wire Analog***		
	P-WSV 56-964-*M	**PVC Blue 5x18 AWG, Foil/Drain 90°C 300 V, 9 A 10.4 mm OD Cable #RF50964-*M†**	***extremelife-25 UL 1309 approved 5-wire shielded***	1. BK 2. BU 3. GN/YE 4. BN 5. WH	

* Length in meters. Standard cable lengths are 2, 4, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is 316 stainless steel "P-WSV .."; "P-WSM .." indicates nickel plated brass.

† See pages K236 - K244 for ***reelfast***® cable information.

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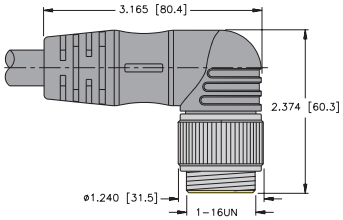
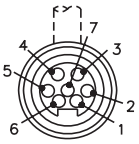
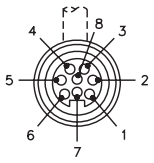
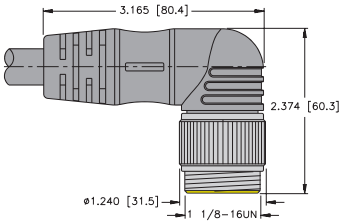
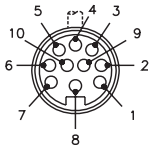
7, 8 and 9-Wire *minifast*® *extremelife*® Control Cordsets

- **Right Angle Male Connectors**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Housing	Part Number	Cable	Features	Pinouts	
	P-WSV 70-182-*M	**PVC Black** **5x18 AWG, 2 STP with GND** **90°C** **300 V, 9 A** **10.4 mm OD** **Cable #RF51182-*M**†	***extremelife-25*** ***UL 1309 approved*** ***2-wire Analog x 2***	1. BU 2. BN 3. Drain 4. WH 5. BK 6. Drain 7. GN/YE	
	P-WSV 80-073-*M	**PVC Blue, Braided Armor** **8x18 AWG, 4 STP** **90°C** **300 V, 9 A** **17.8 mm OD** **Cable #RF51073-*M**†	***extremelife-25*** ***Braided Armor Cable*** ***UL 1309 approved*** ***2-wire Analog x 4***	1. BK 2. WH 3. BU 4. RD 5. YE 6. BN 7. GY 8. GN	
	P-WSV 80-158-*M	**TPE Black** **8x18 AWG, 4 STP** **90°C** **300 V, 9 A** **15.1 mm OD** **Cable #RF51158-*M**†	***extremelife-55*** ***UL 1309 approved*** ***2-wire Analog x 4***		
	P-WSV 100-183-*M	**PVC Black** **9x18 AWG, 4 STP with GND** **90°C** **300 V, 7 A** **13.2 mm OD** **Cable #RF51183-*M**†	***extremelife™-25*** ***UL 1309 approved*** ***2-wire Analog x 4***	1. WH/BK 2. BK/WH 3. WH/GN 4. GN/WH 5. WH/RD 6. RD/WH 7. N/C 8. GN/YE 9. WH/OG 10. OG/WH	
	P-WSV 100-189-*M	**TPE Black** **9x18 AWG, 4 STP with GND** **90°C** **300 V, 7 A** **15.1 mm OD** **Cable #RF51189-*M**†	***extremelife-55*** ***UL 1309 approved*** ***2-wire Analog x 4***		

* Length in meters. Standard cable lengths are 2, 4, 6, 8 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is 316 stainless steel "P-WSV .."; "P-WSM .." indicates nickel plated brass.

† See pages K236 - K244 for ***reelfast***® cable information.

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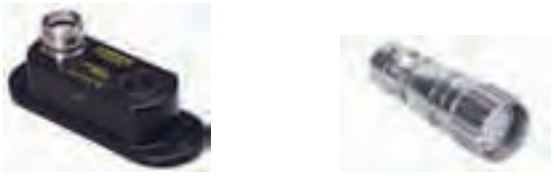
Process Wiring Accessories Selection Guide

7/8", 1, & 1-1/8" *minifast*® Thread	*lokfast*® Guard	Conduit Adapters	Conduit Adapter Ground Ring	Field Wireables	Closure Caps
Pages	K207	K209	K213	K215	K229

M12 *eurofast*® Thread	*lokfast* Guard	Conduit Adapters	Conduit Adapter Ground Ring	Field Wireables	Closure Caps
Pages	K207	K211	K213	K219	K232



M23 *multifast*® Thread	Conduit Adapters	Field Wireables	Accessories
Pages	K212	K223	K234

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minifast® lokfast® Guards

Part Number	Application
LOCK-MINI	*Nylon locking guard for straight minifast standard body connectors (RKM, RKV, RSM and RSV) in Class I, Division 2 installations**
LOCK-MINI (10/BAG)	
LOCK-MINI-ANGLE	*Nylon locking guard for right angle minifast standard body connectors (WKM, WKV, WSM and WSV) in Class I, Division 2 installations**
LOCK-MINI-ANGLE (10/BAG)	
LOCK-MINI-FW	*Nylon locking guard for straight minifast field wireable connectors (BS 41..., and B 41...) in Class I, Division 2 installations**
LOCK-MINI-FW (10/BAG)	
LOCK-MINI-B&C	*Nylon locking guard for straight minifast "B" Style and "C" Style connectors (RKM, RKV, RSM and RSV) in Class I, Division 2 installations**
LOCK-MINI-B&C (10/BAG)	
LOCK-MINI-B&C-ANGLE	*Nylon locking guard for right angle minifast "B" Style and "C" Style connectors (WKM, WKV, WSM and WSV) in Class I, Division 2 installations**
LOCK-MINI-B&C-ANGLE (10/BAG)	

***lokfast* Closed**

***lokfast* Open**

eurofast® lokfast Guards

Part Number	Application
LOCK-EURO-G	*Nylon locking guard for straight eurofast G-body connectors (RKG, RKGV, RSG and RSGV) in Class I, Division 2 installations**
LOCK-EURO-G (10/BAG)	
LOCK-EURO-R	*Nylon locking guard for straight eurofast R-body connectors (RKR, RKRV, RSR and RSRV) in Class I, Division 2 installations**
LOCK-EURO-R (10/BAG)	
LOCK-EURO-FW	*Nylon locking guard for straight eurofast field wireable connectors (B81.., BS81.. and BM81..) in Class I, Division 2 installations**
LOCK-EURO-FW (10/BAG)	

***lokfast* Open**

***lokfast* Closed**

* See **TURCK** Control Drawing QCF-00147 (FM) or Ni-2.404 (CSA) at www.turck.com/fmcd/ for guidance on installation in hazardous locations.

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

lokfast® Guards for use with AIM Stations

Part Number	Application
LOCK-FP-T	*Nylon locking guard kit for use with models FDNP-L0808G-TT, FDNP-XSG16-TT in Class I, Division 2 installations**
LOCK-FL-T	*Nylon locking guard kit for use with models FDNL-L1600-T, FDNL-CPG88-TT in Class I, Division 2 installations**
LOCK-FQ-T	*Nylon locking guard kit for use with models FDNQ-XSG08-T, FDNQ-S0800-T in Class I, Division 2 installations**
LOCK-4MB12	*Nylon locking guard kit for use with models 4MB12-4P2-CS12, 4MB12-5P3-5 in Class I, Division 2 installations**
LOCK-8MB12	*Nylon locking guard kit for use with models 8MB12-4P2-CS12, 8MB12-5P3-5 in Class I, Division 2 installations**
LOCK-FP-E	*Nylon locking guard kit for use with model FENP-XSG16 in Class I, Division 2 installations**
LOCK-FP-C	*Nylon locking guard kit for use with model FLDP-IOM 88-0001 in Class I, Division 2 installations**
LOCK-FL-E	*Nylon locking guard kit for use with model FDNL-S1600-E in Class I, Division 2 installations**
LOCK-FL-C	*Nylon locking guard kit for use with model FDNL-L1600-C in Class I, Division 2 installations**
LOCK-FQ-E	*Nylon locking guard kit for use with model FDNQ-CSG44-E in Class I, Division 2 installations**
LOCK-FQ-C	*Nylon locking guard kit for use with model FDNQ-S0400-C in Class I, Division 2 installations**
LOCK-FP-REP	*Nylon locking guard kit for use with models FDN-DN1, REP-DN, FDN-MSTR in Class I, Division 2 installations**

Guards for *lokfast* Bus Ports

Guards for *lokfast* Aux Power Ports

Guards for *lokfast* I/O Ports

* ***lokfast*** kit includes guards for Bus / I/O / Aux Power depending on module kits.

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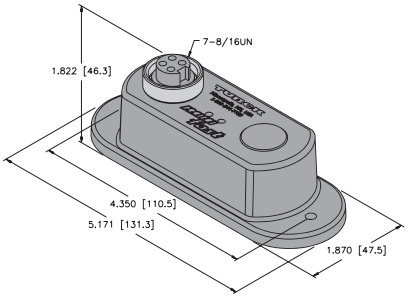
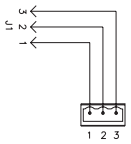
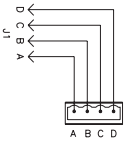
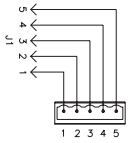
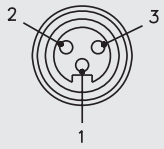
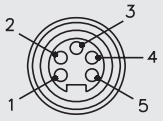
minifast® Conduit Adapters, 1 Port

- **Attaches to Standard Crouse-Hinds 3/4" Form 8, Mark 9 Conduit Bodies for Transition to 3 and 5-Wire *minifast* Connectors**
- **Gasket and 8-32 x 1/2 Mounting Screws**
- **IP 67 Protection (only when all receptacles are mated or covered with plugs)**
- **Terminal Strips Accept Up to 12 AWG Wires**

Drawing	Part Number	Specs	Application	Wiring Diagrams
	CA-1/RKF 30	Nylon Housing 80°C 250 V, 9 A	*Attaches to standard conduit body for transition to 3-wire minifast connector*	
	CA-1/RKF 40		*Attaches to standard conduit body for transition to 4-wire minifast connector*	
	CA-1/RKF 50		*Attaches to standard conduit body for transition to 5-wire minifast connector*	

Standard receptacle housing material is nickel plated brass.."RKF"; "RKFV" indicates 316 stainless steel.
Example: CA-1/RKFV 50.

Pinouts

Female		
		
3-Pin	**4-Pin**	**5-Pin**

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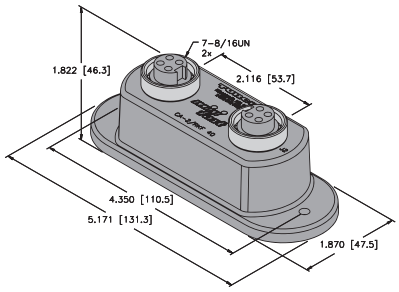
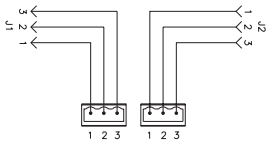
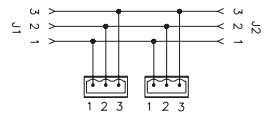
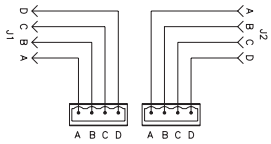
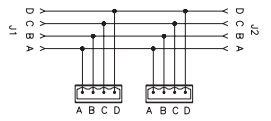
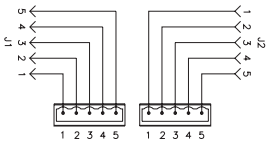
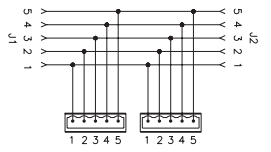
minifast® Conduit Adapters, 2 Port

- **Attaches to Standard Crouse-Hinds 3/4" Form 8, Mark 9 Conduit Bodies for Transition to 3-5 Wire *minifast* Connectors**
- **Gasket and 8-32 x 1/2 Mounting Screws**
- **IP 67 Protection (only when all receptacles are mated or covered with plugs)**
- **Terminal Strips Accept Up to 12 AWG Wires**

Drawing	Part Number	Specs	Application	Wiring Diagrams
	CA-2/RKF 30	Nylon Housing 80°C 250 V, 9 A	*Attaches to standard conduit body for transition to 3-wire minifast connector.*	
	CA-2/RKF 30/S651		*Attaches to standard conduit body for transition to 3-wire minifast connector, parallel wired.*	
	CA-2/RKF 40		*Attaches to standard conduit body for transition to 4-wire minifast connector.*	
	CA-2/RKF 40/S651		*Attaches to standard conduit body for transition to 4-wire minifast connector, parallel wired.*	
	CA-2/RKF 50		*Attaches to standard conduit body for transition to 5-wire minifast connector.*	
	CA-2/RKF 50/S651		*Attaches to standard conduit body for transition to 5-wire minifast connector, parallel wired.*	

Standard receptacle housing material is nickel plated brass.."RKF"; "RKFV" indicates 316 stainless steel.
Example: CA-2/RKFV 50.
For pinouts see bottom of page K222.

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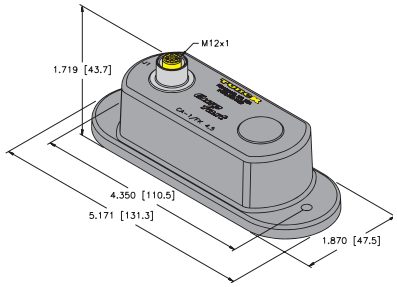
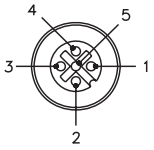
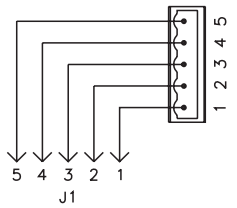
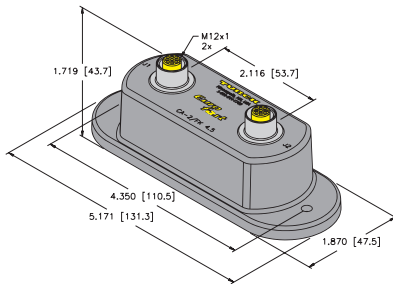
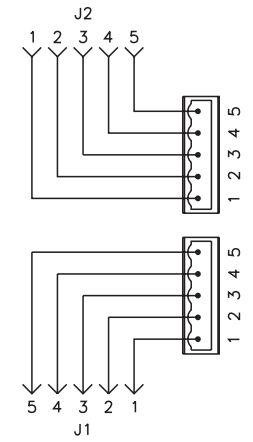
eurofast® Conduit Adapters

- **Attaches to Standard Crouse-Hinds 3/4" Form 8 Conduit Bodies for Transition to 5-Wire *eurofast*® Connectors**
- **Gasket and 8-32 x 1/2 Mounting Screws Included**
- **IP 67 Protection (only when all receptacles are mated or covered with plugs)**
- **Terminal Strips Accept Up to 12 AWG Wires**

Drawing	Part Number	Specs	Application	Pinout	Wiring Diagrams
	CA-1/FK 4.5	Nylon housing 80°C 250 V, 4 A	*Attaches to standard conduit body for transition to 5-wire eurofast connector*		
	CA-2/FK 4.5				

Standard receptacle housing material is nickel plated brass "CA-1(2)/FK 4.5"; "CA-1(2)/FKV 4.5" indicates stainless steel.

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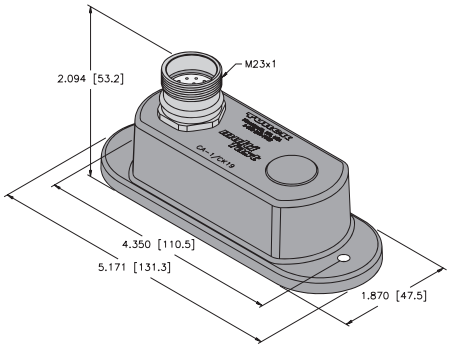
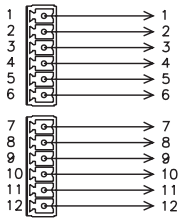
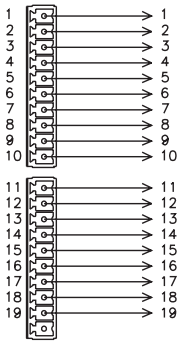
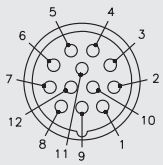
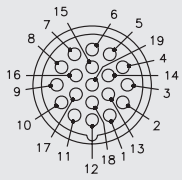
multifast® Conduit Adapters, 1 Port

- Attaches to Standard Crouse-Hinds 3/4" Form 8, Mark 9 Conduit Bodies for Transition to 12 and 19-Pin *multifast* Connectors
- Gasket and 8-32 x 1/2 Mounting Screws Included
- IP 67 Protection (only when all receptacles are mated or covered with plugs)
- Terminal Strips Accept Up to 14 AWG Wires

Drawing	Part Number	Specs	Application	Wiring Diagrams
	CA-1/CK 12	Nylon housing Nickel plated brass receptacle housing 80°C 300 V, 4 A	*Attaches to standard conduit body for transition to 12-pin multifast connector.*	
	CA-1/CKV 12	Nylon housing Stainless steel receptacle housing 80°C 300 V, 4 A		
	CA-1/CK 19	Nylon housing Nickel plated brass receptacle housing 80°C 150 V, 4 A	*Attaches to standard conduit body for transition to 19-pin multifast connector.*	
	CA-1/CKV 19	Nylon housing Stainless steel receptacle housing 80°C 150 V, 4 A		

Pinouts

Female	
	
12-Pin	**19-Pin**

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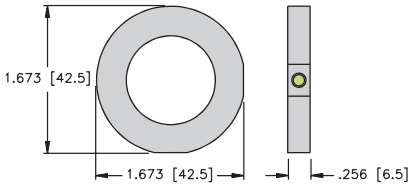
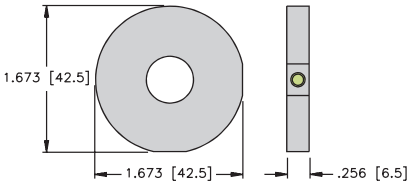
minifast® *eurofast*® Conduit Adapter Ground Rings

Drawing	Part Number	Specs	Application
	CA GROUND RING - MINI FEMALE	**Nickel plated brass plating** **Stainless steel** **Ground + Set screw material**	***Grounding of coupling nuts of armored cordsets***
	CA GROUND RING - EURO FEMALE		

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Notes:

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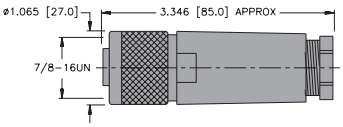
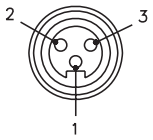
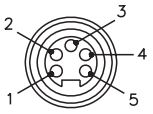
3, 4 and 5-Pin *minifast*® Field Wireable Connectors

- **Straight Female Connectors**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Drawing Number	Part Number	Housing Specs.	Application	Pinout
	B 4131-0/9	Glass filled nylon PG 9 cable gland, accepts 6-8 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 12 A	*Mates with all 3-pin cordsets and receptacles*	
	B 4131-0/13.5	Glass filled nylon PG 13.5 cable gland, accepts 10-12 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 12 A	*Mates with all 3-pin cordsets and receptacles*	
	B 4141-0/9	Glass filled nylon PG 9 cable gland, accepts 6-8 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 9 A	*Mates with all 4-pin cordsets and receptacles*	
	B 4141-0/13.5	Glass filled nylon PG 13.5 cable gland, accepts 10-12 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 9 A	*Mates with all 4-pin cordsets and receptacles*	
	B 4151-0/9	Glass filled nylon PG 9 cable gland, accepts 6-8 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 9 A	*Mates with all 5-pin cordsets and receptacles*	
	B 4151-0/13.5	Glass filled nylon PG 13.5 cable gland, accepts 10-12 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 9 A	*Mates with all 5-pin cordsets and receptacles*	
	B 4151-0/16	Glass filled nylon PG 16 cable gland, accepts 12-14 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 9 A	*Mates with all 5-pin cordsets and receptacles*	

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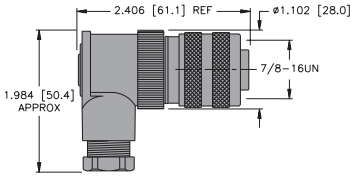
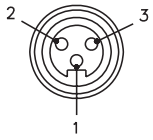
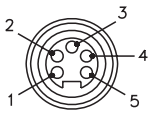
3, 4 and 5-Pin *minifast*® Field Wireable Connectors

- **Right Angle Female Connectors**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Drawing Number	Part Number	Housing Specs.	Application	Pinout
	B 4231-0/9	Glass filled nylon PG 9 cable gland, accepts 6-8 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 12 A	*Mates with all 3-pin cordsets and receptacles*	
	B 4241-0/9	Glass filled nylon PG 9 cable gland, accepts 6-8 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 9 A	*Mates with all 4-pin cordsets and receptacles*	
	B 4251-0/9	Glass filled nylon PG 9 cable gland, accepts 6-8 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 9 A	*Mates with all 5-pin cordsets and receptacles*	

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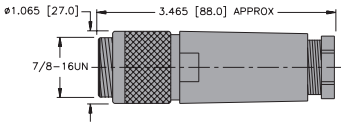
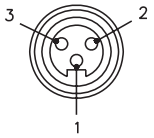
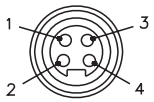
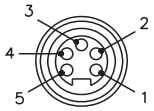
3, 4 and 5-Pin *minifast*® Field Wireable Connectors

- **Straight Male Connectors**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Drawing Number	Part Number	Housing Specs.	Application	Pinout
	BS 4131-0/9	Glass filled nylon PG 9 cable gland, accepts 6-8 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85° C 250 V, 12 A	*Mates with all 3-pin cordsets and receptacles*	
	BS 4131-0/13.5	Glass filled nylon PG 13.5 cable gland, accepts 10-12 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 12 A	*Mates with all 3-pin cordsets and receptacles*	
	BS 4141-0/9	Glass filled nylon PG 9 cable gland, accepts 6-8 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 9 A	*Mates with all 4-pin cordsets and receptacles*	
	BS 4141-0/13.5	Glass filled nylon PG 13.5 cable gland, accepts 10-12 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 9 A	*Mates with all 4-pin cordsets and receptacles*	
	BS 4151-0/9	Glass filled nylon PG 9 cable gland, accepts 6-8 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 9 A	*Mates with all 5-pin cordsets and receptacles*	
	BS 4151-0/13.5	Glass filled nylon PG 13.5 cable gland, accepts 10-12 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 9 A	*Mates with all 5-pin cordsets and receptacles*	
	BS 4151-0/16	Glass filled nylon PG 16 cable gland, accepts 12-14 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 9 A	*Mates with all 5-pin cordsets and receptacles*	

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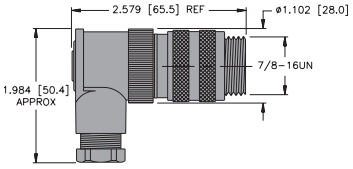
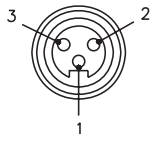
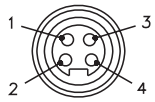
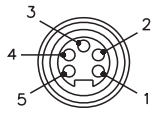
3, 4 and 5-Pin *minifast*® Field Wireable Connectors

- **Right Angle Male Connectors**
- **NEMA 1, 3, 4, 6P and IEC IP 67 Protection**

Drawing Number	Part Number	Housing Specs.	Application	Pinout
	BS 4231-0/9	**Glass filled nylon PG 9 cable gland, accepts 6-8 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 12 A**	***Mates with all 3-pin cordsets and receptacles***	
	BS 4241-0/9	**Glass filled nylon PG 9 cable gland, accepts 6-8 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 9 A**	***Mates with all 4-pin cordsets and receptacles***	
	BS 4251-0/9	**Glass filled nylon PG 9 cable gland, accepts 6-8 mm cable diameter Screw terminals, accepts up to 16 AWG conductors 85°C 250 V, 9 A**	***Mates with all 5-pin cordsets and receptacles***	

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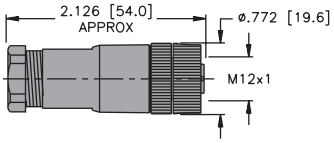
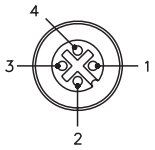
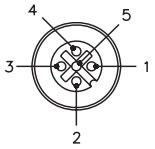
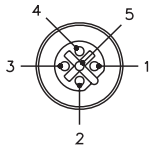
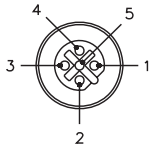
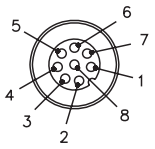
4, 5 and 8-Wire *eurofast*® Field Wireable Connectors, Standard and Reverse Key

- Straight Female Connectors
- IEC IP 67 Protection

Drawing	Part Number	Housing Specs.	Application	Pinout
	B 8141-0	PBT, Black PG 7 cable gland accepts 4-6 mm cable diameter Screw terminals accepts up to 18 AWG conductors 85°C 250 V, 4 A	*Mates with standard key 4-pin cordsets and receptacles*	
	B 8141-0/PG 9	PBT, Black PG 9 cable gland accepts 6-8 mm cable diameter Screw terminals 85°C 250 V, 4 A	*Mates with standard key 4-pin cordsets and receptacles*	
	B 8151-0/PG 9	PBT, Black PG 9 cable gland accepts 4-8 mm cable diameter Screw terminals accepts up to 18 AWG conductors 85°C 125 V, 4 A	*Mates with standard key 5-pin cordsets and receptacles*	
	BM 8151-0	PBT, Black PG 9 cable gland accepts 4-8 mm cable diameter Screw terminals Metal coupling nut 85°C 125 V, 4 A	*Mates with standard key 5-pin cordsets and receptacles*	
	BWS 8141-0	PBT, Black PG 9 cable gland accepts 4-8 mm cable diameter Screw terminals Metal coupling nut 85°C 250 V, 4 A	*Mates with reverse key 4-pin cordsets and receptacles*	
	BWS 8151-0	PBT, Black PG 9 cable gland accepts 4-8 mm cable diameter Screw terminals accepts up to 18 AWG conductors 85°C 125 V, 4 A	*Mates with reverse key 5-pin cordsets and receptacles*	
	B 8181-0	Nylon, Black PG 9 cable gland accepts 4-8 mm cable diameter Screw terminals accepts up to 18 AWG conductors 85°C 60 VAC/75 VDC, 2 A	*Mates with standard key 8-pin cordsets and receptacles*	

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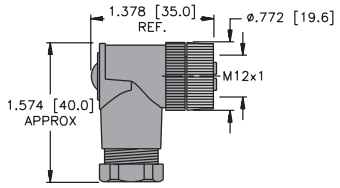
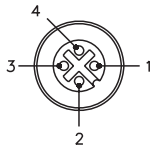
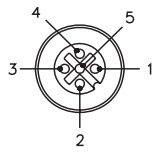
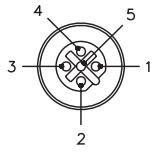
4 and 5-Wire *eurofast*® Field Wireable Connectors, Standard and Reverse Key

- **Right Angle Female Connectors**
- **IEC IP 67 Protection**

Drawing	Part Number	Housing Specs.	Application	Pinout
	B 8241-0	**PBT, Black** **PG 7 cable gland** **accepts 4-6 mm cable diameter** **Screw terminals** **accepts up to 18 AWG conductors** **85°C** **250 V, 4 A**	***Mates with standard key 4-pin cordsets and receptacles***	
	B 8241-0/PG 9	**PBT, Black** **PG 9 cable gland** **accepts 6-8 mm cable diameter** **Screw terminals** **85°C** **250 V, 4 A**	***Mates with standard key 4-pin cordsets and receptacles***	
	B 8251-0/PG 9	**PBT, Black** **PG 9 cable gland** **accepts 4-8 mm cable diameter** **Screw terminals** **accepts up to 18 AWG conductors** **85°C** **125 V, 4 A**	***Mates with standard key 5-pin cordsets and receptacles***	
	BWS 8251-0/PG 9	**PBT, Black** **PG 9 cable gland** **accepts 4-8 mm cable diameter** **Screw terminals** **accepts up to 18 AWG conductors** **85°C** **125 V, 4 A**	***Mates with <u>reverse</u> key 5-pin cordsets and receptacles***	

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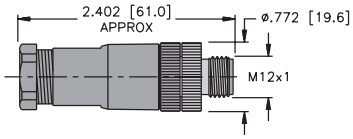
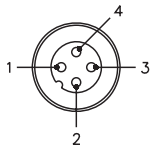
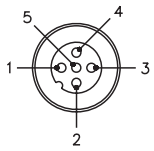
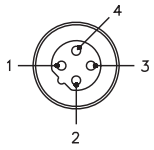
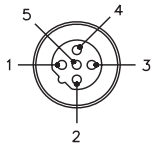
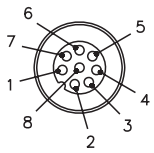
4, 5 and 8-Wire *eurofast*® Field Wireable Connectors, Standard and Reverse Key

- Straight Male Connectors
- IEC IP 67 Protection

Drawing	Part Number	Housing Specs.	Application	Pinout
	BS 8141-0	PBT, Black PG 7 cable gland accepts 4-6 mm cable diameter Screw terminals accepts up to 18 AWG conductors 85°C 250 V, 4 A	*Mates with standard key 4-pin cordsets and receptacles*	
	BS 8141-0/PG 9	PBT, Black PG 9 cable gland accepts 6-8 mm cable diameter Screw terminals 85°C 250 V, 4 A	*Mates with standard key 4-pin cordsets and receptacles*	
	BS 8151-0/PG 9	PBT, Black PG 9 cable gland, accepts 4-8 mm cable diameter Screw terminals accepts up to 18 AWG conductors 85°C 125 V, 4 A	*Mates with standard key 5-pin cordsets and receptacles*	
	BSWS 8141-0	PBT, Black PG 9 cable gland accepts 4-8 mm cable diameter Screw terminals accepts up to 18 AWG conductors 85°C 250 V, 4 A	*Mates with reverse key 4-pin cordsets and receptacles*	
	BSWS 8151-0	PBT, Black PG 9 cable gland accepts 4-8 mm cable diameter Screw terminals accepts up to 18 AWG conductors 85°C 125 V, 4 A	*Mates with reverse key 5-pin cordsets and receptacles*	
	BS 8181-0	Nylon, Black PG 9 cable gland accepts 4-8 mm cable diameter Screw terminals accepts up to 18 AWG conductors 85°C 60 VAC/75 VDC, 2 A	*Mates with standard key 8-pin cordsets and receptacles*	

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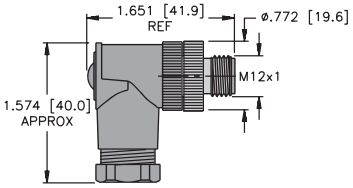
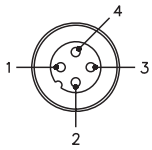
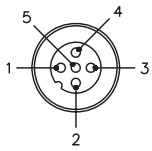
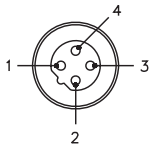
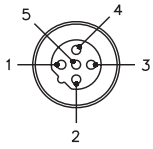
4, 5 and 8-Wire *eurofast*® Field Wireable Connectors, Standard and Reverse Key

- **Right Angle Male Connectors**
- **IEC IP 67 Protection**

Drawing	Part Number	Housing Specs.	Application	Pinout
	BS 8241-0	**PBT, Black PG 7 cable gland accepts 4-6 mm cable diameter Screw terminals accepts up to 18 AWG conductors 85°C 250 V, 4 A**	***Mates with standard key 4-pin cordsets and receptacles***	
	BS 8241-0/PG 9	**PBT, Black PG 9 cable gland accepts 6-8 mm cable diameter Screw terminals 85°C 250 V, 4 A**	***Mates with standard key 4-pin cordsets and receptacles***	
	BS 8251-0/PG 9	**PBT, Black PG 9 cable gland accepts 4-8 mm cable diameter Screw terminals accepts up to 18 AWG conductors 85°C 125 V, 4 A**	***Mates with standard key 5-pin cordsets and receptacles***	
	BSWS 8241-0	**PBT, Black PG 9 cable gland accepts 4-8 mm cable diameter Screw terminals accepts up to 18 AWG conductors 85°C 250 V, 4 A**	***Mates with <u>reverse</u> key 4-pin cordsets and receptacles***	
	BSWS 8251-0	**PBT, Black PG 9 cable gland accepts 4-8 mm cable diameter Screw terminals accepts up to 18 AWG conductors 85°C 125 V, 4 A**	***Mates with <u>reverse</u> key 5-pin cordsets and receptacles***	

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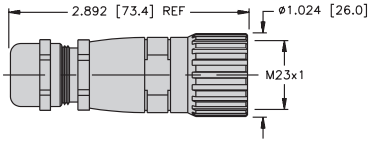
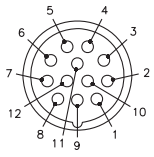
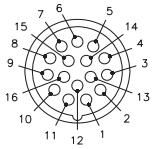
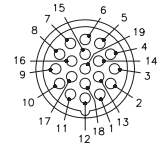
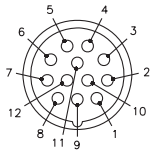
12, 16 and 19-Pin *multifast*® Field Wireable In-line Connectors

- Female Contact Holder & Thread
- For Use with Custom Wiring & Junction Boxes
- Convert Hard Wiring into Quick Disconnect

Housing Style	Part Number	Cable	Features	Pinouts
	CK 12-0	Nickel plated brass PG 11 cable gland, Accepts 4-10 mm cable diameter Accepts up to 12x18 AWG conductors 125°C 300 V, 8 A	*Field wireable 12-pin in-line connector, for use with minifast®, eurofast® (single input per port) and microfast® junctions boxes*	
	CK 16-0	Nickel plated brass PG 13.5 cable gland, Accepts 5-12 mm cable diameter Accepts up to 16x18 AWG conductors 125°C 150 V, 8 A	*Field wireable 16-pin in-line connector, for use with eurofast (isolated power supply) junctions boxes*	
	CK 19-0	Nickel plated brass PG 13.5 cable gland, Accepts 5-12 mm cable diameter Accepts up to 19x18 AWG conductors 125°C 150 V, 8 A	*Field wireable 19-pin in-line connector, for use with eurofast (two Signals per port) junctions boxes*	
	CK 125-0	Nickel plated brass IAC, Accepts 3-10 mm cable diameter Accepts up to 12x18 AWG conductors 125°C 150 V, 8 A	*Field wireable 12-pin in-line connector*	

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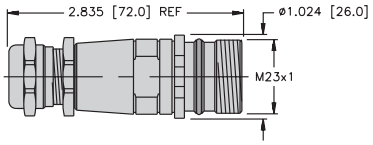
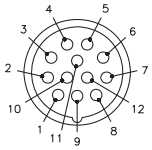
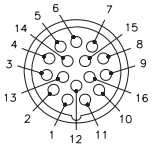
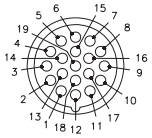
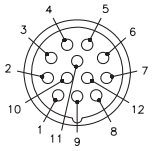
12, 16 and 19-Pin *multifast*® Field Wireable In-line Connectors

- Male Contact Holder & Thread
- For Use with Custom Wiring & Junction Boxes
- Convert Hard Wiring into Quick Disconnect

Housing Style	Part Number	Cable	Features	Pinouts
	CSS 12-0	Nickel plated brass PG 13.5 cable gland, Accepts 5-12 mm cable diameter Accepts up to 12x18 AWG conductor 125°C 300 V, 8 A	*Field wireable 12-pin in-line connector, for use with minifast®, eurofast® (single input per port) and microfast® junctions boxes*	
	CSS 16-0	Nickel plated brass PG 13.5 cable gland, Accepts 5-12 mm cable diameter Accepts up to 16x18 AWG conductor 125°C 150 V, 8 A	*Field wireable 16-pin in-line connector, for use with eurofast (isolated power supply) junctions boxes*	
	CSS 19-0	Nickel plated brass PG 13.5 cable gland, Accepts 5-12 mm cable diameter Accepts up to 19x18 AWG conductor 125°C 150 V, 8 A	*Field wireable 19-pin in-line connector, for use with eurofast (two signals per port) junctions boxes*	
	CSS 125-0	Nickel plated brass IAC, Accepts 3-10 mm cable diameter Accepts up to 12x18 AWG conductors 125°C 150 V, 8 A	*Field wireable 12-pin in-line connector*	

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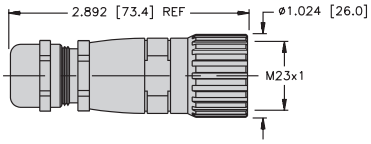
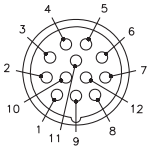
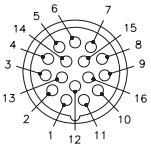
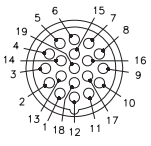
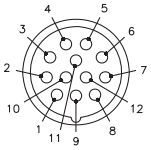
12, 16 and 19-Pin *multifast*® Field Wireable In-line Connectors

- Male Contact Holder, Female Thread
- For Use with Custom Wiring & Junction Boxes
- Convert Hard Wiring into Quick Disconnect
- IEC IP 65 Protection

Housing Style	Part Number	Cable	Features	Pinouts
	CS 12-0	Nickel plated brass PG 11 cable gland, Accepts 4-10 mm cable diameter Accepts up to 12x18 AWG conductor 125° C 300 V, 8 A	*Field wireable 12-pin in-line connector, for use with minifast®, eurofast® (single input per port) and microfast® junctions boxes*	
	CS 16-0	Nickel plated brass PG 13.5 cable gland, Accepts 5-12 mm cable diameter Accepts up to 16x18 AWG conductor 125° C 150 V, 8 A	*Field wireable 16-pin in-line connector, for use with eurofast® (isolated power supply) junctions boxes*	
	CS 19-0	Nickel plated brass PG 13.5 cable gland, Accepts 5-12 mm cable diameter Accepts up to 19x18 AWG conductor 125° C 150 V, 8 A	*Field wireable 19-pin in-line connector, for use with eurofast (two Signals per port) junctions boxes*	
	CS 125-0	Nickel plated brass IAC, Accepts 3-10 mm cable diameter Accepts up to 12x18 AWG conductors 125° C 150 V, 8 A	*Field wireable 12-pin in-line connector*	

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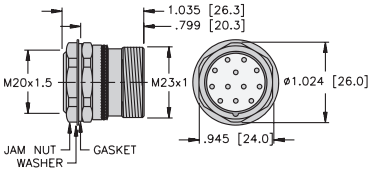
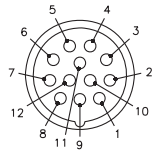
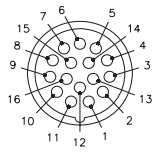
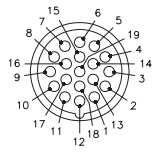
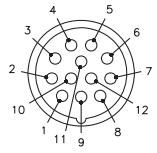
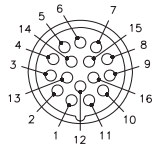
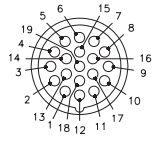
12, 16 and 19-Pin *multifast*® Field Wireable, Front Mount

- Female and Male Connectors
- For Use with Custom Wiring & Junction Boxes
- Convert Hard Wiring into Quick Disconnect
- IEC IP 65 Protection

Housing Style	Part Number	Cable	Features	Pinout
	CKF 12-0	Nickel plated brass Accepts up to 12x18 AWG conductor 125° C 300 V, 8 A	*Field wireable 12-pin receptacle, for use with minifast®, eurofast® (single input per port) and microfast® junctions boxes*	
	CKF 16-0	Nickel plated brass Accepts up to 16x18 AWG conductor 125° C 150 V, 8 A	*Field wireable 16-pin receptacle, for use with eurofast (isolated power supply) junctions boxes*	
	CKF 19-0	Nickel plated brass Accepts up to 19x18 AWG conductor 125° C 150 V, 8 A	*Field wireable 19-pin receptacle, for use with eurofast (two signals per port) junctions boxes*	
	CSF 12-0	Nickel plated brass Accepts up to 12x18 AWG conductor 125° C 300 V, 8 A	*Field wireable 12-pin receptacle, for use with minifast, eurofast (single input per port) and microfast junctions boxes*	
	CSF 16-0	Nickel plated brass Accepts up to 16x18 AWG conductor 125° C 150 V, 8 A	*Field wireable 16-pin receptacle, for use with eurofast (isolated power supply) junctions boxes*	
	CSF 19-0	Nickel plated brass Accepts up to 19x18 AWG conductor 125° C 150 V 8 A	*Field wireable 19-pin receptacle, for use with eurofast (two signals per port) junctions boxes*	

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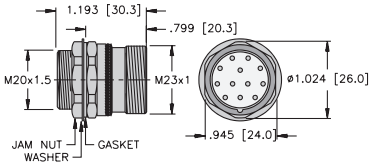
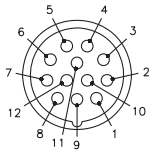
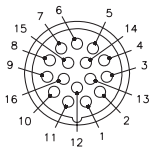
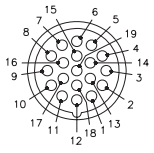
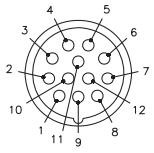
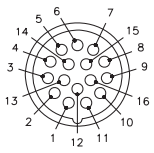
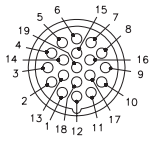
12, 16 and 19-Pin *multifast*® Field Wireable Receptacles, Front Mount, Long Threads

- Female and Male Connectors
- For Use with Custom Wiring & Junction Boxes
- Convert Hard Wiring into Quick Disconnect
- IEC IP 65 Protection

Housing Style	Part Number	Cable	Features	Pinouts
	CKFL 12-0	Nickel plated brass Accepts up to 12x18 AWG conductor 125°C 300 V, 8 A	*Field wireable 12-pin receptacle, for use with minifast®, eurofast® (single input per port) and microfast® junctions boxes*	
	CKFL 16-0	Nickel plated brass Accepts up to 16x18 AWG conductor 125° C 150 V, 8 A	*Field wireable 16-pin receptacle, for use with eurofast (isolated power supply) junctions boxes*	
	CKFL 19-0	Nickel plated brass Accepts up to 19x18 AWG conductor 125°C 150 V, 8 A	*Field wireable 19-pin receptacle, for use with eurofast (two signals per port) junctions boxes*	
	CSFL 12-0	Nickel plated brass Accepts up to 12x18 AWG conductor 125° C 300 V, 8 A	*Field wireable 12-pin receptacle, for use with minifast, eurofast (single input per port) and microfast junctions boxes*	
	CSFL 16-0	Nickel plated brass Accepts up to 16x18 AWG conductor 125°C 150 V, 8 A	*Field wireable 16-pin receptacle, for use with eurofast (isolated power supply) junctions boxes*	
	CSFL 19-0	Nickel plated brass Accepts up to 19x18 AWG conductor 125°C 150 V, 8 A	*Field wireable 19-pin receptacle, for use with eurofast (two Signals per port) junctions boxes*	

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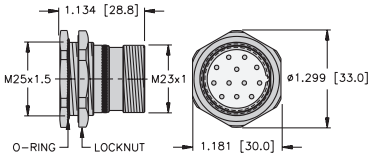
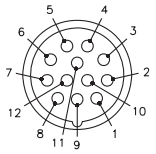
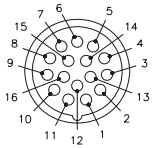
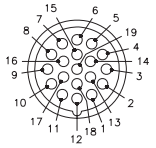
12, 16 and 19-Pin *multifast*® Field Wireable Receptacles, Rear Mount

- Female Contact Holder & Thread
- For Use with Custom Wiring & Junction Boxes
- Convert Hard Wiring into Quick Disconnect
- IEC IP 65 Protection

Housing Style	Part Number	Cable	Features	Pinouts
	CKFD 12-0	Nickel plated brass Accepts up to 12x18 AWG conductor 125°C 300 V, 8 A	*Field wireable 12-pin receptacle, for use with minifast®, eurofast® (single input per port) and microfast junctions boxes*	
	CKFD 16-0	Nickel plated brass Accepts up to 16x18 AWG conductor 125°C 150 V, 8 A	*Field wireable 16-pin receptacle, for use with eurofast (isolated power supply) junctions boxes*	
	CKFD 19-0	Nickel plated brass Accepts up to 19x18 AWG conductor 125°C 150 V, 8 A	*Field wireable 19-pin receptacle, for use with eurofast (two signals per port) junctions boxes*	

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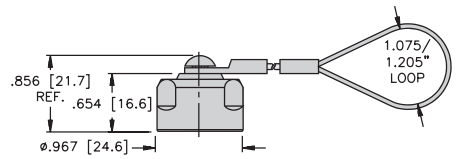
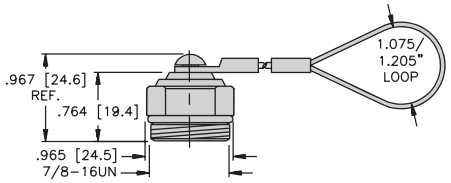
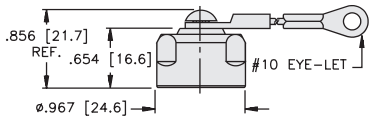
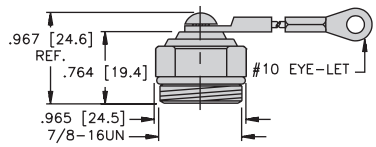
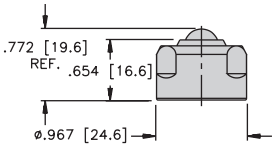
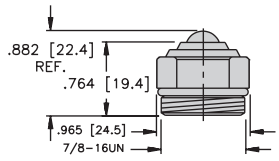
minifast® Closure Caps, Standard

- 7/8-16UN Thread
- Nickel Plated Brass and Stainless Steel
- Male and Female Caps

Housing	Part Number	Specs	Application
	RKM-CC	Nickel plated brass 7/8-16UN threads 6" stainless steel lanyard	*Closure cap, mates to male cordsets*
	RKMV-CC	Stainless steel 7/8-16UN threads 6" stainless steel lanyard	
	RSM-CC	Nickel plated brass 7/8-16UN threads 6" stainless steel lanyard	*Closure cap, mates to female cordsets*
	RSMV-CC	Stainless steel 7/8-16UN threads 6" stainless steel lanyard	
	RKF-CC	Nickel plated brass 7/8-16UN threads 6" stainless steel lanyard	*Closure cap, mates to male receptacles*
	RKFV-CC	Stainless steel 7/8-16UN threads 6" stainless steel lanyard	
	RSF-CC	Nickel plated brass 7/8-16UN threads 6" stainless steel lanyard	*Closure cap, mates to female receptacles*
	RSFV-CC	Stainless steel 7/8-16UN threads 6" stainless steel lanyard	
	RKF-MC	Nickel plated brass 7/8-16UN threads BUNA-N gasket	*Closure cap, mates to male receptacles*
	RKFV-MC	Stainless steel 7/8-16UN threads BUNA-N gasket	
	RSF-MC	Nickel plated brass 7/8-16UN threads BUNA-N gasket and O-ring	*Closure cap, mates to female receptacles*
	RSFV-MC	Stainless steel 7/8-16UN threads BUNA-N gasket and O-ring	

Note: Add "/S1599" to the end of Part Number for closure caps assembled on cordsets.

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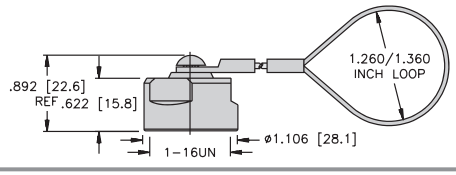
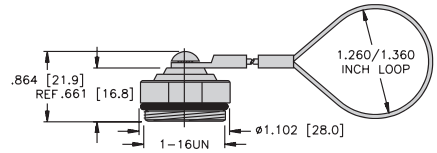
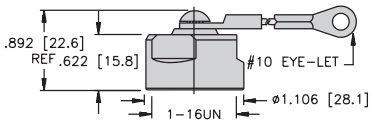
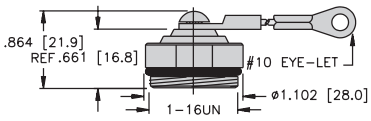
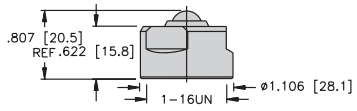
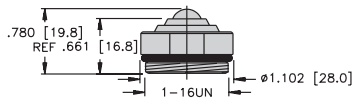
minifast® Closure Caps, "B" Style

- 1-16UN Threads
- Nickel Plated Brass and Stainless Steel
- Male and Female Caps

Housing	Part Number	Specs	Application
	RKMB-CC	Nickel plated brass 1-16UN threads 6" stainless steel lanyard	*Closure cap, mates to male cordsets*
	RKMBV-CC	Stainless steel 1-16UN threads 6" stainless steel lanyard	
	RSMB-CC	Nickel plated brass 1-16UN threads 6" stainless steel lanyard	*Closure cap, mates to female cordsets*
	RSMBV-CC	Stainless steel 1-16UN threads 6" stainless steel lanyard	
	RKFB-CC	Nickel plated brass 1-16UN threads 6" stainless steel lanyard	*Closure cap, mates to male receptacles*
	RKFBV-CC	Stainless steel 1-16UN threads 6" stainless steel lanyard	
	RSFB-CC	Nickel plated brass 1-16UN threads 6" stainless steel lanyard	*Closure cap, mates to female receptacles*
	RSFBV-CC	Stainless steel 1-16UN threads 6" stainless steel lanyard	
	RKFB-MC	Nickel plated brass 1-16UN threads BUNA-N gasket and O-ring	*Closure cap, mates to male receptacles*
	RKFBV-MC	Stainless steel 1-16UN threads BUNA-N gasket and O-ring	
	RSFB-MC	Nickel plated brass 1-16UN threads BUNA-N gasket and O-ring	*Closure cap, mates to female receptacles*
	RSFBV-MC	Stainless steel 1-16UN threads BUNA-N gasket and O-ring	

Note: Add "/S1599" to the end of Part Number for closure caps assembled on cordsets.

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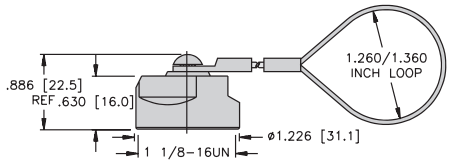
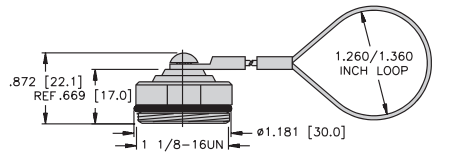
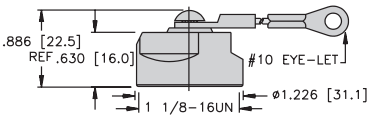
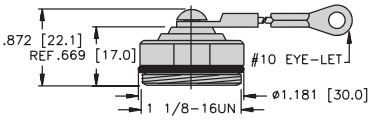
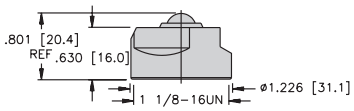
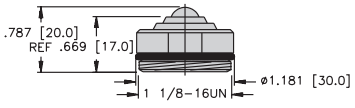
minifast® Closure Caps, "C" Style

- 1⅛-16UN Threads
- Nickel Plated Brass and Stainless Steel
- Male and Female Caps

Housing	Part Number	Specs	Application
	RKMC-CC	Nickel plated brass 1⅛-16UN threads 6" stainless steel lanyard	*Closure cap, mates to male cordsets*
	RKMCV-CC	Stainless steel 1⅛-16UN threads 6" stainless steel lanyard	
	RSMC-CC	Nickel plated brass 1⅛-16UN threads 6" stainless steel lanyard	*Closure cap, mates to female cordsets*
	RSMCV-CC	Stainless steel 1⅛-16UN threads 6" stainless steel lanyard	
	RKFC-CC	Nickel plated brass 1⅛-16UN threads 6" stainless steel lanyard	*Closure cap, mates to male receptacles*
	RKFCV-CC	Stainless steel 1⅛-16UN threads 6" stainless steel lanyard	
	RSFC-CC	Nickel plated brass 1⅛-16UN threads 6" stainless steel lanyard	*Closure cap, mates to female receptacles*
	RSFCV-CC	Stainless steel 1⅛-16UN threads 6" stainless steel lanyard	
	RKFC-MC	Nickel plated brass 1⅛-16UN threads BUNA-N gasket and O-ring	*Closure cap, mates to male receptacles*
	RKFCV-MC	Stainless steel 1⅛-16UN threads BUNA-N gasket and O-ring	
	RSFC-MC	Nickel plated brass 1⅛-16UN threads BUNA-N gasket and O-ring	*Closure cap, mates to female receptacles*
	RSFCV-MC	Stainless steel 1⅛-16UN threads BUNA-N gasket and O-ring	

Note: Add "/S1599" to the end of Part Number for closure caps assembled on cordsets.

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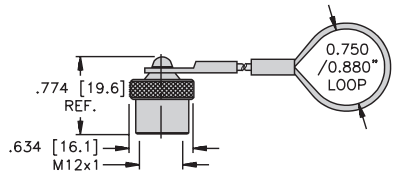
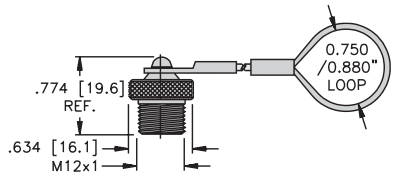
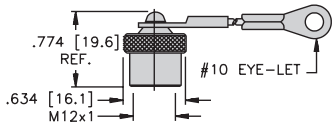
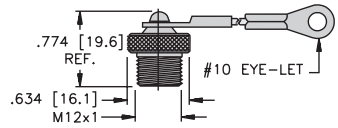
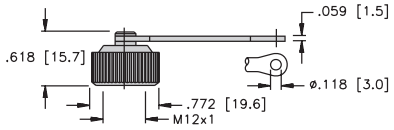
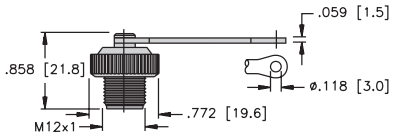
eurofast® Closure Caps

Drawing	Part Number	Cable	Features
	RK-CC	**Nickel plated brass M12x1 threads 6" lanyard**	***Mates to male cordsets***
	RKV-CC	**Stainless steel M12x1 threads 6" lanyard**	***Mates to male cordsets***
	RS-CC	**Nickel plated brass M12x1 threads 6" lanyard**	***Mates to female cordsets***
	RSV-CC	**Stainless steel M12x1 threads 6" lanyard**	***Mates to female cordsets***
	FK-CC	**Nickel plated brass M12x1 threads 6" lanyard with eyelet**	***Mates to male receptacles***
	FKV-CC	**Stainless steel M12x1 threads 6" lanyard with eyelet**	***Mates to male receptacles***
	FS-CC	**Nickel plated brass M12x1 threads 6" lanyard with eyelet**	***Mates to female receptacles***
	FSV-CC	**Stainless steel M12x1 threads 6" lanyard with eyelet**	***Mates to female receptacles***
	FKK-CC	**Plastic M12x1 threads 3" lanyard with eyelet**	***Mates to male receptacles***
	FSK-CC	**Plastic M12x1 threads 3" lanyard with eyelet**	***Mates to female receptacles***

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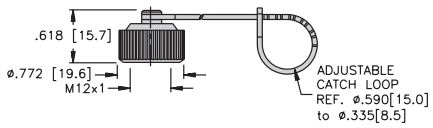
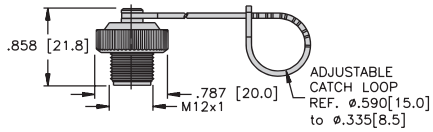
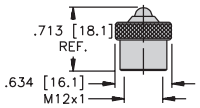
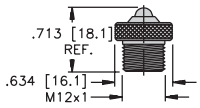
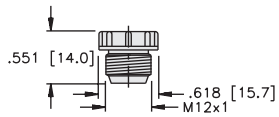
eurofast® Closure Caps

Drawing	Part Number	Cable	Features
	RKK-CC	**Plastic** **M12x1 threads**	***Mates to male cordsets***
	RSK-CC	**Plastic** **M12x1 threads**	***Mates to female cordsets***
	RK-MC	**Nickel plated brass** **M12x1 threads** **No lanyard**	***Mates to male receptacles***
	RKV-MC	**Stainless steel** **M12x1 threads** **No lanyard**	***Mates to male receptacles***
	RS-MC	**Nickel plated brass** **M12x1 threads** **No lanyard**	***Mates to female receptacles***
	RSV-MC	**Stainless steel** **M12x1 threads** **No lanyard**	***Mates to female receptacles***
	VZ3-RED (8/BAG)	**Red Nylon**	***Mates to VB2 series junction boxes and female receptacles***
	VZ3 (8/BAG)	**Nylon**	***Mates to VB2 series junction boxes and female receptacles***

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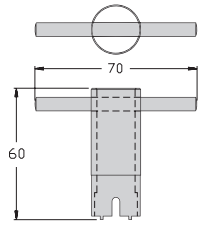
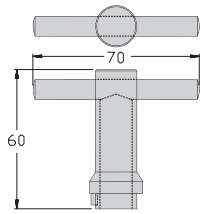
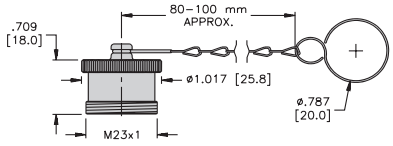
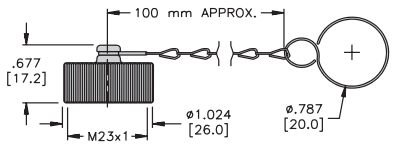
multifast® Accessories

- **Field Wireable Assembly Tools**
- **Closure Caps**

Housing Style	Part Number	Cable	Features
	CK-TOOL	N/A	*Tool to aid assembly of all M23 multifast field wireables with female threads*
	CKF-TOOL	N/A	*Tool to aid assembly of all M23 multifast field wireables with male threads*
	CS-CC	Nickel plated brass Neoprene gasket	*Closure caps for multifast cordset connectors*
	CK-CC	Nickel plated brass Neoprene gasket	*Closure caps for multifast receptacles (CSF and CKF) and CSS cordset connectors*

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Notes:

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reel fast®

Bulk Wiring Control Cable

- **Spooled in 30, 100, or 200 meter lengths in self-feeding packages**
- **2-Wire Analog or HART, Additional Analog or Discrete, NAMUR and *extremelife*® cables to choose from**
- **ITC, PLC, Exposed Run/Direct Burial, Marine Shipboard and more**

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2-Wire Analog or HART Control Circuit *reelfast*® Cable Selection Guide

Diagram A

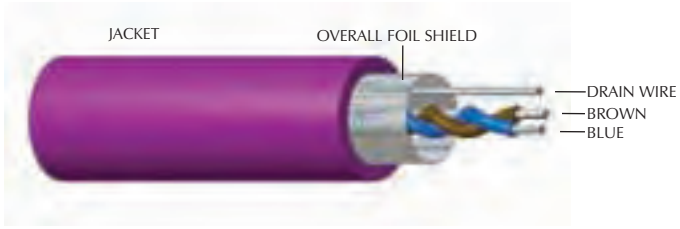


Diagram B

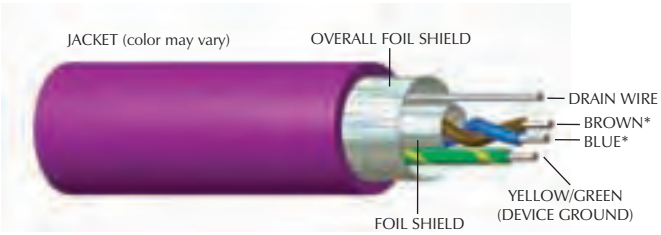


Diagram C

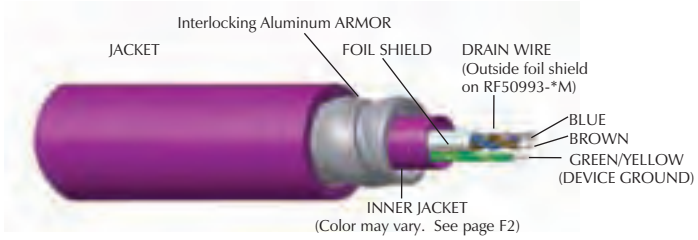
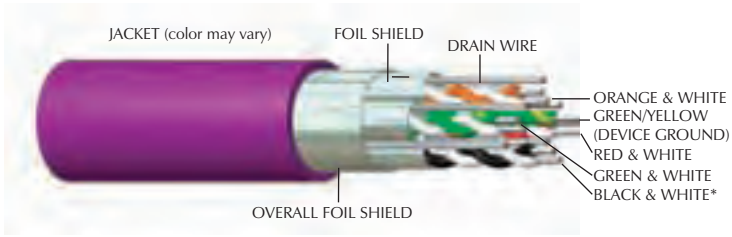


Diagram D



Up to 8 STP. See page F2 for details.

* Conductor colors may vary. See table on page K240 for details.
STP = Shielded Twisted Pair
Note: See page K240 for corresponding bulk cable specifications.

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2-Wire Analog or HART Control Circuit *reelfast*® Cable Selection Guide

Diagram	No. of Cond.	AWG	Jacket Characteristics	ID Number	Ship Wt. (lbs)	Conductor Colors	Shield	UL	CSA	Type	MSHA	Temp. (°C)
A	2	18	PVC Plum 300 V 7.2 mm OD	RF51026-30M RF51026-100M RF51026-200M	5 17 34	1 pair = (BU, BN), Drain (20)	STP Foil/Drain	*	*	ITC/PLTC		105° -25°
B	3	16	PVC Plum 300 V 7.6 mm OD	RF51098-30M RF51098-100M RF51098-200M	7 22 44	1 pair = (WH, BK), GN, Drain (18)	STP Foil/Drain	*	*	ITC/PLTC		105° -25°
B	3	16	PVC Blue 300 V 7.6 mm OD	RF51327-30M RF51327-100M RF51327-200M	7 22 44	1 pair = (WH, BK), GN, Drain (18)	STP Foil/Drain	*	*	ITC/PLTC		105° -25°
B	3	18	PVC Blue 300 V 7.2 mm OD	RF51330-30M RF51330-100M RF51330-200M	6 19 38	1 pair = (BU, BN), GN/YE, Drain (20)	STP Foil/Drain	*	*	ITC-Exposed Run/Direct Burial/PLTC		105° -25°
C	3	18	PVC ARMOR Plum 300 V 13.5 mm OD	RF50947-30M RF50947-100M RF50947-200M	14 47 94	1 pair = (BU, BN), GN/YE, Drain (20)	STP Foil/Drain	*	*	ITC/PLTC		105° -25°
B	3	18	PVC Plum 300 V 7.2 mm OD	RF50949-30M RF50949-100M RF50949-200M	6 19 38	1 pair = (BU, BN), GN/YE, Drain (20)	STP Foil/Drain	*	*	ITC/PLTC		105° -25°
B	3	18	PVC Plum 300 V 7.2 mm OD	RF51162-30M RF51162-100M RF51162-200M	6 19 38	1 pair = (BU, BN), GN/YE, Drain (20)	STP Foil/Drain	*	*	ITC-Exposed Run/Direct Burial/PLTC		105° -25°
B	3	18	PVC Plum 300 V 7.2 mm OD	RF51124-30M RF51124-100M RF51124-200M	6 19 38	1 pair = (RD, BK), GN/YE, Drain (20)	STP Foil/Drain	*	*	ITC/PLTC		105° -25°
B	3	18	PVC BU 300 V 7.2 mm OD	RF50950-30M RF50950-100M RF50950-200M	6 19 38	1 pair = (BU, BN), GN/YE, Drain (20)	Foil/Drain	*	*	ITC/PLTC		105° -25°
C	3	22	PVC ARMOR Plum 11.2 mm OD	RF50993-30M RF50993-100M RF50993-200M	11 34 68	1 pair = (BU, BN), GN/YE, Drain (24)	STP Foil/Drain	*	*	ITC/PLTC		105° -25°
D	9	18 22	PVC Plum 300 V 10 mm OD	RF51229-30M RF51229-100M RF51229-200M	9 30 60	4 pair/22 AWG = (WH/BK, BK/WH), (WH/GN, GN/WH), (WH/RD, RD/WH), (WH/OG, OG/WH), 18 AWG=GN/YE, Drains (5x22)	STP Foil/Drain	*	*	ITC-Exposed Run/Direct Burial/PLTC		105° -25°
D	9	18 22	PVC Plum 300 V 10 mm OD	RF50960-30M RF50960-100M RF50960-200M	9 30 60	4 pair/22 AWG = (WH/BK, BK/WH), (WH/GN, GN/WH), (WH/RD, RD/WH), (WH/OG, OG/WH), 18 AWG = GN/YE, Drains (5x22)	STP Foil/Drain	*	*	ITC/PLTC		105° -25°
D	17	18 22	PVC Plum 300 V 12 mm OD	RF50959-30M RF50959-100M RF50959-200M	14 45 90	8 pair/22 AWG = (WH/BK, BK/WH), (WH/GN, GN/WH), (WH/RD, RD/WH), (WH/OG, OG/WH), (WH/BU, BU/WH), (WH/BN, BN/WH), (WH/YE, YE/WH), (WH/VT, VT/WH), 18 AWG = GN/YE, Drains (9x22)	STP Foil/Drain	*	*	ITC/PLTC		105° -25°
D	17	18 22	PVC Plum 300 V 12.7 mm OD	RF51230-30M RF51230-100M RF51230-200M	17 55 110	8 pair/22 AWG = (WH/BK, BK/WH), (WH/GN, GN/WH), (WH/RD, RD/WH), (WH/OG, OG/WH), (WH/BU, BU/WH), (WH/BN, BN/WH), (WH/YE, YE/WH), (WH/VT, VT/WH), 18 AWG = GN/YE, Drains (9x22)	STP Foil/Drain	*	*	ITC-Exposed Run/Direct Burial/PLTC		105° -25°
D	8	22	PVC BU 300 V 10 mm OD	RF50978-30M RF50978-100M RF50978-200M	9 30 60	4 Pair = (WH/BK, BK/WH), (WH/GN, GN/WH), (WH/RD, RD/WH), (WH/OG, OG/WH), GN/YE, Drain (22)	4 STP Foil/Drain	*	*	ITC/PLTC		105° -25°
D	16	22	PVC BU 300 V 12 mm OD	RF50977-30M RF50977-100M RF50977-200M	14 45 90	8 Pair = (WH/BK, BK/WH), (WH/GN, GN/WH), (WH/RD, RD/WH), (WH/OG, OG/WH), (WH/BU, BU/WH), (WH/BN, BN/WH), (WH/YE, YE/WH), (WH/VT, VT/WH), GN/YE, Drain (22)	8 STP Foil/Drain	*	*	ITC/PLTC		105° -25°

STP = Shielded Twisted Pair.

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Additional Analog or Discrete Control Circuit *reelfast*® Cable Selection Guide

Diagram A

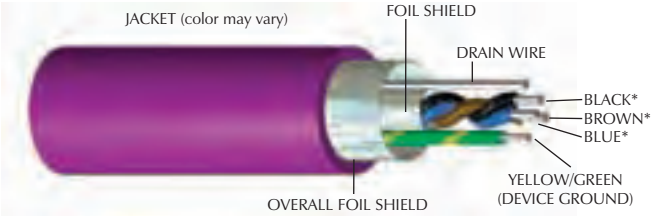


Diagram B

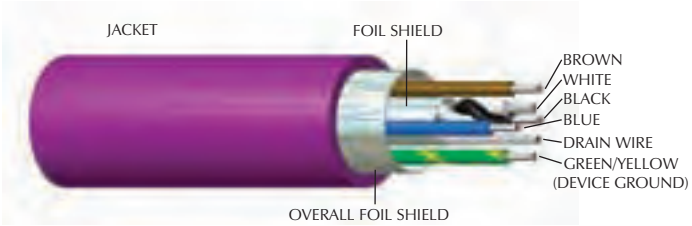


Diagram C

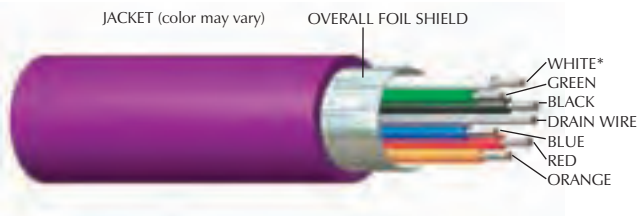
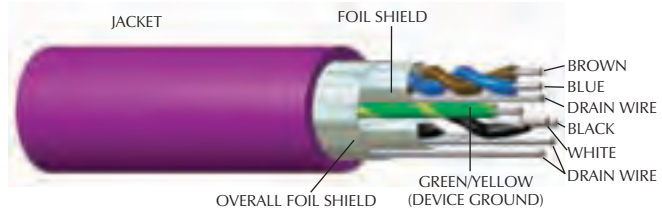


Diagram D

Diagram E



* Conductor colors may vary. See table on page K240 for details.
STP = Shielded Twisted Pair
Note: See page K240 for corresponding bulk cable specifications.

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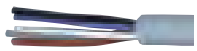
Additional Analog or Discrete Control Circuit *reelfast*® Cable Selection Guide

Photo/Diagram	No. of Cond.	AWG	Jacket Characteristics	ID Number	Ship Wt. (lbs)	Conductor Colors	Shield	UL	CSA	Type	MSHA	Temp.
	3	18	PVC YE 300 V 7.2 mm OD	RF50880-30M RF50880-100M RF50880-200M	6 18 35	BN, BU, GN/YE		*	*	ITC/PLTC		105° -25°
	3	18	PVC GY 300 V 7.2 mm OD	RF51187-30M RF51187-100M RF51187-200M	6 18 36	BK, WH, GN		*	*	ITC/PLTC		105° -25°
A	4	16	PVC Plum 300 V 10.4 mm OD	RF51099-30M RF51099-100M RF51099-200M	10 32 64	Triad = (WH, RD, BK), GN, Drain (18)	Triad Foil/Drain	*	*	ITC/PLTC		105° -25°
A	4	16	PVC BU 300 V 10.4 mm OD	RF51328-30M RF51328-100M RF51328-200M	10 32 64	Triad = (WH, RD, BK), GN, Drain (18)	Triad Foil/Drain	*	*	ITC/PLTC		105° -25°
A	4	18	PVC Plum 300 V 8.1 mm OD	RF51108-30M RF51108-100M RF51108-200M	7 21 42	Triad = (BU, BN, BK), GN/YE, Drain (20)	Triad Foil/Drain	*	*	ITC/PLTC		105° -25°
D	4	18	ARMOR PVC YE 600 V 13.5 mm OD	RF51041-30M RF51041-100M RF51041-200M	11 36 71	BK, WH, RD, GN		*	*	UL 1569 MC, ITC/PLTC		105° -25°
	4	22	PVC GY 300 V 5.2 mm OD	RF50698-30M RF50698-100M RF50698-200M	3 9 18	BN, WH, BU, BK		*	*	ITC/PLTC		105° -25°
C	4	22	PUR BK 300 V 6.9 mm OD	RF51095-30M RF51095-100M RF51095-200M	4 14 28	BN, WH, BU, BK, Drain (22)	Foil/Drain	*	*	ITC/PLTC		105° -60°
B	5	16	PVC Plum 300 V 12.5 mm OD	RF51025-30M RF51025-100M RF51025-200M	15 49 98	1 pair = (WH, BK), BU, BN, GN/YE, Drain (18)	STP Foil/Drain	*	*	ITC/PLTC		105° -25°
	5	18	PVC GY 300 V 7.2 mm OD	RF50972-30M RF50972-100M RF50972-200M	7 21 42	BK, WH, GY, BN, BU		*	*	ITC/PLTC		105° -25°
E	5	18	PVC Plum 300 V 7.9 mm OD	RF51318-30M RF51318-100M RF51318-200M	8 26 53	2 pair = (BK, WH), (BU, BN), GN/YE, Drain (20)	STP Foil/Drain	*	*	ITC-Exposed Run/Direct Burial/PLTC		105° -25°
C	6	16	PVC BU 300 V 9.6 mm OD	RF50329-30M RF50329-100M RF50329-200M	11 36 72	WH, RD, GN, OG, BK, BU, Drain (18)	Foil/Drain	*	*	ITC/PLTC		105° -25°
	6	16	PVC YE 600 V 9.6 mm OD	RF51030-30M RF51030-100M RF51030-200M	11 34 68	BK, WH, RD, OG, BU, GN		*	*	ITC/PLTC		105° -25°
	6	16	PVC Plum 300 V 11.2 mm OD	RF51233-30M RF51233-100M RF51233-200M	13 45 90	WH, RD, GN, OG, BK, BU		*	*	ITC-Exposed Run/Direct Burial/PLTC		105° -25°
C	6	16	PVC Plum 300 V 9.6 mm OD	RF51219-30M RF51219-100M RF51219-200M	11 36 72	WH, RD, GN, OG, BK, BU, Drain (18)	Foil/Drain	*	*	ITC/PLTC		105° -25°
C	11	18	PVC YE 300 V 10 mm OD	RF51088-30M RF51088-100M RF51088-200M	13 42 84	GN, YE, GY, PK, RD, BK, VT, BU, WH, BN, GN/YE, Drain (20)	Foil/Drain	*	*	ITC/PLTC		105° -25°

STP = Shielded Twisted Pair.

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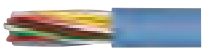
Intrinsically Safe NAMUR Circuit *reelfast*® Cable Selection Guide

Photo	No. of Cond.	AWG	Jacket Characteristics	ID Number	Ship Wt. (lbs)	Conductor Colors	Shield	UL	CSA	Type	MSHA	Temp. (°C)
	2	20	**PVC BU 300 V 5.15 mm OD**	RF20003-30M RF20003-100M RF20003-200M	3 10 19	BN, BU		*	*	**AWM 2517**	*	**105° -50°**
	2	20	**PUR BU 300 V 5.2 mm OD**	RF50657-30M RF50657-100M RF50657-200M	3 8 16	BN, BU		*	*	**AWM 21002**		**105° -60°**
	4	22	**PVC BU 300 V 5.2 mm OD**	RF50598-30M RF50598-100M RF50598-200M	3 9 18	BN, WH, BU, BK		*	*	**AWM 2517**	*	**105° -50°**
	5	22	**PVC BU 300 V 6.8 mm OD**	RF50767-30M RF50767-100M RF50767-200M	5 15 29	WH, BK, GN, RD, OG		*	*	**PLTC**	*	**105° -30°**
	5	24	**PUR BU 300 V 5.7 mm OD**	RF50928-30M RF50928-100M RF50928-200M	4 11 20	BU, OG, RD, YE, BK, Drain (24)	**Foil/Drain**	*	*	**AWM 21002**		**105° -60°**
	9	22	**PVC BU 300 V 6.9 mm OD**	RF50741-30M RF50741-100M RF50741-200M	5 13 26	WH, BK, GN, RD, OG, BU, BN, YE, VT		*	*	**PLTC**		**105° -25°**
	16	22	**PVC BU 300 V 8.3 mm OD**	RF50744-30M RF50744-100M RF50744-200M	8 25 50	WH, BK, GN, RD, OG, BU, BN, YE, VT, GY, PK, TN, WH/BK, WH/GN, WH/RD, WH/BU		*	*	**PLTC**		**105° -25°**

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Control *extremelife*® *reelfast*® Cable Selection Guide

- **UL 1309 Approved**
- **ABS Approved**
- **Marine Shipboard**

Diagram A

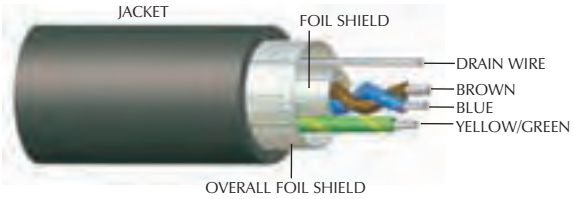
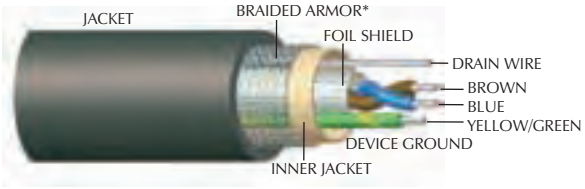


Diagram B



*AVAILABLE ON SOME CABLE TYPES

Diagram C

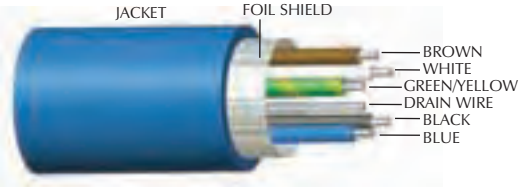


Diagram D

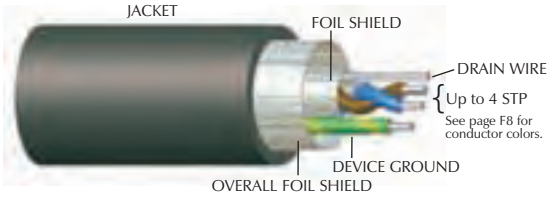
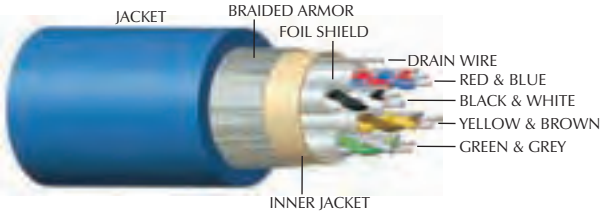


Diagram E



STP = Shielded Twisted Pair
Note: See page K244 for corresponding bulk cable specifications.

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Control *extremelife*® *reelfast*® Cable Selection Guide

Diagram	No. of Cond.	AWG	Jacket Characteristics	ID Number	Ship Wt. (lbs)	Conductor Colors	Shield	UL	CSA	Type	Temp. (°C)
A	3	18	**PVC BK 300 V 8.4 mm OD *extremelife™-25***	RF51180-30M RF51180-100M RF51180-200M	7 21 42	1 pair = (BU, BN), GN/YE, Drain (20)	**STP Foil/Drain**	*	*	**A**	**105° -40°**
B	3	18	**PVC, ARMOR, BK 300 V 12.5 mm OD *extremelife-25***	RF51181-30M RF51181-100M RF51181-200M	17 57 114	1 pair = (BU, BN), GN/YE, Drain (20)	**STP Foil/Drain**	*	*		**105° -40°**
A	3	18	**TPE BK 300 V 8.4 mm OD *extremelife-55***	RF51188-30M RF51188-100M RF51188-200M	6 20 40	1 pair = (BU, BN), GN/YE, Drain (20)	**STP Foil/Drain**	*	*	**B**	**105° -55°**
C	5	18	**PVC BU 300 V 10.4 mm OD *extremelife-25***	RF50964-30M RF50964-100M RF50964-200M	10 33 66	BN, WH, BK, BU, GN/YE, Drain (20)	**Foil/Drain**	*	*		**105° -40°**
D	5	18	**PVC BK 300 V 10.4 mm OD *extremelife-25***	RF51182-30M RF51182-100M RF51182-200M	10 32 64	2 pair = (BN, BU), (BK, WH), GN/YE, Drain (2 x 20)	**STP Foil/Drain**	*	*	**A**	**105° -40°**
E	8	18	**PVC, ARMOR, BU 300 V 17.8 mm OD *extremelife-25***	RF51073-30M RF51073-100M RF51073-200M	31 103 206	4 pair = (BK, WH), (BU, RD), (YE, BN), (GY, GN), Drains (4 x 20)	**STP Foil/Drain**	*	*		**105° -40°**
D	8	18	**TPE BK 300 V 15.1 mm OD *extremelife-55***	RF51158-30M RF51158-100M RF51158-200M	18 60 120	4 pair = (BK, WH), (BU, RD), (YE, BN), (GY, GN), Drains (5 x 20)	**STP Foil/Drain**	*	*	**B**	**105° -55°**
D	9	18	**PVC BK 300 V 13.2 mm OD *extremelife-25***	RF51183-30M RF51183-100M RF51183-200M	16 52 104	4 pair = (WH/BK, BK/WH), (WH/GN, GN/WH), (WH/RD, RD/WH), (WH/OG, OG/WH), GN/YE, Drains (4 x 20)	**STP Foil/Drain**	*	*	**A**	**105° -40°**
D	9	18	**TPE BK 300 V 15.1 mm OD *extremelife-55***	RF51189-30M RF51189-100M RF51189-200M	19 60 120	4 pair = (WH/BK, BK/WH), (WH/GN, GN/WH), (WH/RD, RD/WH), (WH/OG, OG/WH), GN/YE, Drains (4 x 20)	**STP Foil/Drain**	*	*	**B**	**105° -55°**

STP = Shielded Twisted Pair

Type A - All *extremelife-25* Cables

- Marine Shipboard
- UL1309
- IEEE 1202/FT4
- IEEE 45-1998
- IEEE 1580-2001
- IEC 332-3

Type B - All *extremelife-55* Cables

- Marine Shipboard
- UL1309
- ITC
- ABS App.No. 03-HS400-763-PDA

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TURCK Standards

One or more of the following standards may apply to products or components of products in this catalog. This section is intended to provide a reference to the applicable standards only. Original or facsimiles of the original standards documents should be used for interpretation. It is the responsibility of the user to determine the suitability of use of the products represented in this catalog.

ANSI/B93.55M

Generally defines the geometry and connection scheme of "mini" type connectors used in fluid power (valve) applications. It defines the numerical marking of the pins and the conductor size and colors for 3 and 5 pin versions. This specification was the basis for the so-called "automotive" standard conductor colors that are widely used on sensors.

CENELEC EN 50 044

Identifies connections for inductive proximity switches. The specification defines conductor colors for proximity switches with 2, 3, or 4 conductors. It also defines numerical marking of the terminals, whether quick disconnect, or not. **TURCK** sensors and recommended cordsets that apply within the scope of the standard comply with CENELEC EN 50 044. The conventions defined in this standard have been widely adopted in industry to include photoelectric controls and other related sensing devices.

CSA

The Canadian equivalent of UL in Canada. It is a government-run organization that tests and *certifies* that products conform to their own set of safety-related specifications.

DIN 43650

Defines the geometry and other characteristics of the "square" connectors most frequently used on hydraulic and pneumatic solenoid valves and other devices in the fluid power industry.

MSHA

The Mine Safety and Health Administration - a US Government agency that ensures and regulates safety for mines and mine workers. The MSHA approval is required for products used in underground mines, including electrical equipment, power cords, and instrumentation components.
The MSHA standards require special fire-resistant properties and characteristics that prevent the propagation of flames.

NRTL

Nationally Recognized Test Laboratory - An independent laboratory authorized by the US Government to perform product safety evaluations. Test laboratories must meet government laboratory standards, and are audited annually by OSHA to maintain this credential. UL standards are adopted by the US government and OSHA as being "Safety Standards", and these accredited labs then use the UL standards to perform product evaluations.

The Canadian Standards Association, (CSA) is authorized as a NRTL to perform product evaluations and tests to the UL Standards. The certification mark "CSA NRTL/C" is then applied to products that satisfy all construction and performance criteria for both US and Canada. This certification mark is generally accepted by local building, safety, and quality agencies as meeting safety, construction, and performance criteria in both the US and Canada.

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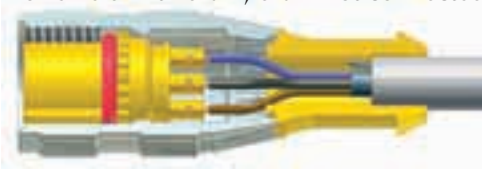
Shielded Cordsets

Whenever wire is used to transmit electrical data, it is possible for the wire to absorb external noise, possibly changing the characteristics of the electrical signal, or to give off noise that could cause changes in other electrical components that are near. Shielding is the act of placing conductive material between the potential noise emitters and receivers.

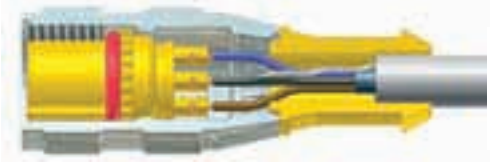
Electrical noise is usually classified as electro-magnetic interference (EMI) or radio frequency interference (RFI).

TURCK offers a number of shielding options:

1. Foil shield with drain, drain not connected



2. Foil shield with drain, drain connected to a pin



3. Foil and braid shield with shield tied to coupling nut

4. Aluminum armored cable with armor tied to coupling nut

For a shield to be effective, it must be tied to a ground at some point. It is usually preferred to not tie the shield to ground at more than one point to avoid ground loops. A shield not tied to a ground will reflect some noise and is better than no shield at all, but will be much more effective if tied to a ground.

High frequency noise, RFI, is handled well with a foil shield. The wavelength of RFI is usually small and can pass through the 'holes' in a braided shield. EMI is usually larger wavelengths and needs a braided shield to increase the mass of shielding material to be effective.

Aluminum armored cables provide the ultimate in noise immunity as they are basically flexible conduit.

Select the shielded cordset that best meets your needs. If it is easier to tie the shield to ground inside the panel, the foil/drain with the drain not connected inside the cordset is a good choice. If you can connect the drain via a pin inside the device being connected, the foil/drain with the drain connected to a pin is a good choice. Any environments with EMI noise from things like large motors or welding equipment will benefit from a braided shield tied to the coupling nut.

TURCK shielded cordsets with the shield tied to the coupling nut offer complete shielding for the entire length of the cordset. A metal sleeve inside the molded body connects the braid/foil shield of the cable to the metal coupling nut with no loss of shielding potential.

TURCK armored cordsets are the ultimate in shielded connectors. A **TURCK** patented process allows the interlocked aluminum armor to be connected directly to the coupling nut offering the same protection as running conductors inside metal conduit.

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IP Protection Class

IP		Dust Protection						
		0_ Unprotected	1_ Objects ≥50mm	2_ Objects ≥12.5mm	3_ Objects ≥2.5mm	4_ Objects ≥1.0mm	5_ Dust Protected	6_ Dust Tight
Water Protection	_0 Unprotected	IP 00	IP 10	IP 20	IP 30	IP 40	IP 50	IP 60
	_1 Dripping Water		IP 11	IP 21	IP 31	IP 41	IP 51	IP 61
	_2 Dripping Water on 15° slant		IP 12	IP 22	IP 32	IP 42	IP 52	IP 62
	_3 Spraying Water			IP 23	IP 33	IP 43	IP 53	IP 63
	_4 Splashing Water				IP 34	IP 44	IP 54	IP 64
	_4K Splashing Water High Pressure				IP 34K	IP 44K	IP 54K	IP 64K
	_5 Jet Water						IP 55	IP 65
	_6 Intense Jet Water						IP 56	IP 66
	_6K Intense Jet Water High Pressure						IP 56K	IP 66K
	_7 Temporary immersion							IP 67
	_8 Continuous immersion as specified by manufacturer							IP 68
	_9K Water at high pressure/Steam jet cleaning							IP 69K

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IP 67 Protection

First ID Number	Protection from penetration of…	Requirements
0	Unprotected	N/A
1	Solid Foreign Particles Ø50 mm	No full penetration of sphere with Ø50 mm
2	Solid Foreign Particles Ø12.5 mm	No full penetration of sphere with Ø12.5 mm
3	Solid Foreign Particles Ø2.5 mm	No penetration of rod with Ø2.5 mm
4	Solid Foreign Particles Ø1.0 mm	No penetration of wire with Ø1.0 mm
5	Dust	Dust may only penetrate in such quantity that function and safety are not impacted
6	Dust	No penetration of dust

Second ID Number	Protection from penetration of…	Requirements
0	Unprotected	N/A
1	Dripping water	Vertically falling drips may not cause any damage
2	Dripping water when the enclosure is in a slanted position of up to 15°	Vertically falling drips may not cause any damage
3	Spraying water	Spraying water, which is sprayed in a perpendicular angle of up to 60° may not cause any damage
4	Splashing water	Water splashing against the enclosure from every direction may not cause any damage
4K	Splashing water with increased pressure	Water splashing against the enclosure from every direction and with increased pressure may not cause any damage
5	Jet water	Water which is hosed against the enclosure from every direction may not cause damage
6	Intense jet water	Water which is hosed against the enclosure with high intensity may not cause any damage
6K	Intense jet water with increased pressure	Water which is hosed against the enclosure with high intensity and increased pressure may not cause any damage
7	Temporary immersion in water	Water may not enter the enclosure in such quantity as to cause damage when the enclosure is held under water for a set period of time using predetermined pressure (1 m for 30 min)
8	Continuous immersion in water	Water may not enter the enclosure in such quantity as to cause damage when the enclosure is held under water for a set period of time using predetermined pressure (TURCK standard is 6' of water, and other chemicals, for a period of 24 hours)
9K	Water at high-pressure/steam jet cleaning	Water which is directed against the enclosure from every direction with extremely high pressure may not cause any damage (14 to 16 l/min at 8,000 to 10,000 kPa)

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NEMA Standards

NEMA		NEMA 1	NEMA 2	NEMA 12	NEMA 13	NEMA 3	NEMA 3R	NEMA 4	NEMA 4X	NEMA 6	NEMA 6P
Rating Type		Indoor				Outdoor		Indoor/Outdoor			
Protection against:	Test Number										
Incidental Contact	6.2	●	●	●	●	●	●	●	●	●	●
Falling Dirt	6.2	●	●	●	●	●	●	●	●	●	●
Rust	6.8	●		●	●	●	●	●	●	●	●
Circulating Dust, Lint, Fibers (nonhazardous)	6.5.1.2(2)			●	●	●		●	●	●	●
Windblown Dust	6.5.1.1(2)					●		●	●	●	●
Falling Liquids/Light Splashing	6.3.2.2		●	●	●	●		●	●	●	●
Rain	6.4.2.1					●	●	●	●	●	●
Rain	6.4.2.2					●		●	●	●	●
Snow and Sleet	6.6.2.2					●	●	●	●	●	●
Hose Down and Splashing Water	6.7							●	●	●	●
Occasional Prolonged Submersion	6.11(2)									●	●
Oil and Coolant Drip	6.3.2.2			●	●						
Oil and Coolant, Spray/Splash	6.12				●						
Corrosive Agents	6.9					●	●		●		●

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6.2 Rod Entry Test - a ½" diameter rod may not enter the enclosure and a 1/8" rod cannot enter within 4" of live components

6.3 Drip Test - 20 drops per minute for 30 minutes with no water entering enclosure 6.3.2.2 Evaluation, no water shall enter enclosure

6.4 Rain Test - All exposed surfaces are sprayed with 5 psi of water for 60 minutes at a rate of 18" per hour rise in a straight sided pan 6.4.2.1 Evaluation, No water shall have reached live parts, insulation, or mechanisms 6.4.2.2 Evaluation, No water shall have entered enclosure

6.5.1.1 (2) Outdoor Dust Test (alternate method) - Stream of water at 45 gallons per minute from a 1" diameter nozzle, from all directions at a distance from 10' to 12'. Test time is a minimum of 5 minutes. No water shall enter enclosure.

6.5.1.2 (2) Indoor Dust Test (alternate method) - Atomized water at 30 psi is sprayed from all directions from a distance of 12" to 15" at a rate of 3 gallons per hour. No water shall enter enclosure.

6.6 External Icing Test - The enclosure is sprayed with water between 0°C and 3°C in a room at 2°C. The spray is between 1 and 2 gallons per hour per square foot. Spray for 1 hour. The room temp is then dropped to between -7°C and -3°C with the spray still going. Ice needs to build up on a test bar at a rate of 1/4 inch per hour. Spray continues until 3/4 inch of ice is on the enclosure. Room temperature is maintained for at least 3 hours. 6.6.2.2 Evaluation, enclosure is undamaged after ice has melted.

6.7 Hose down Test - Stream of water at 65 gallons per minute from a 1" diameter nozzle from all angles at a distance of 10' to 12'. Test time is 48 seconds times (height + width + depth of enclosure in feet) or a minimum of 5 seconds. No water shall enter enclosure.

6.8 Rust Resistance Test - only applicable to enclosures incorporating external ferrous parts

6.9 Corrosion Protection - Test per UL 508, 6.9 or 6.10.

6.11 (2) Air Pressure Test (alternate method) - Enclosure is submerged in water at a pressure equal to a depth of 6' for 24 hours. No water shall enter enclosure.

6.12 Oil Exclusion Test - Stream of test liquid at 2 gallons per minute from a 3/8" nozzle for 30 minutes. Water with 0.1% wetting agent is directed from all angles from a distance of 12" to 18". No test liquid shall enter the enclosure.

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Conversion Chart		
AWG to Metric		
AWG	Diameter mm	Section mm^2
8	3.26	10
10	2.59	6
12	2.05	4
14	1.63	2.5
16	1.29	1.5
18	1.024	0.75
20	0.813	0.5
22	0.643	0.34
24	0.511	0.25
26	0.405	0.14
28	0.32	0.05
30	0.255	0.05

Thread Conversion Chart	
PG to Metric	
PG	Diameter (mm)
7	12
9	16
11	20
16	25

Cable Length Tolerance Chart	
All Lengths	
Strip Length	Diameter (mm)
0-7 mm	±0.5 mm
8-29 mm	±1.0 mm
30-49 mm	±2.0 mm
50-69 mm	±3.0 mm
70-100 mm	±4.0 mm
Over 100 mm	±5.0 mm

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Installing Cable Products in Accordance with the National Electrical Code (NEC)

The NEC is a set of guidelines for installation of electrical devices, including cables, meant to reduce the risk of electrical shock, fire, etc. The NEC is simply a code and local laws may or may not require installation based on the NEC. Check local laws for applicability.

The NEC generally does not cover cables installed inside a machine. Any cables installed in an exposed manner, on the outside of a machine or from one machine to something else, must be an approved type and installed in accordance with the appropriate NEC articles.

UL (Underwriters Laboratory) and CSA (Canadian Standards Association) are the primary sources in North America for approving cables to specific standards. While a cable installed within a piece of machinery does not fall under the NEC, most people want to install an approved cable. **TURCK** cables have both UL and CSA approvals. Many of these approvals are the UL AWM (Appliance Wiring) approvals and are acceptable for use in a UL approved device. A UL Listed cable may be installed outside a machine per the NEC standards. UL Listed cables available from **TURCK** include NEC designations for hard duty cables (SOOW, SJOOW, STOOW, SEOW), armored cables (MC), and tray-rated cables (PLTC, ITC).

Hard duty cables designations are:

S - Service Grade (600V)

SJ - Service Grade Junior (300V)

ST - Service Grade Thermoplastic (600V)

SE - Service Grade Thermoplastic Elastomer (600V)

O - Oil resistant jacket material

OO - Oil resistant jacket and conductor insulation

W - Weather proof

TURCK armored cables are available in 3 different configurations. Type MC cables, type MC cables with ITC/PLTC approvals and simply ITC/PLTC approved. Armored cables with ITC/PLTC approvals may be installed in an exposed run without being offered additional mechanical protection.

Tray-rated cables from **TURCK** include Instrument Tray Cable (ITC) and/or Power Limited Tray Cable (PLTC).

TURCK NEC type approved cables are dual listed with other UL type approvals. For example, the RKM 126-*M cordset has a 12 conductor 16 AWG cable with UL AWM 600V approval and ITC/PLTC approval.

Please refer to the NEC and local laws for specific installation requirements based on your environment.

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Cable Applications

Proper management of cabling systems can mean the difference between a dependable and smooth operating installation and costly reoccurring down time. The suggestions outlined below illustrate some of the common sources of problems and provide simple and effective solutions.

Proper Bend Radius for Fixed and Moving Applications

Providing sufficient bend radius will allow the cable to absorb the energy of bending over a greater portion of its length, increasing its effective working life. Small increases in the radius of the bend can produce substantial increases in cable life.

Fixed Applications:
Minimum bend radius 5x cable diameter

Moving Applications:
Minimum bend radius 10x cable diameter

Eliminating Stress Points in Cable Dress

Installing cables to allow for adequate stress loops and freedom of motion increase the life of the cables. **TURCK** cordsets incorporate molded strain reliefs that will assist in preventing stress.

Tie Down Loops

Correct

Incorrect

Strain Relief

Correct

Incorrect

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Cable Bundling Techniques

When bundling several cables together, always keep the bundle loose enough to move within itself. Tightly tied bundles create both compression and tension stresses when the bundle is moved.

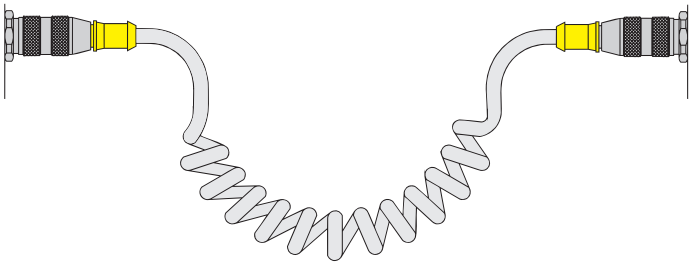
Correct

Incorrect

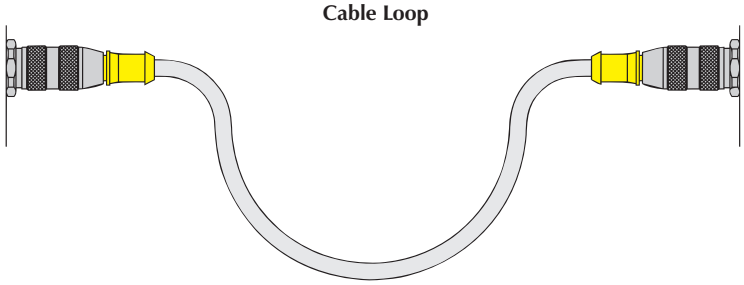
Cabling for Motion Applications

Where cabling is subjected to linear, angular or rotational motion between two points, always allow adequate cable length to absorb the energy imparted by the motion. Use of coiled cords, mechanical support mechanisms, or large, well supported cable loops will maximize cable life.

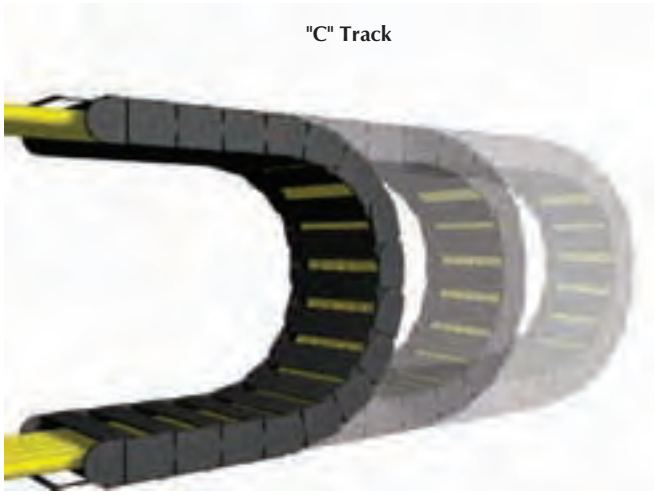
Coil Cord



Cable Loop



"C" Track



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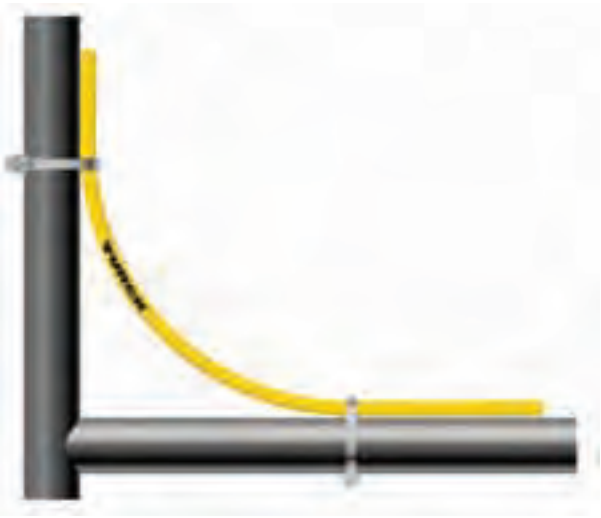
Tying Cables with Cable Ties

When tying cable with self locking cable ties, always leave the ties loose enough for the cables to slide freely under the tie. Over tightening will create stress concentrations that can cause the conductors to fail prematurely. Never tighten the tie to the point where the cable jacket becomes deformed or pinched.

Correct



Incorrect

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Installation Instructions for TURCK's *minifast* ® and *eurofast* ® Connectivity Products

Follow these simple steps to ensure that your **TURCK** connectivity products are installed for best performance and safety.

Step One:

Many instruments are available with a **TURCK** receptacle pre-installed. If a receptacle is already installed, proceed to Step Two. If field installation of a receptacle is necessary, feed the receptacle leads through the instrument's conduit entry and thread the receptacle into the entry threads. Receptacles with NPT threads should be tightened per the requirements for NPT conduit fittings. Receptacles with straight threads (M20 or NPSM) should be tightened to deflect the O-ring just sufficiently to effect a good seal. The receptacle leads should then be connected to the terminals of the instrument. Consult the instrument manual for terminal identification and preferred method of connection. Also, please refer to the product catalog or online at www.turck.com for the pin-out of the receptacle.

Step Two:

minifast connectors are designed to industry standards SAE H1738 and ANSI/B93.55M. The environmental seal for mated connectors is formed by the 'cork and bottle' design of the pin and socket carriers in which each connection chamber is individually sealed. The connection must be properly secured to achieve this seal, as well as to ensure a good electrical performance.

The keyed cordset should be aligned with the key on the instrument receptacle. The cordset should then be pushed into the receptacle and the coupling nut turned until hand tight. The cordset should then be pushed firmly into the receptacle a second time and the coupling nut hand tightened again. This generally allows an additional 1/8 - 1/4 turn and ensures that a tight, weather-proof connection is made. No tools should be used in tightening the connections, as damage to the contacts could occur if the connection is over-tightened.

eurofast connectors are designed to industry standard SAE H1738. The environmental seal for mated connectors is formed by an O-ring seal. The connection must be properly secured to achieve this seal, as well as to ensure a good electrical performance.

The keyed cordset should be aligned with the key on the instrument receptacle. The cordset should then be pushed into the receptacle and the couple nut turned until hand tight. While rotating the coupling nut, the installer may notice a 'ratcheting' sensation. This is an anti-vibration feature designed to maintain the connection in high-vibration environments. No tools should be used in tightening the connection, as damage to the contacts could occur if the connection is over-tightened.

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Installation Instructions for TURCK's *minifast* ® and *eurofast* ® Connectivity Products

Step Three:

Most **TURCK** process wiring products are designed and approved for use in hazardous locations. If the installation is in a hazardous location, there may be additional actions necessary, such as locking the connection with a ***lokfast***™ guard (as shown in the figure below), using an approved energy limiting source of power, or ensuring that the instrument has the appropriate approval. FM approved control drawings detail the requirements for compliant installation of **TURCK** products. The appropriate control drawing number will be identified in the product markings and may be viewed or downloaded from www.turck.com/fmcd. Consult the instrument manual to ensure the instrument has the appropriate approval and to determine if the approval imposes any additional constraints.

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Notes:

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SENSORS

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Valve Position Sensors

Type	35 mm	26 mm	20 mm	16 mm
Sensing Range	4 mm	4 mm	4 mm	2.5 mm
Pages	L9 - L14	L15 - L18	L19 - L20	L21 - L22

Type	Valve Sensor Pucks	*EZ-track*®
Pages	L23 - L26	L28 - L46

Type	Accessories
Pages	L27

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Valve Position Sensors

Position control in actuators and drives is essential in most chemical, petrochemical, and food industry applications. **TURCK** valve position sensors provide a quality solution to valve position feedback in a variety of applications. Each industry has different needs, and while the DS20 series works well in most general applications, **TURCK** has created a variety of styles that were designed with specific industries in mind.

Rising stem valve shown with TURCK *Vprox*® *773* sensors.

Chemical and Petrochemical Industries

The DSU35 provides superior protection against environmental influences, and is highly resistant to harsh chemicals, making it the ideal choice for chemical and petrochemical applications. This sensor and target puck can be mounted to several different actuator sizes without the need for adapters or spacer plates. The DSU35 is available with numerous outputs circuits such as a 2-wire DC, 2-wire NAMUR, 2-wire AC/DC, as well as with DeviceNet ™ and AS-I bus protocols. We also offer the DSU35 with a terminal chamber, which is often a requirement in chemical process applications where conduit must be used.

Food & Beverage Industries

TURCK uses injection-molding technology to make the compact DSC26 sensor, ensuring that it is fully sealed and well suited in wet surroundings. These features make the DSC26 ideal for use in a number of food or beverage applications. The DSC26 has a smooth housing which makes it easy to clean, yet it also has a high degree of protection against high pressure cleaning, and is highly resistant to aggressive cleaning agents.

Overview

TURCK has met with market demand to create an extensive line of valve position sensors. With a variety of standard ***eurofast***®, ***microfast***®, and ***minifast***® connections available, **TURCK's** dual sensors reduce installation costs and minimize the cost of maintenance. These robust and impact resistant sensors are ideal when valve position information must be provided.

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Valve Position Sensor Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

Mounting

B = Embeddable
N = Nonembeddable

Principle of Operation

I = Inductive

Rated Operating Distance (mm)

Housing Style

EG16CA = Stainless Steel 5/8 -18 UNF; 1/2-14 NPT
DSU = Dual Sensor Universal
DS = Dual Sensor
DSC = Dual Sensor Compact

Housing Height

20 = 20 mm
26 = 26 mm
35 = 35 mm

Housing Modifier

TC = Terminal Chamber

Number of Outputs

2 = Dual Output
Blank = Single Output

Output Function

A = Normally Open
F = Connection Programmable
Y0 = NAMUR Output, Requires Remote Amplifier
Y1 = NAMUR Output, Requires Remote Amplifier

Output

ASI = AS-I Protocol
DZ = 2-Wire AC/DC
DNET = DeviceNet™ Protocol
N = NPN (Current Sinking)
P = PNP (Current Sourcing)
Z = 2-Wire AC/DC

Voltage Range

4 = 10-65 VDC (SCP)*
6 = 10-30 VDC (SCP)*
30 = 20-250 VAC; 10-300 VDC (SCP)*
31 = 20-250 VAC; 10-300 VDC (No SCP)
32 = 20-250 VAC; 10-300 VDC (SCP)*

* Short-Circuit Protection

Number of LEDs

Blank = No LEDs
X2 = 2 LEDs

Connector Family

B1 = ***minifast***®, Metal, Male
H1 = ***eurofast***®, Metal, Male

Connector / Sensor Transition

1 = Straight
3 = Straight with Adapter

Number of Pins

Factory Code

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Dual DC NAMUR – Y0, Y1

Temperature Drift	≤±10%
Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN60947-5-6)
Resistance Change from Nonactivated to Activated Condition	Typical <1.0 to >8.0 kΩ
Rated Insulation Voltage	≤1.5 kV
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	>1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Yes, up to 10 VDC
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Short-Circuit Protection	Yes, when connected to NAMUR amplifier up to 15 VDC

Dual AC/DC without Short-Circuit Protection – ADZ31, ADZ35

Temperature Drift	≤±10%
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 400 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Short-Circuit Protection	No

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Dual AC/DC with Short-Circuit Protection – ADZ30, ADZ32, FDZ32

Temperature Drift	≤±10%
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 400 mA; 8 & 12 mm ≤6.0 V at 100 mA
Trigger Current for Overload Protection	AC: ≥440 mA; DC: ≥330 mA
Rated Insulation Voltage	≤1.5 kV
Off-State (Leakage) Current	≤1.7 mA (AC) ≤1.5 mA (DC)
Minimum Load Current	≥3.0 mA
Inrush Current	4.0 A (≤20 ms, 10% Duty Cycle)
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Short-Circuit Protection	Yes

Dual DC or Discrete Output – 2AP4X2, 2AP6X2, 2AN4X2, 2AN6X2

Temperature Drift	≤±10%
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V
Rated Insulation Voltage	≤0.5 kV
Trigger Current for Overload Protection	≥220 mA on 200 mA Load Current ≥170 mA on 150 mA Load Current ≥120 mA on 100 mA Load Current
Off-State (Leakage) Current	<100 µA
No-Load Current	<10 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Short-Circuit Protection	Yes

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Dual DC – AS-interface®

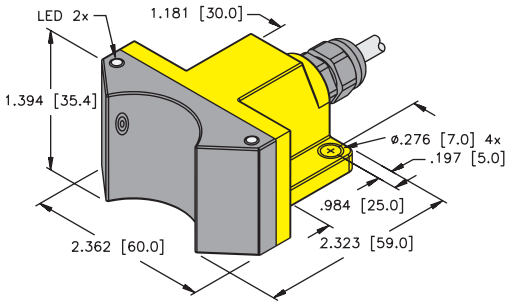
Temperature Drift . . . . . ≤±10%
Differential Travel (Hysteresis) . . . . . 3-15% (5% typical)
No-Load Current . . . . . ≤35 ma
Rated Insulation Voltage . . . . . ≤0.5 kV
E/A Configuration (HEX) / ID-Code (HEX) . . . . . 7 / F
I/O Matrix Input . . . . . 0 = upper sensor S01
1 = lower sensor S02
2 = wire-break at output
3 = not used
I/O Matrix Output . . . . . 0 = output "ON"
1-3 = not used
Short-Circuit Protection / Output Watchdog . . . . Yes / Yes
Wire-Break Protection I_{out} . . . . . ≤0.1 mA
Shock . . . . . 30 g, 11 ms
Vibration . . . . . 55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability . . . . . ≤2% of Rated Operating Distance
AS-I Version . . . . . AS-I V2.1

Dual DC – DeviceNet™

Temperature Drift . . . . . ≤±10%
Differential Travel (Hysteresis) . . . . . 3-15% (5% typical)
No-Load Current . . . . . ≤60 ma
Rated Insulation Voltage . . . . . ≤0.5 kV
Address (MacID) . . . . . 0-63, via EDS file
Baud Rate . . . . . via EDS Date
Input Data DeviceNet . . . . . Bit 0 S01 input / Bit 1 S02 input / Bit 2 output error /
Bit 7 input error / Bit 3-6, not used
Output Data DeviceNet . . . . . Bit 0 valve output / Bit 1-7, not used
Output Voltage . . . . . V+ - 3 V, PNP
Short-Circuit Protection / Output Watchdog . . . . Yes / No
Wire-Break Protection I_{out} . . . . . ≤0.1 mA
Shock . . . . . 30 g, 11 ms
Vibration . . . . . 55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability . . . . . ≤2% of Rated Operating Distance

LED	Color	State	Status
S01	YE	On	Target detected
S02	YE	On	Target detected
Out	YE	Off	Output Off
		On	Output On
ERR	RD	On	Output On/Off wirebreak detected
Status	RD/GN	Off	Sensor not powered
		GN On Steady	Sensor active and allocated by master
		GN Flashing	Sensor active and not allocated by master
		RD Flashing	Recoverable fault (open output, invalid input state, low bus voltage, I/O timeout)
		RD On Steady	Major fault (duplicate address, baud rate, bus off comm.
		GN+RD On	Autobaud detect
		GN+RD Flashing	Power-up test

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Housing Style	Part Number	ID Number	Features	Sensing Range (mm)	Output
35 mm - Nonembeddable, Dual Valve Sensor, Potted-In Cable 	Ni 4-DSU35-2AN4X2	M1569921	***Short-Circuit Protection***	4	**Dual NPN**
	Ni 4-DSU35-2AP4X2	M1569900	***Short-Circuit Protection***	4	**Dual PNP**
	Ni 4-DSU35-2Y1X2	M1051002	***Short-Circuit Protection***	4	**Dual NAMUR**
	Ni 4-DSU35-2ADZ30X2	M4290000	***Short-Circuit Protection***	4	**Dual AC/DC**

Additional specifications on pages L6 - L8.
Target Pucks on pages L23 - L26.

FM APPROVED

Most Ni 4-DSU35… dual valve sensors are FM approved for installation in Class I, Division 2 hazardous locations. See **TURCK** control drawing Ni-1.002 (www.turck.com/fmcd) for specific models and installation requirements. Ni 4-DSU35-2Y0X2-... dual valve sensors are FM approved as intrinsically safe for installation in Class I, II or III, Division 1 hazardous locations per **TURCK** control drawing IS-1.000 (www.turck.com/fmcd).

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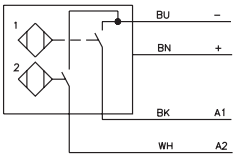
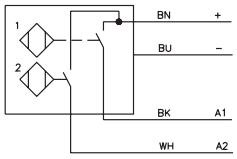
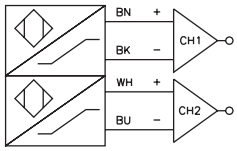
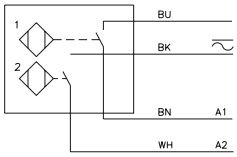
Voltage	Switching Freq. (Hz)	Switching Current (mA)	Operating Temp. (°C)	Protection	Housing	Face	End Cap	Power LED	Output LED	Mating Cord, Cable Length/Jacket	Wiring Diagram #	Wiring Diagrams
10-65 VDC	50	≤200	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	2M/PVC	1	Diagram 1
10-65 VDC	50	≤200	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	2M/PVC	2	Diagram 2
5-30 VDC	50	Remote	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	2M/PVC	3	Diagram 3
20-250 VAC 10-300 VDC	30	≤400/300	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	2M/PVC	4	Diagram 4









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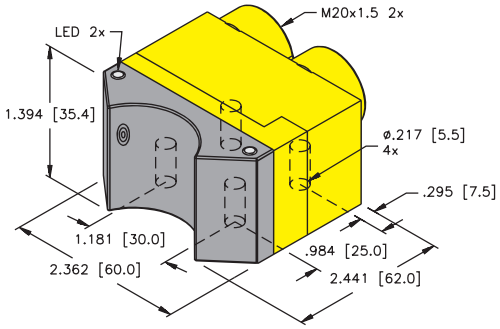
Housing Style	Part Number	ID Number	Features	Sensing Range (mm)	Output
35 mm - Nonembeddable, Dual Valve Sensor, Terminal Chamber 	Ni 4-DSU35TC-2AP4X2	M1569902	***Short-Circuit Protection***	4	**Dual PNP**
	Ni 4-DSU35TC-2Y1X2	M1051004	***Short-Circuit Protection up to 15 VDC***	4	**Dual NAMUR**
	Ni 4-DSU35TC-2ADZ30X2	M4290002	***Short-Circuit Protection***	4	**Dual AC/DC**
	Ni 4-DSU35TC-2ASIX4	M1902005	***Short-Circuit Protection***	4	**Dual ASI-BUS**

Additional specifications on pages L6 - L8.
Target Pucks on pages L23 - L26.

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Most Ni 4-DSU35… dual valve sensors are FM approved for installation in Class I, Division 2 hazardous locations. See **TURCK** control drawing Ni-1.002 (www.turck.com/fmcd) for specific models and installation requirements. Ni 4-DSU35TC-2Y0X2 dual valve sensors are FM approved as intrinsically safe for installation in Class I, II or III, Division 1 hazardous locations per **TURCK** control drawing IS-1.000 (www.turck.com/fmcd).

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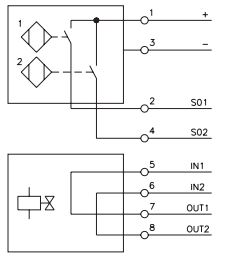
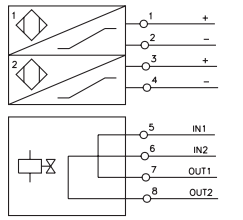
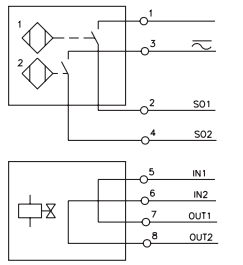
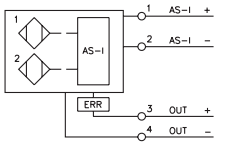
Voltage	Switching Freq. (Hz)	Switching Current (mA) VAC/VDC	Operating Temp. (°C)	Protection	Housing	Face	End Cap	Power LED	Output LED	Mating Cord, Cable Length/Jacket	Wiring Diagram #	Wiring Diagrams
10-65 VDC	50	≤200	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	N/A	1	Diagram 1
5-30 VDC	50	Remote	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	N/A	2	Diagram 2
20-250 VAC 10-300 VDC	30	≤400/300	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	N/A	3	Diagram 3
18-33 VDC	30	≤80	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	N/A	4	Diagram 4









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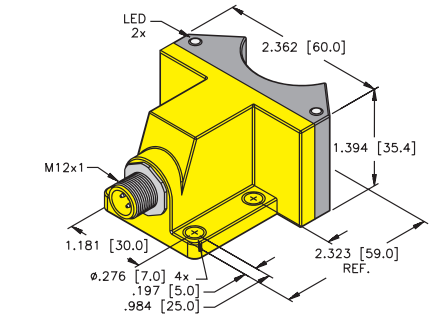
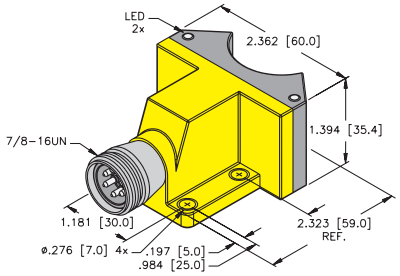
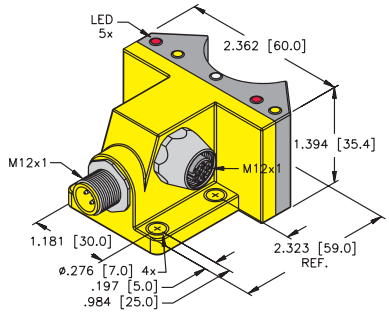
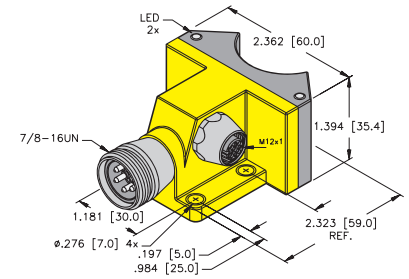
Housing Style	Part Number	ID Number	Features	Sensing Range (mm)	Output
35 mm - Nonembeddable, Dual Valve Sensor, *eurofast*® Connector 	Ni 4-DSU35-2AN4X2-H1141	M1569920	***Short-Circuit Protection***	4	**Dual NPN**
	Ni 4-DSU35-2AP4X2-H1141	M1569901	***Short-Circuit Protection***	4	**Dual PNP**
	Ni 4-DSU35-2Y0X2-H1140	M1051003	***Short-Circuit Protection up to 15 VDC***	4	**Dual NAMUR**
35 mm - Nonembeddable, Dual Valve Sensor, *minifast*® Connector 	Ni 4-DSU35-2ADZ30X2-B1151	M4290001	***Short-Circuit Protection***	4	**Dual AC/DC**
	Ni 4-DSU35-2ADZ35X2-B1151	M4290009		4	
35 mm - Nonembeddable, Dual Valve Sensor, *eurofast* Connector 	Ni 4-DSU35-2ASIX4-H1140	M1902000	***Short-Circuit Protection***	4	**Dual ASI-BUS**
	Ni 4-DSU35-2DNETX5-H1150	M1569908	***Short-Circuit Protection***	4	**Dual DeviceNet ™**
35 mm - Nonembeddable, Dual Valve Sensor, *minifast* Connector 	Ni 4-DSU35-2AP4X2-B1160-FKE4.5	M1569923	***Short-Circuit Protection***	4	**Dual PNP**

Additional specifications on pages L6 - L8.
Target Pucks on pages L23 - L26.

FM APPROVED

Most Ni 4-DSU35… dual valve sensors are FM approved for installation in Class I, Division 2 hazardous locations. See **TURCK** control drawing Ni-1.002 (www.turck.com/fmcd) for specific models and installation requirements. Ni 4-DSU35-2Y0X2-... dual valve sensors are FM approved as intrinsically safe for installation in Class I, II or III, Division 1 hazardous locations per **TURCK** control drawing IS-1.000 (www.turck.com/fmcd).

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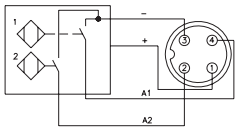
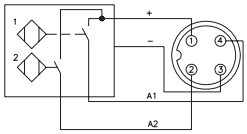
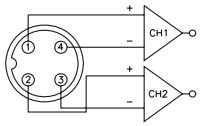
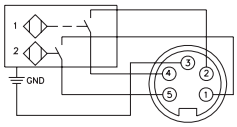
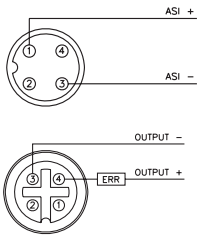
Voltage	Switching Freq. (Hz)	Switching Current (mA) VAC/VDC	Operating Temp. (°C)	Protection	Housing	Face	End Cap	Power LED	Output LED	Mating Cord, Cable Length/Jacket	Wiring Diagram #	Wiring Diagrams
10-65 VDC	50	≤200	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	RK 4.4T-*	1	Diagram 1
10-65 VDC	50	≤200	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	RK 4.4T-*	2	Diagram 2
5-30 VDC	50	Remote	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	RK 4.41T-*	6	
20-250 VAC 10-300 VDC	30	≤400/300	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	RKM 50-*M	4	Diagram 3
20-150 VAC 10-150 VDC	50	≤400/300	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	RKM 50-*M	4	Diagram 4
18-33 VDC	30	≤80	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	RKC 254-*M RS 4.4T-*	5	Diagram 5
11-25 VDC	50	≤80	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	RKC 572-*M RS 4.4T-*	6	Diagram 6
10-65 VDC	50	≤200	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	RKM 60-*M RK 4.5T-*	7	Diagram 7

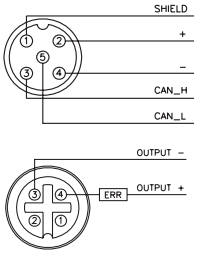


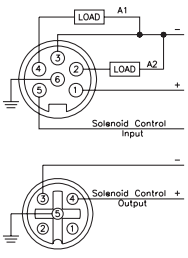












* Length in meters.

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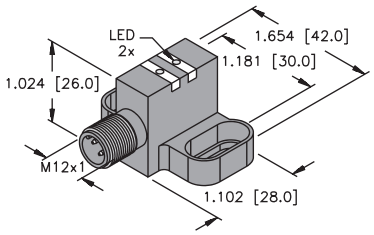
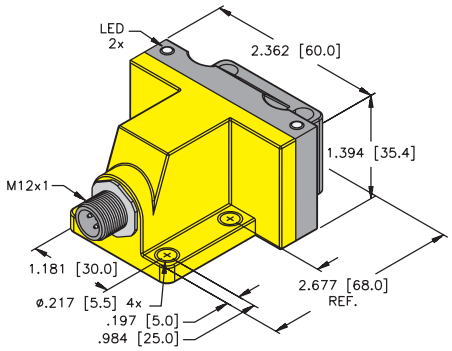
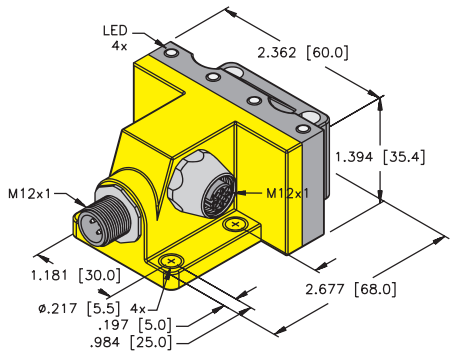
Housing Style	Part Number	ID Number	Features	Sensing Range (mm)	Output
26 mm - Nonembeddable, Dual Valve Sensor, *eurofast*® Connector 	Ni 4-DSC26-2AP6X2-H1141	M1650087	***Short-Circuit Protection***	4	**Dual PNP**
26 mm - Nonembeddable, Dual Valve Sensor, *eurofast* Connector 	Ni 4-DSU26-2AP4X2-H1141	M1569904	***Short-Circuit Protection***	4	**Dual PNP**
	Ni 4-DSU26-2Y1X2-H1140	M1051007	***Short-Circuit Protection up to 15 VDC***	4	**Dual NAMUR**
26 mm - Nonembeddable, Dual Valve Sensor, *eurofast* Connector 	Ni 4-DSU26-2ASIX4-H1140	M1902001	***Short-Circuit Protection***	4	**Dual ASI-BUS**

Additional specifications on pages L6 - L8.
Target Pucks on pages L23 - L26.

FM APPROVED

Most Ni 4-DSU26-Y0X2-… dual valve sensors are FM approved as intrinsically safe for installation in Class I, Division 1 hazardous locations per **TURCK** control drawing IS-1.000 (www.turck.com/fmcd).

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Voltage	Switching Freq. (Hz)	Switching Current (mA) VAC/VDC	Operating Temp. (°C)	Protection	Housing	Face	End Cap	Power LED	Output LED	Mating Cord, Cable Length/Jacket	Wiring Diagram #
10-30 VDC	50	≤200	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	RK 4.4T-*	1
10-65 VDC	50	≤200	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	RK 4.4T-*	1
5-30 VDC	50	Remote	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	RK 4.41T-*	2
18-33 VDC	30	≤80	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	RKC 254-* RS 4.4T-*	3

Wiring Diagrams

Diagram 1

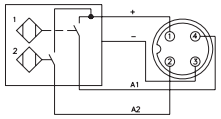


Diagram 2

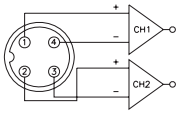
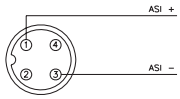
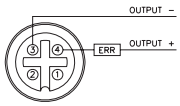


Diagram 3





* Length in meters.

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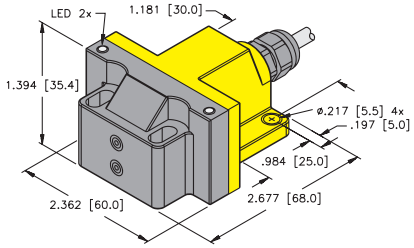
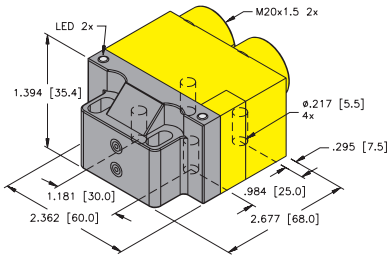
Housing Style	Part Number	ID Number	Features	Sensing Range (mm)	Output
26 mm - Nonembeddable, Dual Valve Sensor, Potted-In Cable 	Ni 4-DSU26-2ADZ30X2	M4290005	***Short-Circuit Protection***	4	**Dual AC/DC**
26 mm - Nonembeddable, Dual Valve Sensor, Terminal Chamber 	Ni 4-DSU26TC-2ADZ30X2	M4290004	***Short-Circuit Protection***	4	**Dual AC/DC**

Additional specifications on pages L6 - L8.
Target Pucks on pages L23 - L26.

FM APPROVED

Most Ni 4-DS20-2Y1X2-… dual valve sensors are FM approved as intrinsically safe for installation in Class I, Division 1 hazardous locations per **TURCK** control drawing IS-1.000 (www.turck.com/fmcd).

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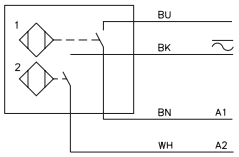
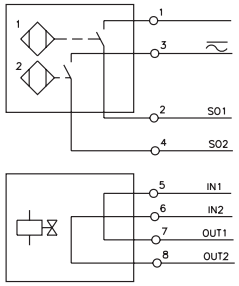
Voltage	Switching Freq. (Hz)	Switching Current (mA) VAC/VDC	Operating Temp. (°C)	Protection	Housing	Face	End Cap	Power LED	Output LED	Mating Cord, Cable Length/Jacket	Wiring Diagram #	Wiring Diagrams
20-250 VAC 10-300 VDC	30	≤400/300	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	2M/PVC	1	**Diagram 1**  **Diagram 2** 
20-250 VAC 10-300 VDC	30	≤400/300	-25 to +70	IP 67	PP	PP	N/A	N/A	YE/RD	N/A	2	

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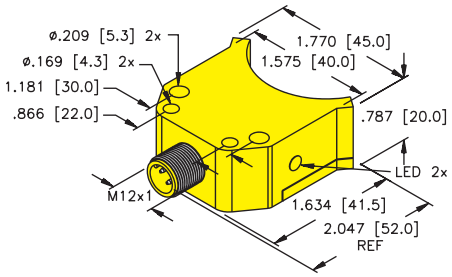
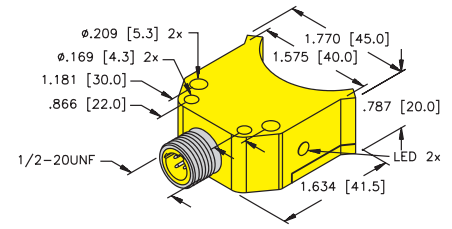
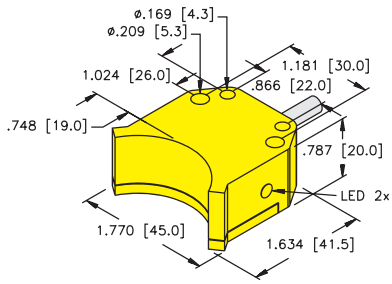
Housing Style	Part Number	ID Number	Features	Sensing Range (mm)	Output
20 mm - Nonembeddable Dual Valve Sensor *eurofast*® Connection 	Ni 4-DS20-2AP6X2-H1141	M1650020	***Short-Circuit Protection***	4	**Dual PNP**
	Ni 4-DS20-2Y1X2-H1140	M1050001	***Short-Circuit Protection up to 15 VDC***	4	**Dual NAMUR**
20 mm - Nonembeddable Dual Valve Sensor *microfast*® Connection 	Ni 4-DS20-2AZ31X2-B3151	M1305000		4	**Dual AC/DC**
20 mm - Nonembeddable Dual Valve Sensor Potted-In Cable 	Ni 4-DS20-2AP6X2	M1650022	***Short-Circuit Protection***	4	**Dual PNP**
	Ni 4-DS20-2Y1X2	M1050002	***Short-Circuit Protection up to 15 VDC***	4	**Dual NAMUR**

Additional specifications on pages L6 - L8.
Target Pucks on pages L23 - L26.

FM APPROVED

Most Ni 4-DS20-2Y1X2-… dual valve sensors are FM approved as intrinsically safe for installation in Class I, Division 1 hazardous locations per **TURCK** control drawing IS-1.000 (www.turck.com/fmcd).

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Voltage	Switching Freq. (Hz)	Switching Current (mA) VAC/VDC	Operating Temp. (°C)	Protection	Housing	Face	End Cap	Power LED	Output LED	Mating Cord, Cable Length/Jacket	Wiring Diagram #
10-30 VDC	50	≤200	-25 to +70	IP 67	PBT	PBT	N/A	N/A	YE/YE	RK 4.4T-*	1
5-30 VDC	50	Remote	-25 to +70	IP 67	PBT	PBT	N/A	N/A	RD/RD	RK 4.41T-*	2
20-250 VAC 10-300 VDC	20	≤100/300	-25 to +70	IP 67	PBT	PBT	N/A	N/A	RD/RD	KB 5T-*	3
10-30 VDC	50	≤200	-25 to +70	IP 67	PBT	PBT	N/A	N/A	YE/YE	2M/PVC	4
5-30 VDC	50	Remote	-25 to +70	IP 67	PBT	PBT	N/A	N/A	RD/RD	2M/PVC	5

Wiring Diagrams

Diagram 1

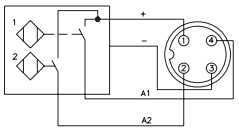


Diagram 2

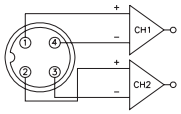


Diagram 3

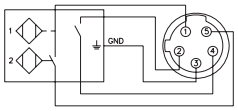


Diagram 4

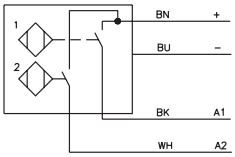
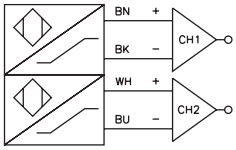
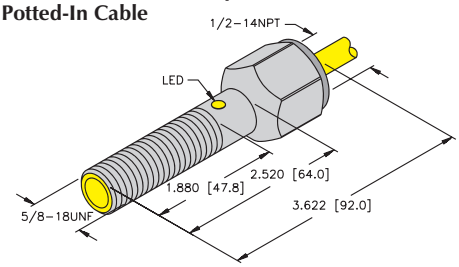
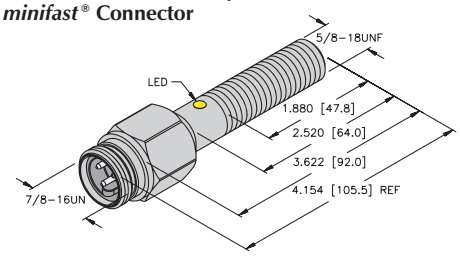


Diagram 5



* Length in meters.

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Housing Style	Part Number	ID Number	Features	Sensing Range (mm)	Output
16 mm - Embeddable, *Vprox 773™*, Potted-In Cable 	Bi 2.5-EG16CA-FDZ32X2	T4205100-1	***Prog. Outputs*** ***Low Temp. -40°C*** ***Short-Circuit Protection***	2.5	**2-Wire AC/DC**
16 mm - Embeddable, *Vprox 773*, *minifast*® Connector 	Bi 2.5-EG16CA-FDZ32X2-B1151	T4205190	***Prog. Outputs*** ***Low Temp. -40°C*** ***Short-Circuit Protection***	2.5	**2-Wire AC/DC**

Additional specifications on pages L6 - L8.

FM APPROVED

TURCK *Vprox* sensors are FM approved for installation in Class I, Division 2 hazardous locations when installed per **TURCK** control drawing Ni-1.002 (www.turck.com/fmcd).

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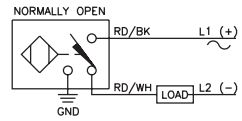
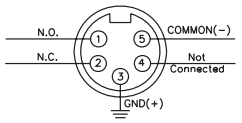
Voltage	Switching Freq. (Hz)	Switching Current (mA) VAC/VDC	Operating Temp. (°C)	Protection	Housing	Face	End Cap	Power LED	Output LED	Mating Cord, Cable Length/Jacket	Wiring Diagram #	Wiring Diagrams
20-250 VAC 10-300 VDC	50	≤100	-40 to +70	IP 67	SS	PA 12	N/A	GN	RD	2M/PVC	1	**Diagram 1**
20-250 VAC 10-300 VDC	50	≤100	-40 to +70	IP 67	SS	PA 12	N/A	GN	RD	RK 50-*M	2	**Diagram 2**





* Length in meters.

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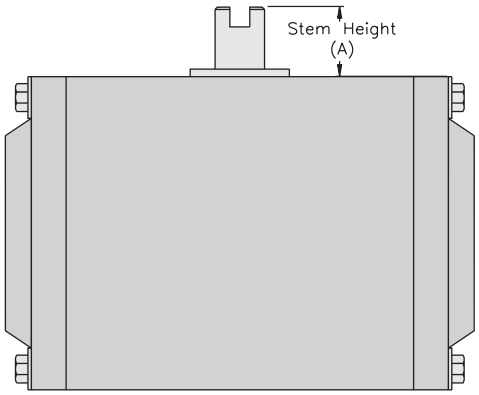
Valve Sensor Puck Selection Guide

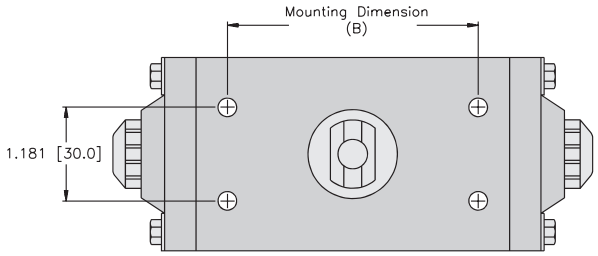
Stem Height (A)		20 mm		30 mm		50 mm	
Mounting Dimension (B)		80 mm	130 mm	80 mm	130 mm	80 mm	130 mm
Part Number	Output Function						
DS20	End Position Indication- On	BTS-DS20-TP1 (M6900155)	Consult Factory	BTS-DS20-TK1 (M6900156)	BTS-DS20-TP1 (M6900155)	N/A	N/A
	Adjustable/End Position- On	BTS-DS20-KEY (M6900136)	BTS-DS20-KEY (M6900136)	Consult Factory	Consult Factory	N/A	N/A
DSC26	End Position Indication- On	BTS-DSC26-EB1 (M6900222)	Consult Factory	BTS-DSC26-EB2 (M6900223)	BTS-DSC26-EB3 (M6900224)	Consult Factory	Consult Factory
DSU35	End Position Indication- On	BTS-DSU35-EB1 (M6900225)	BTS-DSU35-EB1 (M6900225)	BTS-DSU35-EB1 (M6900225)	BTS-DSU35-EB1 (M6900225)	BTS-DSU35-EB1 (M6900225) and BTS-DSU35-Z07 (M6900403)	BTS-DSU35-EB1 (M6900225) and BTS-DSU35-Z07 (M6900403)
	Adjustable/End Position- On	BTS-DSU35-EBE1 (M6900226)	BTS-DSU35-EBE1 (M6900226)	BTS-DSU35-EBE2 (M6900228)	BTS-DSU35-EBE2 (M6900228)	BTS-DSU35-EBE1 (M6900226) and BTS-DSU35-Z07 (M6900403)	BTS-DSU35-EBE1 (M6900226) and BTS-DSU35-Z07 (M6900403)
	End Position Indication- Off	BTS-DSU35-EU1 (M6900227)	BTS-DSU35-EU1 (M6900227)	BTS-DSU35-EU1 (M6900227)	BTS-DSU35-EU1 (M6900227)	BTS-DSU35-EU1 (M6900227) and BTS-DSU35-Z07 (M6900403)	BTS-DSU35-EU1 (M6900227) and BTS-DSU35-Z07 (M6900403)

For stems that exceed 40 mm in diameter, consult drawings for appropriate shim package.

Actuator Side View



Actuator Top View



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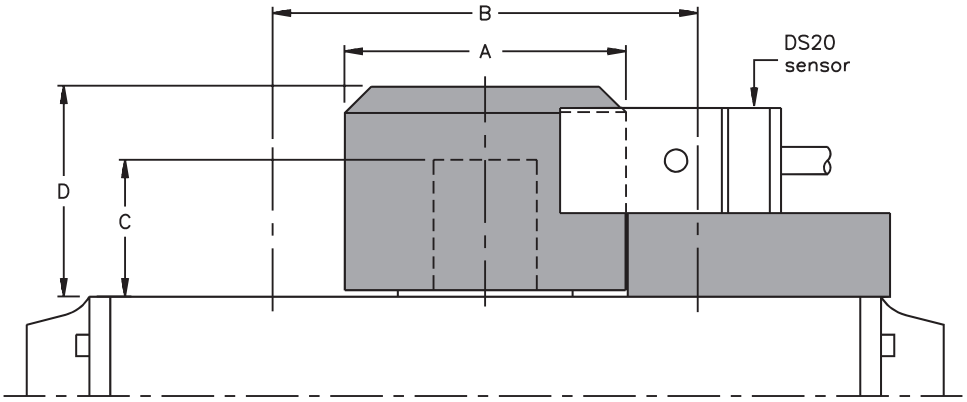
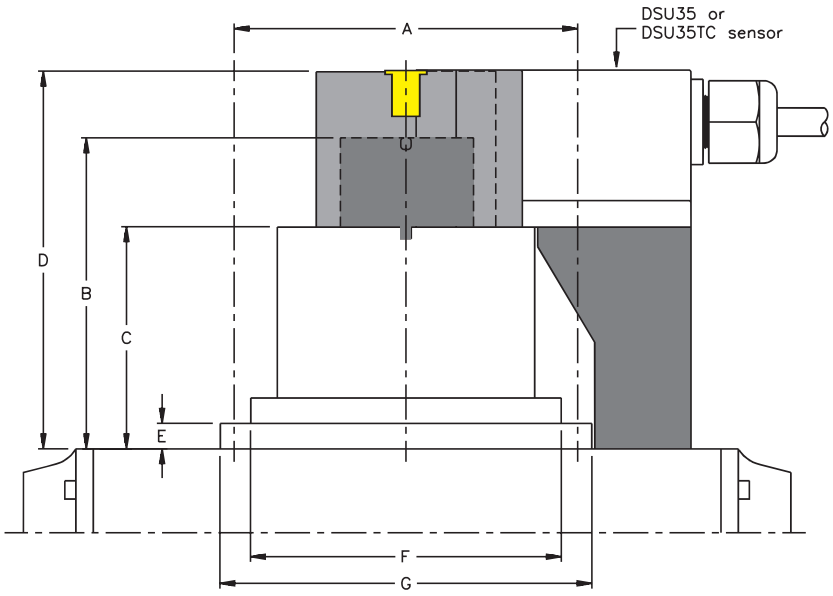
Valve Sensor Puck Information



Part Number	Dimensions (mm)			
	A	B	C	D
BTS-DS20-KEY	40	80x130	20	37



Part Number	Dimensions (mm)						
	A	B	C	D	E	F	G
BTS-DSU35-Z03	130	50	30	65	19 (max)	70	110
BTS-DSU35-Z07	130	70	50	85	19 (max)	10	110

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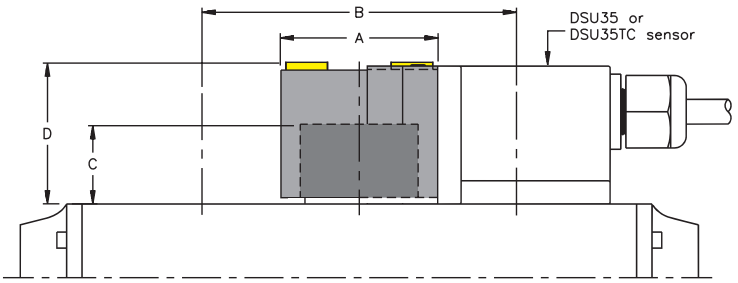
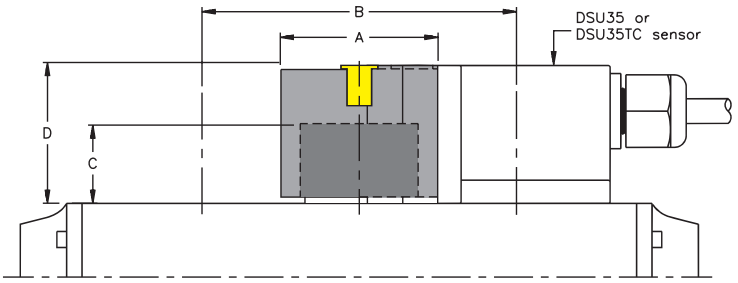
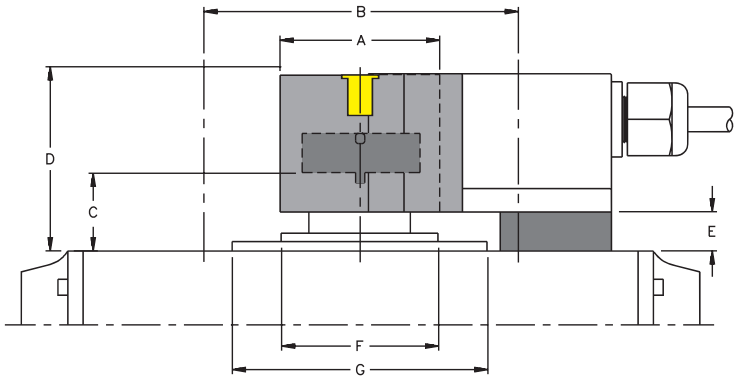
Valve Sensor Puck Information



Part Number	Dimensions (mm)			
	A	B	C	D
BTS-DSU35-EU1	40	80x130	20x30	36



Part Number	Dimensions (mm)			
	A	B	C	D
BTS-DSU35-EB1	40	80x130	20x30	36
BTS-DSU35-EBE1	40	80x130	20	36
BTS-DS20-TP1	40	80	20	36



Part Number	Dimensions (mm)						
	A	B	C	D	E	F	G
BTS-DSU35-Z01	40	80x130	20	45	10	40	65
BTS-DSU35-Z02	40	80x130	20	55	20	40	65
BTS-DSU35-Z04	40	80x130	30	45	10	40	65
BTS-DSU35-Z05	40	80x130	30	55	20	30	65
BTS-DSU35-Z06	40	80x130	30	65	30	40	65
BTS-DS20-TK1	40	80x130	30	46	10	50	50

"Z" mounting packages include shims to increase height of sensor and may include similar shim for target puck (depending on package).

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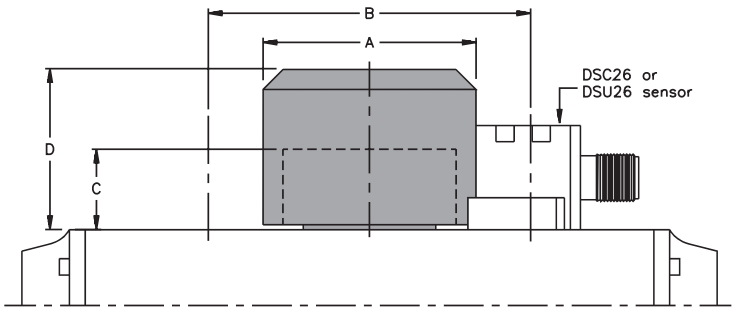
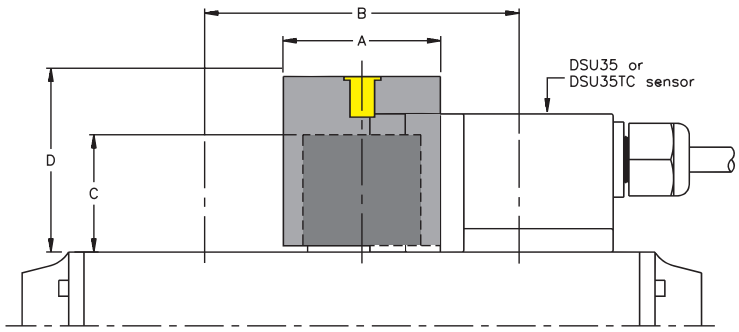
Valve Sensor Puck Information



Part Number	Dimensions (mm)			
	A	B	C	D
BTS-DSC26-EB1	53	80	20	40
BTS-DSC26-EB2	65	80	30	50
BTS-DSC26-EB3	102	130	30	50



Part Number	Dimensions (mm)			
	A	B	C	D
BTS-DSU35-EBE2	40	80x130	30	47

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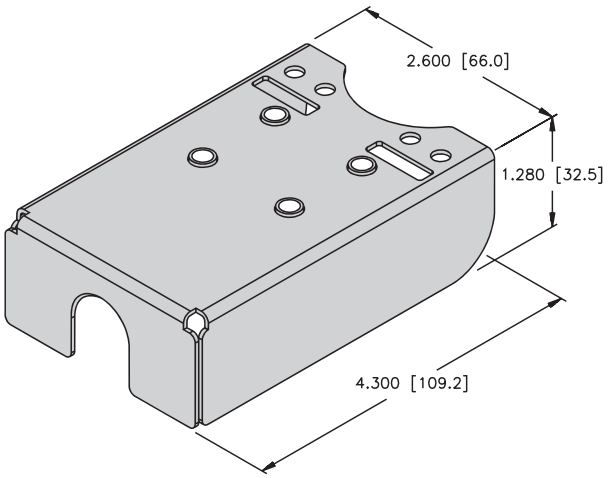
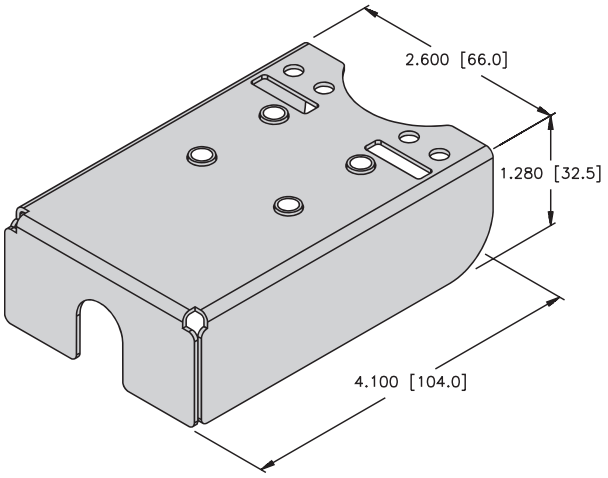
Valve Sensor Accessories for Class I, Division 2 Applications

GUARD-DSU35-AD
(A9235)



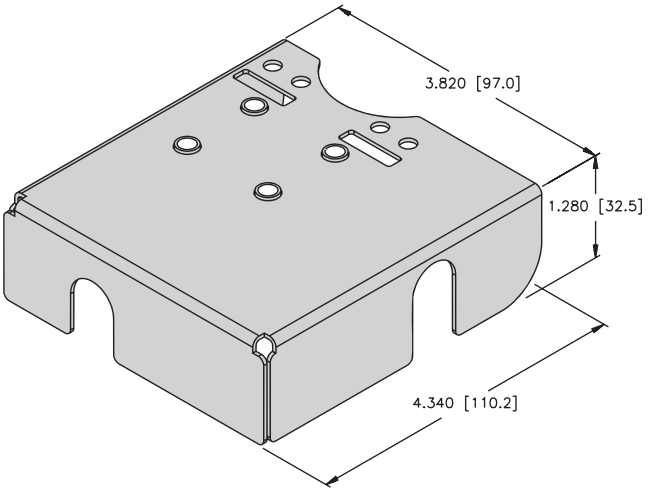
For use with: Ni 4-DSU35-ADZ35X2-B1151

GUARD-DSU35-DC
(A9234)



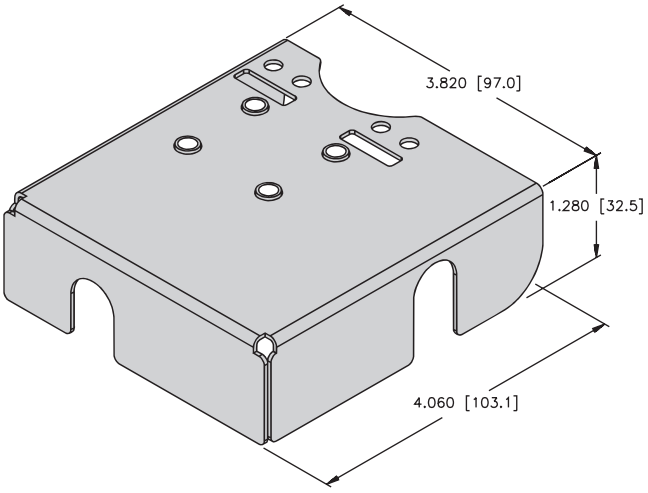
For use with: Ni 4-DSU35-2AP4X2-H1140
Ni 4-DSU35-2AN4X2
Ni 4-DSU35-2ADZ35X2
Ni 4-DSU35-2AP4X2

GUARD-DSU35-DCS
(A9287)



For use with: Ni 4-DSU35-2AP4X2-B1160-FKE4.5

GUARD-DSU35-DCS
(A9150)



For use with: Ni 4-DSU35-2ASIX4
Ni 4-DSU35-2DNETX5

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EZ-track®

TURCK's *EZ-track* line of linear displacement transducers (LDTs) is the latest offering in **TURCK**'s continuous effort to change the shape of sensing. Based on magnetostrictive technology, the ***EZ-track*** line will reliably operate in the harsh conditions for which **TURCK** products are known to withstand. With its unique features, IP 67 or optional IP 68 environmental rating, easy mounting and absolute positioning, the ***EZ-track*** line will be sure to fit into your tough linear sensing applications.

Features and Benefits

Non-Contact Sensing Reduces Wear, Breakage, Downtime, and Ultimately Cost

TURCK's ***EZ-track*** line is a family of magnetostrictive LDTs. These non-contact devices detect the position of an external magnet along the active stroke of the sensor without causing any wear on the sensor parts. Because there are no parts to wear or break, the sensors can offer better performance over a longer life than competing technologies. ***EZ-track*** LDTs also offer an alternative when a continuous, absolute reading is necessary in the application.

The absolute reading allows the sensor to accurately determine the position at power ON without the need to set up a home position. With this technology, repeatability of up to +/- 0.001% of full stroke can be achieved. See specifications for detailed information on each product family.

Fast Connections

As a leading supplier of connectivity products, **TURCK** delivers the complete package. Standard, shielded 4 and 5-pin M12 ***eurofast***® cables are always available from **TURCK** for quick connection to ***EZ-track***.

IP 67 / IP 68 (optional)

The ***EZ-track*** line will stand up in harsh environments, thus downtime situations due to environmental conditions can be reduced. Standard units have an environmental rating of IP 67, however IP 68 versions are also available. Consult factory for details.

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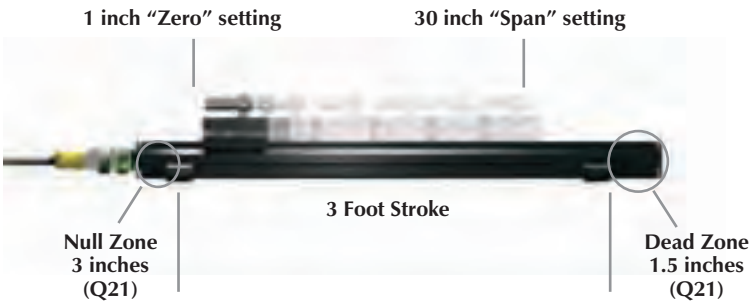
EZ-track® General Overview

Programable Stroke

Programmable Zero and Span Allow Standard Sensors to Have Customized Stroke Lengths, Eliminating the Need to Stock Numerous Models

EZ-track's analog outputs are not limited to the entire length of the sensor. The zero and span settings can be programmed anywhere along the active stroke. By utilizing this feature, the user can reduce stock levels for various length LDTs used in the plant by replacing them with standard sizes and programming to the specific applications. The **Q21** profile style transducers are available in stroke lengths up to 180 inches.



To Program the *EZ-track* Sensor:

Short pin 2 to pin 3 to obtain "Zero" setting, short pin 2 to pin 1 to obtain "Span" setting, or use **TURCK**'s RP-Q21 Programmer.

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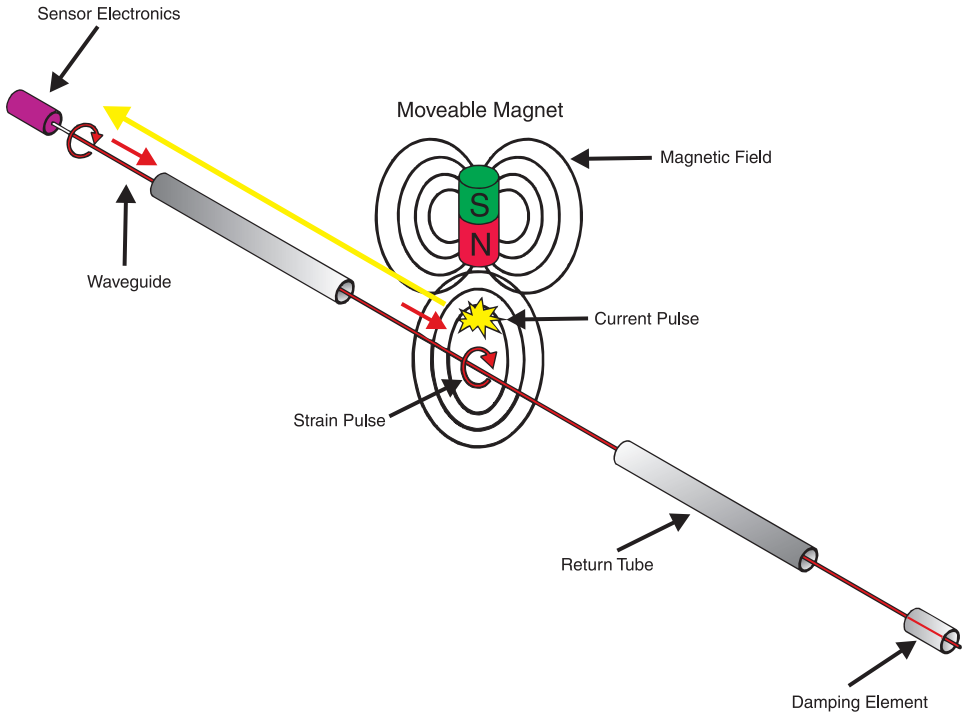
Reliable Accurate Technology

EZ-track® LDTs profile style probes use magnetostrictive technology by applying a mechanical strain pulse to a magnetostrictive waveguide that runs the length of the sensor. When the strain pulse encounters a magnetic field produced by the slide or floating magnet assembly, a current pulse is produced that is picked up by the electronic circuitry. A high speed timer measures the time difference between the applied strain pulse and the return of the induced current pulse. This time, proportional to position, is compared to the "zero" and "span" positions established during the calibration process to scale the output. Once the position has been scaled accordingly, it is converted to a signal in the form of an analog (voltage or current) output, quadrature pulse output, or digital (PWM or start/stop) outputs.

In the **Q21R** the magnetostrictive effect is used in the opposite manner, in that a current pulse is induced and a strain pulse returns to the sensor electronics. Utilizing the magnetostrictive effect gives you highly accurate, non-contact absolute position sensing with no wear on the sensing element.



Applications

- **Hydraulic Cylinders**
- **Injection / Blow Molding**
- **Palletizers**
- **Foundries**
- **Packaging Machines**
- **Die Casting**
- **Medical Systems**
- **X-Y Axis Positioning**
- **Elevators**
- **Extruding Equipment**
- **Valve / Actuator Position**
- **Material Handling**
- **Laminating / Gluing Machines**
- **Saw Mills / Lumber Equipment**
- **Cutting / Slitting Machines**
- **Amusement Park Rides**
- **Flight Simulators**
- **Side Guides**

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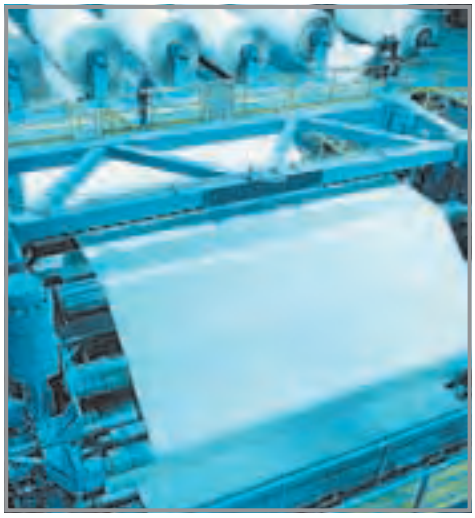
Analog Profile Series

Low Profile Extrusion Housing

Low Profile Housings Reduce Mounting Restrictions and Eliminate Special Mounting Fixtures

The **Q21** series is housed in low profile, environmentally sealed, anodized aluminum housings. The electronics and the sensing element are incorporated into a housing that is less than 1 inch tall without the need for a can or head on the sensor to house the electronics (typical competitive devices are 2.5 times larger). By reducing the profile of the sensor lessens mounting issues, and allows the **Q21** series to fit into applications where others are too bulky.

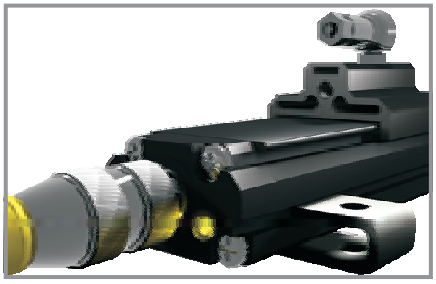


Diagnostic LED

An LED Indicating the Status of the Sensor Simplifies Troubleshooting and Reduces Maintenance

The ***EZ-track***® Series utilizes a diagnostic LED that enables the operator to understand the state of the sensor dependent upon the position of the target magnet.

The LED is green when the power is on and the magnet is in an active programmed area.



The LED turns yellow when the magnet moves out of the programmed area, but is still within the active stroke.

The LED turns red when there is no magnet present or it is in the null or dead zones.

The LED flashes to indicate it is in AGC mode (**Q21**).
This feature simplifies programming and troubleshooting, effectively reducing setup and maintenance time.

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Various Analog Outputs Available Profile Style

The **Q21** series can be ordered in a variety of outputs.

Voltage:	Current:	Quadrature:
0-10 VDC	4-20 mA	10 kHz to 1 MHz
10-0 VDC	20-4 mA	
-10 to 10 VDC		
10 to -10 VDC		
0-5 VDC		
5-0 VDC		
-5 to 5 VDC		
5 to -5 VDC		

Although sensors can be ordered with any of the above outputs, the units can easily be changed in the field to reverse the analog signal. Thus, one model can be used for two applications by programming the "zero" and "span" appropriately.

Automatic Gain Control

The Automatic Gain Control (AGC) feature allows the ***EZ-track***® to sense a magnet other than the standard slide magnet and adjust to the magnetic field strength accordingly. With the ability to sense a standard floating magnet up to 3/8 inch away, the user has greater mounting flexibility for various applications.

FM Approved Installation (Class I, Division 2)

The ***EZ-track* Q21** unit can be ordered for use in a Class I, Division 2 environment. The unit will utilize a Euro-G Fast-Lock, as shown below. See page L37 for part number key and ordering information (S1690 unit rating option).

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Quadrature Profile Series

Direct Quadrature Output

Reduce installation time, vendors and cost by directly interfacing to the PLC input card

The **Q21-DQ** provides a quadrature output directly from the transducer to the controller. The **Q21-DQ** provides A and B channel quadrature output signals that are proportional to the position of the magnet assembly along the length of the probe. The quadrature output makes it possible to have a direct interface to virtually any incremental encoder input or counter card, eliminating costly absolute encoder converters and special PLC interface modules. An index channel (Z) is also provided and its position can be set by the user at any position along the active system. The A, B and Z channels are differential outputs. That is, the connection for each output consists of two signal wires. These are typically described as the "+" and "-" signals. Differential signals are much less prone to interference caused by electrical noise or ground loops more often found in single ended connections.

Replace Incremental Output Devices

The **Q21-DQ** can be used in certain applications to replace incremental rotary and linear encoders. The quadrature output can be used in applications requiring 0.001 inch resolution and repeatability.

Velocity Feedback

The ***EZ-track*** quadrature produces pulses that are sent to the controller in packets at a fixed frequency. The period of the pulses do not change with magnet velocity. Therefore, velocity can not be determined from the pulse packets unless the controller can interpolate velocity from position over time. If your application requires a velocity feedback, please consider the Linear Encoder on pages M4-M5 or consult factory.

Incremental Output, Absolute Functionality

No need to home the machine at start up or after power failure

The **Q21-DQ** allows you to use an incremental style of output while taking advantage of an absolute sensing technology. The Burst Input on the transducer triggers a data transfer of all incremental position data relative to the transducer's zero position. This can be used to achieve absolute position updates when power is restored to the system or anytime an update is needed to re-zero or home the machine.

Programmable Zero Point

The Zero Input allows you to set the probes reference position at any point along the active stroke. The probe will output an increasing or decreasing signal based on the direction the magnet is moving in relation to the established zero point.
See Quadrature Part Number Key to select storage mode.

Volatile Storage - the zero point will be kept until a new zero pulse is sent or until the probe loses power. The zero point can be programmed an infinite number of times.

Non-Volatile Storage - the probe will store the zero position even in the event of a power failure. The zero point can be set 100,000 times.

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Quadrature Profile Series

Transducer Inputs

The *Burst* and *Zero* Inputs are single ended connections. That is, the connection for each input consists of only one wire. The **Q21-DQ** is available with either +24 VDC level signal or TTL level thresholds. Additionally, the 24 VDC can be specified as either sinking or sourcing relative to the probe's input.

Quadrature Output Resolution and Speed

The internal resolution of the **Q21-DQ** transducer is 0.001 inches. This would be represented to the encoder input device by specifying an output resolution of 1,000 cycles per inch (CPI).

Frequency or Pulse Rate

For a typical incremental encoder output, the resolution of the encoder and the speed of travel govern the frequency and pulse width of the output pulses. The output pulse rate from the ***EZ-track***® transducer is fixed and controlled internally. This output frequency is user specified (10 kHz to 1MHz) so that it does not exceed the maximum input rate of the counter card. If the controller's maximum input frequency falls between two available frequencies, choose the lower frequency.

Output Drivers

The **Q21-DQ** uses an OL7272 line driver and can be configured for either a TTL level output or a 10-30 VDC level output. Option R has a 5 VDC TTL level output regardless of input power. Option L has an output of 1 volt less than the probe's input voltage and should be used when driving input cards that are not TTL compatible.

Digital Profile Series

The **Q21D** is a non-contact LDT with a digital output. This transducer utilizes magnetostrictive technology to give absolute position that is repeatable to .006% of the active sensing distance. It also has the same auto-tuning capability that the other profile series transducers offer so that it can adjust its signal strength to various magnets. There is a diagnostic LED that is located at the connector end of the probe and provides visual status information regarding the operation of the **Q21D**. The indications are as follows:

Green: Magnet is present and within the active range, the LED will remain illuminated continuously during normal operation.

Red: Fault, the LDT has lost its signal from the magnet or the magnet has moved into the Null or Dead Zone.

Yellow: No external interrogation pulse is detected.

The **Q21D** digital transducer provides either a Start/Stop or a Variable Pulse signal interface that is proportional to the position of the slide magnet assembly along the length of the probe.

Start/Stop (RS)

The Start/Stop signal interface of the **Q21D** digital output series is a differential RS-422 output. To initiate a start pulse, an external device must be used, and should be a minimum of 1ms in duration. A stop pulse of 1 ms in duration will follow. The time delay from the leading edge of the start pulse to the leading edge of the stop pulse is proportional to the distance form the Null Zone to the Magnet.

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Digital Profile Series

Variable Pulse (VP)

The Variable Pulse interface digital output is a pulse width modulated signal (RS-422). The **Q21D** LDT can be ordered with either external **(VPE)** or internal **(VPI)** interrogation.

External interrogation occurs when an external device connected to the **Q21D-VPE** generates a start pulse. This start pulse should be a minimum of 1 ms in duration. Within 50 nanoseconds after the leading edge of the start pulse has been received, the LDT will generate an output pulse. The duration of the output pulse is proportional to the distance from the Null Zone to the Magnet.

The **Q21D-VPI** generates an internal interrogation, and will continually output pulse width modulated signals. The duration of this output pulse is also proportional to the distance from the Null Zone to The Magnet.

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Notes:

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Analog Profile Series Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

Sensor Family
LT = Linear Transducer

Measurement Span

Units of Measurement
E = Inches

Housing Style
Q = Profile

Housing Height
21 = 21 mm

Resolution
Blank = Standard Resolution
R = Enhanced Resolution

Output Configuration
LU = Voltage
LI = Current

Output Type
Voltage
0 = 0-10 V
1 = 10-0 V
2 = -10 to 10 V*
3 = 10 to -10 V*
4 = 0-5 V*
5 = 5-0 V*
6 = -5 to 5 V*
7 = -5 to 5 V*

Current
0 = 4-20 mA
1 = 20-4 mA

Number of LEDs
X3 = 3 way diagnostic LED

Connection Type
H1141 = ***eurofast***®, M12, 4-pin (standard res.)
H1151 = ***eurofast***, M12, 5-pin (enhanced res.)

Unit Rating
Blank = IP 67
S1661 = IP 68
S1690** = FM Approved (Class I, DIV 2)

* Q21 / Q35 versions only

** FM approved units ship with Euro-G Fast Lock, which must be installed to maintain FM approval.

Note: In addition to the LDT, a typical system includes a magnet, mounting feet and cable (all sold separately).

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Quadrature Profile Series Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

LT | 12 | E - Q | 21 - DQ | R | A | N | N | X2 - H11121

Sensor Family
LT = Linear Transducer

Measurement Span

Units of Measurement
E = Inches

Housing Style
Q = Low Profile

Housing Height
21 = 21 mm

Output Configuration
DQ = Quadrature

Output Type
Quadrature
R = Differential RS422 line driver (TTL compatible)
L = Differential line driver - 10 to 30 VDC

Quadrature Cycle Frequency (Quadrature)
A = 10 kHz
B = 25 kHz
C = 50 kHz
D = 75 kHz
E = 100 kHz
F = 150 kHz
G = 250 kHz
H = 500 kHz
I = 1.0 MHz

Zero Offset Storage (Quadrature)
V = Volatile (non-retentive)
N = Nonvolatile (100,000 storage cycles maximum)

Input Type (Quadrature)
N = Sinking Input (Used with sourcing outputs)
P = Sourcing Input (Used with sinking inputs)
T = TTL Level

Number of LEDs
Examples:
X2 = 2-way diagnostic LED

Connection Type
H11121 = 12-pin, M12, ***eurofast***®

Digital Profile Series Part Number Key

LT | 12 | E - Q | 21 | D - VPI - 001 - X3 - H11121 | /S1661

Sensor Family
LT = Linear Transducer

Measurement Span

Units of Measurement
E = Inches

Housing Style
Q = Profile

Housing Height
21 = 21 mm

Resolution
D = Digital

Output Mode
RS = RS-422 Start/Stop pulse
VPI = Variable pulse internal interrogations
VPE = Variable pulse external interrogations

Number of Recirculations (valid if VPI output, otherwise blank)
001 (standard) to 127

Number of LEDs
X3 = 3 way diagnostic LED

Connection Type
H1161 = ***eurofast***, M12, 6-pin

IP Rating
Blank = IP 67
S1661 = IP 68

Note: In addition to the LDT, a typical system includes a magnet, mounting feet and cable (sold separately).

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Enhanced Resolution Analog Profile Style (Q21R) Specifications

Output	**Current:**	**Voltage:**
	4-20 mA	0-10 VDC
	20-4 mA	10-0 VDC
Load Impedance	≤(voltage in - 4) ÷ 0.02 Ω	≥1000 Ω
	(example: 10 VDC ≤300 Ω)	
Span	5 to 180 in. (Q35 style maximum length 36 in.)	
Repeatability	+/-0.006% of full stroke or +/-0.002 in., whichever is greater	
Resolution	0.001 in. internal (For stroke lengths <65"); 16 bit (For lengths >65)	
Operating Temperature	-40° to +70°C (-40° to +158°F)	
Null Zone	3.00 in.	
Dead Zone	2.00 in.	
Operating Voltage	13.5-30 VDC	
Current Consumption	120 mA at 15 VDC, 2.5 watts maximum	
Response Time:		
≤50 in	1 ms	
50 to 100 in	2 ms	
101 to 150 in	3 ms	
151 to 180 in	4 ms	
LED	Green = Power is applied and magnet is present in the programmed range	
	Red = Fault, magnet is in the Null Zone, Dead Zone or lost	

Standard Resolution Analog Profile Style (Q21) Specifications

Output	**Current:**	**Voltage:**	
	4-20 mA	+5 to -5 VDC	0-10 VDC
	20-4 mA	-5 to +5 VDC	10-0 VDC
		0 to +5 VDC	-10 to +10 VDC
		+5 to 0 VDC	+10 to -10 VDC
Load Impedance	≤(voltage in - 4) ÷ 0.02 Ω	≥1000 Ω	
	(example: 10 VDC ≤300 Ω)		
Span	4 to 180 in. (Q35 style maximum length 36 in.)		
Repeatability	+/-0.01% of full stroke or +/-0.014 in., whichever is greater		
Resolution	0.014 in. for stroke lengths less than 60 in.; For lengths over 60 in.: 12 bits		
Operating Temperature	-40° to +70°C (-40° to +158°F)		
Null Zone	3.00 in.		
Dead Zone	1.50 in.		
Operating Voltage	10-30 VDC		
Current Consumption (max.)	100 mA		
Response Time:			
50 in. or Less:	1 ms updates with 5 ms settling time		
50 in. or Greater:	2 ms updates with 4 ms settling time		
LED	Green = Power is applied and magnet is present in the programmed range		
	Red = Fault, magnet is in the Null Zone, Dead Zone or lost		
	Yellow = Magnet is out of the active programmed range, but still within the active		

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Quadrature Profile Style (Q21-DQ) Specifications

Output	Quadrature, A, $\overline{A}$, B, $\overline{B}$, Z, $\overline{Z}$
Span	5 to 180 inches (Q35 maximum length 36 inches)
Repeatability	+/-0.001% of full stroke or +/- 0.001 inches, whichever is greater
Resolution	0.001 inches internal (1000 pulses per inch)
Operating Temperature	-20° to +70°C (-4° to +158°F)
Null Zone	3.00 in.
Dead Zone	2.00 in.
Operating Voltage	13.5-30 VDC
Current Consumption	3 watts maximum (1 watt typical)
Response Time:	
≤50 in	1 ms
50 to 100 in	2 ms
101 to 150 in	3 ms
151 to 180 in	4 ms
Inputs:	
Option N	NPN (used with sourcing outputs)
Option P	PNP (used with sinking outputs)
Option T	TTL
Option R	5 V differential
Option L	10 to 30 VDC, $V_{out} = V_{in}$-1 Volt
Output Frequency	**10 kHz - 1 MHz**
Nonlinearity	+/- 0.05% of full stroke
LED	Green = Power is applied and magnet is present in the programmed range Red = Fault, magnet is in the Null Zone, Dead Zone or lost

Digital Profile Style (Q21D) Specifications

Output	Start/Stop Pulse: External interrogation; Variable Pulse: Internal or External interrogation
Number of Recirculations	Variable Pulse: 001 (standard) to 127
Span	5 to 180 in.
Repeatability	+/-0.006% of full stroke
Hysteresis	+/-0.02% of full stroke
Operating Temperature	-20° to +70°C (-4° to +158°F)
Null Zone	3.00 in.
Dead Zone	2.00 in.
Operating Voltage	13.5-30 VDC
Current Consumption	120 mA at 15 VDC, 2.5 watts maximum
Shock	Tested to 40G
Vibration	MIL-STD810E, 10G rms random, 20 Hz - 2 kHz
LED	Green = Power is applied and magnet is present Red = Fault, magnet is in the Dead Zone or lost Yellow = No interrogation signal detected

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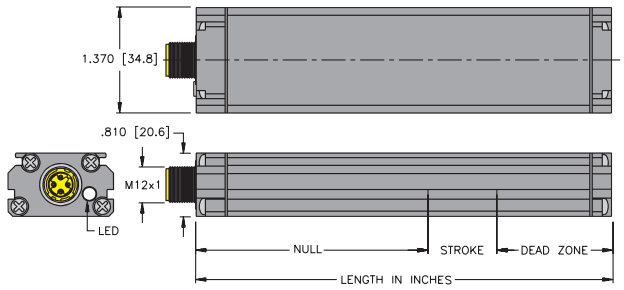
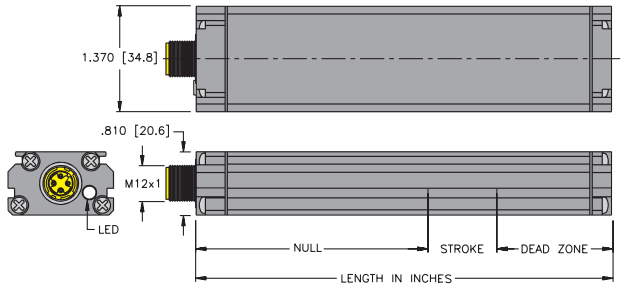
Housing Style	Part Number	Output
21 mm Anodized Aluminum, 5-pin *eurofast* ® Connection 	LT***E-Q21R-LIOX3-H1151	**Analog Current 4-20 mA**
	LT***E-Q21R-LI1X3-H1151	**Analog Current 20-4 mA**
	LT***E-Q21R-LUOX3-H1151	**Analog Voltage 0-10 V**
	LT***E-Q21R-LU1X3-H1151	**Analog Voltage 10-0 V**
21 mm Anodized Aluminum, 4-pin *eurofast* Connection 	LT***E-Q21-LIOX3-H1141	**Analog Current 4-20 mA**
	LT***E-Q21-LI1X3-H1141	**Analog Current 20-4 mA**
	LT***E-Q21-LUOX3-H1141	**Analog Voltage 0-10 V**
	LT***E-Q21-LU1X3-H1141	**Analog Voltage 10 -0 V**
	LT***E-Q21-LU2X3-H1141	**Analog Voltage -10 to 10 V**
	LT***E-Q21-LU3X3-H1141	**Analog Voltage 10 to -10 V**
	LT***E-Q21-LU4X3-H1141	**Analog Voltage 0-5 V**
	LT***E-Q21-LU5X3-H1141	**Analog Voltage 5-0 V**
	LT***E-Q21-LU6X3-H1141	**Analog Voltage -5 to 5 V**
	LT***E-Q21-LU7X3-H1141	**Analog Voltage 5 to -5 V**

*** Span = measuring length in inches.

See page L45 for magnets and mounting accessories (not included).

FM APPROVED

TURCK LT...-Q21-...-H1141 and LT...-Q21-...-H1151 ***EZ-track*** sensors are FM approved for installation in Class I, Division 2 hazardous locations when installed per **TURCK** control drawing Ni-1.003 (www.turck.com/fmcd).

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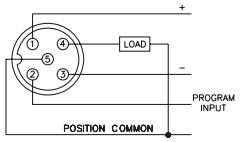
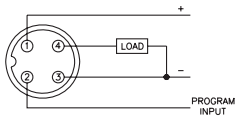
Voltage	Features	eurofast Connection	Enclosure Rating	Agency Approval	Mating Cordset	Wiring Diagram #	Wiring Diagrams
13.5-30 VDC	Analog Output Enhanced Resolution	5-pin	IP 67	CE	RKS 4.5T-*	1	Diagram 1
		5-pin	IP 67	CE	RKS 4.5T-*	1	
		5-pin	IP 67	CE	RKS 4.5T-*	1	
		5-pin	IP 67	CE	RKS 4.5T-*	1	
10-30 VDC	Analog Output Standard Resolution	4-pin	IP 67	CE	RK 4.4T-*/S618	2	Diagram 2
		4-pin	IP 67	CE	RK 4.4T-*/S618	2	
		4-pin	IP 67	CE	RK 4.4T-*/S618	2	
		4-pin	IP 67	CE	RK 4.4T-*/S618	2	
		4-pin	IP 67	CE	RK 4.4T-*/S618	2	
		4-pin	IP 67	CE	RK 4.4T-*/S618	2	
		4-pin	IP 67	CE	RK 4.4T-*/S618	2	
		4-pin	IP 67	CE	RK 4.4T-*/S618	2	
		4-pin	IP 67	CE	RK 4.4T-*/S618	2	
		4-pin	IP 67	CE	RK 4.4T-*/S618	2	





* Length in meters.

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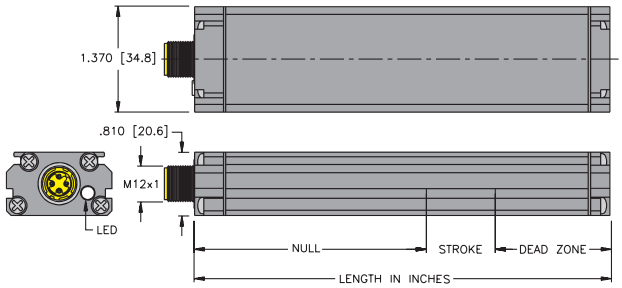
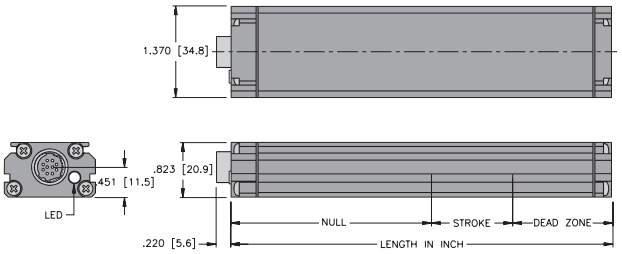
Housing Style	Part Number	Output
21 mm Anodized Aluminum, 6-pin *eurofast*® Connection 	LT***E-Q21D-RS-X3-H1161	**RS 422 Start/Stop pulse**
	LT***E-Q21D-VPI***-X3-H1161	**Variable pulse internal interrogations**
	LT***E-Q21D-VPE-X3-H1161	**Variable pulse external interrogations**
21 mm Anodized Aluminum, 12-pin *eurofast* Connection 	LT***E-Q21-DQR*N*X2-H11121	**Quadrature RS 422 Line Driver (TTL)**
	LT***E-Q21-DQR*N*X2-H11121	**Quadrature RS 422 Line Driver (TTL)**
	LT***E-Q21-DQL*N*X2-H11121	**Quadrature 10-30 VDC Line Driver**
	LT***E-Q21-DQL*N*X2-H11121	**Quadrature 10-30 VDC Line Driver**
	LT***E-Q21-DQR*V*X2-H11121	**Quadrature RS 422 Line Driver (TTL)**
	LT***E-Q21-DQR*V*X2-H11121	**Quadrature RS 422 Line Driver (TTL)**
	LT***E-Q21-DQR*V*X2-H11121	**Quadrature 10-30 VDC Line Driver**
	LT***E-Q21-DQR*V*X2-H11121	**Quadrature 10-30 VDC Line Driver**

*** Span = measuring length in inches.

See page L45 for magnets and mounting accessories (not included).

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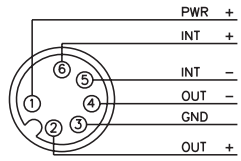
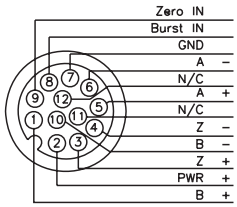
Voltage	Features	Eurofast Connection	Enclosure Rating	Agency Approval	Mating Cordset	Wiring Diagram #	Wiring Diagrams
13.5-30 VDC	Digital Output	6-pin	IP 67	CE	RKS 6T-*	1	Diagram 1
	Digital Output	6-pin	IP 67	CE	RKS 6T-*	1	
	Digital Output	6-pin	IP 67	CE	RKS 6T-*	1	
13.5-30 VDC	Nonvolatile Zero Offset Storage	12-pin	IP 67	CE	RKS 10T-*	2	Diagram 2
	Nonvolatile Zero Offset Storage	12-pin	IP 67	CE	RKS 10T-*	2	
	Nonvolatile Zero Offset Storage	12-pin	IP 67	CE	RKS 10T-*	2	
	Nonvolatile Zero Offset Storage	12-pin	IP 67	CE	RKS 10T-*	2	
	Volatile Zero Offset Storage	12-pin	IP 67	CE	RKS 10T-*	2	
	Volatile Zero Offset Storage	12-pin	IP 67	CE	RKS 10T-*	2	
	Volatile Zero Offset Storage	12-pin	IP 67	CE	RKS 10T-*	2	
	Volatile Zero Offset Storage	12-pin	IP 67	CE	RKS 10T-*	2	





* Length in meters.

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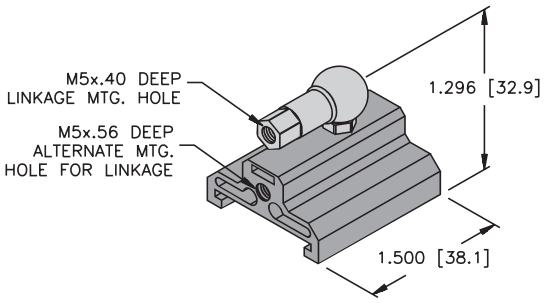
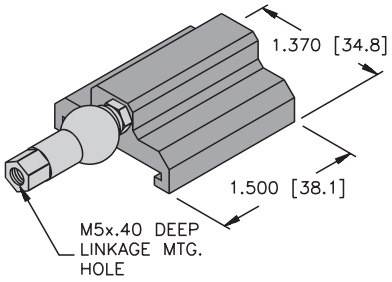
Profile Style Accessories

Slide Magnet



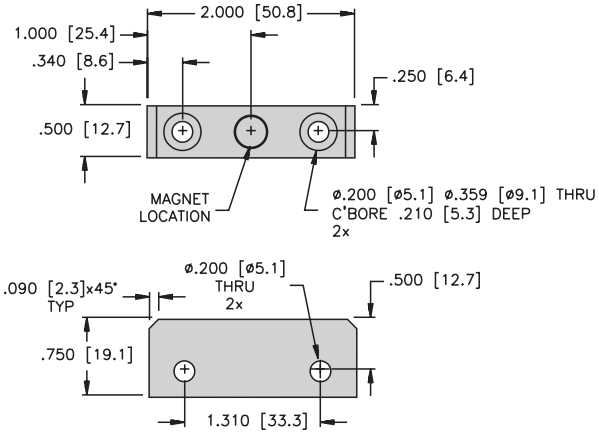
SM-Q21 (A5600)

Slide Magnet with Slide Adapter



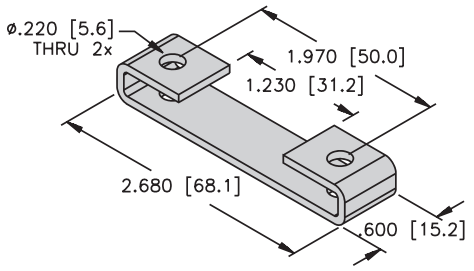
SA-Q21 (A0864)

Floating Magnet



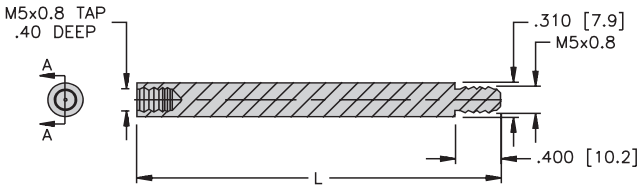
FM-Q21 (A5500)

Q21 Mounting Brackets



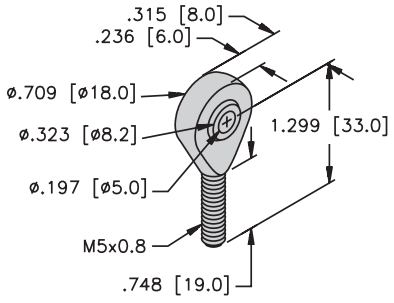
MB-Q21
(* mount every 3 feet) (A5700)

Control Arms



CAE-Q21**

Rod Ends



RE-Q21 (A0865)

** Length in inches.
Stocked in 3", 6" and 9" lengths.

All dimensions shown as: Inches [mm]

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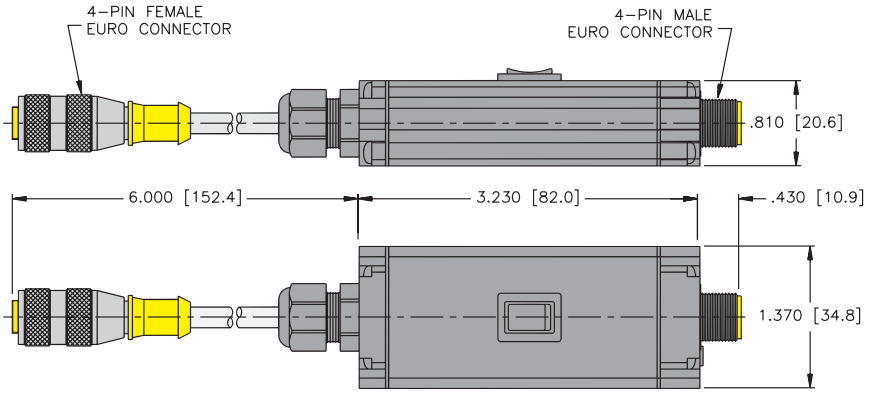
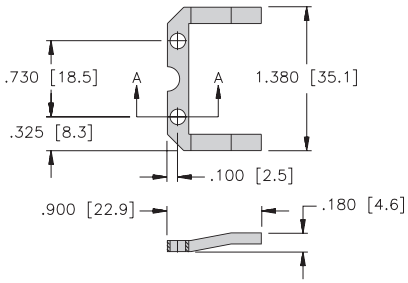
Rocker Programmer



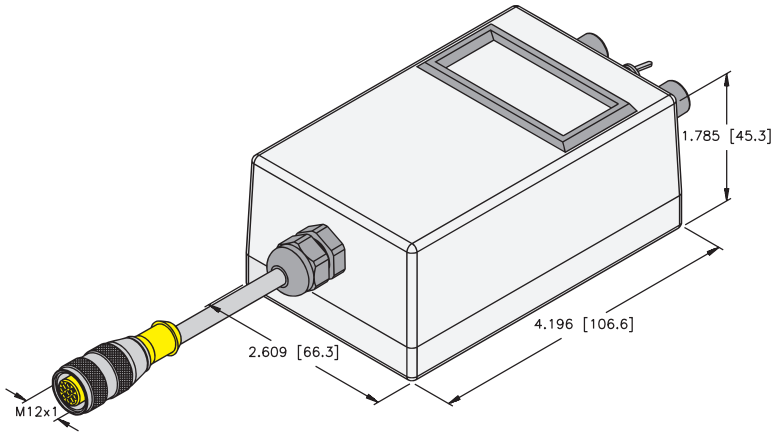
RP-Q21 (A0875)

Q21 Upside Down Brackets



UB-Q21 (2/bag)
(A0876)

Test and Programming Device



TB2-LDT (voltage) (A58001)
TB2-LDT-LI (current) (A58002)

All dimensions shown as: Inches [mm]

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Hazardous Area Proximity Sensors

Type	NAMUR Barrel Style	NAMUR Rectangular Style	Hazardous Area Metal Barrel	Hazardous Area Plastic Barrel
Sensing Range	1.5 - 15 mm	3 - 10 mm	12 - 30 mm	12 - 30 mm
Pages	L49	L50	L53	L53

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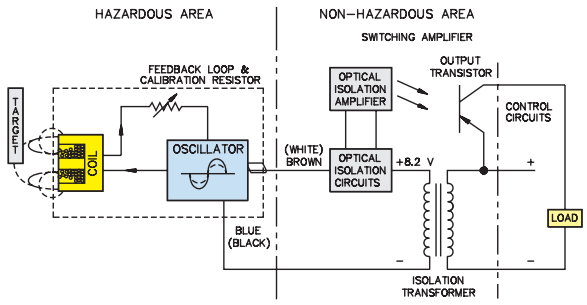
Hazardous Area Proximity Sensors

TURCK NAMUR proximity sensors are 2-wire sensing devices meeting the interoperability requirements of EN 60947-5-6. Because NAMUR sensors operate on very low power, they can be designed to be intrinsically safe for use in hazardous locations. Turck NAMUR compliant sensors have intrinsic safety approval from FM, CSA, ATEX and others.

The operation of NAMUR sensors is similar to that of a variable resistor, with a change of impedance as a target approaches the sensor. When no metal is being sensed, an inductive sensor is in a low impedance state and draws a current of more than 2.2 mA. When a metal target enters the high-frequency field radiated from the sensor face, the impedance increases as the target approaches. When fully damped, the sensor draws less than 1.0 mA. This current change is used to trigger an external amplifier at a defined switch point, usually about 1.5 mA.

Figure 1



NAMUR sensors contain a relatively small number of components, which allows the construction of small devices and helps to ensure a high degree of reliability. As the sensors are 2-wire current loops with fairly low impedance, they are unaffected by most transients.

General NAMUR Specifications

Differential Travel (Hysteresis) . . . . . 1-10% (5% typical)
Nominal Voltage . . . . . 8.2 VDC (EN60947-5-6)
Resistance Change from
Nonactivated to Activated Condition . . . . . typical <1.0 to >8.0 kΩ
Resulting Current Change . . . . . ≥2.2 mA to ≤1.0 mA
Recommended Switching Point for
Remote Amplifier . . . . . >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF
Power-On Effect . . . . . Realized in Amplifier
Reverse Polarity Protection . . . . . Incorporated
Wire-Break Protection . . . . . Realized in Amplifier
Transient Protection . . . . . Realized in Amplifier
Shock . . . . . 30 g, 11 ms
Vibration . . . . . 55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability . . . . . ≤2% of Rated Operating Distance

See **TURCK** Sensors Catalog for detailed individual specifications for all NAMUR sensors.

TURCK NAMUR proximity sensors are functionally compatible with all switch amplifiers with input characteristics that meet the NAMUR requirements. Their approved intrinsic safety entity parameters are compatible with all **TURCK** safety switch amplifiers and remote I/O systems. See Section B, IS Interface Technology, and Section C, IP 20 Slice I/O, for more information.

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NAMUR Barrel Style Sensors

Metal Barrel

Quick Disconnect

Integral Cable

8 mm Diameter, Sensing Range 1.5-3 mm

Bi 1.5-EG08K-Y1-H1341	Bi 1.5-GS880-Y0
Bi 1.5-EG08K-Y1X-H1341	Bi 1.5-EG08K-Y1
Bi 1.5-EG08-Y1-H1341	Bi 1.5-EG08-Y1
Ni 1.5-EG08K-Y1-H1341	Bi 1.5-G08-Y1
Ni 1.5-EG08K-Y1X-H1341	Ni 2-G08-Y1
Ni 1.5-EG08-Y1-H1341	Ni 3-EG08K-Y1

12 mm Diameter, Sensing Range 2-5 mm

Bi 2-EM12-Y0X-H1141	Bi 2-EG12-Y0X
Bi 2-M12-Y1X-H1141	Bi 2-G12-Y0
Bi 2-MT12-Y0X-H1141	Bi 2-G12-Y0X
Bi 2-M12E-Y0X-H1141	Ni 5-G12-Y0
Ni 5-M12-Y1X-H1141	Ni 5-G12-Y0X
Ni 5-G12-Y0-H1141	

18 mm Diameter, Sensing Range 5-10 mm

Bi 5-M18-Y1X-H1141	Bi 5-EG18-Y0
Ni10-M18-Y1X-H1141	Bi 5-G18-Y0
BiD2-G18-Y0-H1141/S212	Bi 5-EG18-Y0X
	BiD2-G180-Y1/S212
	Ni10-G18-Y0
	Ni10-G18-Y0X

30 mm Diameter, Sensing Range 10-15 mm

Bi10-M30-Y1X-H1141	Bi10-G30-Y0
	Bi10-G30-Y0X
	Bi10-G30-Y0/S90
	Ni15-G30-Y0
	Ni15-G30-Y0X

Plastic Barrel

Quick Disconnect

Integral Cable

Terminal Chamber

11 mm Diameter, Sensing Range 2-5 mm

	Bi 2-K11-Y1	
	Ni 5-K11-Y0	

12 mm Diameter, Sensing Range 2-5 mm

Bi 2-S12-Y0X-H1141	Bi 2-P12-Y0	Bi 2-P12SK-Y1X
Ni 5-S12-Y0X-H1141	Bi 2-P12-Y0/S100	Ni 5-P12SK-Y0X
	Bi 2-P12-Y0X	
	Bi 2-P12-Y1X/S97	
	Ni 5-P12-Y0/S100	
	Ni 5-P12-Y0X	
	Ni 5-P12-Y1	

18 mm Diameter, Sensing Range 5-10 mm

Ni10-K18-Y1	Bi 5-P18-Y0	Bi 5-P18SK-Y1X
	Bi 5-P18-Y0X	Ni10-P18SK-Y1X
	Bi 5-P18-Y0/S100	
	Ni10-P18-Y0X	
	Ni10-P18-Y1	
	Ni10-P18-Y0/S100	

20 mm Diameter, Sensing Range 10 mm

Ni10-K20-Y1		

20 mm Diameter, Sensing Range 10 mm

Bi10-P30-Y0X		
Bi10-P30-Y1		
Ni15-P30-Y0X		
Ni15-P30-Y1		

20 mm Diameter, Sensing Range 10 mm

Ni20-K40-Y1		

See **TURCK** Sensor Catalog for detailed individual specifications for all NAMUR sensors.

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NAMUR Rectangular Style Sensors

6-20 mm with Integral Cable

20-26 mm with Quick Disconnect

6 mm , Sensing Range 3 mm		
Bi 2-Q5.5-Y1X		
8 mm , Sensing Range 5 mm		
Bi 2-Q08-Y1X		
10 mm , Sensing Range 2 mm		
Bi 2-Q10S-Y1X		
11 mm , Sensing Range 2 mm		
Bi 2-Q11S-Y1X		
14 mm , Sensing Range 10 mm		
Bi10-Q14-Y0X		
20 mm , Sensing Range 15 mm		
Bi15-Q20-Y0X	Bi15-Q20-Y0X-H1141	
26 mm , Sensing Range 10 mm		
	Bi15-Q20-Y0X-H1141	

40 mm CP40

80 mm CP80

80 mm Q40

90 mm K90

6 mm , Sensing Range 3 mm			
Bi 5-CP40-Y1X			
8 mm , Sensing Range 5 mm			
Ni20-CP40-Y1X			
10 mm , Sensing Range 2 mm			
	Ni40-CP40-Y1		
11 mm , Sensing Range 2 mm			
	Ni50-CP40-Y1		Ni50-K90SR-Y1/M20
14 mm , Sensing Range 10 mm			
		Ni60-Q80-Y0X	

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Class I, Division 2 Hazardous Area Sensors

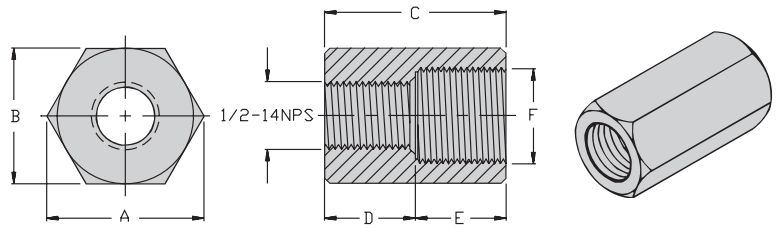
TURCK 3-wire DC proximity sensors without code AN6., AP6., RN6., or RP6. with threaded barrels are approved by FM Approvals for installation in Class I, Division 2 hazardous locations. The sensors must be installed using a Division 2 wiring method, which, for all practical purposes, means that the sensor must be either installed in an enclosure that requires the use of a tool to open, or they must be adapted to a raceway or conduit product. **TURCK** TMF conduit adapters or other suitable thread adapters may be used for this purpose.

Conduit Adapters

When installed in this fashion and powered from a supply not exceeding 30 VDC, there are no further energy limiting or protective enclosure requirements for installation in Class I, Division 2. The sensors have no arcing or sparking components and will not dissipate heat under normal operating conditions.

Part Number	ID Number	Barrel Diameter	Dimensions					
			A	B	C	D	E	F
TMF 12-G	A3310	12 mm	1.15 [29.2]	1.00 [25.4]	1.00 [25.4]	0.50 [12.7]	0.50 [12.7]	M12x1
TMF 18-G	A3320	18 mm	1.15 [29.2]	1.00 [25.4]	1.00 [25.4]	0.50 [12.7]	0.50 [12.7]	M18x1
TMF 30-G	A3345	30 mm	1.73 [44.0]	1.50 [38.1]	1.00 [25.4]	0.60 [15.2]	0.40 [10.2]	M30x1.5
Use above Conduit Adapters with G and P Barrel sensors.								
TMF 18-MS	A3330	18 mm	1.15 [29.2]	1.00 [25.4]	2.00 [50.8]	1.50 [38.1]	0.50 [12.7]	M18x1
TMF 30-MS	A3355	30 mm	1.73 [44.0]	1.50 [38.1]	2.00 [50.8]	0.60 [15.2]	1.40 [35.6]	M30x1.5
Use above Conduit Adapters with M and S Barrel sensors.								

Material: Aluminum
Inches [mm]



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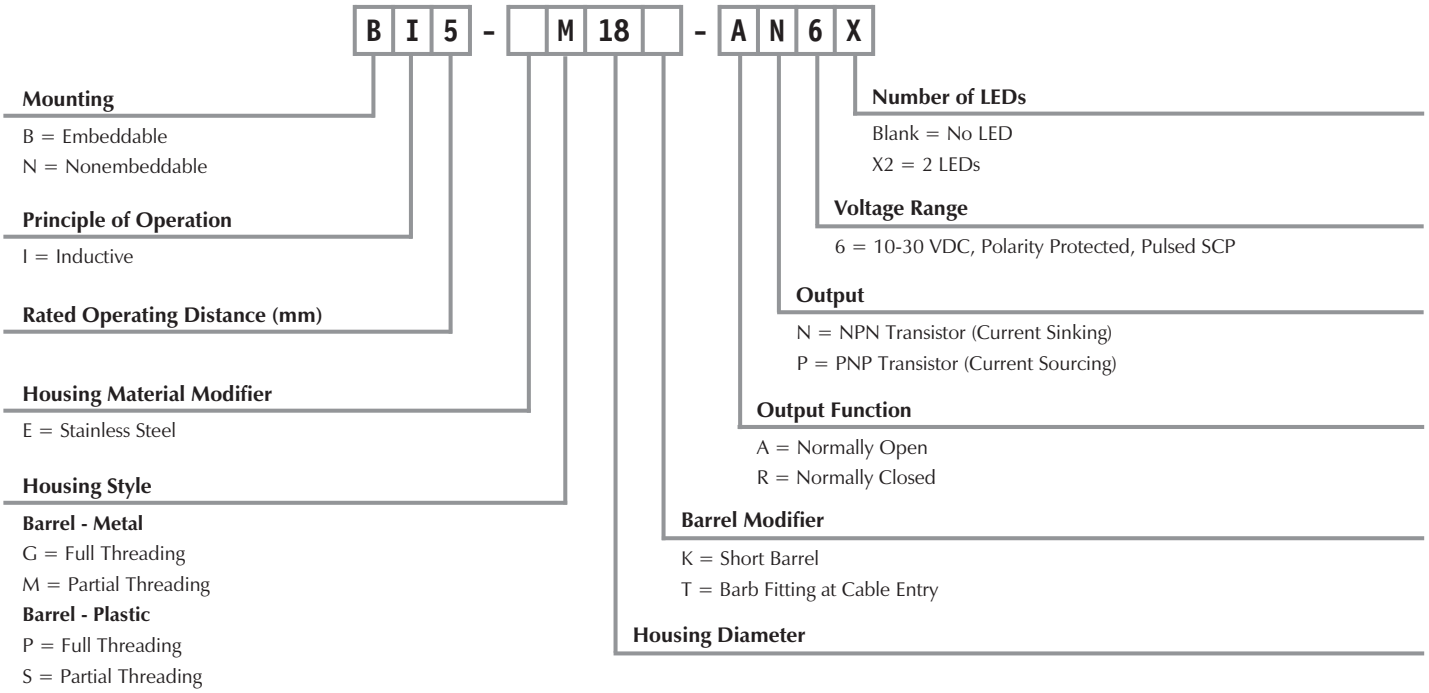
Class I, Division 2 Hazardous Area Metal Barrel Sensors Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.



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Class I, Division 2 Hazardous Area Sensors

Metal Barrel

12 - 18 mm

30 mm

Embeddable

Bi 2-EG12-AN6X	Bi 4-EM12-AN6X	Bi 5-G18K-AN6X	Bi10-G30-AN6
Bi 2-EG12-AP6X	Bi 4-G12-AN6	Bi 5-G18K-AP6	Bi10-G30-AN6X
Bi 2-EG12-RP6X	Bi 4-G12-AN6X	Bi 5-G18K-AP6X	Bi10-G30-AP6
Bi 2-GO8-AN6	Bi 4-G12-AP6X	Bi 5-G18K-RN6X	Bi10-G30-AP6X
Bi 2-G12-AN6	Bi 4-G12K-AN6X	Bi 5-G18-RP6X	Bi10-G30K-AN6
Bi 2-G12-AN6X	Bi 4-G12K-AN6X	Bi 5-M18-AN6X	Bi10-G30K-AN6X
Bi 2-G12-AP6	Bi 4-G12K-AP6X	Bi 5-M18-AP6X	Bi10-G30K-AP6X
Bi 2-G12-AP6X	Bi 4-G12K-RP6X	Bi 5-M18T-AN6X	Bi10-G30K-RP6X
Bi 2-G12K-AN6X	Bi 4-M12-AN6X	Bi 5-M18T-AP6X	Bi10-G30-RN6X
Bi 2-G12K-AP6	Bi 4-M12-AP6X	Bi 5-M18T-RP6X	Bi10-G30-RP6X
Bi 2-G12K-AP6X	Bi 4-M12-RN6X	Bi 8-G18-AN6X	Bi10-M30-RP6
Bi 2-G12K-RN6X	Bi 4-M12-RP6X	Bi 8-G18-AP6X	Bi10-M30T-AN6X
Bi 2-G12K-RP6X	Bi 4-M12T-AN6X	Bi 8-G18-RN6X	Bi10-M30T-AP6X
Bi 2-G12-RN6X	Bi 4-M12T-AP6X	Bi 8-M18-AN6X	Bi15-G30K-AP6X
Bi 2-G12-RP6X	Bi 5-EG18-AN6X	Bi 8-M18-AP6X	Bi15-M30-AN6X
Bi 2-M12-AN6X	Bi 5-EG18-AP6X	Bi 8-M18-RN6X	Bi15-M30-AP6X
Bi 2-M12-AP6X	Bi 5-G18-AN6	Bi 8-M18-RP6X	Bi15-M30-RP6X
Bi 2-M12-RP6X	Bi 5-G18-AN6X	Bi 8-M18T-AN6X	Bi15-M30T-AN6X
Bi 2-M12T-AN6X	Bi 5-G18-AP6	Bi 8-M18T-AP6X	Bi15-M30T-AP6X
Bi 2-M12T-AP6X	Bi 5-G18-AP6X		
Bi 4-EG12-AN6X	Bi 5-G18K-AN6		

Nonembeddable

Ni 4-M12-AP6X	Ni 5-G12K-AP6X	Ni10-G18-AN6X	Ni15-M30T-AN6X
Ni 4-M12T-AN6X	Ni 5-G12K-RN6X	Ni10-G18-AP6	Ni15-M30T-AP6X
Ni 4-M12T-AP6X	Ni 5-G12K-RP6X	Ni10-G18-AP6X	
Ni 5-G12-AN6	Ni 5-G12-RN6X	Ni10-G18K-AN6X	
Ni 5-G12-AN6X	Ni 5-G12-RP6X	Ni10-G18K-AP6X	
Ni 5-G12-AP6	Ni 8-M18-AP6X	Ni10-G18K-RP6X	
Ni 5-G12-AP6X	Ni 8-M18T-AN6X	Ni10-G18-RN6X	
Ni 5-G12K-AN6X	Ni 8-M18T-AP6X	Ni10-G18-RP6X	
Ni 5-G12K-AP6	Ni10-G18-AN6		

Plastic Barrel

12 - 18 mm

30 mm

Embeddable

Bi 2-S12-AN6X	Bi10-S30-AN6X
Bi 2-S12-AP6X	Bi10-S30-AP6X
Bi 2-S12-RN6X	
Bi 5-S18-AN6X	
Bi 5-S18-AP6X	
Bi 5-S18-RN6X	
Bi 5-S18-RP6X	

Nonembeddable

Ni 4-S12-AN6X	Ni15-S30-AN6X
Ni 4-S12-AP6	
Ni 4-S12-AP6X	
Ni 8-S18-AN6X	
Ni 8-S18-AP6	
Ni 8-S18-AP6X	
Ni 8-S18-RN6X	

See **TURCK** Sensor Catalog for detailed individual specifications for all NAMUR sensors.

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Notes:

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INSTRUMENTATION

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Pressure Selection Guide

Type	High Accuracy Pressure Sensors	Programmable Flush Mount Pressure Sensors
Pages	M13 - M20	M21 - M22

Type	Transmitters (scaled in psi)	Transmitters (scaled in bar)
Pages	M23 - M24	M25 - M28

Pressure Sensors with Diaphragm Seals*

Type	Sanitary	General Purpose	Chemical Resistant	Flush Mount	Accessories
Pages	M29 - M30	M31 - M32	M32	M33	M34 - M35

* Sold as a complete unit with pressure sensors and pressure transmitters only

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TURCK Pressure Controls Offer a Flexible Solution to Any Pressure Application

Designed with Features to Meet your Needs

The complete line of **TURCK** pressure controls present a wide range of pressure-sensing products that have been designed for versatility and efficiency in a variety of pressure monitoring applications. Our electronic pressure controls are well suited for use in pneumatic and hydraulic systems where there is a need to monitor, measure or control the pressure of both liquids and gases. If your application requires pressure monitoring, **TURCK** pressure controls are the right choice for you.

Solid State Reliability

The piezo-resistive measuring cells offer an extremely high overpressure resistance, which in turn produces a pressure control that is remarkably stable. The robust housings and ceramic piezo-resistive measuring cells combined with solid-state reliability give these controls a 10 million-cycle rating. The high shock and vibration resistance allow these devices to function safely and reliably even in the harshest of environmental conditions.

Pressure Controls from TURCK for Multiple Applications

TURCK pressure controls can be used in a wide variety of applications with either liquids or gases. Whether it's control in hydraulic systems or monitoring of pressure in welding guns, **TURCK** pressure controls are designed to provide reliable data in your harshest application.

Some common applications include:

- Air Compressors
- Hydraulic Clamping Systems
- Bad Filter Detection
- Vacuum for Pick-up and Transfer of Product
- Pneumatic Systems
- Hydraulic Accumulators
- Injection Molding Machines
- Press Machines
- Automotive Welding Pressure
- Machine Coolant
- Pump Run Dry

Implementing process control into your system should not require a redesign of your process. Why not choose a sensor that can be modified to meet your unique specifications? Robust, solid state, and available in several programmable styles - the **TURCK** Pressure Controls have the flexibility to adapt and perform in many applications.

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A Pressure Sensor Designed with the Customer Applications in Mind

- **High Accuracy**

  The PS400 and PS500 provide an accuracy rating of ±0.5 percent of full scale.

- **Flexible Mounting Options**

  Multiple threaded connections and a unique coupling (PS500) make them easy to mount in a variety of applications.

- **Easy to Operate**

  Push buttons and enter keys for quick and easy programming.

- **Robust Design**

  An environmental rating of IP 67 provide operational durability in harsh applications.

Simple Programming

The new high accuracy programmable pressure sensors combine high accuracy and performance with simple programming, resulting in an extremely user friendly sensor. The sensor is easily programmed via three controls: two push buttons for scrolling through programming features, and one recessed enter key. The push buttons are finger operated, and used to make value selections in the menu or to scroll through the various menu options. The recessed button is used to store selected values, and prevents programmed values from being inadvertently altered.

The menu is clear and concise to allow parameters such as set points, reset points, output functions, analog ranges, and a range of special options to be programmed with ease. The menu also includes an optional electronic lockout that disables the push buttons from functioning until the lockout is removed.

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Stock Reduction

The PS400 and PS500 sensors are specified with an accuracy of 0.5 percent exceeding what is required by the machine engineering sector. The combination of high accuracy and flexible programming often allows a single sensor to replace several conventional sensors (with varying sensing ranges) resulting in a significant reduction in inventory. The LI2UPN8X output version allows the user to select current analog output with 1 set point or 2 set points. This allows 1 sensor to replace two part numbers.

Flexible Mounting Options

The high accuracy programable pressure sensors feature a large, bright, 4-digit, 7-segment LCD display with a constant indication of pressure in either psi (pounds per square inch), bar, kPa (kilopascals), or MPa (megapascals). This display is tilted at a 45° angle, and can be inverted electronically for easy reading in a variety of applications. IO user selectable units include: millibar, millimeters or mercury, inches of water, feet of water, inch of #g Mercury, meter of water and kilograms per square centimeter.

The PS400 and PS500 pressure sensors are encased in a compact, 34 mm diameter housing with various threaded connections for simple, versatile installation. This allows several sensors to be mounted in close proximity to one another, and is advantageous when space is at a premium. The PS500 series also features a process connection that allows the housing to rotate 360 degrees for optimal viewing prior to locking the sensor in place. These features allow the PS400 and PS500 pressure sensors to be utilized in a wide variety of applications.

Robust Design

The innovative PS400 and PS500 pressure sensors were designed to tolerate tough applications. Stainless steel housing with an integrated stainless steel M12 ***eurofast***® connector enables fast and reliable installation. The sensors also offer a variety of stainless steel pressure connections including G1/4 and 1/4-18 NPT threads.

The sensors are highly resistant to overpressure and burst pressure, yet they also incorporate a patented medium stop system that prevents leakage when these levels are exceeded. The media stop system immediately seals the sensor if the pressure cell has been damaged, and can prevent liquid leakage if burst pressure is exceeded.

Noise Immune

The PS400 and PS500 programmable sensors offer a high level of protection against interference from sources that produce high levels of EMI (such as frequency converters and stepper motors) and other plant noise. These features were incorporated to create a pressure sensor ideal for use virtually anywhere.

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Tough Industrial Pressure Transmitters

TURCK's industrial pressure transmitters combine the reliability of solid-state design with the durability of Stainless Steel. The result is a pressure transmitter that provides accurate and dependable pressure measurement in demanding applications. At the heart of the transmitter is a proven ceramic component technology that provides long-term stability and a high tolerance to overpressure conditions. A patented media stop, included with devices rated over 600 bar, contains the process media in the event that the burst pressure is exceeded. The housing is constructed of Stainless Steel and provides an IP 67 level of protection. The fluid connection is a standard G 1/4 or 1/4 NPT thread that works with all of **TURCK's** existing pressure accessories. All of the transmitters include an M12x1 ***eurofast*** ® quick disconnect, making them compatible with **TURCK's** extensive line of cordsets and junction boxes.

TURCK Pressure Sensors and Transmitters with Diaphragms Installed

Operation

In many pressure applications, there is a need to separate the pressure sensor from the media it is sensing via an isolation device. **TURCK** offers a variety of diaphragm seals that are attached either directly or remotely to the pressure device to provide this isolation. The diaphragms that **TURCK** offers are all manufactured and installed by PI Components, and are not available as a separate item. This insures that the quality of the assembly is maintained for optimum accuracy.

The **TURCK** pressure sensor is attached into the top of the diaphragm housing, which is then filled with fluid. The sensor receives the pressure hydraulically via this internal medium. The lower half of the diaphragm housing adapts to the process connection, and is designed to contain the process medium as it acts against the thin membrane located between the two housings.

Applications

TURCK offers the diaphragms in numerous wetted material options, as well as with many different fill fluids to solve any application. Typical process applications that require the use of a diaphragm include:

- Sanitary Applications
- Corrosive Processes
- Viscous Applications
- Applications Where Freezing Media Can Clog The Sensor

Pressure Transmitter with S1605 Sanitary Diaphragm

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Innovative Pressure Sensor and Diaphragm Solutions

TURCK is the market leader in providing innovative sensor solutions for industrial automation applications. **TURCK's** high quality, high performance pressure sensors and pressure transmitters can be combined with multiple styles of diaphragms to give our customers an infinite selection of unique pressure sensing solutions.

TURCK offers diaphragms in numerous wetted material options, as well as with many different fill fluids. This broad selection provides custom sensing solutions for the most diverse pressure applications. Parts numbers should be developed through your **TURCK** representative or application support. In general, the formula below illustrates how to configure a custom sensor and diaphragm assembly.

Pressure Transmitter		Diaphragm Modifier		New Part Number:
PT010R-11-LI3-H1131	+	S1693	=	PT010R-11-LI3-H1131/S1693

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Pressure Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

Pressure Transmitter (scaled in psi)

PT	100psig	-	13	-	LI3	-	H1131

Style

PT = Pressure Transmitter

Pressure Range

-30HG = -30 to 0 in. Hg (vacuum)
15psig = 0 to 15 psig (0 to 1 bar)
30psig = 0 to 30 psig (0 to 2 bar)
60psig = 0 to 60 psig (0 to 4 bar)
100psig = 0 to 100 psig (0 to 6.8 bar)
200psig = 0 to 200 psig (0 to 13.7 bar)
300psig = 0 to 300 psig (0 to 20.6 bar)
500psig = 0 to 500 psig (0 to 34.4 bar)
750psig = 0 to 750 psig (0 to 51.7 bar)
1000psig = 0 to 1000 psig (0 to 68.9 bar)
2000psig = 0 to 2000 psig (0 to 137.8 bar)
3000psig = 0 to 3000 psig (0 to 206.8 bar)
5000psig = 0 to 5000 psig (0 to 344.7 bar)
7500psig = 0 to 7500 psig (0 to 517 bar)

Fluid Connection

13 = 1/4 Male NPT

Output Circuitry

LI3 = 8-33 VDC / 4-20 mA Loop Powered
LU2 = 11.4-33 VDC / 0-10 V

Electrical Connection

H1131 = 3-pin, M12 ***eurofast***

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Pressure Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

Pressure Transmitter (scaled in bar)

PT | 010 | R - 11 - LI3 - H1131

Style

PT = Pressure Transmitter

Pressure Range

01V = -1 to 0 bar (-14.5 to 0 psi) (vacuum)
0.5 = 0 to 0.5 bar (0 to 7.25 psi)
001 = 0 to 1 bar (0 to 14.5 psi)
002 = 0 to 1.6 bar (0 to 23.2 psi)
003 = 0 to 2.5 bar (0 to 36.25 psi)
004 = 0 to 4 bar (0 to 58 psi)
006 = 0 to 6 bar (0 to 87 psi)
010 = 0 to 10 bar (0 to 145 psi)
016 = 0 to 16 bar (0 to 232 psi)
025 = 0 to 25 bar (0 to 362.5 psi)
040 = 0 to 40 bar (0 to 580 psi)
060 = 0 to 60 bar (0 to 860 psi)
100 = 0 to 100 bar (0 to 1450 psi)
160 = 0 to 160 bar (0 to 2320 psi)
250 = 0 to 250 bar (0 to 3625 psi)
400 = 0 to 400 bar (0 to 5800 psi)
600 = 0 to 600 bar (0 to 8700 psi)

Measurement Type

A = Absolute
R = Relative

Fluid Connection

11 = G1/4 BSPP
13 = 1/4 NPT

Output Circuitry

LI3 = 8-33 VDC / 4-20 mA Loop Powered
LU2 = 11.4-33 VDC / 0-10 V

Electrical Connection

H1131 = 3-pin, M12 ***eurofast***®

High Accuracy Programmable Pressure Sensor Part Number Key

PS | 010 | R - 4 | 01 - 2UP8X - H1141

Style

PS = Pressure Sensor

Pressure Range

01V = -1 to 0 bar (-14.5 to 0 psi) (vacuum)
001 = 0 to 1 bar (0 to 14.5 psi)
003 = 0 to 3 bar (0 to 43.5 psi)
010 = 0 to 10 bar (0 to 145 psi)
016 = 0 to 16 bar (0 to 232 psi)
025 = 0 to 25 bar (0 to 362.5 psi)
040 = 0 to 40 bar (0 to 580 psi)
100 = 0 to 100 bar (0 to 1450 psi)
250 = 0 to 250 bar (0 to 3625 psi)
400 = 0 to 400 bar (0 to 5800 psi)

Type of Pressure

R = Relative (Gauge)

Pressure Connection Style

4 = Fixed pressure connection
5 = Rotatable pressure connection

Fluid Connection

01 = G1/4 female thread 1/4 BSPP with DIN 3845 seal
03 = 1/4-18 NPT male threads

Output Circuitry

2UP8X = 15-30 VDC/(2) N.O./N.C. PNP
LIUP8X = 18-30 VDC/Analog Current and (1) N.O./N.C. PNP
LUUP8X = 18-30 VDC/Analog Voltage and (1) N.O./N.C. PNP
LIUPN8X = 18-30 VDC/Analog Current and (1) N.O./N.C. PNP/NPN or (2) N.O./N.C. PNP/NPN

Electrical Connection

H1141 = 4-pin, M12x1, ***eurofast***

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High Accuracy Programmable Pressure Sensor Specifications

Current Consumption	≤50 mA
Switching Frequency (Discrete)	≤180 Hz
Minimum Hysteresis	±0.5%
Display Reaction Time:	
3 Selectable Modes	Slow 600 ms update Normal 200 ms update Fast 50 ms update
Wetted Parts	Stainless Steel, Viton Al_2O_3 Ceramic
Programmable Analog:	
Analog Start Point	Programmable from 0-75% of measuring range
Analog End Point	Programmable from 25-100% of measuring range
Time Delays:	
Switching Delay	Switch-on and switch-off delay adjustable from 0 to 50 seconds in steps of 0.1 second
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Yes
Transient Protection	EN 60947-5-2
Short-Circuit Protection	Yes
Temperature Ranges:	
Ambient Temperature	-40° to +80°C (-40° to +176°F)
Medium Temperature	-25° to +85°C (-40° to +185°F)
Enclosure Rating	Meets NEMA 4, 6, 12, 13 and IP 67
Shock	50 g per IEC 68-2-27
Vibration	20 g (10-200 Hz) per IEC 68-2-6
Burst Protection	patented media stop
Accuracy:	
Repeatability	≤±0.5% of measuring range
Zero Shift/Span Shift	≤±0.15% of measuring range/°C
LED Function/Display:	
Measuring Value/Programming	4-digit 7-segment display
Status Display	LEDs indicate output status and selected measuring units
EMC Information:	
EN 61000-4-2	ESD: 4 KD CK/ 8 KV AD
EN 61000-4-3	HF irradiated: 15 V/m
EN 61000-4-4	Burst: 2 KV
EN 61000-4-5	Surge: 500 V, 12 Ω
EN 61000-4-6	HF conducted: 10 V

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Programmable Pressure Specifications (Flush Mount)

Current Consumption . . . . . ≤50 mA
Short-Circuit Protection . . . . . Yes
Reverse Polarity Protection . . . . . Yes
Hysteresis (Set-Point Models) . . . . . ≤2% of measuring range
Enclosure Rating . . . . . IP 65

Analog Adjustment:
PC001
4 mA . . . . . 0-12.6 psi
20 mA . . . . . 2.4-15 psi
PC016
4 mA . . . . . 0-198 psi
20 mA . . . . . 32-230 psi

Accuracy:
Linearity . . . . . ≤0.5% of measuring range
Repeatability . . . . . ≤1% of measuring range
Temperature Drift . . . . . ≤0.02% of measuring range / °C

Temperature Range:
Ambient . . . . . -20° to +70°C (-4° to +158°F)
Medium . . . . . -20° to +80°C (-4° to +176°F)

LED Function / Display:
Measuring Value / Programming . . . . . Rotatable, 3-digit, 7 segment display (psi)
Status Display . . . . . LED's indicate output status

Pressure Transmitter Specifications

Medium Temperature . . . . . -40°C to +150°C (-40°F to +302°F)
Current Consumption . . . . . ≤20 mA
Dynamic Response . . . . . <2 ms
Short-Circuit Protection . . . . . Yes
Reverse Polarity Protection . . . . . Yes
Enclosure Rating . . . . . IP 67
Housing Material . . . . . Stainless Steel 1.430 (AISI 303) / PBT
Shock Resistance . . . . . 75 G, 11 ms per IEC 68-2-27
Vibration Resistance . . . . . 20 G, 15 mm per IEC 68-2-6
Wetted Parts . . . . . 303 Stainless Steel (connection)
AL_20_3 Ceramic (element)
Viton (seal)
Zero Shift . . . . . <±0.015% of measuring range / °C
Span Shift . . . . . <±0.015% of measuring range / °C
Voltage Output . . . . . >10 k Ω/ <100 nF

Current Output . . . . . $\leq \frac{\text{supply voltage}}{0.02\ \text{A}} = \text{Ohm}$

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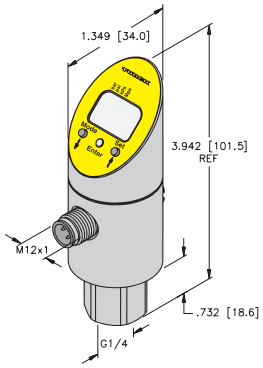
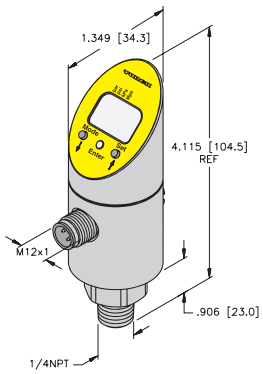
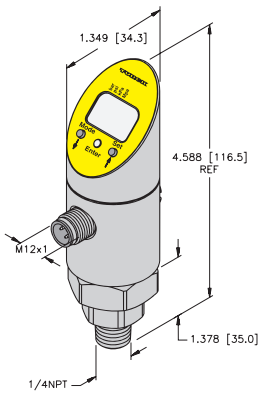
Housing	Part Number	ID Number	Pressure Range (psig)	Allowable Over Pressure (psig)	Output
4-Wire DC, G1/4 Female Connection 	PS01VR-401-LI2UPN8X-H1141	M6832100	-14.5 to 0	43.5	**Programmable Current: 4-20 mA, 20-4 mA, 0-20 mA, 20 mA and 1 PNP/NPN N.O./N.C. or 2 PNP/NPN N.O./N.C.**
	PS001R-401-LI2UPN8X-H1141	M6832101	0 to 14.5	43.5	
	PS003R-401-LI2UPN8X-H1141	M6832102	0 to 43.5	108.7	
	PS010R-401-LI2UPN8X-H1141	M6832103	0 to 145	362.5	
	PS016R-401-LI2UPN8X-H1141	M6832104	0 to 232	580	
	PS025R-401-LI2UPN8X-H1141	M6832105	0 to 362	942	
	PS040R-401-LI2UPN8X-H1141	M6832106	0 to 580	1450	
	PS100R-401-LI2UPN8X-H1141	M6832107	0 to 1450	3625	
	PS250R-401-LI2UPN8X-H1141	M6832108	0 to 3625	9064	
	PS400R-401-LI2UPN8X-H1141	M6832109	0 to 5800	13,053	
4-Wire DC, 1/4-18 NPT Male Connection 	PS01VR-403-LI2UPN8X-H1141	M6832180	-14.5 to 0	43.5	**Programmable Current: 4-20 mA, 20-4 mA, 0-20 mA, 20 mA and 1 PNP/NPN N.O./N.C. or 2 PNP/NPN N.O./N.C.**
	PS001R-403-LI2UPN8X-H1141	M6832181	0 to 14.5	43.5	
	PS003R-403-LI2UPN8X-H1141	M6832182	0 to 43.5	108.7	
	PS010R-403-LI2UPN8X-H1141	M6832183	0 to 145	362.5	
	PS016R-403-LI2UPN8X-H1141	M6832184	0 to 232	580	
	PS025R-403-LI2UPN8X-H1141	M6832185	0 to 362	942	
	PS040R-403-LI2UPN8X-H1141	M6832186	0 to 580	1450	
	PS100R-403-LI2UPN8X-H1141	M6832187	0 to 1450	3625	
	PS250R-403-LI2UPN8X-H1141	M6832188	0 to 3625	9064	
	PS400R-403-LI2UPN8X-H1141	M6832189	0 to 5800	13,053	
4-Wire DC, 1/4-18 NPT Male Connection, Rotatable Housing 	PS01VR-503-LI2UPN8X-H1141	M6832280	-14.5 to 0	43.5	**Programmable Current: 4-20 mA, 20-4 mA, 0-20 mA, 20 mA and 1 PNP/NPN N.O./N.C. or 2 PNP/NPN N.O./N.C.**
	PS001R-503-LI2UPN8X-H1141	M6832281	0 to 14.5	43.5	
	PS003R-503-LI2UPN8X-H1141	M6832282	0 to 43.5	108.7	
	PS010R-503-LI2UPN8X-H1141	M6832283	0 to 145	362.5	
	PS016R-503-LI2UPN8X-H1141	M6832284	0 to 232	580	
	PS025R-503-LI2UPN8X-H1141	M6832285	0 to 362	942	
	PS040R-503-LI2UPN8X-H1141	M6832286	0 to 580	1450	
	PS100R-503-LI2UPN8X-H1141	M6832287	0 to 1450	3625	
	PS250R-503-LI2UPN8X-H1141	M6832288	0 to 3625	9064	
	PS400R-503-LI2UPN8X-H1141	M6832289	0 to 5800	13,053	

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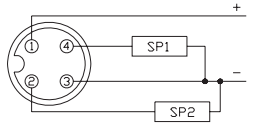
Voltage	Set point Range (psig)	Re-Set point Range (psig)	Switching Current	Analog Load	Set point Accuracy (of full scale)	Analog Accuracy ** (of full scale)	Mating Cordset	Wiring Diagram #	Wiring Diagrams
18-30 VDC	-14.5 to -0.73	-14.07 to -0.29	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	Diagram 1
	0.73 to 14.5	0.29 to 14.07	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	2.17 to 43.5	0.87 to 42.2	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	7.25 to 145	2.90 to 140	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	11.6 to 232	4.64 to 225	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	18.13 to 362.5	7.25 to 351	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	29 to 580	11.6 to 562	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	72.5 to 1450	29 to 1406	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	181 to 3625	72.5 to 3516	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	290 to 5800	116 to 5626	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
18-30 VDC	-14.5 to -0.73	-14.07 to -0.29	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	0.73 to 14.5	0.29 to 14.07	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	2.17 to 43.5	0.87 to 42.2	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	7.25 to 145	2.9 to 140	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	11.6 to 232	4.64 to 225	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	18.13 to 362.5	7.25 to 351	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	29 to 580	11.6 to 562	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	72.5 to 1450	29 to 1406	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	181 to 3625	72.5 to 3516	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	290 to 5800	116 to 5626	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
18-30 VDC	-14.5 to -0.73	-14.07 to -0.29	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	0.73 to 14.5	0.29 to 14.07	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	2.17 to 43.5	0.87 to 42.2	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	7.25 to 145	2.90 to 140	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	11.60 to 232	4.64 to 225	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	18.13 to 362.5	7.25 to 351	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	29 to 580	11.6 to 562	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	72.5 to 1450	29 to 1406	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	181 to 3625	72.5 to 3516	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	
	290 to 5800	116 to 5626	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	1	



See page M10 - M12 for additional pressure specifications.
See pages M29 - M33 for diaphragm seals.
See pages M34 - M35 for pressure accessories.
* Length in meters.
** Accuracy includes linearity, repeatability and hysteresis.

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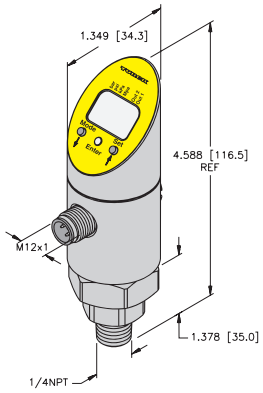
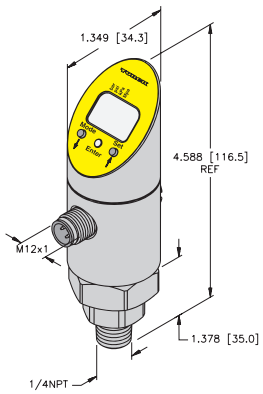
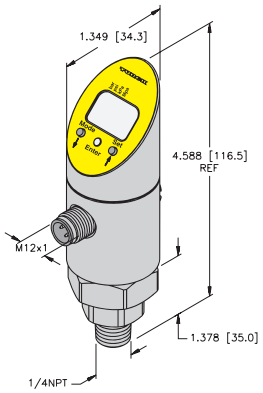
Housing	Part Number	ID Number	Pressure Range (psig)	Allowable Over Pressure (psig)	Output
4-Wire DC, 1/4-18 NPT Male Connection, Rotatable Housing 	PS01VR-503-2UP8X-H1141	M6831202	-14.5 to 0	43.5	**Dual PNP N.O. or N.C.**
	PS001R-503-2UP8X-H1141	M6831205	0 to 14.5	43.5	
	PS003R-503-2UP8X-H1141	M6831208	0 to 36.26	101.5	
	PS010R-503-2UP8X-H1141	M6831211	0 to 145	362.5	
	PS016R-503-2UP8X-H1141	M6831900	0 to 232	580	
	PS025R-503-2UP8X-H1141	M6831901	0 to 362	942	
	PS040R-503-2UP8X-H1141	M6831902	0 to 580	1450	
	PS100R-503-2UP8X-H1141	M6831220	0 to 1450	3625	
	PS250R-503-2UP8X-H1141	M6831223	0 to 3625	9064	
	PS400R-503-2UP8X-H1141	M6831903	0 to 5800	13,053	
4-Wire DC, 1/4-18 NPT Male Connection, Rotatable Housing 	PS01VR-503-LIUP8X-H1141	M6831246	-14.5 to 0	43.5	**PNP N.O. or N.C and Programmable Current: 0-20 mA, 4-20 mA, 20-0 mA, 20-4 mA**
	PS001R-503-LIUP8X-H1141	M6831228	0 to 14.5	43.5	
	PS003R-503-LIUP8X-H1141	M6831233	0 to 36.26	101.5	
	PS010R-503-LIUP8X-H1141	M6831239	0 to 145	362.5	
	PS016R-503-LIUP8X-H1141	M6831914	0 to 232	580	
	PS025R-503-LIUP8X-H1141	M6831915	0 to 362	942	
	PS040R-503-LIUP8X-H1141	M6831916	0 to 580	1450	
	PS100R-503-LIUP8X-H1141	M6831255	0 to 1450	3625	
	PS250R-503-LIUP8X-H1141	M6831260	0 to 3625	9064	
	PS400R-503-LIUP8X-H1141	M6831917	0 to 5800	13,053	
4-Wire DC, 1/4-18 NPT Male Connection, Rotatable Housing 	PS01VR-503-LUUP8X-H1141	M6831247	-14.5 to 0	43.5	**PNP N.O. or N.C. and Programmable Voltage: 0-10 V, 0-5 V, 1-6 V, 10-0 V, 5-0 V, 6-1 V**
	PS001R-503-LUUP8X-H1141	M6831229	0 to 14.5	43.5	
	PS003R-503-LUUP8X-H1141	M6831234	0 to 36.26	101.5	
	PS010R-503-LUUP8X-H1141	M6831240	0 to 145	362.5	
	PS016R-503-LUUP8X-H1141	M6831928	0 to 232	580	
	PS025R-503-LUUP8X-H1141	M6831929	0 to 362	942	
	PS040R-503-LUUP8X-H1141	M6831930	0 to 580	1450	
	PS100R-503-LUUP8X-H1141	M6831256	0 to 1450	3625	
	PS250R-503-LUUP8X-H1141	M6831261	0 to 3625	9064	
	PS400R-503-LUUP8X-H1141	M6831931	0 to 5800	13,053	

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Voltage	Set point Range (psig)	Re-Set point Range (psig)	Switching Current	Analog Load	Set point Accuracy (of full scale)	Analog Accuracy ** (of full scale)	Mating Cordset	Wiring Diagram #
15-30 VDC	-14.5 to -0.73	-14.07 to -0.29	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	0.73 to 14.5	0.29 to 14.07	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	2.17 to 36.26	0.87 to 42.2	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	7.25 to 145	2.90 to 140	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	11.6 to 232	4.64 to 225	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	18.13 to 362.5	7.25 to 351	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	29 to 580	11.6 to 562	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	72.5 to 1450	29 to 1406	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	181 to 3625	72.5 to 3516	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	290 to 5800	116 to 5626	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
18-30 VDC	-14.5 to -0.73	-14.07 to -0.29	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	0.73 to 14.5	0.29 to 14.07	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	2.17 to 36.26	0.87 to 42.2	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	7.25 to 145	2.9 to 140	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	11.6 to 232	4.64 to 225	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	18.13 to 362.5	7.25 to 351	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	29 to 580	11.6 to 562	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	72.5 to 1450	29 to 1406	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	181 to 3625	72.5 to 3516	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	290 to 5800	116 to 5626	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
18-30 VDC	-14.5 to -0.73	-14.07 to -0.29	≤200 mA	≥2KΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	0.73 to 14.5	0.29 to 14.07	≤200 mA	≥2 KΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	2.17 to 36.26	0.87 to 42.2	≤200 mA	≥2 KΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	7.25 to 145	2.90 to 140	≤200 mA	≥2 KΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	11.60 to 232	4.64 to 225	≤200 mA	≥2 KΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	18.13 to 362.5	7.25 to 351	≤200 mA	≥2 KΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	29 to 580	11.6 to 562	≤200 mA	≥2 KΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	72.5 to 1450	29 to 1406	≤200 mA	≥2 KΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	181 to 3625	72.5 to 3516	≤200 mA	≥2 KΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	290 to 5800	116 to 5626	≤200 mA	≥2 KΩ	±0.5%	≤±0.5%	RK 4.4T-*	3

Wiring Diagrams

Diagram 1

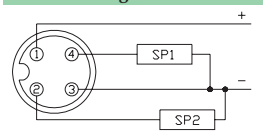


Diagram 2

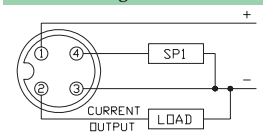
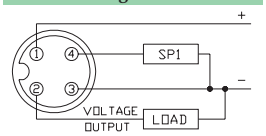


Diagram 3



See page M10 - M12 for additional pressure specifications.
See pages M29 - M33 for diaphragm seals.
See pages M34 - M35 for pressure accessories.
* Length in meters.
** Accuracy includes linearity, repeatability and hysteresis.

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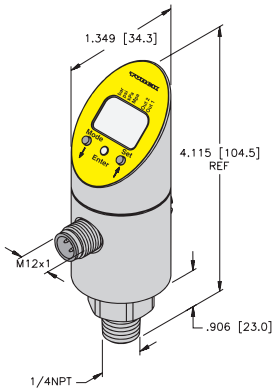
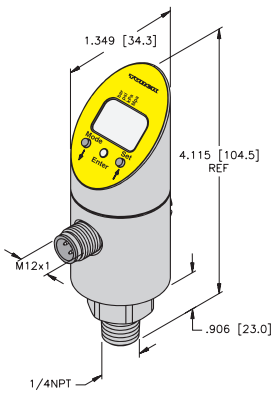
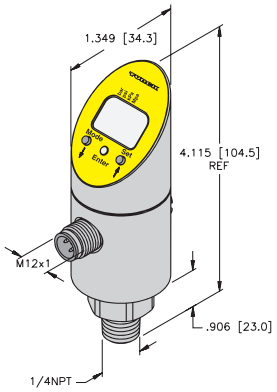
Housing	Part Number	ID Number	Pressure Range (psig)	Allowable Over Pressure (psig)	Output
4-Wire DC, 1/4-18 NPT Male Connection, Rotatable Housing 	PS01VR-403-2UP8X-H1141	M6831962	-14.5 to 0	43.5	**Dual PNP N.O. or N.C.**
	PS001R-403-2UP8X-H1141	M6831963	0 to 14.5	43.5	
	PS003R-403-2UP8X-H1141	M6831964	0 to 36.26	101.5	
	PS010R-403-2UP8X-H1141	M6831965	0 to 145	362.5	
	PS016R-403-2UP8X-H1141	M6831966	0 to 232	580	
	PS025R-403-2UP8X-H1141	M6831967	0 to 362	942	
	PS040R-403-2UP8X-H1141	M6831968	0 to 580	1450	
	PS100R-403-2UP8X-H1141	M6831969	0 to 1450	3625	
	PS250R-403-2UP8X-H1141	M6831970	0 to 3625	9064	
	PS400R-403-2UP8X-H1141	M6831971	0 to 5800	13,053	
4-Wire DC, 1/4-18 NPT Male Connection, Rotatable Housing 	PS01VR-403-LIUP8X-H1141	M6831942	-14.5 to 0	43.5	**PNP N.O. or N.C. and Programmable Current: 0-20 mA, 4-20 mA, 20-0 mA, 20-4 mA**
	PS001R-403-LIUP8X-H1141	M6831943	0 to 14.5	43.5	
	PS003R-403-LIUP8X-H1141	M6831944	0 to 36.26	101.5	
	PS010R-403-LIUP8X-H1141	M6831945	0 to 145	362.5	
	PS016R-403-LIUP8X-H1141	M6831946	0 to 232	580	
	PS025R-403-LIUP8X-H1141	M6831947	0 to 362	942	
	PS040R-403-LIUP8X-H1141	M6831948	0 to 580	1450	
	PS100R-403-LIUP8X-H1141	M6831949	0 to 1450	3625	
	PS250R-403-LIUP8X-H1141	M6831950	0 to 3625	9064	
	PS400R-403-LIUP8X-H1141	M6831951	0 to 5800	13,053	
4-Wire DC, 1/4-18 NPT Male Connection, Rotatable Housing 	PS01VR-403-LUUP8X-H1141	M6831952	-14.5 to 0	43.5	**PNP N.O. or N.C. and Programmable Voltage: 0-10 V, 0-5 V, 1-6 V, 10-0 V, 5-0 V, 6-1 V**
	PS001R-403-LUUP8X-H1141	M6831953	0 to 14.5	43.5	
	PS003R-403-LUUP8X-H1141	M6831954	0 to 36.26	101.5	
	PS010R-403-LUUP8X-H1141	M6831955	0 to 145	362.5	
	PS016R-403-LUUP8X-H1141	M6831956	0 to 232	580	
	PS025R-403-LUUP8X-H1141	M6831957	0 to 362	942	
	PS040R-403-LUUP8X-H1141	M6831958	0 to 580	1450	
	PS100R-403-LUUP8X-H1141	M6831959	0 to 1450	3625	
	PS250R-403-LUUP8X-H1141	M6831960	0 to 3625	9064	
	PS400R-403-LUUP8X-H1141	M6831961	0 to 5800	13,053	

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Voltage	Set Point Range (psig)	Re-Set Point Range (psig)	Switching Current	Analog Load	Set Point Accuracy (of full scale)	Analog Accuracy ** (of full scale)	Mating Cordset	Wiring Diagram #
15-30 VDC	-14.5 to -0.73	-14.07 to -0.29	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	0.73 to 14.5	0.29 to 14.07	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	2.17 to 36.26	0.87 to 42.2	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	7.25 to 145	2.9 to 140	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	11.60 to 232	4.64 to 225	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	18.13 to 362.5	7.25 to 351	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	29 to 580	11.6 to 562	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	72.5 to 1450	29 to 1406	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	181 to 3625	72.5 to 3516	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
	290 to 5800	116 to 5626	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1
18-30 VDC	-14.5 to -0.73	-14.07 to -0.29	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	0.73 to 14.5	0.29to 14.07	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	2.17 to 36.26	0.87 to 42.2	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	7.25 to 145	2.9 to 140	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	11.6 to 232	4.64 to 225	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	18.13 to 362.5	7.25 to 351	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	29 to 580	11.6 to 562	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	72.5 to 1450	29 to 1406	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	181 to 3625	72.5 to 3516	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
	290 to 5800	116 to 5626	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2
18-30 VDC	-14.5 to -0.73	-14.07 to -0.29	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	0.73 to 14.50	0.29 to 14.07	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	2.17 to 36.26	0.87 to 42.2	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	7.25 to 145	2.9 to 140	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	11.6 to 232	4.64 to 225	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	18.13 to 362.5	7.25 to 351	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	29 to 580	11.6 to 562	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	72.5 to 1450	29 to 1406	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	181 to 3625	72.5 to 3516	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3
	290 to 5800	116 to 5626	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3

Wiring Diagrams

Diagram 1

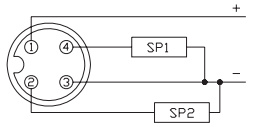


Diagram 2

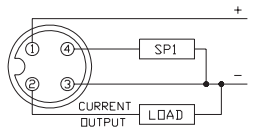
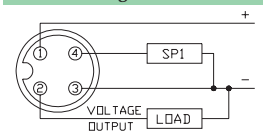


Diagram 3



See page M10 - M12 for additional pressure specifications.
See pages M29 - M33 for diaphragm seals.
See pages M34 - M35 for pressure accessories.
* Length in meters.
** Accuracy includes linearity, repeatability and hysteresis.

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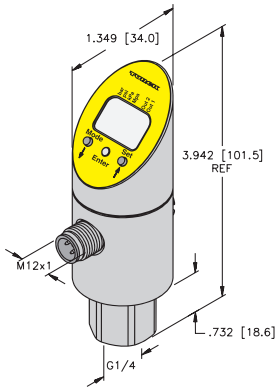
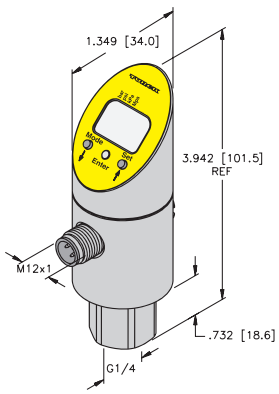
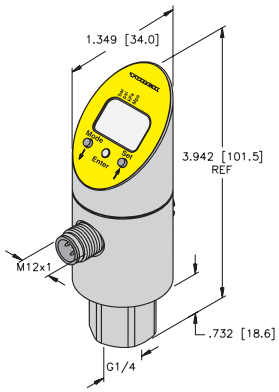
Housing	Part Number	ID Number	Pressure Range (psig)	Allowable Over Pressure (psig)	Output
4-Wire DC, G1/4 Female Connection 	PS01VR-401-2UP8X-H1141	M6831201	-14.5 to 0	43.5	**Dual PNP N.O. or N.C.**
	PS001R-401-2UP8X-H1141	M6831204	0 to 14.5	43.5	
	PS003R-401-2UP8X-H1141	M6831207	0 to 36.26	101.5	
	PS010R-401-2UP8X-H1141	M6831210	0 to 145	362.5	
	PS016R-401-2UP8X-H1141	M6831213	0 to 232	580	
	PS025R-401-2UP8X-H1141	M6831215	0 to 362	942	
	PS040R-401-2UP8X-H1141	M6831217	0 to 580	1450	
	PS100R-401-2UP8X-H1141	M6831219	0 to 1450	3625	
	PS250R-401-2UP8X-H1141	M6831222	0 to 3625	9064	
	PS400R-401-2UP8X-H1141	M6831225	0 to 5800	13,053	
4-Wire DC, G1/4 Female Connection 	PS01VR-401-LIUP8X-H1141	M6831245	-14.5 to 0	43.5	**PNP N.O. or N.C. and Programmable Current: 0-20 mA, 4-20 mA, 20-0 mA, 20-4 mA**
	PS001R-401-LIUP8X-H1141	M6831227	0 to 14.5	43.5	
	PS003R-401-LIUP8X-H1141	M6831231	0 to 36.26	101.5	
	PS010R-401-LIUP8X-H1141	M6831237	0 to 145	362.5	
	PS016R-401-LIUP8X-H1141	M6831243	0 to 232	580	
	PS025R-401-LIUP8X-H1141	M6831249	0 to 362	942	
	PS040R-401-LIUP8X-H1141	M6831251	0 to 580	1450	
	PS100R-401-LIUP8X-H1141	M6831253	0 to 1450	3625	
	PS250R-401-LIUP8X-H1141	M6831259	0 to 3625	9064	
	PS400R-401-LIUP8X-H1141	M6831263	0 to 5800	13,053	
4-Wire DC, G1/4 Female Connection 	PS01VR-401-LUUP8X-H1141	M6831828	-14.5 to 0	43.5	**PNP N.O. or N.C. and Programmable Voltage: 0-10 V, 0-5 V, 1-6 V, 10-0 V, 5-0 V, 6-1 V**
	PS001R-401-LUUP8X-H1141	M6831800	0 to 14.5	43.5	
	PS003R-401-LUUP8X-H1141	M6831232	0 to 36.26	101.5	
	PS010R-401-LUUP8X-H1141	M6831238	0 to 145	362.5	
	PS016R-401-LUUP8X-H1141	M6831820	0 to 232	580	
	PS025R-401-LUUP8X-H1141	M6831836	0 to 362	942	
	PS040R-401-LUUP8X-H1141	M6831844	0 to 580	1450	
	PS100R-401-LUUP8X-H1141	M6831254	0 to 1450	3625	
	PS250R-401-LUUP8X-H1141	M6831858	0 to 3625	9064	
	PS400R-401-LUUP8X-H1141	M6831264	0 to 5800	13,053	

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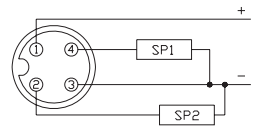
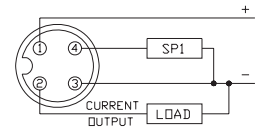
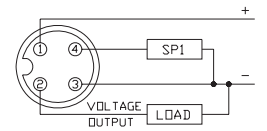
Voltage	Set Point Range (psig)	Re-Set Point Range (psig)	Switching Current	Analog Load	Set Point Accuracy (of full scale)	Analog Accuracy ** (of full scale)	Mating Cordset	Wiring Diagram #	Wiring Diagrams
15-30 VDC	-14.5 to -0.73	-14.07 to -0.29	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1	Diagram 1
	0.73 to 14.5	0.29 to 14.07	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1	
	2.17 to 36.26	0.87 to 42.2	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1	
	7.25 to 145	2.9 to 140	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1	
	11.6 to 232	4.64 to 225	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1	
	18.13 to 362.5	7.25 to 351	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1	
	29 to 580	11.6 to 562	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1	
	72.5 to 1450	29 to 1406	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1	
	181 to 3625	72.5 to 3516	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1	
	290 to 5800	116 to 5626	≤200 mA	N/A	±0.5%	N/A	RK 4.4T-*	1	
18-30 VDC	-14.5 to -0.73	-14.07 to -0.29	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2	Diagram 2
	0.73 to 14.5	0.29 to 14.07	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2	
	2.17 to 36.26	0.87 to 42.2	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2	
	7.25 to 145	2.9 to 140	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2	
	11.6 to 232	4.64 to 225	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2	
	18.13 to 362.5	7.25 to 351	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2	
	29 to 580	11.6 to 562	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2	
	72.5 to 1450	29 to 1406	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2	
	181 to 3625	72.5 to 3516	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2	
	290 to 5800	116 to 5626	≤200 mA	≤500 Ω	±0.5%	≤±0.5%	RK 4.4T-*	2	
18-30 VDC	-14.5 to -0.73	-14.07 to -0.29	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3	Diagram 3
	0.73 to 14.5	0.29 to 14.07	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3	
	2.17 to 36.26	0.87 to 42.2	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3	
	7.25 to 145	2.9 to 140	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3	
	11.6 to 232	4.64 to 225	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3	
	18.13 to 362.5	7.25 to 351	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3	
	29 to 580	11.6 to 562	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3	
	72.5 to 1450	29 to 1406	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3	
	181 to 3625	72.5 to 3516	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3	
	290 to 5800	116 to 5626	≤200 mA	≥2 kΩ	±0.5%	≤±0.5%	RK 4.4T-*	3	







See page M10 - M12 for additional pressure specifications.
See pages M29 - M33 for diaphragm seals.
See pages M34 - M35 for pressure accessories.
* Length in meters.
** Accuracy includes linearity, repeatability and hysteresis.

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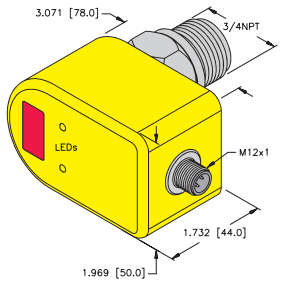
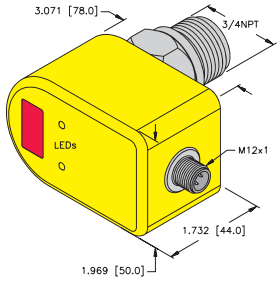
Housing Style	Part Number	ID Number	Pressure Range (psi)	Allowable Overpressure (psi)	Minimum Burst Pressure (psi)	Output
4-Wire DC, Flush Mount 	PC001-N3/4A4P-2AP8X-H1141	M6831391	0 to 14.5	72.5	72.5	**Dual PNP N.O./N.C.**
	PC016-N3/4A4P-2AP8X-H1141	M6831393	0 to 232	696	696	
3-Wire DC, Flush Mount 	PC001-N3/4A4P-LIX-H1141	M6831392	0 to 14.5	72.5	72.5	**4-20 mA**
	PC016-N3/4A4P-LIX-H1141	M6831390	0 to 232	696	696	

Conversion: 1 bar = 14.5038 psi

Material

Housing	PBT
Sensing Element	Ceramic
Cable Connector	303 Stainless Steel
Pressure Connection	316 Stainless Steel (No. 1.4305)
O-ring Seal	Viton

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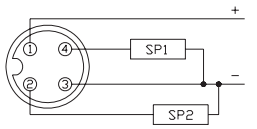
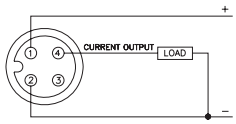
Voltage	Set point	Switching Current	Analog Load	Display Accuracy**	Set point Accuracy**	Analog Accuracy**	Mating Cordset	Wiring Diagram #	Wiring Diagrams
19.2-28.8 VDC	0.2 to 15	≤200 mA	N/A	≤3	≤3	N/A	RK 4.4T-*	1	Diagram 1
	2 to 230	≤200 mA	N/A	≤3	≤3	N/A	RK 4.4T-*	1	
19.2-28.8 VDC	N/A	N/A	≤500 Ω	≤3	N/A	≤0.5	RK 4.4T-*	2	Diagram 2
	N/A	N/A	≤500 Ω	≤3	N/A	≤0.5	RK 4.4T-*	2	





See page M10 - M12 for additional pressure specifications.
See pages M29 - M33 for diaphragm seals.
See pages M34 - M35 for pressure accessories.
* Length in meters.
** % of rated overall range.

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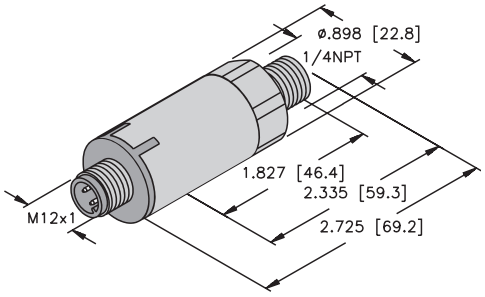
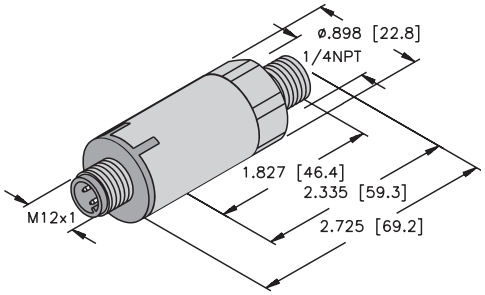
Housing Style	Part Number	ID Number	Scaled Pressure Range	Output
Gauge Pressure Transmitter, 1/4 Male NPT Connection 	PT-30HG-13-LI3-H1131	H6831455	0 to -30 in. HG	**4-20 mA Loop Powered**
	PT15psig-13-LI3-H1131	H6831456	0 to 15 psi	
	PT30psig-13-LI3-H1131	H6831457	0 to 30 psi	
	PT60psig-13-LI3-H1131	H6831458	0 to 60 psi	
	PT100psig-13-LI3-H1131	H6831459	0 to 100 psi	
	PT200psig-13-LI3-H1131	H6831460	0 to 200 psi	
	PT300psig-13-LI3-H1131	H6831461	0 to 300 psi	
	PT500psig-13-LI3-H1131	H6831462	0 to 500 psi	
	PT750psig-13-LI3-H1131	H6831463	0 to 750 psi	
	PT1000psig-13-LI3-H1131	H6831464	0 to 1000 psi	
	PT2000psig-13-LI3-H1131	H6831465	0 to 2000 psi	
	PT3000psig-13-LI3-H1131	H6831466	0 to 3000 psi	
	PT5000psig-13-LI3-H1131	H6831467	0 to 5000 psi	
	PT7500psig-13-LI3-H1131	H6831468	0 to 7500 psi	
Gauge Pressure Transmitter, 1/4 Male NPT Connection 	PT-30HG-13-LU2-H1131	H6831469	0 to 30 in. HG	**0-10 VDC**
	PT15psig-13-LU2-H1131	H6831470	0 to 15 psi	
	PT30psig-13-LU2-H1131	H6831471	0 to 30 psi	
	PT60psig-13-LU2-H1131	H6831472	0 to 60 psi	
	PT100psig-13-LU2-H1131	H6831473	0 to 100 psi	
	PT200psig-13-LU2-H1131	H6831474	0 to 200 psi	
	PT300psig-13-LU2-H1131	H6831475	0 to 300 psi	
	PT500psig-13-LU2-H1131	H6831476	0 to 500 psi	
	PT750psig-13-LU2-H1131	H6831477	0 to 750 psi	
	PT1000psig-13-LU2-H1131	H6831478	0 to 1000 psi	
	PT2000psig-13-LU2-H1131	H6831479	0 to 2000 psi	
	PT3000psig-13-LU2-H1131	H6831480	0 to 3000 psi	
	PT5000psig-13-LU2-H1131	H6831481	0 to 5000 psi	
	PT7500psig-13-LU2-H1131	H6831482	0 to 7500 psi	

Conversion: 1 bar = 14.5038 psi

Material

Housing	303 Stainless Steel
Sensing Element	AL_20_3 Ceramic
Media Stop	PPS
Cable Connector	303 Stainless Steel / PBT
Pressure Connection	303 Stainless Steel
O-ring Seal	Viton

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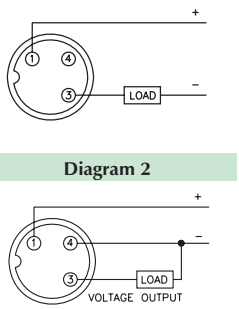
Voltage	Allowable Over Pressure	Accuracy**	Fluid Connection Type	Mating Cordset	Wiring Diagram #	Wiring Diagrams
8-33 VDC	60 in HG	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	1	Diagram 1
	45 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	90 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	150 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	250 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	500 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	750 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	1	Diagram 2
	1250 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	1875 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	2500 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	5000 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	7500 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	12,500 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	15,000 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	1	
11.4-33 VDC	60 in HG	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	45 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	90 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	150 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	250 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	500 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	750 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	1250 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	1875 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	2500 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	5000 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	7500 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	12,500 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	15,000 psi	≤0.5% Full Scale	1/4 NPT	RK 4T-*/S618	2	



See page M10 - M12 for additional pressure specifications.
See pages M29 - M33 for diaphragm seals.
See pages M34 - M35 for pressure accessories.
* Length in meters.
** Total of linearity, hysteresis and repeatability.

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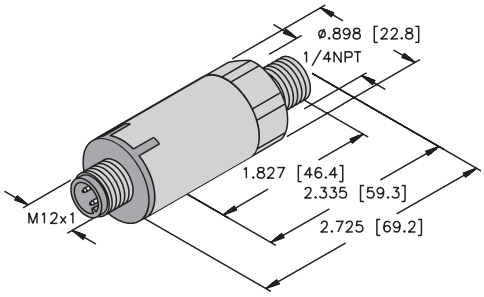
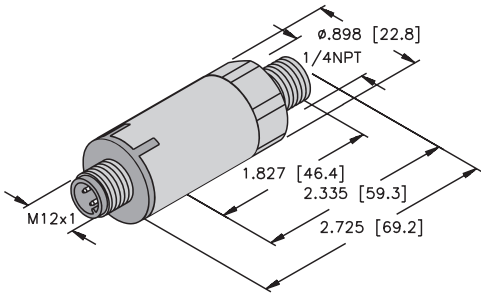
Housing Style	Part Number	ID Number	Scaled Pressure Range (bar)	Output
Gauge Pressure Transmitter, 4-20 mA Output, 1/4 Male NPT Connection 	PT01VR-13-LI3-H1131	H6831496	-1 to 0	**4-20 mA Loop Powered**
	PT001R-13-LI3-H1131	H6831497	0 to 1	
	PT002R-13-LI3-H1131	H6831498	0 to 2	
	PT003R-13-LI3-H1131	H6831499	0 to 3	
	PT004R-13-LI3-H1131	H6831500	0 to 4	
	PT006R-13-LI3-H1131	H6831501	0 to 6	
	PT010R-13-LI3-H1131	H6831502	0 to 10	
	PT016R-13-LI3-H1131	H6831503	0 to 16	
	PT025R-13-LI3-H1131	H6831504	0 to 25	
	PT040R-13-LI3-H1131	H6831505	0 to 40	
	PT060R-13-LI3-H1131	H6831506	0 to 60	
	PT100R-13-LI3-H1131	H6831507	0 to 100	
	PT160R-13-LI3-H1131	H6831508	0 to 160	
	PT250R-13-LI3-H1131	H6831509	0 to 250	
	PT400R-13-LI3-H1131	H6831510	0 to 400	
	PT600R-13-LI3-H1131	H6831511	0 to 600	
Gauge Pressure Transmitter, 0-10 V Output, 1/4 Male NPT Connection 	PT01VR-13-LU2-H1131	H6831512	-1 to 0	**0-10 VDC**
	PT001R-13-LU2-H1131	H6831513	0 to 1	
	PT002R-13-LU2-H1131	H6831514	0 to 2	
	PT003R-13-LU2-H1131	H6831515	0 to 3	
	PT004R-13-LU2-H1131	H6831516	0 to 4	
	PT006R-13-LU2-H1131	H6831517	0 to 6	
	PT010R-13-LU2-H1131	H6831518	0 to 10	
	PT016R-13-LU2-H1131	H6831519	0 to 16	
	PT025R-13-LU2-H1131	H6831520	0 to 25	
	PT040R-13-LU2-H1131	H6831521	0 to 40	
	PT060R-13-LU2-H1131	H6831522	0 to 60	
	PT100R-13-LU2-H1131	H6831523	0 to 100	
	PT160R-13-LU2-H1131	H6831524	0 to 160	
	PT250R-13-LU2-H1131	H6831525	0 to 250	
	PT400R-13-LU2-H1131	H6831526	0 to 400	
	PT600R-13-LU2-H1131	H6831527	0 to 600	

Conversion: 1 bar = 14.50377 psi

Material

Housing	303 Stainless Steel
Sensing Element	AL_20_3 Ceramic
Media Stop	PPS
Cable Connector	303 Stainless Steel / PBT
Pressure Connection	303 Stainless Steel
O-ring Seal	Viton

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Voltage	Allowable Over Pressure (bar)	Accuracy**	Fluid Connection Type	Mating Cordset	Wiring Diagram #	Wiring Diagrams
8-33 VDC	3	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	1	Diagram 1
	3	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	5	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	7	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	12	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	15	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	25	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	40	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	62	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	100	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	150	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	250	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	400	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	625	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	1000	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	1	
	1200	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	1	
11.4-33 VDC	3	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	3	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	5	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	7	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	12	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	15	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	25	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	40	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	62	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	100	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	150	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	250	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	400	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	625	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	1000	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	2	
	1200	≤0.3% Full Scale	1/4 NPT	RK 4T-*/S618	2	

Diagram 1

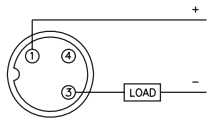
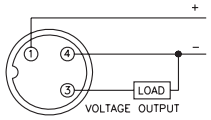


Diagram 2



See page M10 - M12 for additional pressure specifications.
See pages M29 - M33 for diaphragm seals.
See pages M34 - M35 for pressure accessories.
* Length in meters.
** Total of linearity, hysteresis and repeatability.

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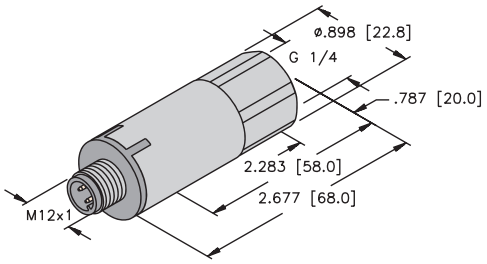
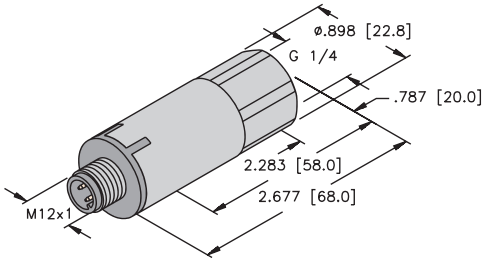
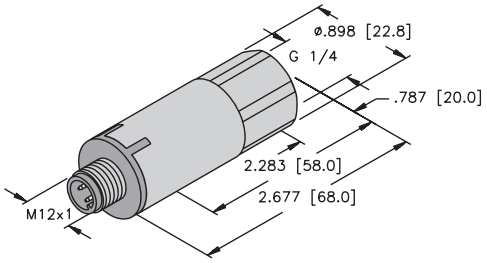
Housing Style	Part Number	ID Number	Scaled Pressure Range (bar)	Output
Gauge Pressure Transmitter, G 1/4 Female Connection 	PT01VR-11-LI3-H1131	H6831433	-1 to 0	**4-20 mA Loop Powered**
	PT0.5R-11-LI3-H1131	H6831495	0 to 0.5	
	PT001R-11-LI3-H1131	H6831434	0 to 1	
	PT002R-11-LI3-H1131	H6831435	0 to 2	
	PT003R-11-LI3-H1131	H6831436	0 to 3	
	PT004R-11-LI3-H1131	H6831437	0 to 4	
	PT006R-11-LI3-H1131	H6831438	0 to 6	
	PT010R-11-LI3-H1131	H6831432	0 to 10	
	PT016R-11-LI3-H1131	H6831439	0 to 16	
	PT025R-11-LI3-H1131	H6831440	0 to 25	
	PT040R-11-LI3-H1131	H6831441	0 to 40	
	PT060R-11-LI3-H1131	H6831442	0 to 60	
	PT100R-11-LI3-H1131	H6831443	0 to 100	
	PT160R-11-LI3-H1131	H6831444	0 to 160	
	PT250R-11-LI3-H1131	H6831445	0 to 250	
	PT400R-11-LI3-H1131	H6831446	0 to 400	
	PT600R-11-LI3-H1131	H6831447	0 to 600	
Gauge Pressure Transmitter, G 1/4 Female Connection 	PT01VR-11-LU2-H1131	H6831454	-1 to 0	**0-10 VDC**
	PT001R-11-LU2-H1131	H6831483	0 to 1	
	PT002R-11-LU2-H1131	H6831484	0 to 2	
	PT003R-11-LU2-H1131	H6831485	0 to 3	
	PT004R-11-LU2-H1131	H6831486	0 to 4	
	PT006R-11-LU2-H1131	H6831452	0 to 6	
	PT010R-11-LU2-H1131	H6831487	0 to 10	
	PT016R-11-LU2-H1131	H6831488	0 to 16	
	PT025R-11-LU2-H1131	H6831489	0 to 25	
	PT040R-11-LU2-H1131	H6831490	0 to 40	
	PT060R-11-LU2-H1131	H6831491	0 to 60	
	PT100R-11-LU2-H1131	H6831492	0 to 100	
	PT160R-11-LU2-H1131	H6831453	0 to 160	
	PT250R-11-LU2-H1131	H6831451	0 to 250	
	PT400R-11-LU2-H1131	H6831493	0 to 400	
	PT600R-11-LU2-H1131	H6831494	0 to 600	
Absolute Pressure Transmitter, G 1/4 Female Connection 	PT001A-11-LI3-H1131	H6831449	0 to 1	**4-20 mA Loop Powered**
	PT002A-11-LI3-H1131	H6831450	0 to 2	
	PT003A-11-LI3-H1131	H6831448	0 to 3	

Conversion: 1 bar = 14.5038 psi

Material

Housing	303 Stainless Steel
Sensing Element	AL_20_3 Ceramic
Media Stop	PPS
Cable Connector	303 Stainless Steel / PBT
Pressure Connection	303 Stainless Steel
O-ring Seal	Viton

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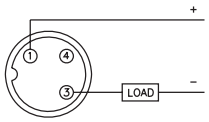
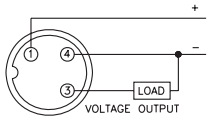
Voltage	Allowable Over Pressure (bar)	Accuracy**	Fluid Connection Type	Mating Cordset	Wiring Diagram #	Wiring Diagrams
8-33 VDC	3	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	Diagram 1
	1.5	≤0.5% Full Scale	G 1/4	RK 4T-*/S618	1	
	3	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	
	5	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	
	7	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	
	12	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	
	15	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	Diagram 2
	25	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	
	40	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	
	62	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	
	100	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	
	150	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	
	250	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	
	400	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	
	625	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	
	1000	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	
	1200	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	
11.4-33 VDC	3	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	2	
	3	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	2	
	5	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	2	
	7	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	2	
	12	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	2	
	15	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	2	
	25	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	2	
	40	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	2	
	62	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	2	
	100	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	2	
	150	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	2	
	250	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	2	
	400	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	2	
	625	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	2	
	1000	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	2	
	1200	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	2	
8-33 VDC	3	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	
	5	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	
	7	≤0.3% Full Scale	G 1/4	RK 4T-*/S618	1	





See page M10 - M12 for additional pressure specifications.
See pages M29 - M33 for diaphragm seals.
See pages M34 - M35 for pressure accessories.
* Length in meters.
** Total of linearity, hysteresis and repeatability.

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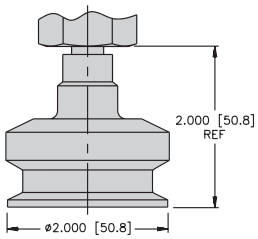
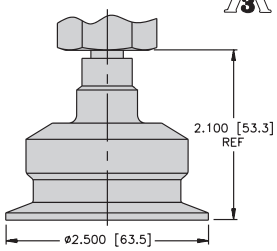
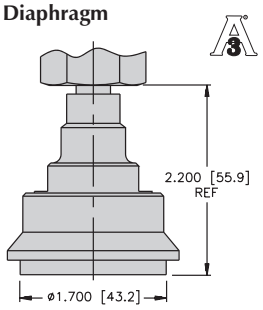
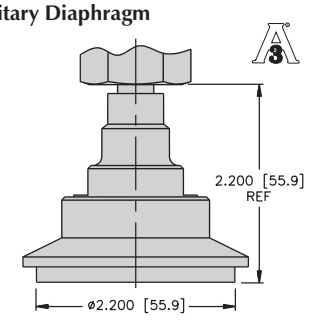
Housing Style	Part Number	Process Connection	Lower Housing	Diaphragm	Upper Housing	Fill Fluid	Maximum Working Pressure at 100°F	Standards
Sanitary Diaphragm 	PC.../S1604 PT.../S1604 PS.../S1604	1.5 in. Tri-clamp	316 L	316 L	316 L	Neobe M20	600 psi	3A 37-01
Sanitary Diaphragm 	PC.../S1605 PT.../S1605 PS.../S1605	2.0 in. Tri-clamp	316 L	316 L	316 L	Neobe M20	600 psi	3A 37-01
Sanitary Diaphragm 	PC.../S1691 PT.../S1691 PS.../S1691	1.5 in. Cherry-Burrel	316 L	316 L	316 L	Neobe M20	250 psi	3A 37-01
Sanitary Diaphragm 	PC.../S1692 PT.../S1692 PS.../S1692	2.0 in. Cherry-Burrel	316 L	316 L	316 L	Neobe M20	250 psi	3A 37-01

Diaphragm seals must be ordered factory assembled with any **TURCK** pressure sensor or pressure transmitter.
For optional fill fluids and materials see page M36 at the end of this section.

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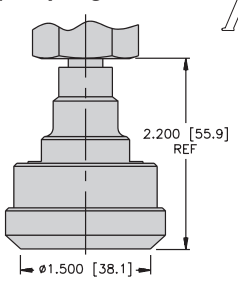
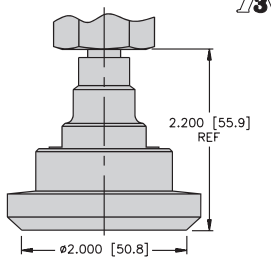
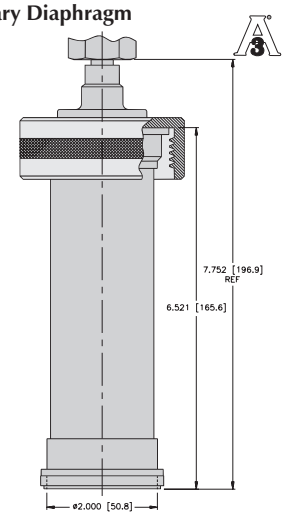
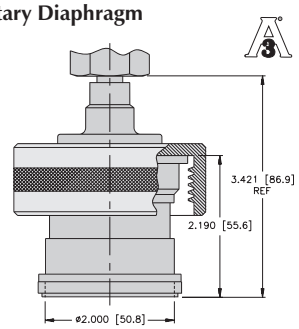
Housing Style	Part Number	Process Connection	Lower Housing	Diaphragm	Upper Housing	Fill Fluid	Maximum Working Presssure at 100°F	Standards
Sanitary Diaphragm 	PC.../S1693 PT.../S1693 PS.../S1693	1.5 in. Bevel Seat	316 L	316 L	316 L	Neobe M20	250 psi	3A 37-01
Sanitary Diaphragm 	PC.../S1694 PT.../S1694 PS.../S1694	2.0 in. Bevel Seat	316 L	316 L	316 L	Neobe M20	250 psi	3A 37-01
Sanitary Diaphragm 	PC.../S1689 PT.../S1689 PS.../S1689	Anderson Long Shell	316 L	316 L	316 L	Neobe M20	200 psi	3A 37-01
Sanitary Diaphragm 	PC.../S1695 PT.../S1695 PS.../S1695	Anderson Short Shell	316 L	316 L	316 L	Neobe M20	200 psi	3A 37-01

Diaphragm seals must be ordered factory assembled with any **TURCK** pressure sensor or pressure transmitter.
For optional fill fluids and materials see page M36 at the end of this section.

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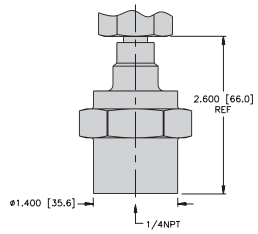
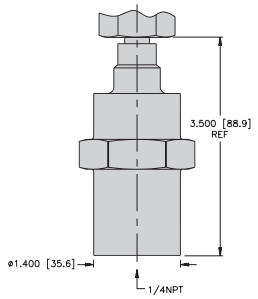
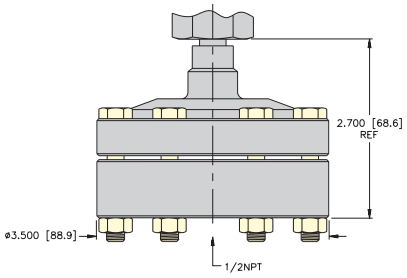
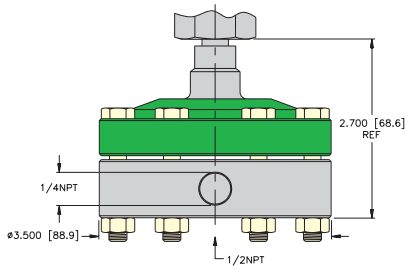
Housing Style	Part Number	Process Connection	Lower Housing	Diaphragm	Upper Housing	Fill Fluid	Maximum Working Pressure at 100°F
Fully Welded Diaphragm Seal 	PC.../S1685 PT.../S1685 PS.../S1685	1/4 NPT Female	316 L	316 L	316 L	Silicone DC200	2500 psi
Fully Welded Diaphragm Seal, Clean Out Port 	PC.../S1593 PT.../S1593 PS.../S1593	1/4 NPT Female	316 L	316 L	316 L	Silicone DC200	2500 psi
General Purpose, Welded Diaphragm 	PC.../S1049 PT.../S1049 PS.../S1049	1/2 NPT Female	316 L	316 L	316 L	Silicone DC200	2500 psi
General Purpose, Welded Diaphragm, Flush Port 	PC.../S1700 PT.../S1700 PS.../S1700	1/2 NPT Female	316 L	316 L	Carbon Steel	Silicone DC200	2500 psi

Diaphragm seals must be ordered factory assembled with any **TURCK** pressure sensor or pressure transmitter.
For optional fill fluids and materials see page M36 at the end of this section.

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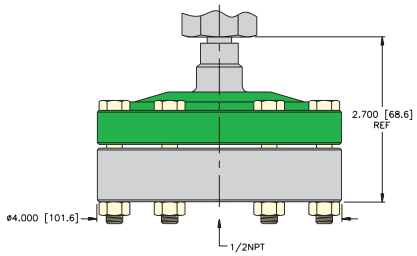
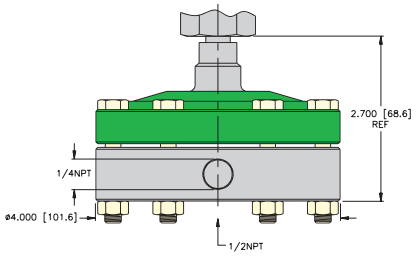
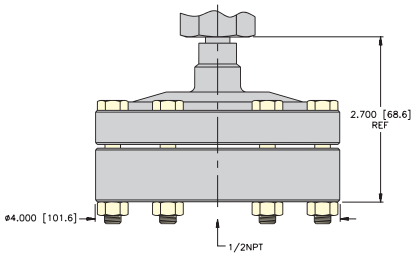
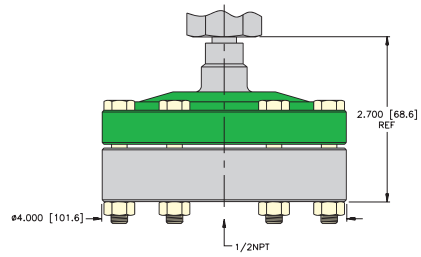
Housing Style	Part Number	Process Connection	Lower Housing	Diaphragm	Upper Housing	Fill Fluid	Maximum Working Pressure at 100°F
General Purpose, Welded Diaphragm 	PC.../S1701 PT.../S1701 PS.../S1701	1/2 NPT Female	316 L	316 L	Carbon Steel	Silicone DC200	2500 psi
General Purpose, Welded Diaphragm, Flush Port 	PC.../S1702 PT.../S1702 PS.../S1702	1/2 NPT Female	316 L	316 L	Carbon Steel	Silicone DC200	2500 psi
Chemical Resistant, Welded Diaphragm 	PC.../S1731 PT.../S1731 PS.../S1731	1/2 NPT Female	PVC	Hastelloy C276	316 L	Silicone DC200	200 psi
Chemical Resistant, Welded Diaphragm 	PC.../S1733 PT.../S1733 PS.../S1733	1/2 NPT Female	PVC	Hastelloy C276	Carbon Steel	Silicone DC200	200 psi

Diaphragm seals must be ordered factory assembled with any **TURCK** pressure sensor or pressure transmitter.
For optional fill fluids and materials see page M36 at the end of this section.

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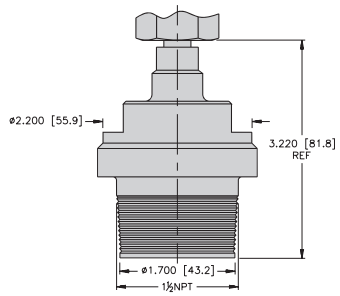
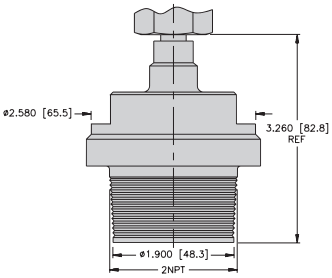
Housing Style	Part Number	Process Connection	Lower Housing	Diaphragm	Upper Housing	Fill Fluid	Maximum Working Pressure at 100°F
Flush Mount Diaphragm 	PC.../S1704 PT.../S1704 PS.../S1704	1-1/2 NPT Male	316 L	316 L	316 L	Silicone DC200	5000 psi
Flush Mount Diaphragm 	PC.../S1705 PT.../S1705 PS.../S1705	2 NPT Male	316 L	316 L	316 L	Silicone DC200	3000 psi

Diaphragm seals must be ordered factory assembled with any **TURCK** pressure sensor or pressure transmitter.
For optional fill fluids and materials see page M36 at the end of this section.

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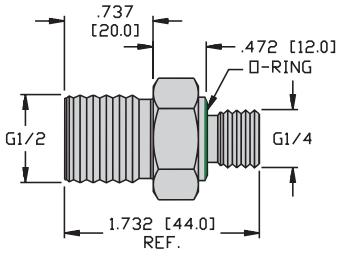
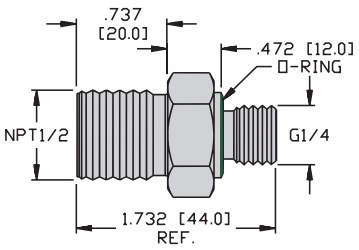
Accessories

Adapter, G1/4 to G1/2 (316 Stainless Steel) .945 [24.0] across flats



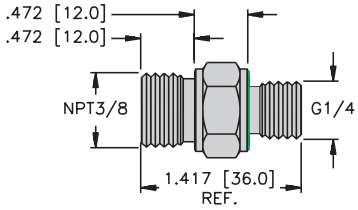
PCV-G1/2A4
(M6835012)

Adapter, G1/4 to 1/2NPT (316 Stainless Steel) .748 [19.0] across flats



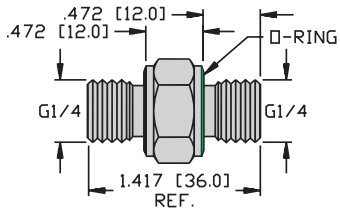
PCV-N1/2A4
(M6835013)

Adapter, G1/4 to 3/8NPT (316 Stainless Steel) .945 [24.0] across flats



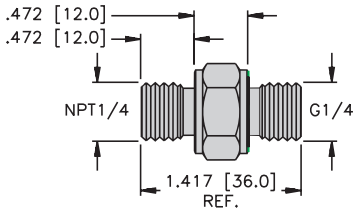
PCV-N3/8A4
(M6835020)

Adapter, G1/4 to G1/4 (316 Stainless Steel) .748 [19.0] across flats



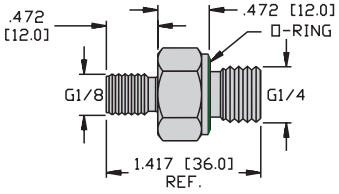
PCV-G1/4A4
(M6835011)

Adapter, G1/4 to 1/4 NPT (316 Stainless Steel) .748 [19.0] across flats



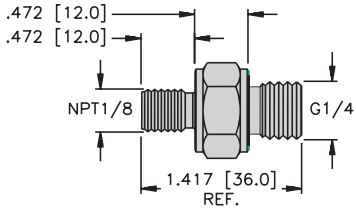
PCV-N1/4A4
(M6835022)

Adapter, G1/4 to G1/8 (316 Stainless Steel) .748 [19.0] across flats



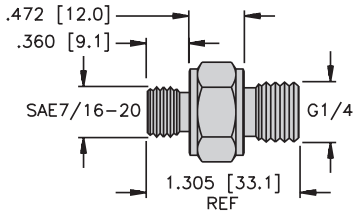
PCV-G1/8A4
(M6835014)

Adapter, G1/4 to 1/8NPT(316 Stainless Steel) .748 [19.0] across flats



PCV-N1/8A4
(M6835021)

Adapter, G1/4 to 7/16 SAE (316 Stainless Steel) .748 [19.0] across flats



PCV-S7/16A4
(A9136)

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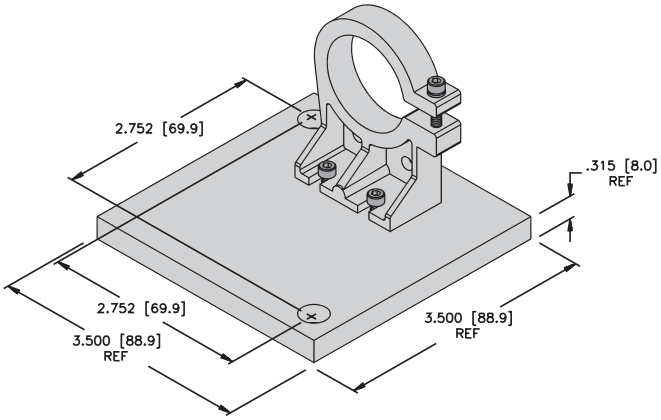
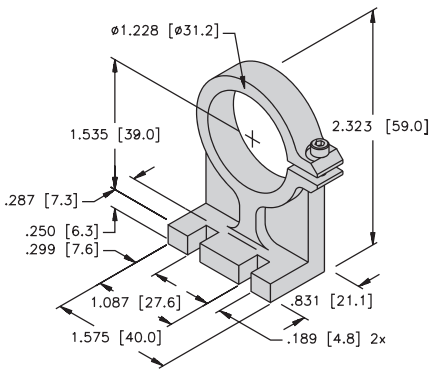
Accessories

Mounting Bracket Kit (Aluminum)



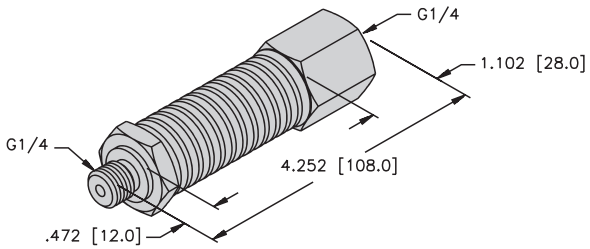
PCS-AB-KIT
(A5121)

Mounting Bracket (Aluminum)



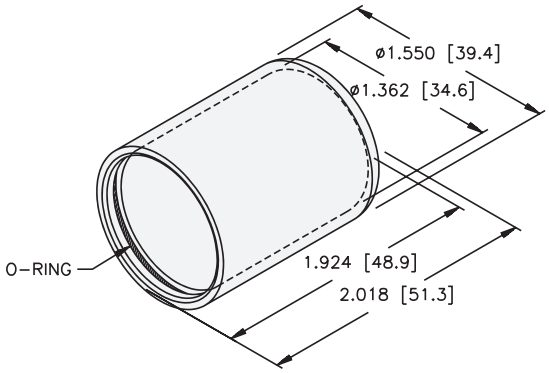
PCS-MBT
(A5120)

Heat Sink (316 Stainless Steel)



PCS-G1/4A4
(M6835015)

Clear Cap



PS-COVER
(A9232)

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Diaphragm Seal Optional Materials

Optional Fill Fluids

Diaphragm Fill Fluids	Application Range (°C)	Specific Gravity at 25°C	Viscosity at 25°C
Silicone DC200-10CS	-45 to 205	0.93	10
Silicone DC 704	0 to 315	1.07	39
Silicone DC 710	5 to 345	1.11	500
Flurolube FS-5	-40 to 150	1.88	7.8
Halocarbon Oil 6.3	-40 to 235	1.88	10.6
Halocarbon Oil 4.2	-45 to 175	1.85	6.5
Neobee-20	-15 to 205	0.92	9.8

Optional Materials

Housing Material			
Wetted			Non-Wetted
304 SS (304)	Hast-C22 (HAS2)	Nickel 200 (NICK)	
304L SS (304L)	Hastelloy B-2 (HASB)	PVC	304 SS (304)
316 SS (316)	Hastelloy C-276 (HASC)	Tantalum (TANT)	316 SS (316)
316Ti SS	Inconel 600 (INC)	Teflon-25%GF (TFGF) (+1500°F max.)	Carbon Steel (STL)
Carbon Steel (STL)	Inconel 625 (I625)	Titanium GR.4 (TIT)	Monel 400 (MON)
Carpenter 20 (C20)	Monel 400 (MON)	Zirconium 702 (ZIRC)	

Diaphragm Material		
Wetted		
304L SS (304L)	Hastelloy B-2 (HASB)	Silver (SILV)
316L SS (316L)	Hastelloy C-276 (HASC)	Tantalum (TANT)
321 SS (321)	Inconel 600 (INC)	Teflon Coated Metal
Buna N (NBR) (1250 psi; +2500°F)	Kalrez 1050LF (KALR)	Teflon (TFE) (1250 psi; +3500°F)
Carpenter 20 (C20)	Kel-F (KELF) (1250 psi; +4000°F)	Titanium GR4 (TIT)
(for anti-stick purposes only)	Monel 400 (MON)	Viton A (VIT) (1250 psi; +3500°F)
Gold (GOLD)	Nickel 200 (NICK)	Zirconium 702 (ZIRC)
Hast - C22 (HAS2)	Nickel 201 (N201)	

Gasket Material		
Wetted		
	Grafoil (GRAF)	PTFE (3510) (-400°F to +2000°F)
	Non-Asbestos (4401)	PTFE (K2) (-500°F to +4500°F)

O-Ring Material		
Wetted		
	Buna N (NBR) (-100°F to +2500°F)	Teflon (TFE) (-400°F to +3500°F)
	Kalrez (KALR)	Viton A (VIT) (-100°F to +3500°F)

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Pressure Conversion[1]

From / To	PSI	KPA	inches[2] inH_2O	mmH_2O	inches[3] inHg	mm Hg	Bars	m Bars	Kg/cm^2	gm/cm^2
PSI	1	6.8948	27.7620	705.1500	2.0360	51.7149	0.0689	68.9470	0.0703	70.3070
KPA	0.1450	1	4.0266	102.2742	0.2953	7.5006	0.0100	10.0000	0.0102	10.197
inH_2O	0.0361	0.2483	1	25.4210	0.0734	1.8650	0.0025	2.4864	0.0025	2.5355
mmH_2O	0.0014	0.0098	0.0394	1	0.0028	0.0734	0.0001	0.0979	0.00001	0.0982
inHg	0.4912	3.3867	13.6195	345.936	1	25.4000	0.0339	33.8639	0.0345	34.532
mm Hg	0.0193	0.1331	0.5362	13.6195	0.0394	1	0.0013	1.3332	0.0014	1.3595
Bars	14.5040	100.000	402.180	10215.0	29.5300	750.060	1	1000	1.0197	1019.72
m Bars	0.0145	0.1000	0.4022	10.2150	0.0295	0.7501	0.001	1	0.0010	1.0197
Kg/cm^2	14.2233	97.9047	394.408	10018.0	28.9590	735.559	0.9000	980.700	1	1000
gm/cm^2	0.0142	0.0979	0.3944	10.0180	0.0290	0.7356	0.0009	0.9807	0.001	1

(1) Example:

1 mm Hg = 0.5362 inH_2O = 1.3332 mBars
97 mm Hg = 97(0.5362) = 52.0114 inH_2O
97 mm Hg = 97(1.332) = 129.3204 mBars

(2) at 60°F
(3) at 32°F

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Notes:

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Flow Monitor Selection Guide

Type	Digital Readout Flow Monitor	Plastic Self Contained	Stainless Steel Self Contained
Pages	M53 - M60	M61 - M62	M63 - M64

Type	Self Contained Inline	Remote Probe	Remote Amplifier/ Signal Processors	Accessories
Pages	M65 - M66	M67 - M70	M71 - M74	M75 - M76

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A Variety of Flow Sensors for All of Your Flow Applications

The rugged design and high repeatability of **TURCK** flow sensors bring a new level of reliability to flow monitoring. Many sensors have an enclosure rating of IP 67, in addition to a pressure resistance of 1450 psi, while other models are able to withstand aggressive materials such as acids and caustics. **TURCK** flow sensors are available as in-line models, self-contained devices, or probe styles (with a separate signal processor), and are able to perform in many different media, such as liquids, gases and airflow. **TURCK** flow monitors have a temperature gradient of 250°C/minute, which allows them to respond rapidly to changes in temperature and makes them especially suited to applications such as monitoring coolant flow to weld tips. Our wide range of flow products offer a solution to many flow applications.

Solid State with No Moving Parts

All **TURCK** flow sensors are solid-state devices that operate on the calorimetric principle. With this technology there are no moving parts that may break off or become lodged in the pipeline. Often in impure or "dirty" flow applications, mechanical devices tend to become frozen or stuck in the "open" position making **TURCK** electronic sensors a much better choice in these applications. No matter how demanding your application, you now have a solution that installs easily, performs dependably, and does not require expensive downtime.

Product Features

- All wetted parts are made of Stainless Steel, Titanium, Hastelloy or Teflon
- Omni-directional monitoring allows you to monitor the flow in any direction
- Automatic temperature compensation allows for sudden shifts in flow temperature within specified extremes

TURCK offers longer probe lengths for use in applications where there is a larger pipe, or long standoff, in many different probe style flow sensors. These probes are available in 20 millimeter increments with a maximum length of 220 millimeters. Consult factory for more information.

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TURCK: Delivering Advanced Automation Products

As the market for automation components continues to evolve and requires smarter, smaller, more robust sensing and productivity products, **TURCK** is rising to meet these challenges with a complete offering of automation components. Established as the industry's leading brand in proximity sensors, the **TURCK** name is synonymous with high-quality, rugged sensing products. Now users can expect that same quality in an expanded offering of automation products that will help improve their processes and profits.

A Digital Read Out Flow Sensor for Your Flow Monitoring Applications

The rugged design and high repeatability of **TURCK**'s Digital Read Out (DRO) flow sensor brings a new level of reliability to flow monitoring. This self-contained, fully programmable sensor allows for both flow and temperature monitoring, and features a highly visible three-digit display that can alternate between flow rate and media temperature when required.

The DRO flow monitor allows the user to program set points specific to an application, and can be programmed to perform in many different media, such as water, glycol and Galden HT110. If the fluid is a glycol/water mix, the percentage of glycol can be selected so that the monitor can adjust to each unique application without the need for factory calibration. The DRO flow monitor has an adjustable filter to smooth out a variety of erratic flow conditions, and is able to monitor changes in flow as low as 0.2 gallons per minute (GPM) or as fast as 12 GPM.

This unique flow monitor can be programmed with two different set points to reflect flow rate. It can be programmed to have one set point monitor flow and one point monitor temperature. A model with 4 set points is also available, where two points monitor flow and two points monitor temperature. And an analog current monitor is available with one set point.

The DRO flow monitor also features programmable on and off time delay functions, and allows the user to define hysteresis for both the flow and temperature set points. It is manufactured with a standard ***eurofast*** ® M12 connector, has a pressure rating of 145 psi, and can be ordered with a number of different fluid connections; making the DRO flow monitor an economical solution for your demanding flow applications.

Typical Applications:

- Weld Tip Protection
- Transformer Cooling
- Semiconductor Chamber Cooling
- Hot Roller Coolant

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Solid-State with No Intrusive or Moving Parts

The DRO flow monitor is an in-line device that approximates flow rate without disrupting the flow. Typical flow monitors often need to be installed by a specialist so that the monitor is precisely oriented to the direction of flow. These devices are also prone to material build up, which can affect the accuracy of the monitor.

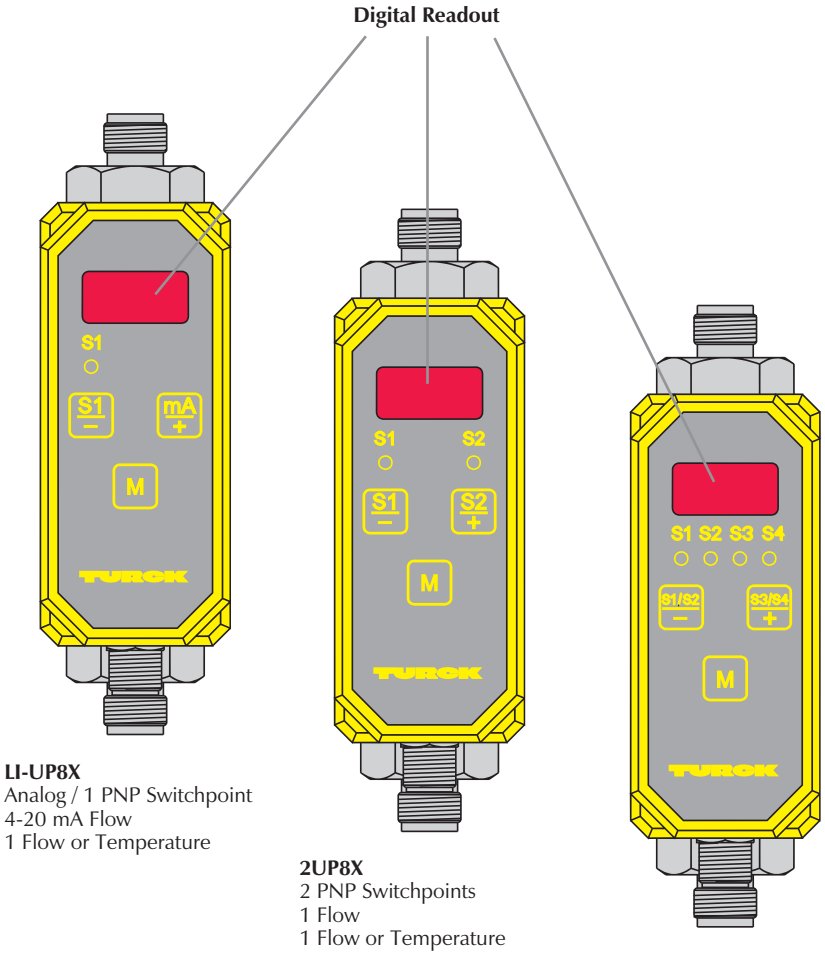
The DRO flow monitor is a solid-state device that operates on the calorimetric principle, resulting in a sensor with no moving parts that can break or become lodged in the pipeline. This technology, combined with the in-line mounting of the sensor, allows the DRO flow monitor to perform dependably in a variety of demanding applications without concern for flow restriction or expensive downtime.

Product Features

- Selectable Media Inputs
- Flow/Temperature Readout
- User Programmable Set Points
- User Programmable Keypad
- Mounts Directly Into Pipeline
- 3 Digit - Highly Visible Display
- Adjustable On and Off Delay
- Adjustable Filtering
- Low Pressure Drop
- Solid-State Device
- Stainless Steel Wetted Parts
- Password Protected Programming

Selectable Media

- Water
- Deionized Water
- Ethylene Glycol (0-70%)
- Galden® HT110
- Galden® HT135



LI-UP8X
Analog / 1 PNP Switchpoint
4-20 mA Flow
1 Flow or Temperature

2UP8X
2 PNP Switchpoints
1 Flow
1 Flow or Temperature

4UP8X
4 PNP Switchpoints
2 Flow
2 Temperature

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Flow Monitor Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

Insertion Probe Sensor

FCS - N1/2 A4P - AP8X - H1141 Special Option Codes

Sensor Type

FCS = Insertion Probe Flow Sensor
FCTS = Flow Sensor with Temperature Alarm

Fluid Connection

N1/2 = 1/2 NPT
N3/4 = 3/4 NPT
G1/4 = G1/4 (1/4 BSPP)
G1/2 = G1/2 (1/2 BSPP)
GL1/2 = G1/2 (1/2 BSPP with additional threading)
50 = 1.5 inch Tri-clamp

Housing

A4 = 316 Stainless Steel Housing and Probe
A2P = 303 Stainless Steel Probe with PBT Housing
A4P = 316 Stainless Steel Probe with PBT Housing
AL = 303 Stainless Steel Probe
HB = Hastelloy B
HC22 = Hastelloy C22
T = Dyflor (PVDF)
TN = Titanium w/B3 Coating

Circuitry

2AP8X = Dual N.O. PNP
AP8X = N.O. PNP
AN8X = N.O. NPN
ARX = N.O. Relay
RRX = N.C. Relay
LIX = 4-20 mA
NA = Remote (requires MK or MS 96)
NAEX = Intrinsically Safe

Electrical Connection

H1141 = ***eurofast*** ®
H1140 = ***eurofast***
B1151 = ***minifast*** ®
B3141 = ***microfast*** ®
B3151 = ***microfast***

Special Option Codes

/A

Modifier

/A = Airflow

/L

Probe Length

/L = Probe Length in mm

/D..

D Number

/D100 = +120°C (+248°F)
/D500 = 500 Bar Rating

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Flow Monitor Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

Inline Flow Sensor

FCI	-	TC	D04	A4P	-	AP8X	-	H1141	Special Option Codes

Sensor Type

FCI = Inline Flow Sensor

Fluid Connection

TC = Tubing Connection
N1/8 = 1/8 NPT
N1/4 = 1/4 NPT
N3/4 = 3/4 NPT
Blank = G1/4

Inline Diameter (millimeters)

D03 = 3 mm
D04 = 4 mm
D06 = 6 mm
D08 = 8 mm
D09 = 9 mm
D10 = 10 mm
D11 = 11 mm
D20 = 20 mm

Housing

A4 = 316 Stainless Steel
A4P = 316 Stainless Steel with PBT Housing
CTP = Ceramic / PTFE / PBT
HC22 = Hastelloy C22

Circuitry

AP8X = N.O. PNP
AN8X = N.O. NPN
ARX = N.O. Relay
RRX = N.C. Relay
LIX = 4-20 mA
NA = Remote (requires MK or MS 96)
NAEX = Intrinsically Safe
2ARX = Dual N.O. Relay

Electrical Connection

H1141 = ***eurofast*** ®, 4-pin
H1140 = ***eurofast***, 4-pin
H1160 = ***eurofast***, 6-pin

Special Option Codes

/D..

D Number

/D038 = 3/8 in. Tubing Connection
/D201 = 3/8 in. Tubing Connection, Digital Readout, water or water/glycol mix
/D203 = 3/8 in. Tubing Connection, Digital Readout, water only
/D205 = 1/2 in. Tubing Connection, Digital Readout, water or water/glycol mix
/D209 = 3/4 in. Tubing Connection, Digital Readout, water or water/glycol mix

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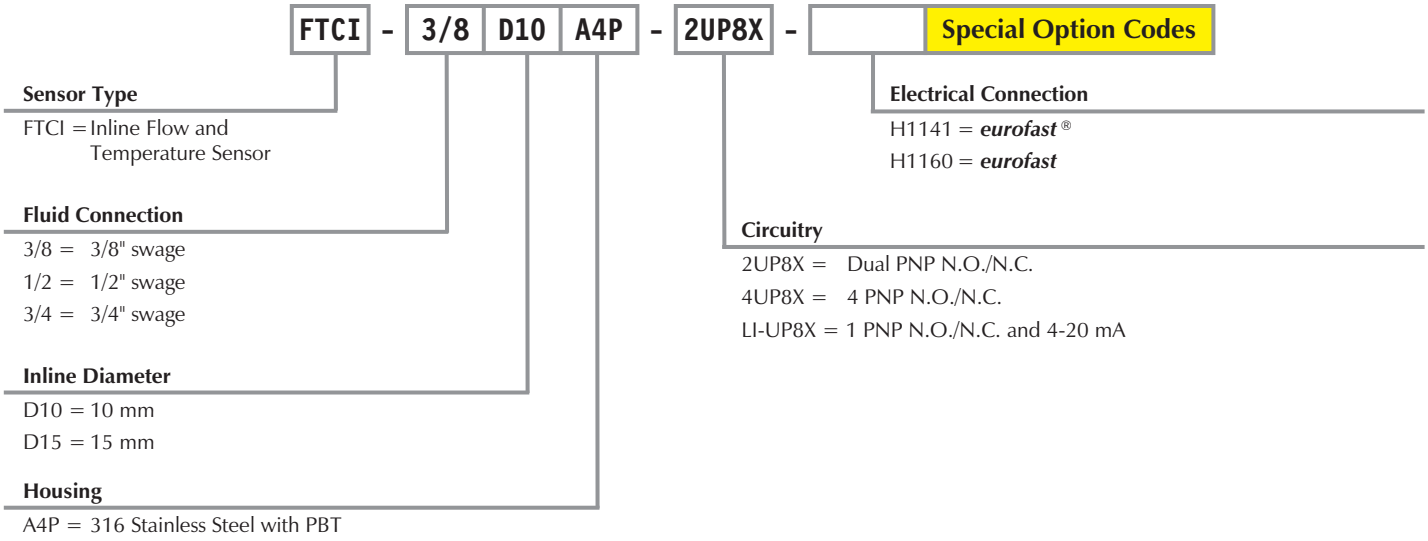
Flow Monitor Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.



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DRO Flow - DC

Time Delay Before Availability . . . . . 2-15 seconds (8 seconds typical)
Response Time . . . . . 0.5-3 seconds
Maximum Temperature Gradient . . . . . 250°C / min.

Plastic Self Contained Insertion Probe - DC

Time Delay Before Availability . . . . . 2-15 seconds (8 seconds typical)
Response Time . . . . . 1-15 seconds (2 seconds typical)
Maximum Temperature Gradient . . . . . 250°C / min.

Stainless Steel Self Contained Insertion Probe - DC

Time Delay Before Availability . . . . . 2-15 seconds (8 seconds typical)
Response Time . . . . . 1-15 seconds (2 seconds typical)
Maximum Temperature Gradient . . . . . 250°C / min.

Self Contained Inline - DC

Time Delay Before Availability . . . . . 5-15 seconds (8 seconds typical)
Response Time . . . . . 0.5-3 seconds
Maximum Temperature Gradient . . . . . 400°C / min.

Remote Insertion Probe - DC

Time Delay Before Availability . . . . . 2-15 seconds (8 seconds typical)
Response Time . . . . . 1-13 seconds (2 seconds typical)
Maximum Temperature Gradient . . . . . 250°C / min.

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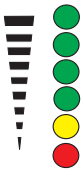
Set-up – Operating and Display Functions

Self Contained Insertion Probe

6 LEDs for flow rate status indication:



4 x green: degree of set point overrange (1, 2, 3, or 4 green LEDs are lit)

1 x yellow: flow is at/above set point
1 x red: flow is below set point

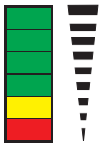
≥20 mA
>16 mA
>12 mA
>8 mA
>4 mA
≤4 mA

Sealing screw (on front of device) covers the potentiometer for switch point adjustment

Potentiometer for adjustment of flow switch point (with analog devices the potentiometer is used to set the measuring range)

Processor MK96

LED display for flow rate status indication:



4 x green: degree of set point overrange (1, 2, 3, or 4 green LEDs are lit)

1 x yellow: flow is at/above set point
1 x red: flow is below set point

≥20 mA
>16 mA
>12 mA
>8 mA
>4 mA
≤4 mA

Potentiometer (coarse) for operating range adjustment

Potentiometer for fine adjustment of switch point value

Analog versions

Potentiometer for adjusting the 4 mA to the medium

Potentiometer for adjusting the span to 20 mA (not all applications may reach 20 mA)

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Set-up – Operating and Display Functions

Processor MS96

6 LEDs for flow rate status indication:

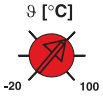
4 x green: degree of set point overrange (1, 2, 3, or 4 green LEDs are lit)

1 x yellow: flow is at/above set point
1 x red: flow is below set point

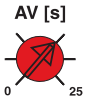
Potentiometer (coarse) for operating range adjustment

Potentiometer for fine adjustment of switch point value

Red LED illuminates when flow is at or above preset temperature



Potentiometer for temperature set-point adjustment (from -20°C to +100°C)



Potentiometer to set switch-off delay time which affects the flow monitoring output (terminals 6 - 8)

Self Contained Inline

6 LEDs for flow rate status indication:

4 x green: degree of set point overrange (1, 2, 3, or 4 green LEDs are lit)

1 x yellow: flow is at/above set point
1 x red: flow is below set point

≥20 mA
>16 mA
>12 mA
>8 mA
>4 mA
≤4 mA

Potentiometer for adjustment of flow switch point

Analog versions

Potentiometer for adjusting the 4 mA to the medium

Potentiometer for adjusting the span to 20 mA (not all applications may reach 20 mA)

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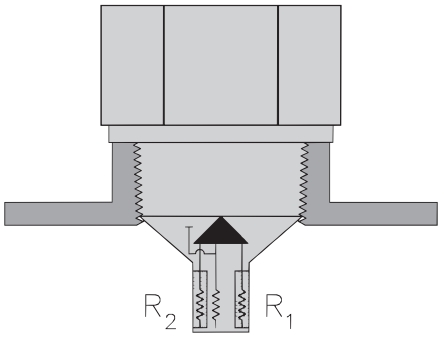
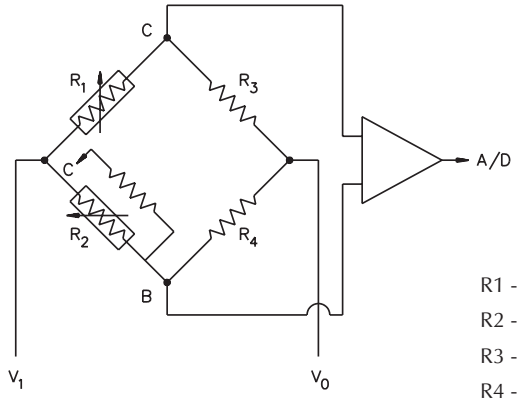
Principles of Operation

TURCK flow controls use no mechanical parts to monitor the flow speed of liquids and gasses. These solid state flow switches operate on the calorimetric principle: the measure of heat transfer from an object to a fluid.

The **TURCK** solid state flow monitors use two temperature dependent resistors similar to RTDs. One of the resistors (R1) monitors the temperature of the surrounding fluid. The other resistor (R2) is connected to a heating element. The heating element heats R2 to a temperature that is slightly above the surrounding fluid temperature. When there is no fluid flow, the difference in resistance between R1 and R2 is a fixed value. As fluid moves over the flow monitor probe, heat is conducted away from the heating element causing the temperature on R2 to decrease. This heat loss changes the difference in resistance between R1 and R2.

The resistance difference is measured by a Wheatstone bridge circuit. A change in resistance difference causes a change in the bridge voltage. The flow set point is determined by comparing the bridge voltage to a reference voltage.





R1 - Monitors fluid temperature
R2 - Heated by heating element
R3 - Internal resistor
R4 - Internal resistor

Operating Range

Heat loss on the heating element will likewise determine the sensitivity of the monitor. The heat loss becomes a function of flow velocity and thermal conductivity of the fluid. The lower the thermal conductivity of the fluid, the faster the fluid has to flow to be detected.

Flow monitor operating ranges vary from one type of fluid to the other. These operating ranges are proportional to the speed of the fluid that the monitor can detect.

At the same flow rate compared to water, air can conduct away from the heating element only a fraction of the heat. For example, for A2/A4 stainless steel insertion type monitors the operating range for air flow is from 2 to 30 m/s, and for water from 1 to 150 cm/s. For oil, the range is between the 3 to 300 cm/sec.

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Temperature Gradient

The temperature gradient of a fluid indicates the change in fluid temperature within a specified time (unit of measure: °C (°F)/min). The temperature gradient of a device defines the maximum temperature rise that can be compensated by the monitor without malfunction.

The monitor has the ability to compensate for sudden thermal shifts within the specified extremes. Sudden temperature changes exceeding the specified tolerances (temperature error) may cause the device to malfunction. Only when the monitor has adapted to the new temperature, will it provide an accurate measurement.

The temperature gradient for **TURCK** flow controls is 250°C/min. - 15 times higher than standard flow devices which makes for a particularly accurate switch-point stability during variations in temperature.

The sensitivity to temperature rise of **TURCK** flow monitors has been reduced to a minimum (<12 s) and can accurately be determined in advance. This characteristic is the result of the optimum calorimetric principle and special monitors construction.

Time Delay Before Availability

The availability is the time required, after power has been applied, for the flow monitor to reach a stable operating condition. The availability provides for the time needed to energize the flow monitor and the time needed for the flow monitor to stabilize at the fluid's temperature.

Response Time

The switch on time is the time required for the flow monitor to detect and indicate that the flow speed is increasing. The switch off time is the time required for the flow monitor to detect and indicate that the flow speed is decreasing.

Effects of Housing Material

The switch on time, the switch off time and the temperature gradient of the flow monitor is dependent on the housing material. The Teflon ® flow monitors have a low thermal conductivity causing a slower response time to fluid temperature changes and to changes in the flow speed.

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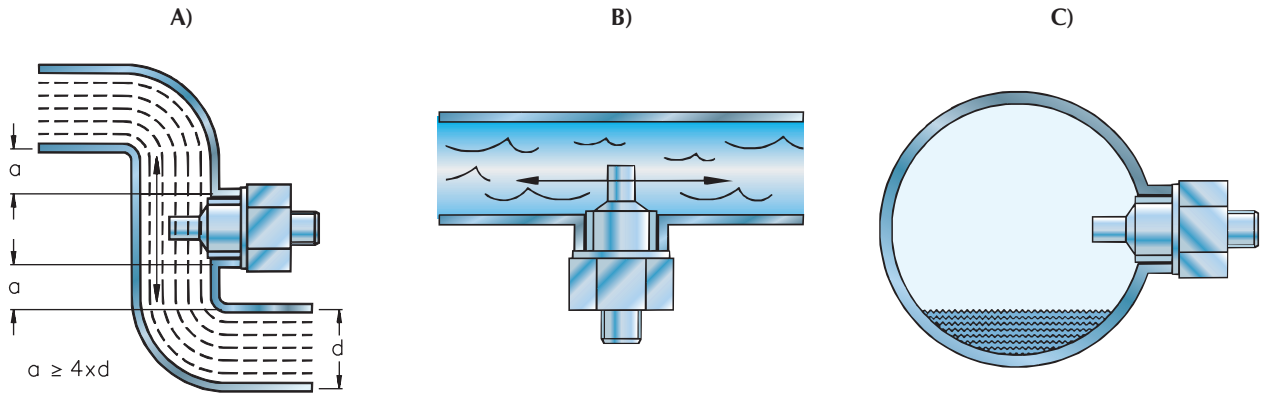
Mounting Instructions

Areas of turbulent flow occur whenever there is a change in the pipe construction (e.g. pipe inlets, pipe outlets, pipe elbows). To avoid an inaccurate output, the following guidelines should be observed:

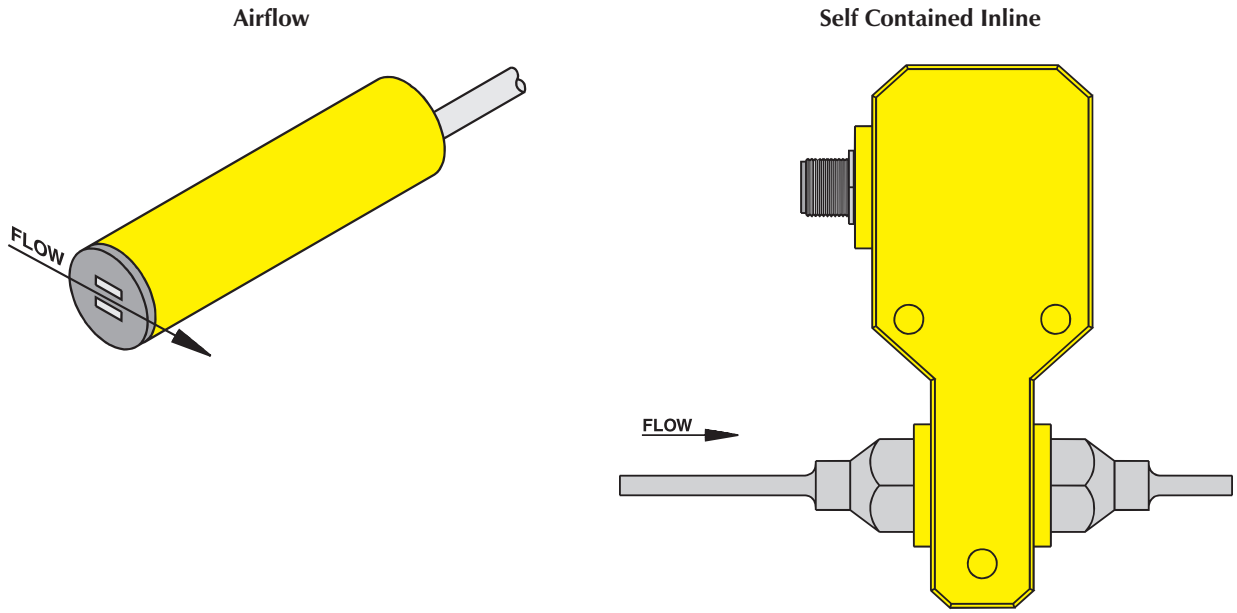
A) Pay special attention to the minimum distance (a³4xd) to tube bend and intersections.

B) Flow monitor must be mounted from below in applications where medium does not completely fill the pipe.

C) If a possibility of deposit build-up exists, mount the flow monitor at the side of the pipe.



Proper Orientation for TURCK Flow Monitors



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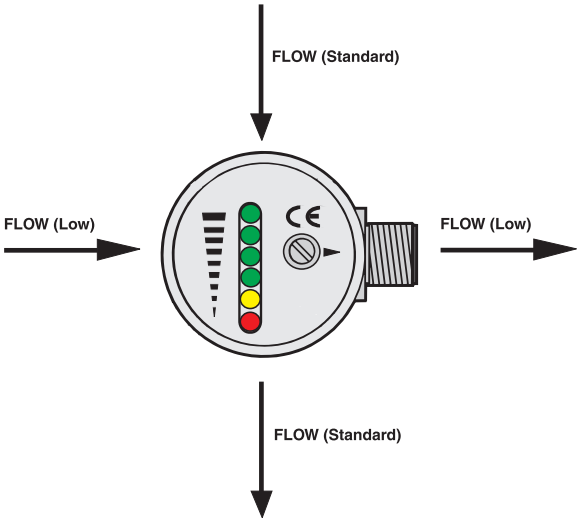
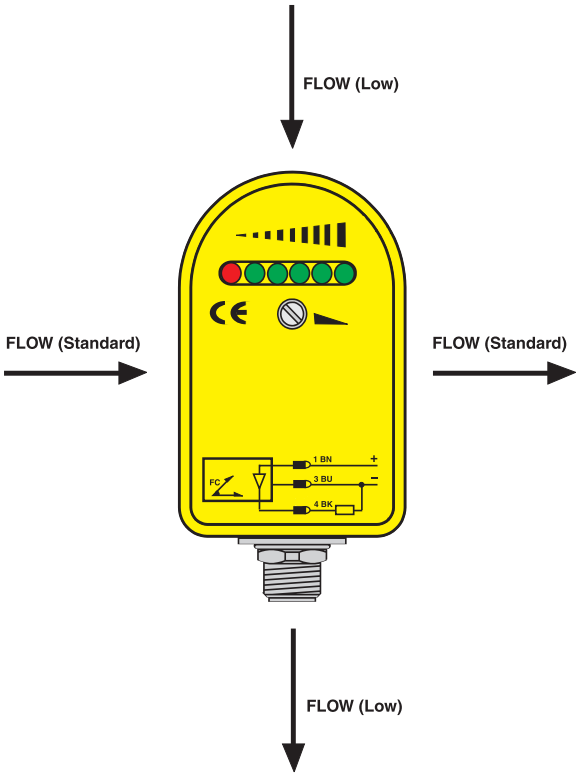
Proper Orientation for TURCK Flow Monitors

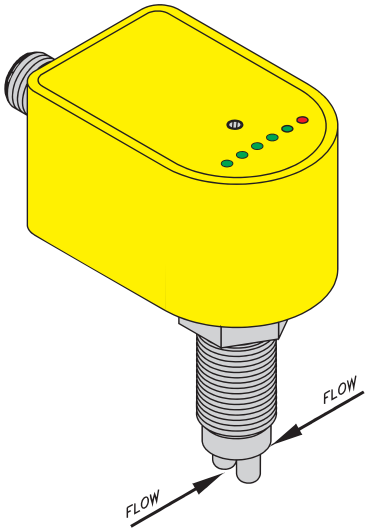
Self-Contained Metal Housing



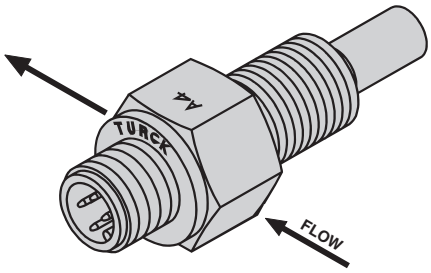
Self-Contained Plastic Housing



Dual Tipped



Remote Insertion Probe



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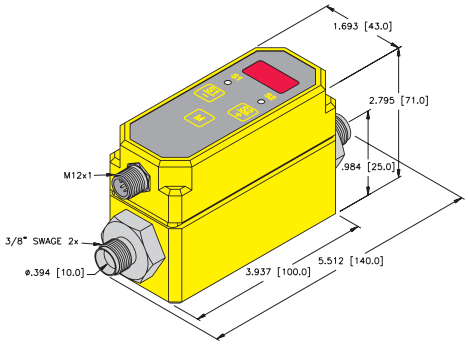
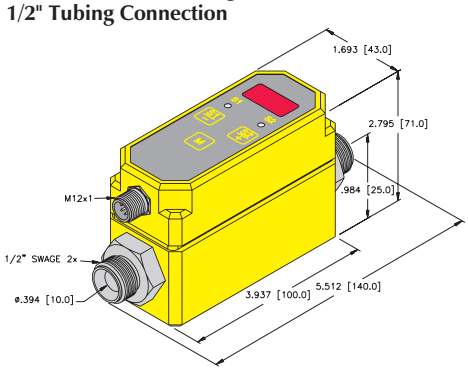
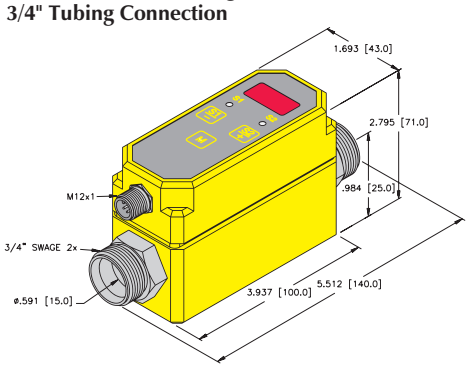
Housing Style	Part Number	ID Number	Flow Detection Range (GPM)	Temperature Monitoring Range (°F)	Output 1: Flow	Output 2: Temperature or Flow
Inline Flow Monitor, Digital Readout, 3/8" Tubing Connection 	FTCI-3/8D10A4P-2UP8X-H1141	M6870806	0.2 to 4	+14 to +194	**PNP N.O./N.C.**	**PNP N.O./N.C.**
Inline Flow Monitor, Digital Readout, 1/2" Tubing Connection 	FTCI-1/2D10A4P-2UP8X-H1141	M6870807	0.2 to 5	+14 to +194	**PNP N.O./N.C.**	**PNP N.O./N.C.**
Inline Flow Monitor, Digital Readout, 3/4" Tubing Connection 	FTCI-3/4D15A4P-2UP8X-H1141	M6870808	1 to 12	+14 to +194	**PNP N.O./N.C.**	**PNP N.O./N.C.**

Compatible Fluids: Water, Deionized Water, Ethylene Glycol (0-70%), Galden® HT110, Galden® HT135

Material

Housing	PBT
Wetted Parts	316 Ti Stainless Steel
O-Ring	FKM

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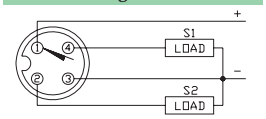
Voltage	Current Consumption (mA)	Switching Current	Pressure Rating (psi)	Fluid Connection	Operating Temp. (°C) (ambient)	Protection	Mating Cordset	Wiring Diagram #	Wiring Diagrams
21.6-26.4 VDC	≤100	200	290	3/8" swage	0 to +60	IP 65	RK 4.4T-*	1	Diagram 1 
21.6-26.4 VDC	≤100	200	290	1/2" swage	0 to +60	IP 65	RK 4.4T-*	1	
21.6-26.4 VDC	≤100	200	290	3/4" swage	0 to +60	IP 65	RK 4.4T-*	1	

* Length in Meters.

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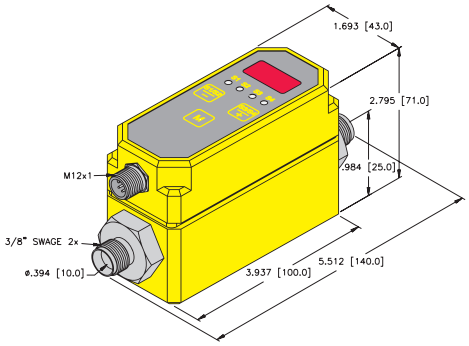
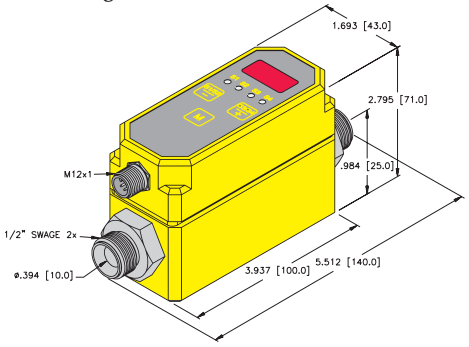
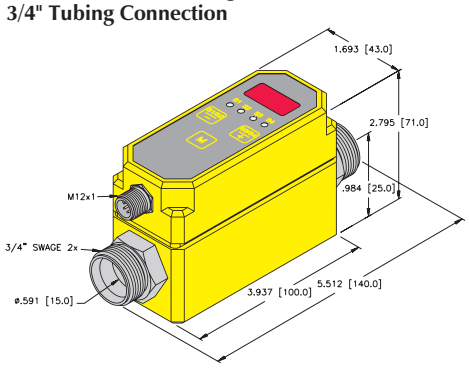
Housing Style	Part Number	ID Number	Flow Detection Range (GPM)	Temperature Monitoring Range (°F)	Output 1& 2: Flow	Output 3 & 4: Temperature
Inline Flow Monitor, Digital Readout, 3/8" Tubing Connection 	FTCI-3/8D10A4P-4UP8X-H1160	M6870814	0.2 to 4	+14 to +194	**PNP N.O./N.C.**	**PNP N.O./N.C.**
Inline Flow Monitor, Digital Readout, 1/2" Tubing Connection 	FTCI-1/2D10A4P-4UP8X-H1160	M6870815	0.2 to 5	+14 to +194	**PNP N.O./N.C.**	**PNP N.O./N.C.**
Inline Flow Monitor, Digital Readout, 3/4" Tubing Connection 	FTCI-3/4D15A4P-4UP8X-H1160	M6870813	1 to 12	+14 to +194	**PNP N.O./N.C.**	**PNP N.O./N.C.**

Compatible Fluids: Water, Deionized Water, Ethylene Glycol (0-70%), Galden® HT110, Galden® HT135

Material

Housing	PBT
Wetted Parts	316 Ti Stainless Steel
O-Ring	FKM

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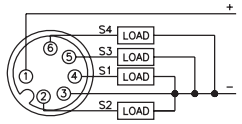
Voltage	Current Consumption (mA)	Switching Current	Pressure Rating (psi)	Fluid Connection	Operating Temp. (°C) (ambient)	Protection	Mating Cordset	Wiring Diagram #	Wiring Diagrams
21.6-26.4 VDC	≤100	200	290	3/8" swage	0 to +60	IP 65	RKC 6T-*	1	Diagram 1 
21.6-26.4 VDC	≤100	200	290	1/2" swage	0 to +60	IP 65	RKC 6T-*	1	
21.6-26.4 VDC	≤100	200	290	3/4" swage	0 to +60	IP 65	RKC 6T-*	1	

* Length in Meters.

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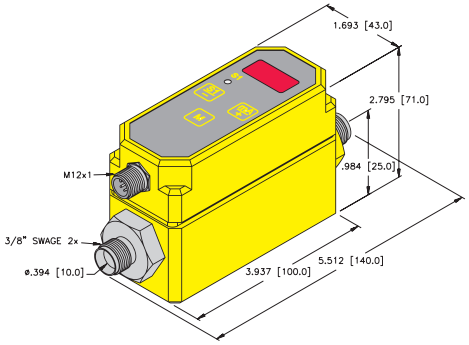
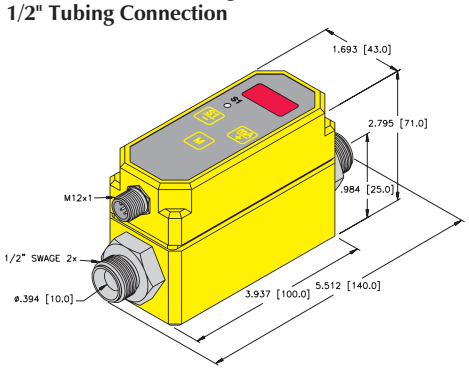
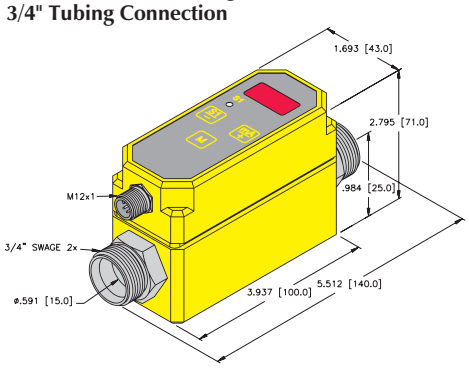
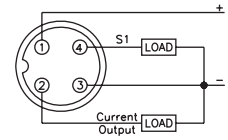
Housing Style	Part Number	ID Number	Flow Detection Range (GPM)	Temperature Monitoring Range (°F)	Output 1: Temperature	Output 2: Flow
Inline Flow Monitor, Digital Readout, 3/8" Tubing Connection 	FTCI-3/8D10A4P-LI-UP8X-H1141	M6870809	0.2 to 4	+14 to +194	**PNP N.O./N.C.**	**Analog 4-20 mA**
Inline Flow Monitor, Digital Readout, 1/2" Tubing Connection 	FTCI-1/2D10A4P-LI-UP8X-H1141	M6870810	0.2 to 5	+14 to +194	**PNP N.O./N.C.**	**Analog 4-20 mA**
Inline Flow Monitor, Digital Readout, 3/4" Tubing Connection 	FTCI-3/4D15A4P-LI-UP8X-H1141	M6870811	1 to 12	+14 to +194	**PNP N.O./N.C.**	**Analog 4-20 mA**

Compatible Fluids: Water, Deionized Water, Ethylene Glycol (0-70%), Galden® HT110, Galden® HT135

Material

Housing	PBT
Wetted Parts	316 Ti Stainless Steel
O-Ring	FKM

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Voltage	Current Consumption (mA)	Switching Current	Pressure Rating (psi)	Fluid Connection	Operating Temp. (°C) (ambient)	Protection	Mating Cordset	Wiring Diagram #	Wiring Diagrams
21.6-26.4 VDC	≤100	200	290	3/8" swage	0 to +60	IP 65	RK 4.4T-*	1	Diagram 1 
21.6-26.4 VDC	≤100	200	290	1/2" swage	0 to +60	IP 65	RK 4.4T-*	1	
21.6-26.4 VDC	≤100	200	290	3/4" swage	0 to +60	IP 65	RK 4.4T-*	1	

* Length in Meters.

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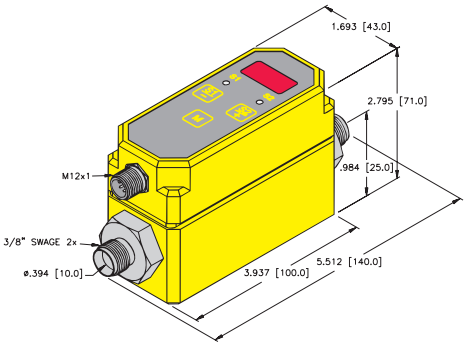
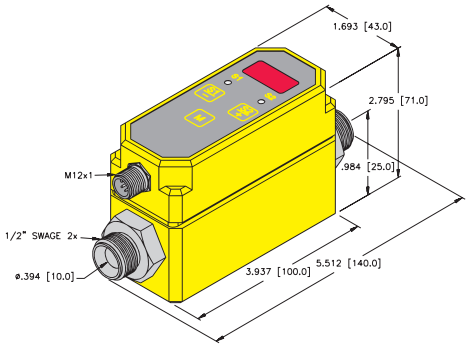
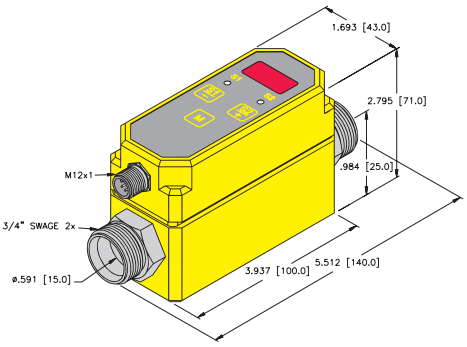
Housing Style	Part Number	ID Number	Flow Detection Range (water)	Flow Detection Range (gly/col/water)	Temperature Monitoring Range (°F)	Output
Inline Flow Monitor, Digital Readout, 3/8" Tubing Connection 	FCI-D10A4P-2ARX-H1160/D201	M6870679	0.2 - 4 GPM	0.2 - 4 GPM	0 to +212	**Dual Relay N.O.**
	FCI-D10A4P-2ARX-H1160/D203	M6870680	0.2 - 4 GPM	N/A (Water only)	0 to +212	**Dual Relay N.O.**
Inline Flow Monitor, Digital Readout, 1/2" Tubing Connection 	FCI-D10A4P-2ARX-H1160/D205	M6870681	0.2 - 5 GPM	0.2 - 5 GPM	0 to +212	**Dual Relay N.O.**
Inline Flow Monitor, Digital Readout, 3/4" Tubing Connection 	FCI-D15A4P-2ARX-H1160/D209	M6870684	1 - 12 GPM	1 - 12 GPM	0 to +212	**Dual Relay N.O.**

Material

Wetted Parts:	316 Stainless Steel
Housing:	PBT
O-ring:	FKM

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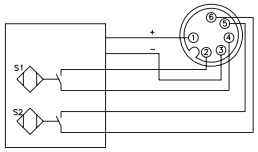
Voltage	Load Current/ Analog Load	Pressure Rating (psi)	Fluid Connection	Operating Temp. (°C) (ambient)	Operating Temp. (°C) (fluid)	Protection	Mating Cordset	Wiring Diagram #	Wiring Diagrams
21.6-26.4 VDC	≤0.5 A at 30 VDC ≤1 A at 36 VAC	290	3/8" swage	0 to +60	-10 to +95	IP 65	RKC 6T-*	1	**Diagram 1** 
21.6-26.4 VDC	≤0.5 A at 30 VDC ≤1 A at 36 VAC	290	3/8" swage	0 to +60	0 to +80	IP 65	RKC 6T-*	1	
21.6-26.4 VDC	≤0.5 A at 30 VDC ≤1 A at 36 VAC	290	1/2" swage	0 to +60	-10 to +95	IP 65	RKC 6T-*	1	
21.6-26.4 VDC	≤0.5 A at 30 VDC ≤1 A at 36 VAC	290	3/4" swage	0 to +60	-10 to +95	IP 65	RKC 6T-*	1	

* Length in Meters.

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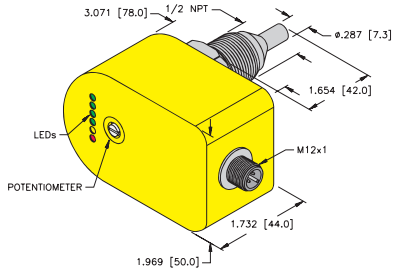
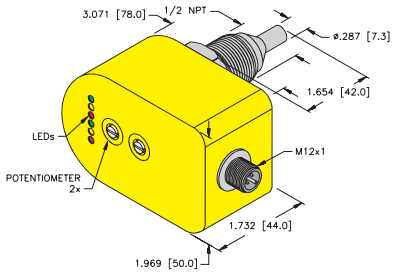
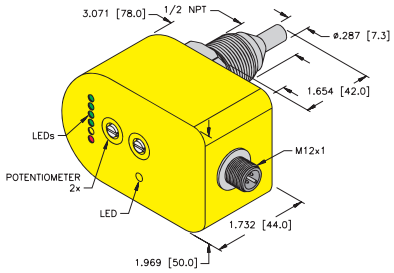
Housing Style	Part Number	ID Number	Flow Detection Range (water)	Flow Detection Range (oil)	Output
Self-Contained Plastic Housing 	FCS-N1/2A4P-AP8X-H1141	M6871032	1-150 cm/sec.	3-300 cm/sec.	**PNP N.O.**
Self-Contained Plastic Housing, Dual Set points 	FCS-N1/2A4P-2AP8X-H1140	M6871009	1-150 cm/sec.	3-300 cm/sec.	**Dual PNP N.O.**
Self-Contained Plastic Housing, Flow and Temperature Set points 	FTCS-N1/2A4P-2AP8X-H1140	M6871036	1-150 cm/sec. Temperature 0 to +80°C	3-300 cm/sec. Temperature 0 to +80°C	**Dual PNP N.O.**

Additional specifications on pages M46.
Accessories on page M75 - M76.
Technical data on pages M77 - M79.

Material

Housing	PBT
Cable Connector	303 Stainless Steel
Wetted Parts	316 Ti Stainless Steel

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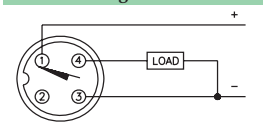
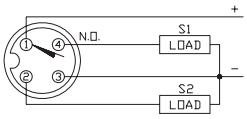
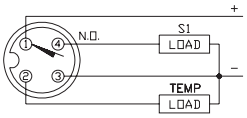
Voltage	Current Consumption (mA)	Switching Current/ Analog Load	Pressure Rating (psi)	Fluid Connection	Operating Temp. (°C) (ambient)	Operating Temp. (°C) (fluid)	Protection	Mating Cordset	Wiring Diagram #	Wiring Diagrams
19.2-28.8 VDC	≤60 mA	≤400 mA	1450	1/2 NPT	-25 to +70	-20 to +80	IP 65	RK 4T-*	1	**Diagram 1**  **Diagram 2**  **Diagram 3** 
19.2-28.8 VDC	≤60 mA	≤400 mA	1450	1/2 NPT	-25 to +70	-20 to +80	IP 65	RK 4.4T-*	2	
19.2-28.8 VDC	≤60 mA	≤400 mA	1450	1/2 NPT	-25 to +70	-20 to +80	IP 65	RK 4.4T-*	3	

* Length in meters.

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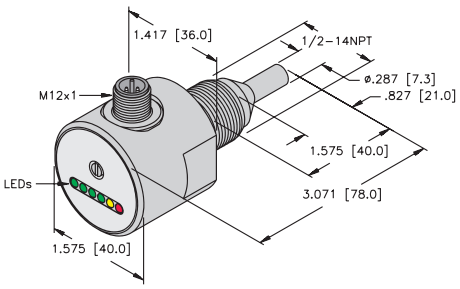
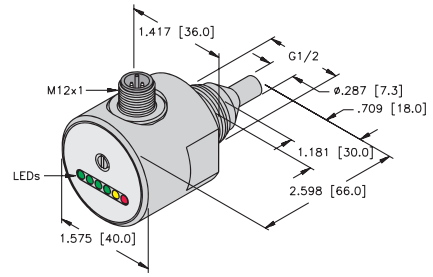
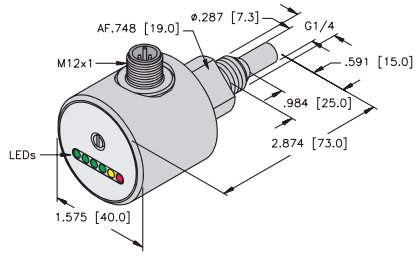
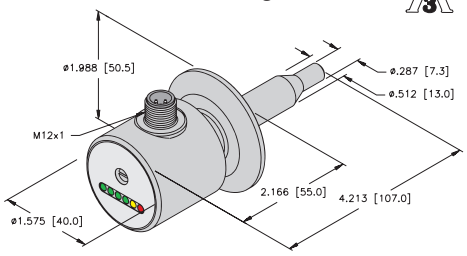
Housing Style	Part Number	ID Number	Flow Detection Range (water)	Flow Detection Range (oil)	Output
Self-Contained 316 Stainless Steel Housing 	FCS-N1/2A4-AP8X-H1141	M6871004	1-150 cm/sec.	3-300 cm/sec.	**PNP N.O.**
	FCS-N1/2A4-AN8X-H1141	M6871010	1-150 cm/sec.	3-300 cm/sec.	**NPN N.O.**
	FCS-N1/2A4-ARX-H1140	M6871035	1-150 cm/sec.	3-300 cm/sec.	**Relay N.O.**
Self-Contained 316 Stainless Steel Housing 	FCS-G1/2A4-AP8X-H1141	M6870004	3-300 cm/sec.	3-300 cm/sec.	**PNP N.O.**
Self-Contained 316 Stainless Steel Housing 	FCS-G1/4A4-ARX-H1140	M6870102	3-300 cm/sec.	3-300 cm/sec.	**Relay N.O.**
DC Self Contained Sanitary, 316L Stainless Steel Housing 	FCS-50A4-AP8X-H1141/D014	M6872025	1-150 cm/sec.	3-300 cm/sec.	**PNP N.O.**

Additional specifications on pages M46.
Accessories on page M75 - M76.
Technical data on pages M77 - M79.

Material

Cable Connector	303 Stainless Steel
Wetted Parts	316 Ti Stainless Steel

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Voltage	Current Consumption (mA)	Switching Current /Analog Load	Pressure Rating (psi)	Fluid Connection	Operating Temp. (°C) (ambient)	Operating Temp. (°C) (fluid)	Protection	Mating Cordset	Wiring Diagram #
19.2-28.8 VDC	≤70 mA	≤400 mA	1450	1/2 NPT	-25 to +80	-20 to +80	IP 67	RK 4T-*	1
19.2-28.8 VDC	≤70 mA	≤400 mA	1450	1/2 NPT	-25 to +80	-20 to +80	IP 67	RK 4T-*	2
19.2-28.8 VDC	≤70 mA	≤1 A at 60 VDC	1450	1/2 NPT	-25 to +80	-20 to +80	IP 67	RK 4.4T-*	3
19.2-28.8 VDC	≤70 mA	≤400 mA	1450	G 1/2	-25 to +80	-20 to +80	IP 67	RK 4T-*	1
19.2-28.8 VDC	≤70 mA	≤1 A at 60 VDC	1450	G 1/4	-25 to +80	-20 to +80	IP 67	RK 4.4T-*	3
21.6-26.4 VDC	≤70 mA	≤400 mA	1450	1.5 in. Tri-clamp	-20 to +80 **(+100)	20 to +80	IP 67	RKV 4T-*	1

Wiring Diagrams

Diagram 1

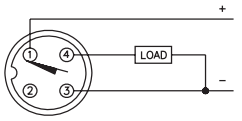


Diagram 2

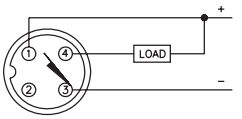
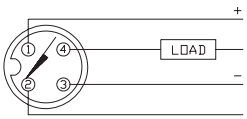


Diagram 3



* Length in meters.
** Sensor may be heated to 100°C for 10 minutes without damage.

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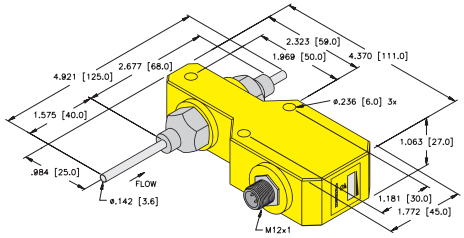
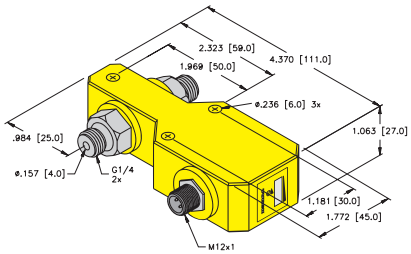
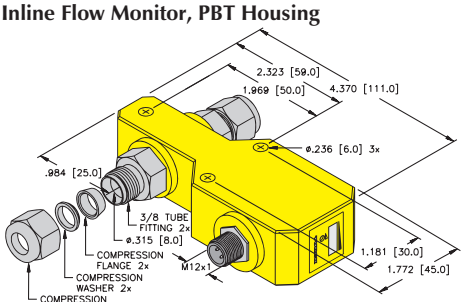
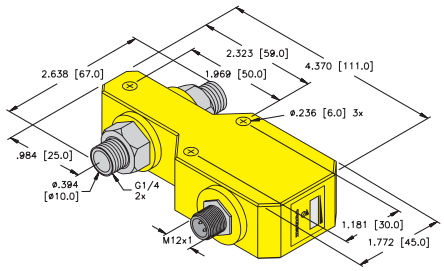
Housing Style	Part Number	ID Number	Flow Detection Range (water)	Flow Detection Range (oil)	Output
Inline Flow Monitor, PBT Housing 	FCI-TCD04A4P-ARX-H1140	M6870626	1-200 ml/min.	Consult Factory	**Relay N.O.**
	FCI-TCD04A4P-AP8X-H1141	M6870656	1-200 ml/min.	Consult Factory	**PNP N.O.**
Inline Flow Monitor, PBT Housing 	FCI-D04A4P-AP8X-H1141	M6870640	15-1000 ml/min.	Consult Factory	**PNP N.O.**
Inline Flow Monitor, PBT Housing 	FCI-D08A4P-ARX-H1140/D038	M6870647	100-6000 ml/min.	Consult Factory	**Relay N.O.**
Inline Flow Monitor, PBT Housing 	FCI-D10A4P-AP8X-H1141	M6870642	100-6000 ml/min.	Consult Factory	**PNP N.O.**
	FCI-D10A4P-ARX-H1140	M6870644	100-6000 ml/min.	Consult Factory	**Relay N.O.**

Additional specifications on pages M46.
Accessories on page M75 - M76.
Technical data on pages M77 - M79.

Material

Housing	PBT
Cable Connector	303 Stainless Steel
Wetted Parts	316 Ti Stainless Steel

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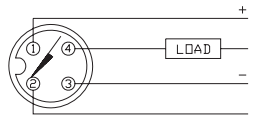
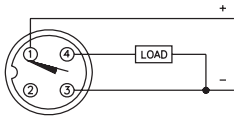
Voltage	Current Consumption (mA)	Switching Current/ Analog Load	Pressure Rating (psi)	Fluid Connection	Operating Temp. (°C) (ambient)	Operating Temp. (°C) (fluid)	Protection	Mating Cordset	Wiring Diagram #	Wiring Diagrams
21.6-26.4 VDC	≤50 mA	≤1 A at 30 VDC ≤1 A at 36 VAC	14.5	4 mm Tube	0 to +60	0 to +60	IP 67	RK 4.4T-*	1	Diagram 1
21.6-26.4 VDC	≤50 mA	≤200 mA	14.5	4 mm Tube	0 to +60	0 to +60	IP 67	RK 4T-*	2	Diagram 2
21.6-26.4 VDC	≤50 mA	≤200 mA	290	G 1/4	0 to +60	0 to +80	IP 67	RK 4T-*	2	
21.6-26.4 VDC	≤50 mA	≤1 A at 30 VDC ≤1 A at 36 VAC	290	3/8 Compression	0 to +60	0 to +80	IP 67	RK 4.4T-*	1	
21.6-26.4 VDC	≤50 mA	≤200 mA	290	G 1/4	0 to +60	0 to +80	IP 67	RK 4T-*	2	
21.6-26.4 VDC	≤50 mA	≤1 A at 30 VDC ≤1 A at 36 VAC	290	G 1/4	0 to +60	0 to +80	IP 67	RK 4.4T-*	1	





* Length in meters.

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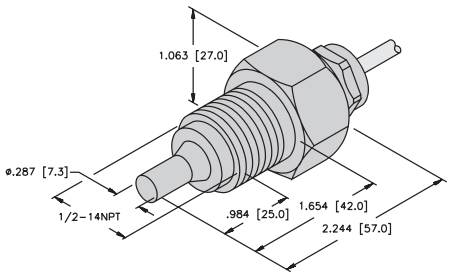
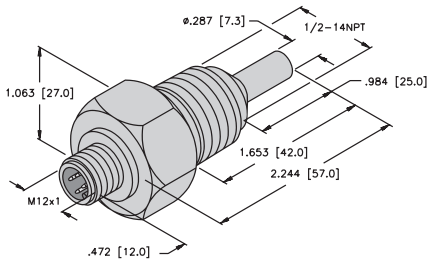
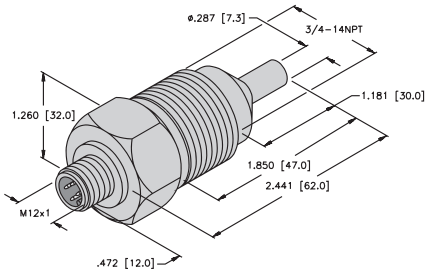
Housing Style	Part Number	ID Number	Flow Detection Range (water)	Flow Detection Range (oil)	Output
Remote Insertion Probe, Stainless Steel Housing 	FCS-N1/2A4-NA	M6871309	1-150 cm/sec.	3-300 cm/sec.	**Remote Amplifier**
Remote Insertion Probe, Stainless Steel Housing 	FCS-N1/2A4-NA-H1141	M6871303	1-150 cm/sec.	3-300 cm/sec.	**Remote Amplifier**
Remote Insertion Probe, Stainless Steel Housing 	FCS-N3/4A4-NA-H1141	M6871304	1-150 cm/sec.	3-300 cm/sec.	**Remote Amplifier**

Additional specifications on pages M46.
Accessories on page M75 - M76.
Technical data on pages M77 - M79.

Material

Housing	316 Ti Stainless Steel
Cable Connector	303 Stainless Steel
Wetted Parts	316 Ti Stainless Steel

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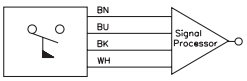
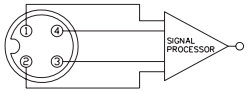
Voltage	Switching Current /Analog Load	Pressure Rating (psi)	Fluid Connection	Operating Temp. (°C) (ambient)	Operating Temp. (°C) (fluid)	Protection	Mating Cord, Cable Length/Jacket	Wiring Diagram #	Wiring Diagrams
Remote Amplifier	Remote Amplifier	1450	1/2 NPT	-25 to +80	-25 to +80	IP 67	2M/PVC	1	**Diagram 1**  **Diagram 2** 
Remote Amplifier	Remote Amplifier	1450	1/2 NPT	-25 to +80	-25 to +80	IP 67	RK 4.4T-*	2	
Remote Amplifier	Remote Amplifier	1450	3/4 NPT	-25 to +80	-25 to +80	IP 67	RK 4.4T-*	2	

* Length in meters.

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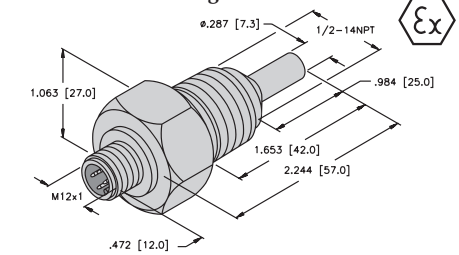
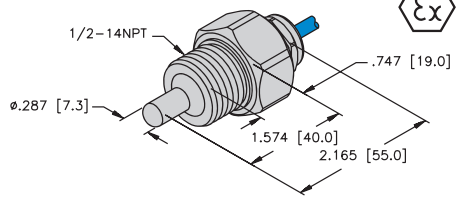
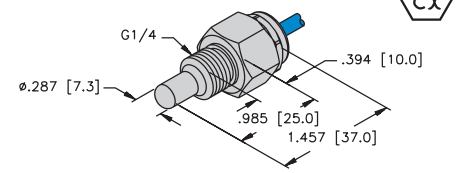
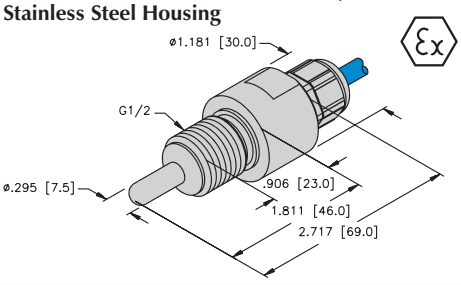
Housing Style	Part Number	ID Number	Flow Detection Range (water)	Flow Detection Range (oil)	Output
Remote Insertion Probe, Intrinsically Safe, Stainless Steel Housing 	FCS-N1/2A4-NAEX-H1141	M6871322	1-100 cm/min.	3-200 cm/min.	**Remote Amplifier**
Remote Insertion Probe, Intrinsically Safe, Stainless Steel Housing 	FCS-N1/2A4-NAEX	M6871423	1-100 cm/min.	3-200 cm/min.	**Remote Amplifier**
Remote Insertion Probe, Intrinsically Safe, Stainless Steel Housing 	FCS-G1/4A4-NAEX	M6870315	1-100 cm/min.	3-200 cm/min.	**Remote Amplifier**
Remote Insertion Probe, Intrinsically Safe, Stainless Steel Housing 	FCS-GL1/2A4-NAEX/D500	M6870431	1-100 cm/min.	3-200 cm/min.	**Remote Amplifier**

Additional specifications on pages M46.
Accessories on page M75 - M76.
Technical data on pages M77 - M79.

Material

Housing	316 Ti Stainless Steel
Cable Connector	303 Stainless Steel
Wetted Parts	316 Ti Stainless Steel

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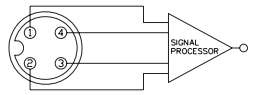
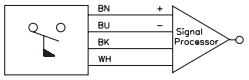
Voltage	Switching Current /Analog Load	Pressure Rating (psi)	Fluid Connection	Operating Temp. (°C) (ambient)	Operating Temp. (°C) (fluid)	Protection	Mating Cord, Cable Length/Jacket	Wiring Diagram #	Wiring Diagrams
Remote Amplifier	Remote Amplifier	1450	1/2 NPT	-25 to +85	-25 to +85	IP 67	RK 4.41T-*	1	**Diagram 1**  **Diagram 2** 
Remote Amplifier	Remote Amplifier	1450	1/2 NPT	-25 to +85	-25 to +85	IP 68	2M/PUR	2	
Remote Amplifier	Remote Amplifier	1450	G 1/4	-25 to +85	-25 to +85	IP 68	2M/PUR	2	
Remote Amplifier	Remote Amplifier	7250	GL 1/2	-25 to +85	-25 to +85	IP 68	2M/PUR	2	

* Length in meters.

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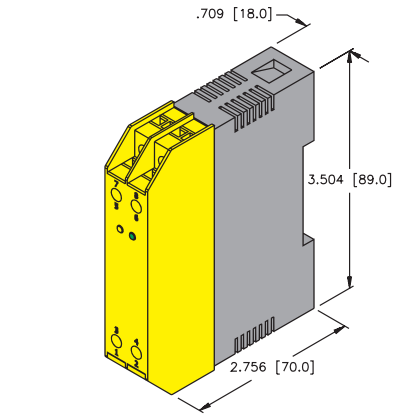
Housing Style	Part Number	ID Number	Features	Output
Remote Amplifiers 	MK96-11-R/24VDC	M7525090	*N.O. Relay Outputs*	Relay N.O.
	MK96-VP01	M7525002	*Complimentary PNP Outputs* *Short-Circuit and Reverse Polarity Protection* *Dual Potentiometer*	Complementary PNP
	MK96-VN01	M7525003	*Complimentary NPN Outputs* *Short-Circuit and Reverse Polarity Protection* *Dual Potentiometer*	Complementary NPN
	MK96-LI01	M7525004	*Non-Linear 4-20 mA* *Dual Potentiometer*	4-20 mA Non-linear

Material

Housing	PC/ABS

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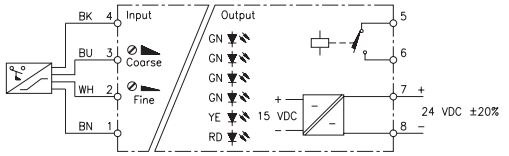
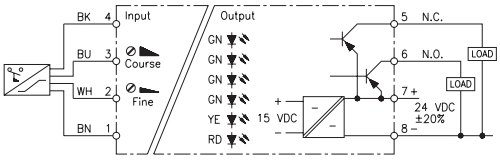
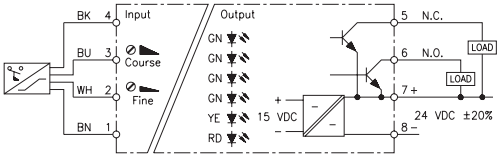
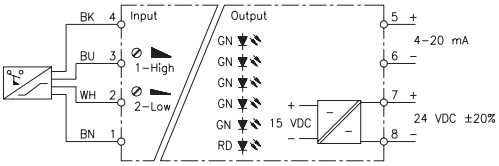
Voltage	Mounting	Current Consumption	Protection	Switching Current /Analog Load	Wiring Diagram #	Wiring Diagrams
19.2-28.8 VDC	DIN 50022 or 50035	≤70 mA	IP 20	2 A at 60 VDC	1	**Diagram 1**
19.2-28.8 VDC	DIN 50022 or 50035	≤65 mA	IP 20	400 mA	2	**Diagram 2**
19.2-28.8 VDC	DIN 50022 or 50035	≤65 mA	IP 20	400 mA	3	**Diagram 3**
19.2-28.8 VDC	DIN 50022 or 50035	≤100 mA	IP 20	≤500 Ω	4	**Diagram 4**









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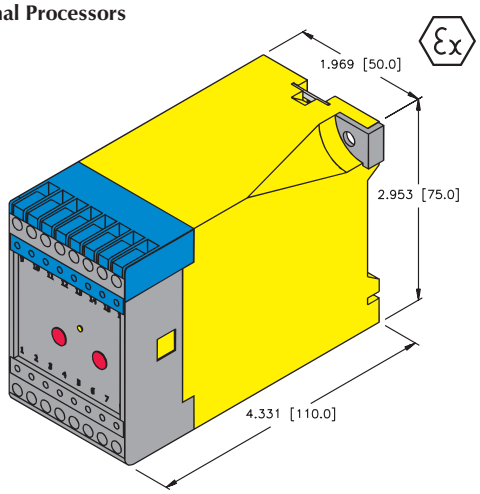
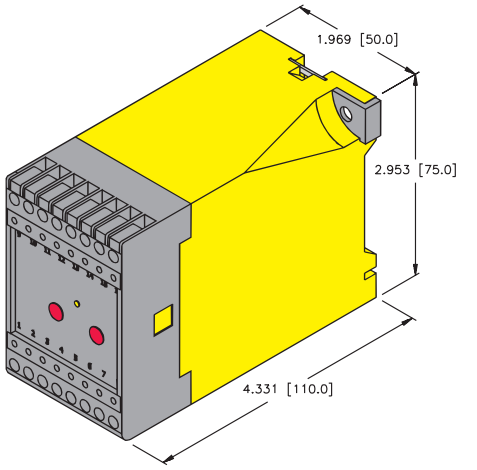
Housing Style	Part Number	ID Number	Features	Output
Signal Processors 	MS96-11Ex-R/115VAC	M5231202	*Intrinsically Safe* *Zone 1 [EExib] 11C* *Wire-break* *Dual Potentiometer* *Off Delay*	**Relay** **N.O./N.C.**
	MS96-11Ex-R/24VDC	M5231207	*Intrinsically Safe* *Zone 1 [EExib] 11C* *Wire-break* *Dual Potentiometer* *Off Delay*	**Relay** **N.O./N.C.**
Signal Processors 	MS96-12R/115VAC	M5231000	*Flow and Temp. Control* *Wire-break* *Dual Potentiometer* *Off Delay*	**Dual** **Relay** **N.O./N.C.**
	MS96-12R/24VDC	M5231007	*Flow and Temp. Control* *Wire-break* *Dual Potentiometer* *Off Delay*	**Dual** **Relay** **N.O./N.C.**

Material

Housing	PC/ABS

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Voltage	Mounting	Current Consumption	Protection	Switching Current	Wiring Diagram #	Wiring Diagrams
103.5-126.5 VAC	DIN 50022	≤75 mA	IP 20	≤4 A at 250 VAC	1	
21.6-26.4 VDC	DIN 50022	≤125 mA	IP 20	≤4 A at 250 VAC	1	
103.5-126.5 VAC	DIN 50022	≤90 mA	IP 20	≤2 A at 60 VDC	2	
21.6-26.4 VDC	DIN 50022	≤120 mA	IP 20	≤2 A at 60 VDC	2	

Diagram 1

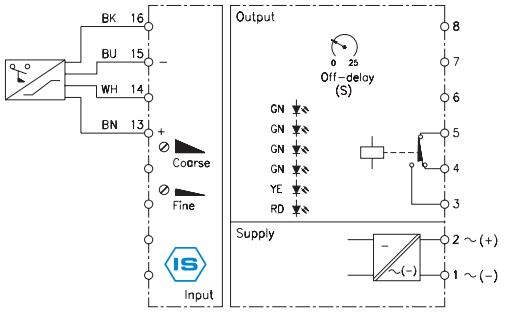
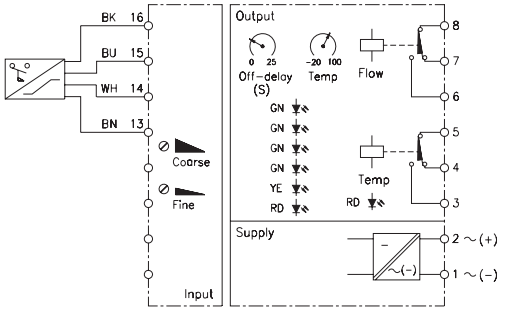


Diagram 2



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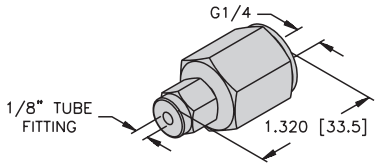
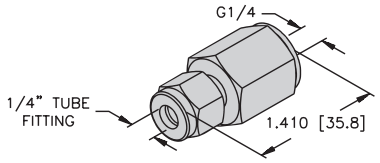
Flow Accessories

Adapter G1/4 to 1/8 in. Tubing (316 Stainless Steel)



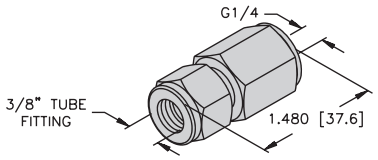
FSV-SS-1/8X1/4
(A2535)

Adapter G1/4 to 1/4 in. Tubing (316 Stainless Steel)



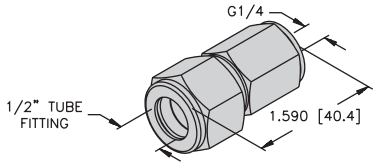
FSV-SS-1/4X1/4
(A2534)

Adapter G 1/4 to 3/8 in. Tubing (316 Stainless Steel)



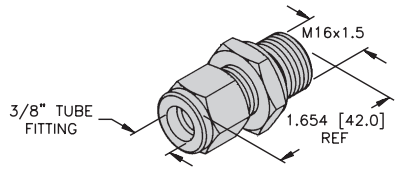
FSV-SS-3/8X1/4
(A2533)

Adapter G1/4 to 1/2 in. Tubing (316 Stainless Steel)



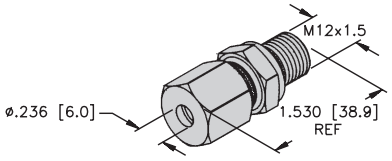
FSV-SS-1/2X1/4
(A2536)

Adapter M16 to 3/8 in. Tubing (316 Stainless Steel)



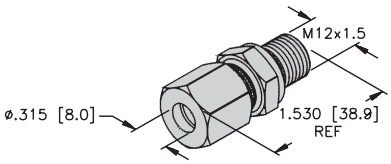
FSV-D3/8-M16
(M6873005)

Adapter M12 to 6 mm Tubing (316 Stainless Steel)



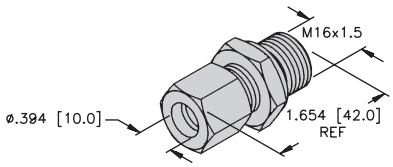
FSV-D06/M12
(M6873002)

Adapter M12 to 8 mm Tubing (316 Stainless Steel)



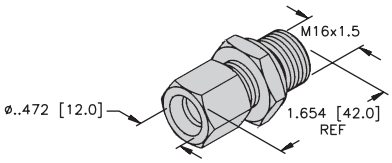
FSV-D08/M12
(M6873004)

Adapter M16 to 10 mm Tubing (316 Stainless Steel)



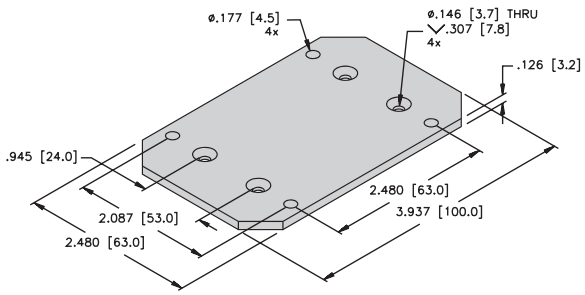
FSV-D10/M16
(M6873001)

Adapter M16 to 12 mm Tubing (316 Stainless Steel)



FSV-D12/M16
(M6873003)

Mounting Bracket



FCI-BP
(A9181)

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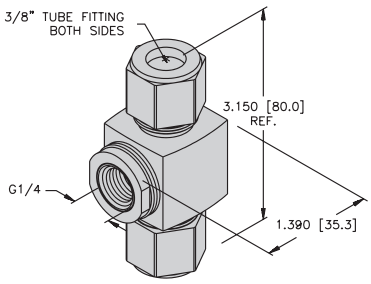
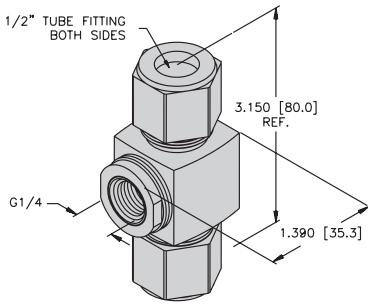
Flow Accessories

Pipe Tee (316 Stainless Steel)



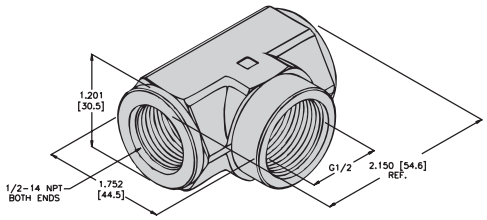
3/8 A4-AK
(A6000)

Pipe Tee (316 Stainless Steel)



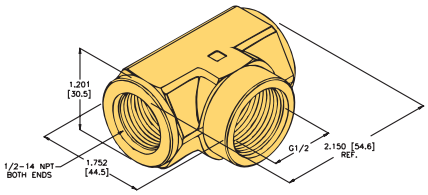
1/2 A4-AK
(A3420)

Pipe Tee (Stainless Steel)



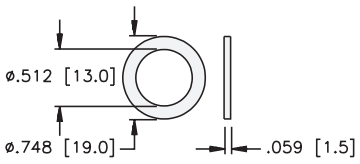
N1/2-G1/2-SST
(A6060)

Pipe Tee (Brass)



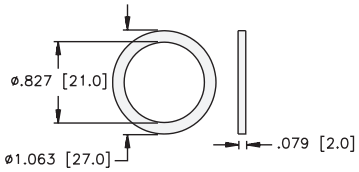
N1/2-G1/2-BT
(A6050)

G 1/4 Gasket

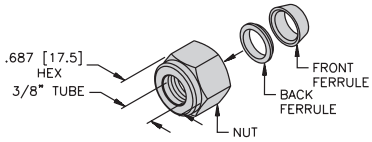


FD-G1/4AFM30/34
(M6875010)

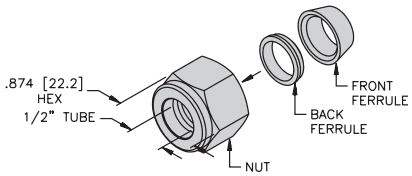
G 1/2 Gasket



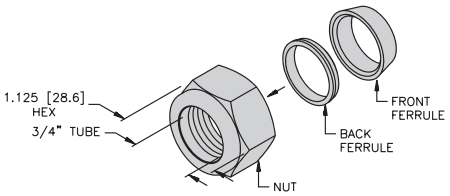
FD-G1/2AFM30/34
(M6875013)



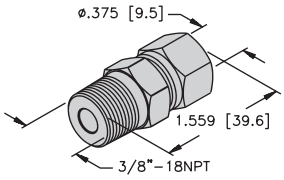
FSV-SS 3/8 KIT (2 sets)
(A9183)



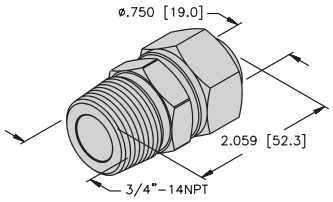
FSV-SS 1/2 KIT (2 sets)
(A9184)



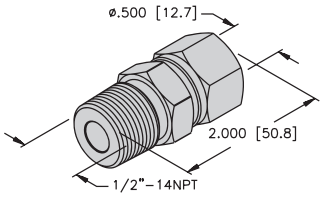
FSV-SS 3/4 KIT (2 sets)
(A9185)



FSV-SS 3/8 TS-NPT
(A9307)



FSV-SS 3/4 TS-NPT
(A9306)



FSV-SS 1/2 TS-NPT
(A9305)

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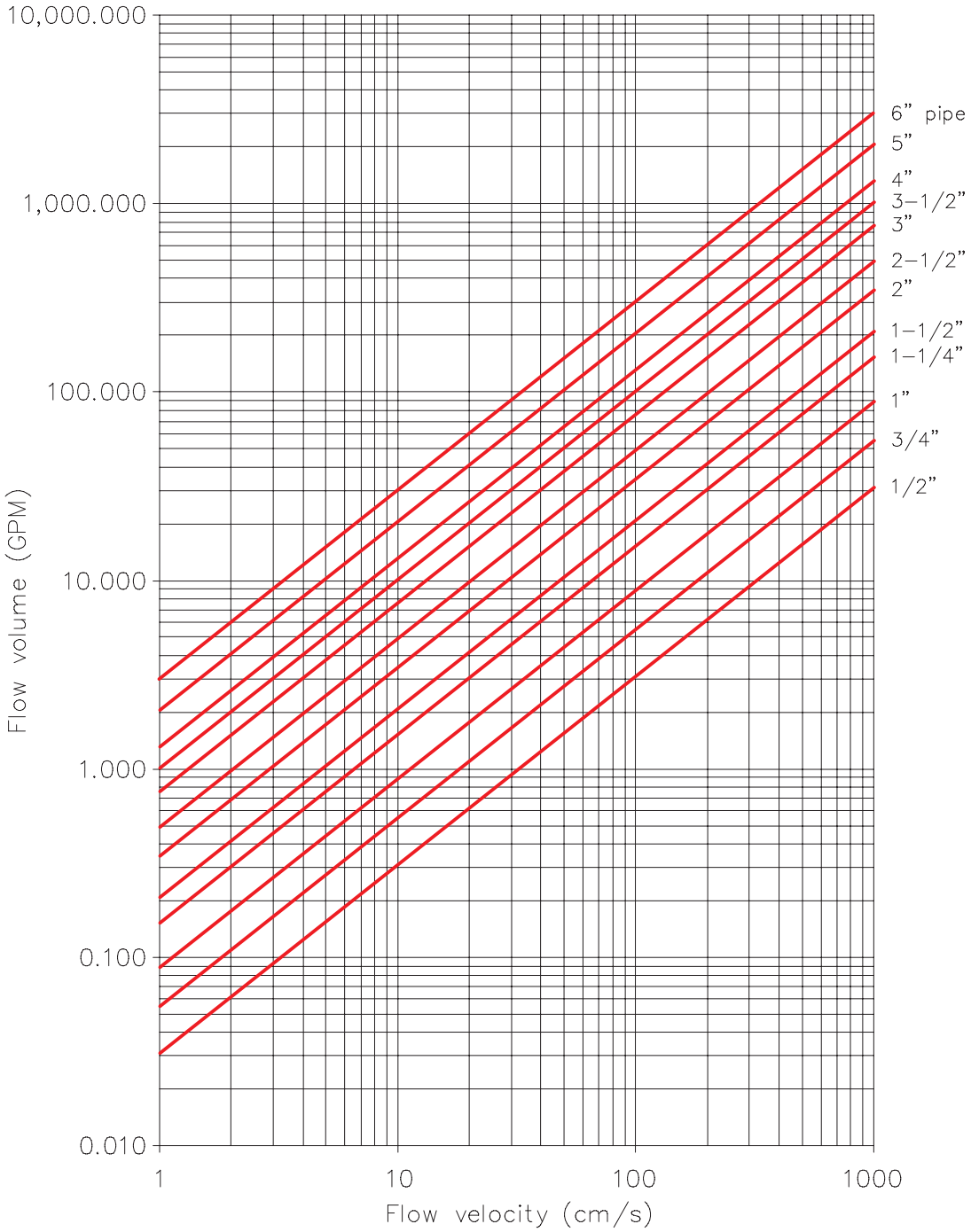
Liquid Flow Conversion Chart (Water)

Flow velocity to flow volume for schedule 40 pipes of various sizes.



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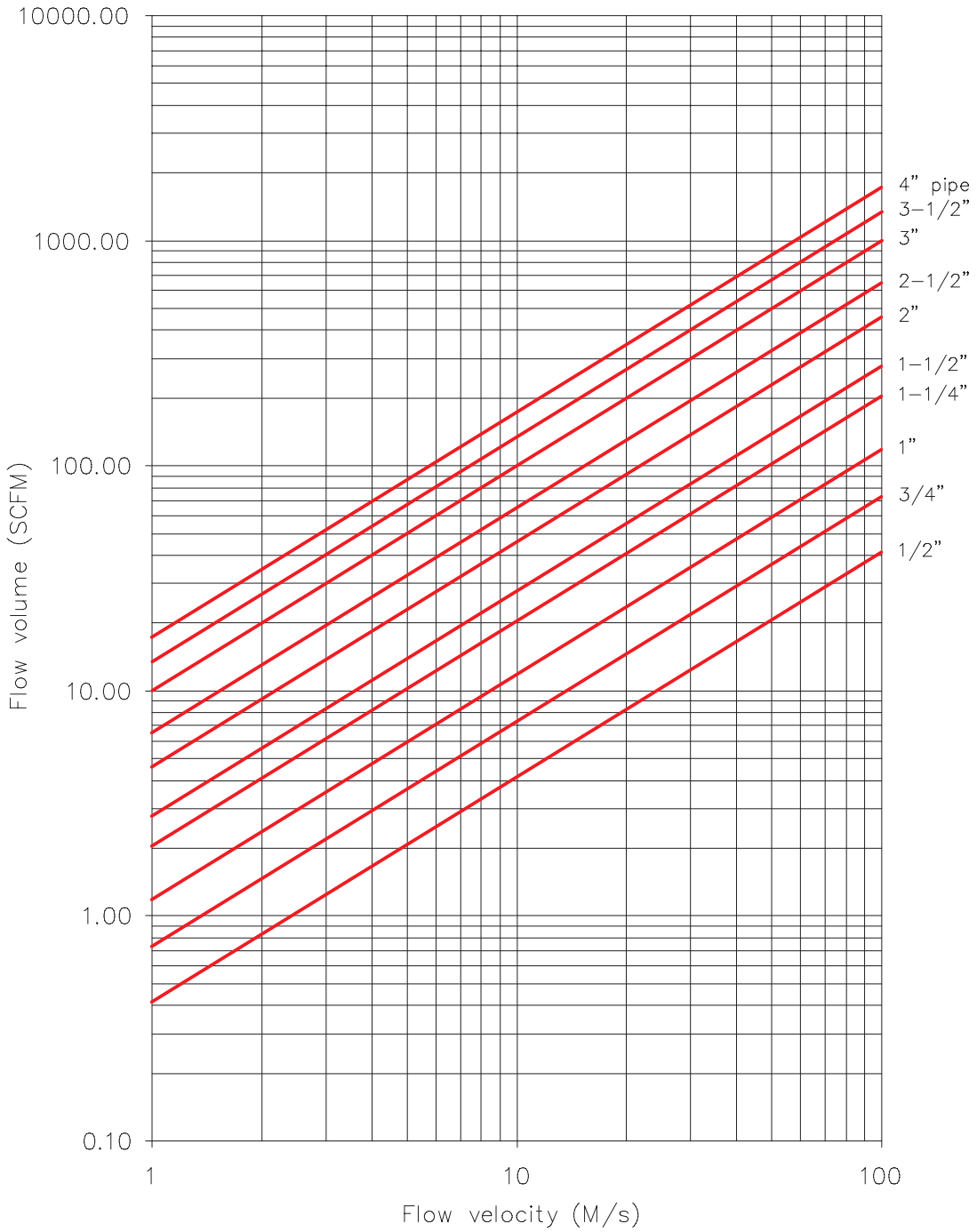
Gas Flow Conversion Chart

Flow velocity to flow volume for schedule 40 pipes of various sizes.



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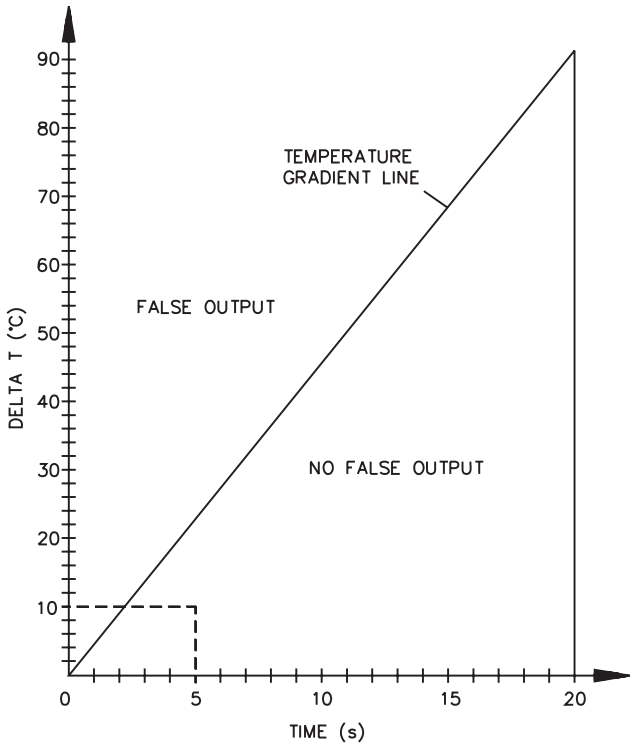
Response Time

Graph 1
Temperature Gradient for Stainless Steel Housing



Graph 1 can be used to determine if the **TURCK** flow monitor can compensate for a temperature change to a sensed medium. The dotted line in the graph indicates that a 10°C change has occurred in a time period of 5 seconds. Points (5,10) intersect in the "No False Output" region of the graph. This example illustrates an acceptable degree of temperature change in the application. As a result, the flow monitor can compensate for the fluid temperature change.

Fahrenheit = (1.8X°C) + 32

Flow Conversions

The calorimetric principle is dependent on the fluid speed, and not the volumetric flow rate.
On the following pages are conversion charts from flow speed to volumetric flow rate.

SCFM = 1.0737 X ID2 X FSM
GPM = 0.0803 X ID2 X FS
FT/S = 0.0328 X FS
FT/S = 3.2808 X FSM

GPM: Gallons per minute
FT/S: Feet per second
ID: Inner Diameter of pipe in inches
FS: Flow Speed of fluid in cm/s
FSM: Flow Speed of fluid in m/s

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Notes:

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Temperature Sensors Selection Guide

Type	TS400/TS500 Temp Sensors	Temperature Probes	Thermowells	Compression Fittings
Pages	M87 - M88	M91 - M92	M94 - M95	M96

Type	TS400/TS500 Accessories	Self Contained Temperature Monitors
Pages	M97 - M98	M101 - M102

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Precise, Reliable Temperature Sensors for Process Automation

Accurately determining temperature is one of the most important tasks in processing and manufacturing industries. Precision, reliability and interface flexibility are just some of the characteristics that make a great temperature sensor. **TURCK's** new TS400 and TS500 temperature sensor series provide all these traits and more, and adhere to the high standards consistent with all **TURCK** products.

TS400 and TS500 temperature sensors incorporate design elements that equate to real advantages in your applications. The TS400 and TS500 sensor series are platinum resistance temperature detectors (RTDs), commonly referred to as a Pt-100. Pt-100's are known to be highly precise, repeatable, and provide extremely short response times.

Pt-100's contain a platinum wire that is wrapped around a core or patterned as a thin film on a substrate so that it experiences minimal differential expansion or other strains. As the temperature changes, the controller measures the change in the electrical resistance of the platinum wire. Specifically, the hotter the wire becomes, the higher the value of electrical resistance. Pt-100 RTDs have a nominal resistance of 100 ohms at 0°C with an accuracy of 0.4°C at 50°C. The sensor's operating range varies from -50 to 500°C (-58 to 932°F).

Quality

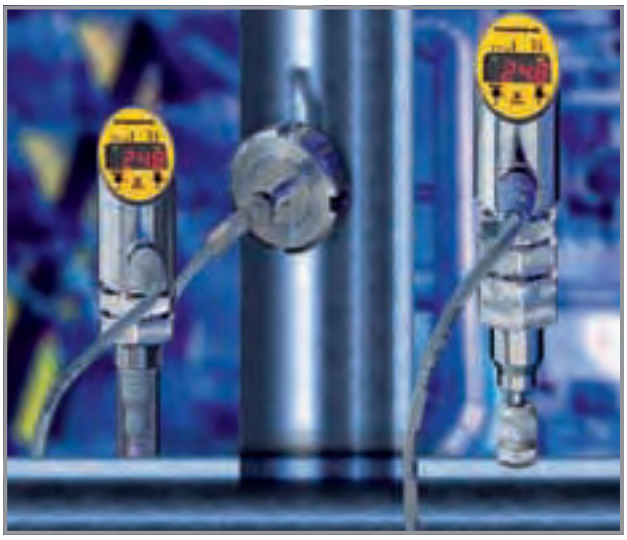
TS400 and TS500 sensors were designed to handle harsh manufacturing environments.

- High immunity to electromagnetic interference
- Reliable and accurate
- Compact design
- Robust stainless steel housing
- IP 67 environmental protection to increase operational durability

User-Friendly

TS400 and TS500 sensors were designed with the user in mind.

- Simple push-button programming
- Recessed button stores selected values and helps prevent unintentional operational errors
- The entire display can be inverted electronically
- The TS500 version can be rotated 320 degrees
- Does not require regular maintenance calibration
- M12 ***eurofast***® connection promotes easy integration in existing applications



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Flexible

TS400 and TS500 use state of the art technology to bring you a sensor that facilitates operational efficiency.

- Remote or direct mountable
- Compact, robust housing
- 4-pin M12 ***eurofast***® connection
- Compatible with 4-wire probes
- Displays output in °C, °F, K and ohms

Benefits

TS400 and TS500 temperature sensors allow you to realize immediate benefits in your application.

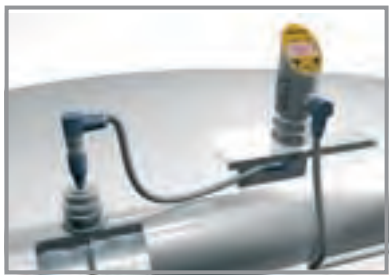
- May be implemented in nearly all factory or process automation applications
- Housing design permits sensors to be mounted directly next to each other or in restrictive places
- Large, bright LED display
- Versions with multiple outputs available; all are easy to program and use

How to Order TS400 and TS500 Sensors and Accessories

1. Determine your desired output and select the TS model that meets your needs.
2. Select the appropriate probe for your application.
   a) Questions? Call 1-800-554-7769.
3. Choose remote or direct mounting.
   a) For direct mounting with TP 203 and TP 206, order the stabilizer (STA-3 or STA-6).
   b) For remote mounting, order a mating cordset (RK 4.4T-*-RS 4.4T).
4. Select a process connection.
   a) For thermowells, order one length shorter than the length of probe you selected in step 2.
   b) If no thermowell is selected, a compression fitting is needed for mounting the probe. (Note: The TP 104A does not require a process connection.)

* Length in meters.

Direct Mounting



Remote Mounting

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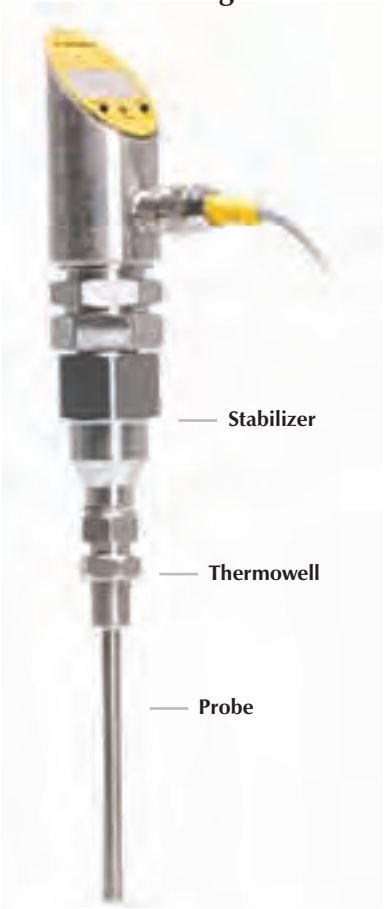
Direct Mounting Sensor



Remote Mounting Sensor

Accessories

Stabilizer
(use with TP 203A .. & TP 206A ..)

Remote Cordset
(RK 4.4T-*-RS 4.4T)

Probe Options

TP 104A ..

TP 306A ..

TP 203A ..
or TP 206A ..

Process Connection Options

Compression Fitting
(CF)

Thermowell
THW ... TRI

Thermowell
THW ... N

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TS400/TS500 Temperature Sensor Part Number Key

Style

TS = Temperature Sensor

Housing

400 = Adjustable, with display, non-rotatable
500 = Adjustable, with display, rotatable

Analog Output

LI = Current analog output
LU = Voltage analog output

Switching Output

2U = 2 x programmable N.O./N.C. mode
U = 1 x programmable N.O./N.C. mode

Output Logic

PN = PNP/NPN configurable transistor switching output
P = PNP transistor switching output
N = NPN transistor switching output

Operational Voltage

8 = 15-30 VDC (switching outputs)
8 = 18-30 VDC (switching and analog outputs)

With LED Display

Connection

H1141 = 4-pin, M12x1, ***eurofast***® connector

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TS400/TS500 Technical Data

Operating Voltage	15-30 VDC (switching outputs) 18-30 VDC (switching and analog output)
No-Load Current	≤50 mA
SELV. PELV	According to EN 50178
Short-Circuit Protection	Yes
Reverse Polarity Protection	Yes
Insulation Class	III
Switching Output	
Switching Frequency	≤180 Hz
Output Function	2 x PNP or NPN, N.C./N.O. programmable
Voltage Drop at I_e	≤2 V
Rated Operational Current	0.2 A
Switching Point Distance	0.2 K -49.8° to +500°C (-58° to +932°F)
Reset Points	-50° to +499.8°C (-58° to +932°F)
Analog Current Output	
Current Output	4-20 mA, 0-20 mA, 20-4 mA, 20-0 mA programmable
Response Time	<100 ms
Load	≥0.5 kΩ
Analog Voltage Output	
Voltage Output	0-10 V, 0-5 V, 1-6 V, 10-0 V, 5-0 V, 6-1 V programmable
Response Time	<100 ms
Load	≥2 kΩ
Temperature Sensor Accuracy	
Switching Output	
Switching Point Accuracy	≤ ± 0.2 K
Repetition Accuracy	≤ ± 0.1 K
Analog Output Accuracy (Lin.+Hys.+Rep.)	≤ ± 0.2 K
Temperature Sensor Housing	
Housing Material	Stainless steel/plastic 1.4404 (AISI 316L)/PC
Electrical Connection	Connector M12x1 (***eurofast***®), 4-pin with integrated high-speed connection technology.
Sensor Connection	Connector M12x1 (***eurofast***), 4-pin
Coupling Nut Size (with tightening torque)	SW 30 (max. 35 Nm)
Display	
Temperature Display	4-digit 7-segment display can be rotated by 180° and switched off
Switch State Display	2 x LED yellow
Measured Value/Programming	Switch/release points; hysteresis/window mode; N.O./N.C.; unit of display; peak value memory
Display of Temperature Unit	4 x LED green (°C, °F, K, Ω)
EMC	
EN 61000-4-2	ESD 4 kV CD / 8 kV AD
EN 61000-4-3	HF radiated: 15 V/m²
EN 61000-4-4	Burst 2 kV
EN 61000-4-5	Surge 1 kV, 42 Ω
EN 61000-4-6	HF conducted: 10 V
Ambient Conditions	
Medium Temperature	Directly connected -50° to 150°C (otherwise see temperature probes)
Ambient Temperature	-40° to +80°C (-40° to +176°F)
Storage Temperature	-40° to +80°C (-40° to +176°F)
Degree of Protection	IP 67
Vibration Resistance	20 g (10-2000 Hz) according to IEC 68-2-6

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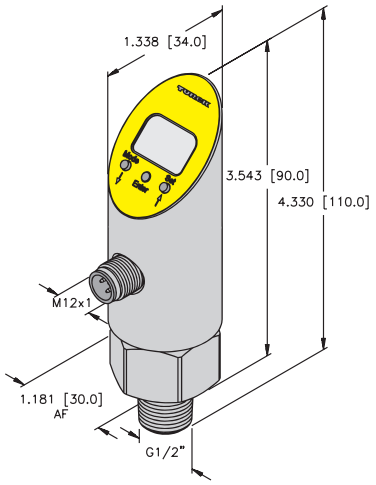
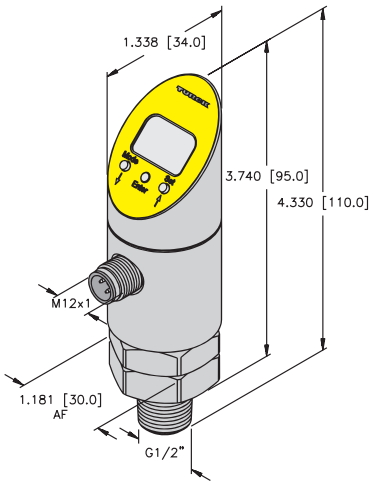
Housing	Part Number	ID Number	Temperature Range – Remote	Temperature Range – Direct	Output
Temperature Sensor for 4-wire PT100 	TS-400-2UP8X-H1141	M6840001	-50° to 500°C (-58° to 932°F)	-50° to 150°C (-58° to 302°F)	**Dual PNP N.O./N.C.**
	TS-400-LIUP8X-H1141	M6840002			**Dual NPN N.O./N.C.**
	TS-400-LUUP8X-H1141	M6840003			**1 PNP N.O./N.C. and Programmable Current**
	TS-400-2UN8X-H1141	M6840004			**1 NPN N.O./N.C. and Programmable Current**
	TS-400-LIUN8X-H1141	M6840005			**1 PNP N.O./N.C. and Programmable Voltage**
	TS-400-LUUN8X-H1141	M6840006			**1 NPN N.O./N.C. and Programmable Voltage**
	TS-400-LI2UPN8X-H1141	M6840007			**1 PNP/NPN N.O./N.C. and Programmable Current or 1 PNP/NPN N.O./N.C.**
Temperature Sensor for 4-wire PT100, 320° Rotatable Housing 	TS-500-2UP8X-H1141	M6840009	-50° to 500°C (-58° to 932°F)	-50° to 150°C (-58° to 302°F)	**Dual PNP N.O./N.C.**
	TS-500-LIUP8X-H1141	M6840010			**Dual NPN N.O./N.C.**
	TS-500-LUUP8X-H1141	M6840011			**1 PNP N.O./N.C. and Programmable Current**
	TS-500-2UN8X-H1141	M6840012			**1 NPN N.O./N.C. and Programmable Current**
	TS-500-LIUN8X-H1141	M6840013			**1 PNP N.O./N.C. and Programmable Voltage**
	TS-500-LUUN8X-H1141	M6840014			**1 NPN N.O./N.C. and Programmable Voltage**
	TS-500-LI2UPN8X-H1141	M6840015			**1 PNP/NPN N.O./N.C. and Programmable Current or 1 PNP/NPN N.O./N.C.**

For remote probes use cordset RK 4.4T-*-RS 4.4T. * Length in meters.

See page M98 for additional cordset information.

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Voltage	Switching Current (mA)	Analog Load	Mating Cordset	Wiring Diagram #
15-30 VDC	≤200	N/A	RK 4.4T-*	1
15-30 VDC	≤200	N/A	RK 4.4T-*	1
18-30 VDC	≤200	≤500 Ω	RK 4.4T-*	2
18-30 VDC	≤200	≤500 Ω	RK 4.4T-*	2
18-30 VDC	≤200	≤500 Ω	RK 4.4T-*	3
18-30 VDC	≤ 200	≤500 Ω	RK 4.4T-*	3
18-30 VDC	≤200	≤500 Ω	RK 4.4T-*	4
15-30 VDC	≤200	N/A	RK 4.4T-*	1
15-30 VDC	≤200	N/A	RK 4.4T-*	1
18-30 VDC	≤200	≤500 Ω	RK 4.4T-	2
18-30 VDC	≤200	≤500 Ω	RK 4.4T-*	2
18-30 VDC	≤200	≤500 Ω	RK 4.4T-*	3
18-30 VDC	≤200	≤500 Ω	RK 4.4T-*	3
18-30 VDC	≤200	≤500 Ω	RK 4.4T-*	4

Wiring Diagrams

Diagram 1

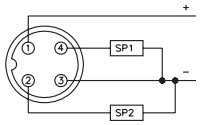


Diagram 2

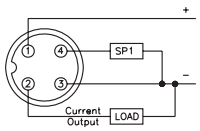


Diagram 3

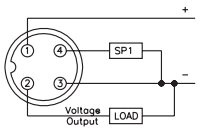
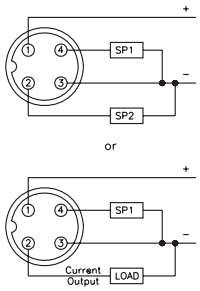


Diagram 4



* Length in meters.

Simple Mounting

After the sensor is mounted, the actual processor unit is attached and fixed using a coupling nut. The sensor can still be rotated and aligned in all directions.

TS500 shown.

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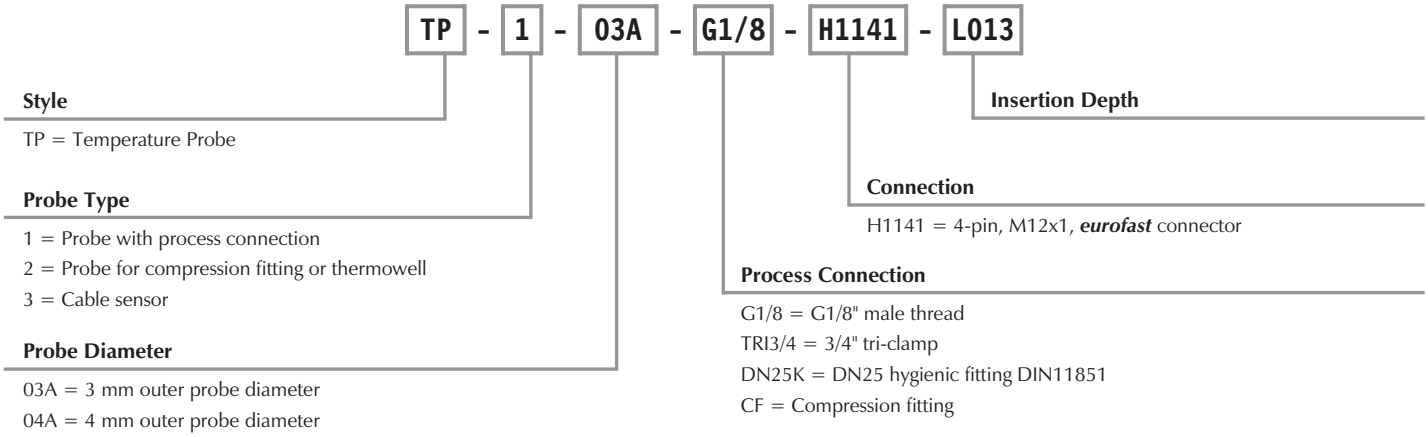
Temperature Probes Part Number Key



Temperature Probes Technical Data

Probe (TP-104A ..)

Temperature Operating Range	-50° to 120°C (-58° to +248°F)
Ambient Temperature	-20° to 90°C (-4° to +194°F)
Measuring Element	Pt100, DIN EN 60751, Class A
Response Time	$t_{0.5}$ = 3 s; $t_{0.9}$ = 10 s in water at 0.2 m/s
Output Function	4-wire
Reverse Polarity Protection	Yes
Degree of Protection	IP 67
Housing Material	Plastic/Stainless steel
Housing Quality	1.4404 (AISI 316L)
Sensor Material	Stainless steel
Sensor Quality	1.4404 (AISI 316L)
Pressure Rating (psi)	580.15
Connection	Connector, M12x1 (***eurofast***®)
Mechanical Connection	Tri-Clamp 3/4"; DN25 hygienic fitting according to DIN 11851

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Temperature Probes Technical Data

Probe (TP-203 .. / TP-206 ..)

Temperature Operating Range	-30° to +500°C (-22° to 932°F) ≤350°C accuracy class A (662°F) ≥350°C accuracy class B (662°F)
Ambient Temperature	-20° to 90°C (-4° to +194°F)
Measuring Element	Pt100, DIN EN 60751, Class A
Response Time	203: $t_{0.5}$ = 1.5 s; $t_{0.9}$ = 6 s 206: $t_{0.5}$ = 6 s; $t_{0.9}$ = 15 s 306: $t_{0.5}$ = 8 s; $t_{0.9}$ = 20 s
Output Function	4-wire
Reverse Polarity Protection	Yes
Degree of Protection	IP 67
Housing Material	Stainless steel/plastic
Housing Quality	1.4404 (AISI 316L) mineral insulated
Sensor Material	Stainless steel
Sensor Quality	1.4404 (AISI 316L)
Pressure Rating (psi)	1450.38
Connection	Connector, M12x1 (***eurofast***®)
Mechanical Connection	For compression fittings or thermowells

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Probe (TP-306A ..)

Temperature Operating Range	-50° to +105°C (-58° to +221°F)
Ambient Temperature	-20° to +90°C (-4° to +194°F)
Measuring Element	Pt100, DIN EN 60751, Class A
Response Time	$t_{0.5}$ = 8 s; $t_{0.9}$ = 20 s in water at 0.2 m/s
Output Function	4-wire
Reverse Polarity Protection	Yes
Degree of Protection	IP 67
Housing Material	Plastic/Stainless steel
Housing Quality	TPE (thermoplastic elastomer)
Sensor Material	Stainless steel
Sensor Quality	1.4404 (AISI 316L)
Pressure Rating (psi)	217.56
Connection	Connector, M12x1 (***eurofast***)
Mechanical Connection	For compression fittings or thermowells or for direct mounting

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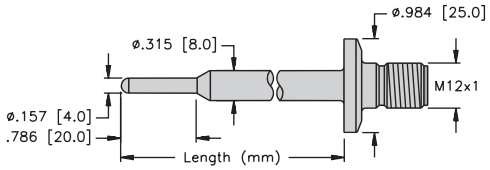
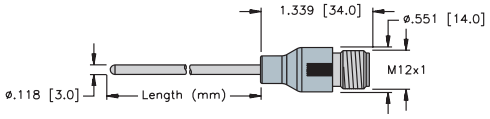
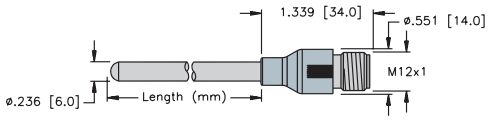
Temperature Probes

Housing Style	Part Number	ID Number	Temperature Range	Length (mm)
Pt100 Temperature Probe, 3/4" Tri-Clamp, Ø8 mm 	TP-104A-TRI3/4-H1141-L035	M9910429	-50° to +120°C (-58° to +248°F)	35
	TP-104A-TRI3/4-H1141-L100	M9910430		100
Pt100 Temperature Probe, Ø3 m 	TP-203A-CF-H1141-L100	M9910402	-30° to +350°C (-22° to +662°F)	100
	TP-203A-CF-H1141-L150	M9910403		150
	TP-203A-CF-H1141-L200	M9910482		200
	TP-203A-CF-H1141-L250	M9910404		250
	TP-203A-CF-H1141-L300	M9910474		300
Pt100 Temperature Probe, Ø6 mm 	TP-206A-CF-H1141-L100	M9910475		100
	TP-206A-CF-H1141-L150	M9910476		150
	TP-206A-CF-H1141-L200	M9910477		200
	TP-206A-CF-H1141-L300	M9910478		300

For technical data see page M89 - M90.

Mating cordset for remote connections; RK 4.4T-*-RS 4.4T. * Length in meters.

See page M97 for additional cordset information.

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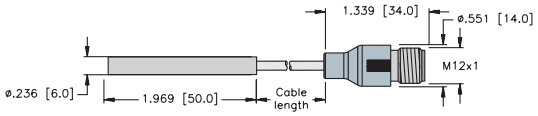
Temperature Probes

Housing Style	Part Number	ID Number	Temperature Range	Length (m)
Pt100 Cable Probe, 4-Pin M12x1 eurofast®, Ø8 mm 	TP-306A-CF-H1141-L1000	M9910479	-50° to 105°C (-58° to 221°F)	1
	TP-306A-CF-H1141-L2000	M9910480		2
	TP-306A-CF-H1141-L5000	M9910481		5

For technical data see page M90.

Rotatable Display

TS400 and TS500 sensors may also be installed horizontally. The display may be electronically inverted 180 degrees by software incorporated within the sensor.

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Thermowell Part Number Key

THW - 3 - G1/8 - A4 - L013

Thermowell

Probe Diameter

3 = 3 mm outer diameter
6 = 6 mm outer diameter

Process Connection

G1/8 = G1/8" male thread
N1/8 = 1/8" NPT male thread
G1/4 = G1/4" male thread
N1/4 = 1/4" NPT male thread
G1/2 = G1/2" male thread
N1/2 = 1/2" NPT male thread
TRI3/4 = 3/4" tri-clamp
DN25K = DN25 hygienic fitting thread DIN 11851

Material

A4 = Stainless steel AISI316L

Insertion Depth

Compression Fittings Part Number Key

CF - M - 3 - G1/8 - A4

Compression Fitting

Compression Ring Material

M = AISI316L
P = PTFE

Probe Diameter

3 = 3 mm outer diameter
6 = 6 mm outer diameter

Operational Voltage

G1/8 = G1/8" male thread
N1/8 = 1/8" NPT male thread
G1/4 = G1/4" male thread
N1/4 = 1/4" NPT male thread

Material

A4 = Stainless steel AISI316L

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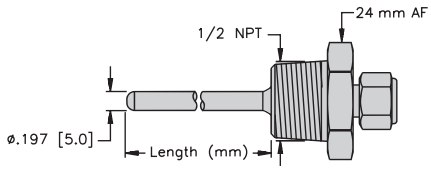
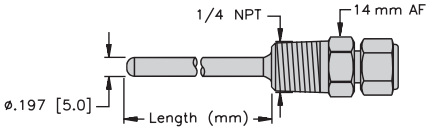
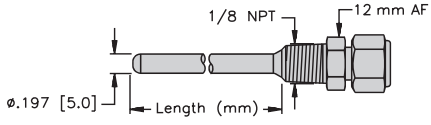
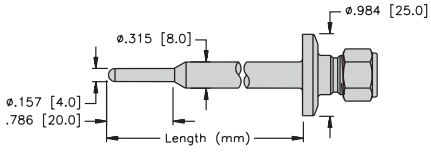
Thermowells

Housing Style	Part Number	ID Number	Process Connection	Length (mm)	Compatible Probe	Pressure Rating (psi)
Thermowell, 1/2" Male NPT 	THW-3-N1/2-A4-L050	M9910447	1/2" NPT	50	3 mm	5800
	THW-3-N1/2-A4-L100	M9910448	1/2" NPT	100	3 mm	5800
	THW-3-N1/2-A4-L150	M9910449	1/2" NPT	150	3 mm	5800
	THW-3-N1/2-A4-L250	M9910450	1/2" NPT	250	3 mm	5800
Thermowell, 1/4" Male NPT 	THW-3-N1/4-A4-L050	M9910416	1/4" NPT	50	3 mm	5800
	THW-3-N1/4-A4-L100	M9910420	1/4" NPT	100	3 mm	5800
	THW-3-N1/4-A4-L150	M9910424	1/4" NPT	150	3 mm	5800
	THW-3-N1/4-A4-L200	M9910428	1/4" NPT	200	3 mm	5800
Thermowell, 1/8" Male NPT 	THW-3-N1/8-A4-L050	M9910414	1/8" NPT	50	3 mm	5800
	THW-3-N1/8-A4-L100	M9910418	1/8" NPT	100	3 mm	5800
	THW-3-N1/8-A4-L150	M9910422	1/8" NPT	150	3 mm	5800
	THW-3-N1/8-A4-L200	M9910426	1/8" NPT	200	3 mm	5800
Thermowell, 3/4" Tri-Clamp 	THW-3-TRI3/4-A4-L035	M9910433	3/4" Tri-Clamp	35	3 mm	5800
	THW-3-TRI3/4-A4-L050	M9910451	3/4" Tri-Clamp	50	3 mm	580
	THW-3-TRI3/4-A4-L100	M9910452	3/4" Tri-Clamp	100	3 mm	580
	THW-3-TRI3/4-A4-L150	M9910453	3/4" Tri-Clamp	150	3 mm	580
	THW-3-TRI3/4-A4-L250	M9910454	3/4" Tri-Clamp	250	3 mm	580

Note: Material is AISI 316L/1.4404

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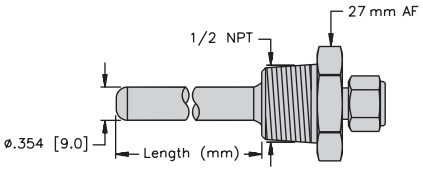
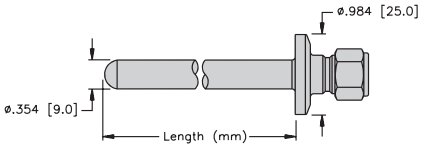
Thermowells

Housing Style	Part Number	ID Number	Process Connection	Length (mm)	Compatible Probe	Pressure Rating (psi)
Thermowell, 1/2" Male NPT 	THW-6-N1/2-A4-L050	M9910463	1/2" NPT	50	6 mm	5800
	THW-6-N1/2-A4-L100	M9910464	1/2" NPT	100	6 mm	5800
	THW-6-N1/2-A4-L150	M9910465	1/2" NPT	150	6 mm	5800
	THW-6-N1/2-A4-L250	M9910466	1/2" NPT	250	6 mm	5800
Thermowell, 3/4" Tri-Clamp 	THW-6-TRI3/4-A4-L050	M9910467	3/4" Tri-Clamp	50	6 mm	5800
	THW-6-TRI3/4-A4-L100	M9910468	3/4" Tri-Clamp	100	6 mm	580
	THW-6-TRI3/4-A4-L150	M9910469	3/4" Tri-Clamp	150	6 mm	580
	THW-6-TRI3/4-A4-L250	M9910470	3/4" Tri-Clamp	200	6 mm	580

Note: Material is AISI 316L/1.4404

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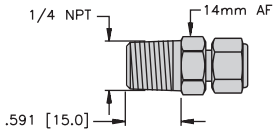
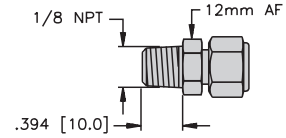
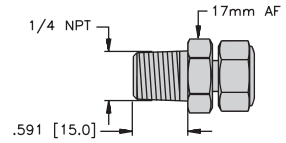
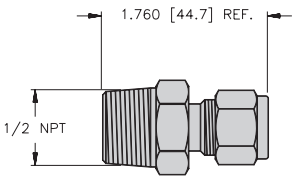
Compression Fittings

Housing Style	Part Number	ID Number	Compatible Probe Diameter	Compression Fitting)	Temperature Range	Pressure Rating (psi
Compression Fitting, 1/4" Male NPT 	CF-M-3-N1/4-A4	M9910408	Ø3 mm	Metal	350°C (662°F)	580
	CF-P-3-N1/4-A4	M9910412	Ø3 mm	PTFE	100°C (212°F)	87
Compression Fitting, 1/8" Male NPT 	CF-M-3-N1/8-A4	M9910406	Ø3 mm	Metal	350°C (662°F)	580
	CF-P-3-N1/8-A4	M9910410	Ø3 mm	PTFE	100°C (212°F)	87
Compression Fitting, 1/4" Male NPT 	CF-M-6-N1/4-A4	M9910484	Ø3 mm	Metal	350°C (662°F)	580
	CF-P-6-N1/4-A4	M9910486	Ø6 mm	PTFE	100°C (212°F)	87
Compression Fitting, 1/2" Male NPT 	CF-M-6-N1/2-A4	A0950	Ø6 mm	Metal	350°C (662°F)	580

Note: Material is AISI 316L/1.4404

Mounts in Compact Spaces

With a housing diameter of 34 mm, multiple temperature sensors can fit in tight spaces.

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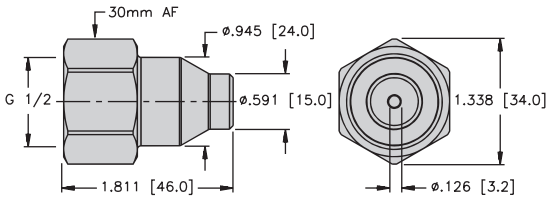
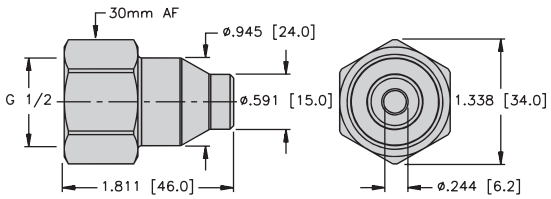
Stabilizer Accessories for Direct Mounting

Stabilizer for 3 mm Temperature Probe



STA-3
(M6835024)

Stabilizer for 6 mm Temperature Probe



STA-6
(M6830523)

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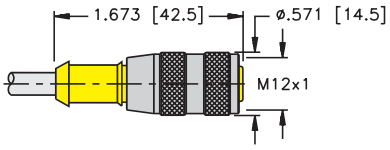
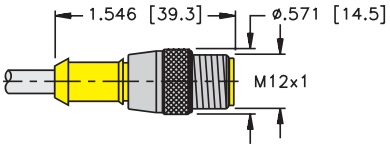
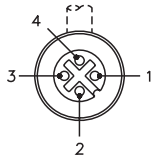
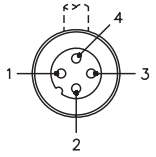
4-Wire *eurofast*® Cordsets, Standard Plug Body

- Straight Male and Female Connectors
- NEMA 1, 3, 4, 6P and IEC IP 68 Protection
- 250 VAC/300 VDC, 4 A

Housing Style	Part Number	Cable	Features	Pinout
RK ..**  **RS ..**** 	RK 4.4T-* RK 4.4T-*-RS 4.4T	**AWM PVC Grey** **4x22 AWG** **105°C** **5.2 mm OD** **Cable #RF50516-*M**	*flexlife*®	1. BN 2. WH 3. BU 4. BK	**Female**  **Male** 

* Length in meters. Standard cable lengths are 2, 4, 6, 8 and 10 meters. Consult factory for other lengths.

** Standard coupling nut material is nickel plated brass "RK .."; "RKK .." indicates nylon and "RKV .." indicates 316 stainless steel.

Extension Example: RK 4.4T - 2 - RS 4.4T

RK .. - RS ..

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Self-Contained Temperature Monitors

The **TURCK** temperature monitor with digital readout is a fully programmable device that is easy to set up for a wide variety of applications. The self-contained temperature-monitoring device has two independently adjustable switching points or a single switch point with a separate analog output. The monitor can be used for limit-value monitoring or window functions. The TC01 sensor has an adjustable hysteresis, and can also be programmed to measure temperature in degrees Fahrenheit or degrees Celsius. These devices feature a highly visible digital display and a sensor housing that can be rotated to allow the viewing of temperature data from any direction. The 24 VDC devices include integral circuitry that protects against Short-Circuit damage, and a G1/2 threaded fitting for easy installation. They operate in temperatures from -40° to +120°C (-40° to +248°F).

Principles of Operation

The temperature sensors employ a calorimetric principle to provide continuous and accurate temperature analysis of liquid or paste-like media. They are ideal for temperature analysis in many industries including automotive, welding, hydraulic power units, beverage/brewery, plastics, pumps, pulp/paper, and semiconductor.

Operating Modes

If an over-range of a certain temperature is to be monitored, select the Hysteresis-function. In this mode, a limit value must be set. If the temperature exceeds this value, the output either activates or de-activates, depending on the selected output function. A Hysteresis value is assigned to the limit value, which determines the differential between the switch-on or switch-off value. It is also possible to delay the switch-on and switch-off times. If the window-function is selected as the operating mode, the switching output activates when the adjusted limit temperature is reached (beginning of window range) and de-activates when the end value (defined by the window width value) is reached. The switch-on and switch-off delay may also be used in this operating mode.

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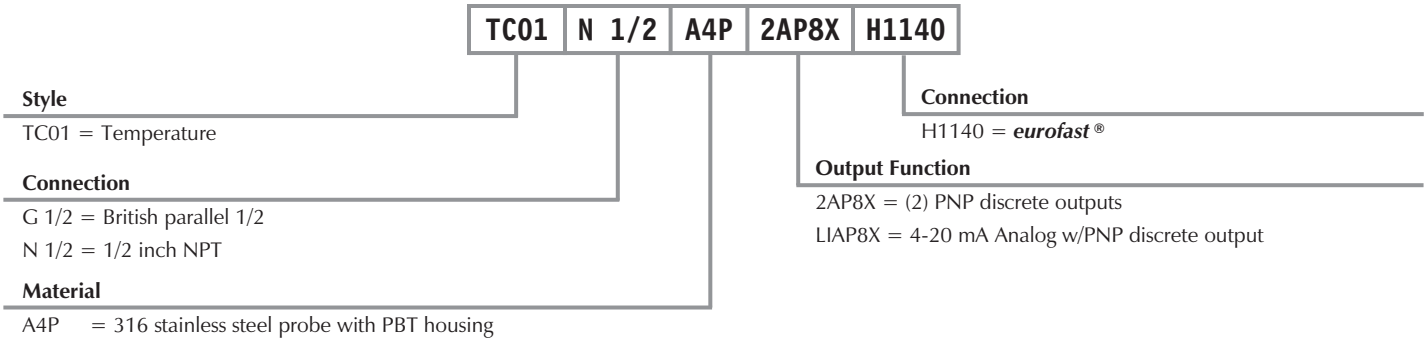
Temperature Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.



Temperature General Specifications

Operating Voltage . . . . . 21.6 - 26.4 VDC (including ripple)
Current Consumption . . . . . ≤70 mA
Voltage Drop at I_{max} . . . . . ≤2.5 VDC
Temperature Range . . . . . -20 to +60°C (-4 to +140°F)
Medium Temperature Range . . . . . -40 to +120°C (-40 to +248°F)
Measuring Range . . . . . -40 to +120°C (-40 to +248°F)
Tolerance Range . . . . . ±2.5°C (0° to +80°C: ±1°C) ±36.5°F (+32° to +176°F: ±33.8°F)
Switch Point Accuracy . . . . . ±3% of full scale
Display Resolution . . . . . 0.1°C (-9.9° to +99.9°C: 0.1°C) ±36.5°F (+33.8°F +14°F to +210°F: +32°F)
Programmable Ranges . . . . . -39° to +120°C (-38° to +248°F), 0.5°C/step
Hysteresis Range . . . . . +0.5° to +99.5°C (+32.9° to +211.1°F), 0.5°C/step (0.9°F/step)
Window Range . . . . . +0.5° to +99.5°C (+32.9° to +211.1°F), 0.5°C/step (0.9°F/step)
Switch-on and Switch-off Delay Time . . . . . 0 to 50 s (0.5 s/step)
LED Indications/ Display . . . . . 3-digit 7-segment display
at Limit Value S1/S2 . . . . . Yellow (2x)
Display Resolution (3-digit) . . . . . +0.1°C (+32.1°F)
Protection . . . . . IP 65

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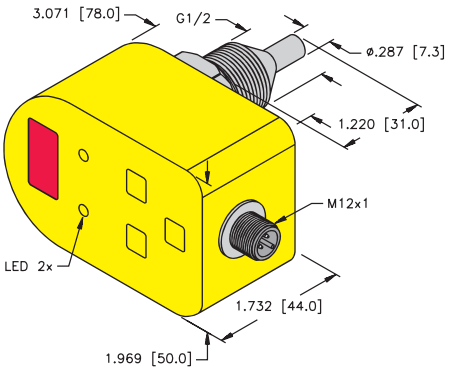
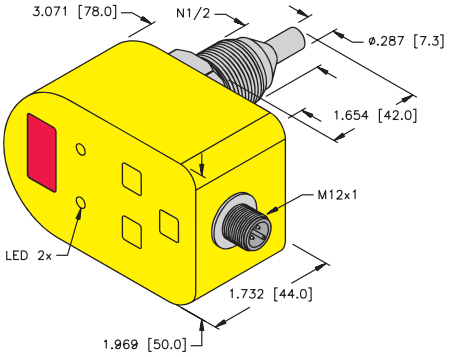
Housing Style	Part Number	ID Number	Output
Self-Contained Temperature Controls, PBT Housing 	TC01-G1/2A4P-2AP8X-H1140	M6877001	**Dual PNP N.O./N.C.**
	TC01-G1/2A4P-LIAP8X-H1140	M6877002	**PNP N.O./N.C. and 4-20 mA**
Self-Contained Temperature Controls, PBT Housing 	TC01-N1/2A4P-2AP8X-H1140	M68777005	**Dual PNP N.O./N.C.**
	TC01-N1/2A4P-LIAP8X-H1140	M6877004	**PNP N.O./N.C. and 4-20 mA**

Material

Housing	PBT
Probe	316 Ti Stainless Steel

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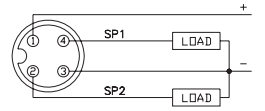
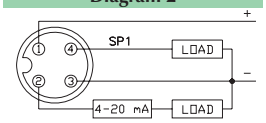
Voltage	Pressure Rating (psi)	Switching Current /Analog Load	Operating Temperature (°C)	Temperature Measuring Range (°C)	Process Connection	Mating Cordset	Wiring Diagram #	Wiring Diagrams
21.6-26.4 VDC	1450	200 mA	-20 to +60	-40 to +120	G 1/2	RK 4.4T-*	1	Diagram 1
21.6-26.4 VDC	1450	200 mA/<500 Ω	-20 to +60	-40 to +120	G 1/2	RK 4.4T-*	2	Diagram 2
21.6-26.4 VDC	1450	200 mA	-20 to +60	-40 to +120	1/2 NPT	RK 4.4T-*	1	
21.6-26.4 VDC	1450	200 mA/<500 Ω	-20 to +60	-40 to +120	1/2 NPT	RK 4.4T-*	2	





* Length in meters.

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Level Selection Guide

Type	*levelprox*®	*levelprox* Mounting Accessories
Pages	M107 - M108	M109

Type	*EZ-track*® Level Probe	Level Probe Accessories	Probe Holder	Level Control Monitor
Pages	M113 - M116	M117 - M118	M123 - M124	M125 - M128

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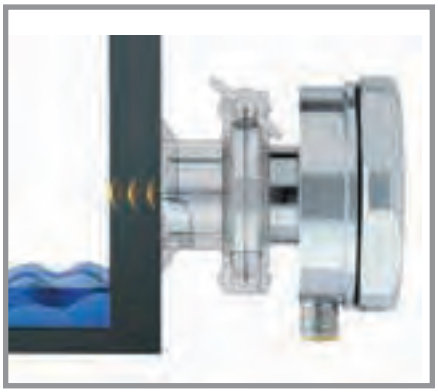
levelprox ®

levelprox is a unique, non-invasive ultrasonic sensing solution that provides accurate media detection through metal container walls. ***levelprox*** mounts to the outside of a container with no compromise to structural integrity, and is ideal for high pressure, hazardous or sterile applications.

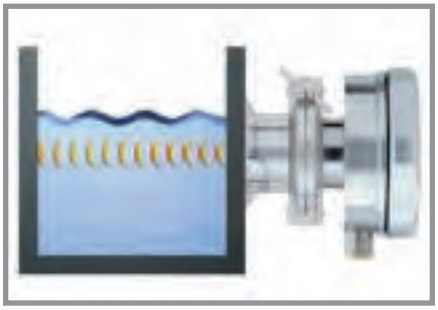
All it takes to reliably detect the presence of liquid through a metal container is to program the empty and full conditions into the ***levelprox*** using a simple teach button. The sensor generates a high frequency ultrasonic pulse that is transferred into the container wall through a coupling gel. As the pulse enters the container wall it is influenced by the containers contents. ***levelprox*** analyzes this pulse and compares it to the conditions that were programmed into the memory of the sensor.

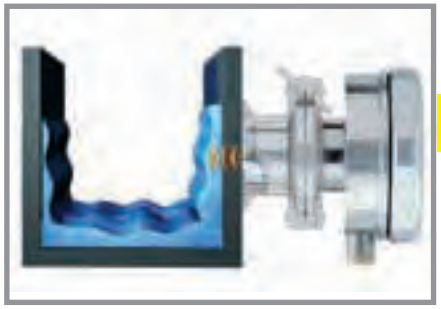
With Dual Operating Modes, *levelprox* Provides Reliable Detection in Even the Toughest Applications:

Reverb Mode: evaluates the ultrasonic pulse as it reverberates within the container wall. This pulse travels through the container wall until it reaches the inner wall. The reverb mode works great when the liquid to be detected has a low viscosity, leaving little or no coating on the container wall. The reverb mode should also be utilized when stirring devices are used inside the container.



Echo mode: evaluates the ultrasonic pulse as it travels through the liquid and echoes off of the opposite container wall. Highly viscous liquids can be reliably detected with the echo mode. The mode looks past the layers of product that can coat the inside of a container to give the true level of the product.





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Dual Mode T50

levelprox ®

The T50 dual-mode ***levelprox*** features a robust 316L stainless steel housing with an integrated sanitary connection. The sensors construction and non-invasive operation make it the perfect choice for applications in food, beverage and pharmaceutical industries. The integrated Tri-Clamp mounting flange maintains proper orientation to the tank wall and also protects the coupling during washdown operations.

Dual Mode M30

The M30 dual-mode ***levelprox*** is ideal for level detection applications where stainless steel sanitary fittings are not required. The M30 delivers non-invasive detection without the additional expense of a sanitary housing. Its 30 mm barrel can be easily mounted using a welding adapter or a metal strap kit.

Mounting Accessories

Mounting accessories are available for the T50 and M30 sensors for welding, bonding and strapping ***levelprox*** sensors to most common containers.

Recommended Operating Mode

Application	Reverb	Echo
Liquids contaminated with solids	Yes	No
Liquids that leave a film on container wall	No	Yes
Liquid with internal mixing devices	Yes	No
Containers with internal coating	No	Yes
Containers greater than 6 ft. across	Yes	No
Aerated liquid	Yes	No

levelprox Specifications

Switching Delay . . . . . 1-10 second (adjustable via DIP-switches)
Rated Operational Current (DC) I_e . . . . . ≤200 mA
No-load Current I_o . . . . . ≤60 mA
Overload Trip Point . . . . . >270 mA
Max. Voltage Drop at 200 mA . . . . . ≤2.5 V
Switching Frequency . . . . . 1 Hz
Time Delay Before Availability . . . . . ≤2 s
Protection Class . . . . . IP 68
Housing Material . . . . . T50: 316L stainless (A41.4404)
M30: Chrome plated brass
Operation Temperature . . . . . -25° to +70°C (-13° to +158°F)
Supply Voltage Indication . . . . . Green LED
Switching status indication . . . . . Yellow LED
Error Indication . . . . . Red LED flashing and alarm output on
Alarm Indication . . . . . Red LED
Flashing Green LED indicates alarm off
Approvals . . . . . Class I, Division 2

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Mounting the T50 *levelprox*®

Mounting

One of the most critical procedures in any ***levelprox*** application is the mounting of the sensor. Reliable operation of the sensor requires a mount that is rigidly fixed and properly oriented to the container wall. Below you will find some important tips for mounting a ***levelprox***.

Surface Preparation

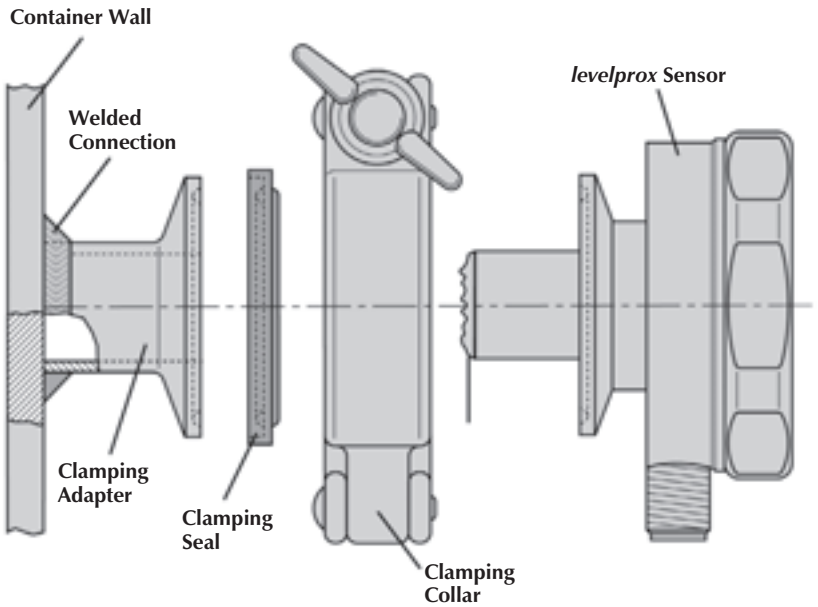
The surface of the tank plays an important role ensuring proper operation of the sensor. The surface finish and structural integrity of the container wall need to be evaluated when selecting a mounting location for the sensor. The surface finish should be smooth and free of rust, paint, and coatings that could affect the sound transmission of the sensor. The area of the tank where the sensor will mount should be in good condition, i.e. no pitting, dents, welded joints, internal structures etc. If you are using a weld-on mount, be aware that excessive heat from the welder can distort thin walled containers.

Mounting the Sensor

The ***levelprox*** needs to make solid contact with the container wall for proper operation. Ideally the clamping adapter should be mounted perpendicular to the container wall. In the case of a round container, the sensor should be mounted so that the transducer is pointing at the center axis. **TURCK** offers several mounting options designed to keep the sensor optimally coupled with the wall of the container.

Installation

Included with every **TURCK** ***levelprox*** is a small container of coupling gel. This gel is required for the sensor to efficiently pass the ultrasonic pulses into the container wall. Before installing the sensor on the container, remember to apply a generous amount of the gel to the sensors transducer surface.



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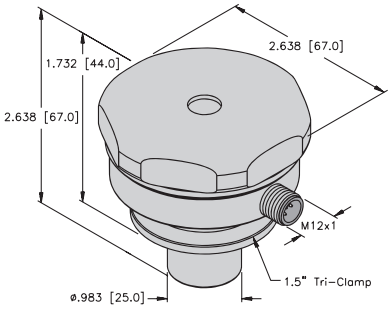
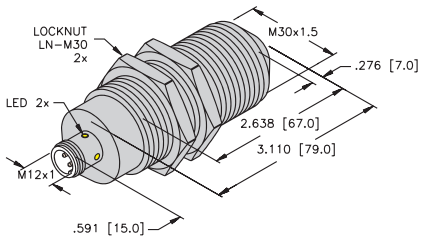
Housing Style	Part Number	ID Number	Container Wall Thickness	Min\Max Container Diameter	Programming	Output
Smooth Cylindrical T50 Style 	LPRE-T50-UP6X3-H1151	M1606201	1-15 mm	100-2000 mm** Stainless Steel	Push button or external teach wire	**5-Wire DC PNP**
Standard M30 Style 	LPRE-M30-AP6X2-H1141	M1606203	1-15 mm	100-2000 mm** Nickel Brass	VB2-SP1	**4-Wire DC PNP**

Additional specifications on page M105.
Accessories on page M109.
** 2000 mm (echo mode), no limit (reverberation mode).

FM APPROVED

TURCK ***levelprox*** sensors are FM approved for installation in Class I, Division 2 hazardous locations when installed per **TURCK** control drawing Ni-1.005 (www.turck.com/fmcd).

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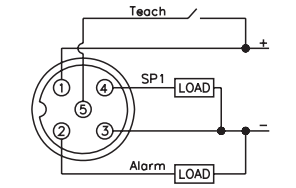
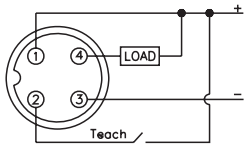
Voltage	Switching Current (mA)	Min. Repeat Accuracy (mm)	Operating Temp. (°C)	Protection Class	Housing	Short-Circuit Protection	Rev. Polarity Protection	Wire Break Protection	Mating Cord, Cable Length/Jacket	Wiring Diagram #	Wiring Diagrams
15-30 VDC	≤200	≤±5 mm	-25 to +70	IP 67	SS	Yes	Yes	Yes	RK 4.5T-*	1	Diagram 1
15-30 VDC	≤200	≤±5 mm	-25 to +70	IP 67	CPB	Yes	Yes	Yes	RK 4.4T-*	2	Diagram 2





* Length in meters.

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Mounting Accessories for T50

Part Number	ID Number	T50 Weld Kit
LP-MS-T50-S	M6900253	

Designed to mount the T50 sensor to flat sided containers. Can also be used for mounting to large diameter round containers.

Includes: Clamping Adapter, Clamp, and Gasket

Part Number	ID Number	T50 Epoxy Mounting Kit
LP-MS-T50-K	M6900255	

Designed for mounting the T50 sensor to flat sided containers. Kit is ideal for applications where welding is not possible.

Includes:
Clamping Adapter, General Purpose Epoxy, Clamp, Gasket, and Locator Buttons

Part Number	Clamping Adapter
LP-Clamping Adapter-*	

Custom machined weld-on clamping adapter to fit round containers.

Note: Clamp and gasket need to be purchased separately, see table on right.

* Indicates the container diameter in meters.

Individual Pieces		
Part Number	**ID Number**	**Description**
LP-OKS1110**	M6900296	Coupling Gel
LP-MZ-T50-SR**	A5316	Sanitary Clamp
LPMZ-T50-CS	M6900365	Clamping Adapter
LP-MZ-T50-D**	A5315	Gasket

Mounting Accessories for M30

Part Number	ID Number	Push Button
VB2-SP1	A3501-29	

The VB2-SP1 is used for programming and mode selection of the M30 ***levelprox***

Part Number	ID Number	M30 Weld Mount
LP-MZ-M30-SB	A5321	

Mounting Bracket can be strapped or welded to container. Perfect for applications that don't require washdown.

Part Number	ID Number	M30 Sanitary Adapter
LP-MZ-M30-T50	A5317	

Allows the M30 to be mounted using T50 Accessories. Use with **LP-Clamping Adapter-*** in applications that are subjected to washdown.

* Indicates the container diameter in meters.

Part Number	ID Number	M30 Straps
LP-MZ-M30-B250	A5320	
LP-MZ-M30-B500	A5319	
LP-MZ-M30-B1000	A5322	

Use with LP-MZ-M30-SB to mount the M30 using straps. Constructed of stainless steel with lengths available:
250 cm, 500 cm, and 1000 cm

Includes:
Two stainless steel straps

** Accessories that can also be used on M30 style ***levelprox***.

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EZ-track® Liquid Level Probe

The ***EZ-track*** line from **TURCK** is a line of magnetostrictive linear displacement transducers. These devices detect the position of an external magnet along the active stroke of the sensor without causing any wear on the sensor parts. Because there are no parts to wear or break, the sensors can offer better performance over a longer life than competing technologies. They also offer an alternative when a continuous, absolute reading is necessary in the application.

The ***EZ-track*** R16 Liquid Level Sensor is a programmable, two-wire loop powered intrinsically safe probe that is ideal for continuous level monitoring in a variety of liquids and tank designs. The R16 sensor uses magnetostrictive technology to monitor the position of a magnetic float along the active stroke of the sensing tube, which is then converted into a configurable 4-20 mA output. The IP 68 rated R16 liquid level sensors are available in a rigid 316 stainless steel housing or a flexible PVDF design. The probe lengths vary between 18 and 288 inches. The stainless steel version is also available in an optional Food Grade or 3A Rated Sanitary finish probe for use in an array of food service, dairy and beverage applications. A variety of floats, fittings, and accessories are available to fit virtually any application requirement.

All of the electronics for the R16 sensor are incorporated within the 5/8 inch sensing rod, which eliminates the need for an electronics enclosure at the top of the sensor. This feature when ordered with the standard 4-pin ***minifast***® quick disconnect, offers greater mounting options, and a faster, more reliable installation. The R16 liquid level sensor has a resolution of 0.02 inches of full scale, and an accuracy of 0.1% over the programmable monitoring span, making it the ideal sensor for applications where continuous level position is required.

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R16 Level Probe Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

Sensor Family
LT = Linear Transducer

Measurement
Length of span

Length Units
E = Inches

Housing Style
R = Rod Style

Rod Diameter
Diameter in mm

Probe Style
S = Sanitary - 240 grit finish
F = Food Grade - 180 grit finish
P = PVDF
3 = 316 stainless steel (standard finish)

Flange Adapter
Blank = No Adapter [1]
20 = 2 inch Tri-clamp [4]
25 = 2.5 inch Clamp [4]
30 = 3 inch Tri-clamp [4]
40 = 4 inch Tri-clamp [4]
C = 3 inch Dead Band [2]

Output Configuration
LI = Current

Output Type
0 = 4 to 20 mA
1 = 20 to 4 mA

Intrinsically Safe
Ex
* must be connected to appropriate barrier

Connector Type
D = Dual 3/4 inch NPT
B1140 = 4-pin, ***minifast*** [4]
S = Single 3/4 in. NPT [2]

Special Approvals
3A = 3A approved sensor with non-removable [3]

[1] Available on probe styles 3 or P only.
[2] Available on probe styles P only.
[3] Available on probe styles S only.
[4] Not available on probe style P.

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

PVDF Probe Specifications

Output	4 to 20 mA, 20 to 4 mA
Span	7 to 288 in.
Repeatability	0.014 in. + 0.5% of programmable span typical; max 0.014 in. + 0.4% of programmable span
Resolution	0.25% of programmable span or 0.02 in., whichever is greater
Operating Temperature	-20° to +70°C (-4° to +158°F)
Null Zone	12 in.
Dead Zone	6 to 8 in. (span 7 in. to 126 in.: 6 in.; span 127 in. to 288 in.: 8 in.)
Operational Voltage	13.5-30 VDC
Current Consumption	Loop Powered
Enclosure Rating	IP 69
Non-linearity	0.1% of programmable span
Reading Rate	40 ms
Rod Diameter	0.625 in. (15.9 mm)
Pressure	145 psi
Electronics	PVDF
Rod	PVDF
Agency Approvals	FM
FM-Approval	Class I, Div 1, Group C and D Class II, Div 1, Group E, F, and G Class I, Zone 0 or 1, Groups IIA or IIB

Stainless Steel Probe Specifications

Output	4 to 20 mA, 20 to 4 mA
Span	10 to 288 inches
Repeatability	0.014 in. + 0.5% of programmable span typical; max 0.014 in. +0.4% of span
Resolution	0.25% of programmable span / 0.02 in., whichever is greater
Operating Temperature	-20° to +70°C (-4° to +158°F)
Null Zone	8 in.
Dead Zone	2 in.
Operational Voltage	13.5 to 30 VDC
Current Consumption	Loop Powered
Enclosure Rating	IP 69
Non-linearity	0.1% of programmable span
Reading Rate	40 ms
Rod Diameter	0.625 in. (15.9 mm)
Pressure	1015 psi
Electronics	Stainless Steel 316L
Rod	Stainless Steel 316L
Agency Approvals	FM
FM-Approval	Class I, Div 1, Group C and D Class II, Div 1, Group E, F, and G Class I, Zone 0 or 1, Groups IIA or IIB

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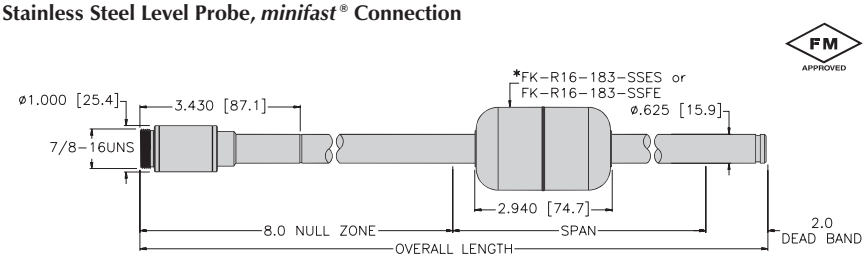
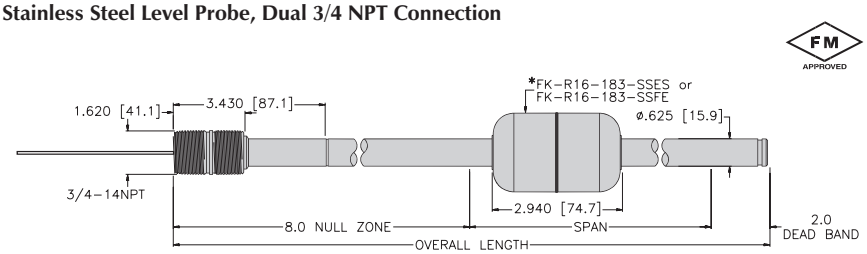
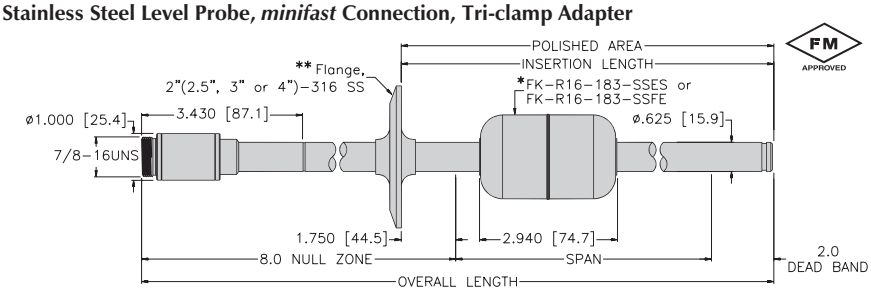
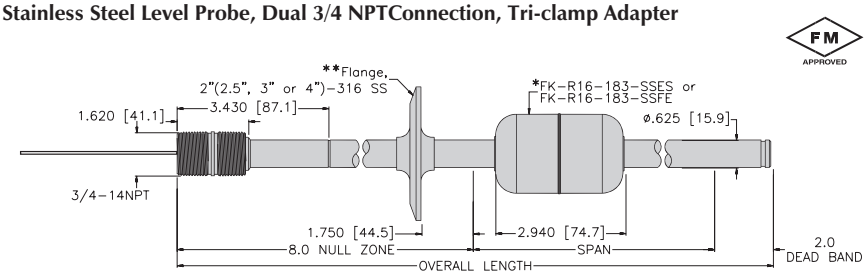
Housing Style	Part Number	Output Current
Stainless Steel Level Probe, *minifast*® Connection 	LT***E-R16-3LI0-EX-B1140	**4-20 mA Loop Powered**
	LT***E-R16-3LI1-EX-B1140	**20-4 mA Loop Powered**
Stainless Steel Level Probe, Dual 3/4 NPT Connection 	LT***E-R16-3LI0-EX-D	**4-20 mA Loop Powered**
	LT***E-R16-3LI1-EX-D	**20-4 mA Loop Powered**
Stainless Steel Level Probe, *minifast* Connection, Tri-clamp Adapter 	LT***E-R16-3**LI0-EX-B1140 LT***E-R16-S**LI0-EX-B1140 LT***E-R16-F**LI0-EX-B1140	**4-20 mA Loop Powered**
	LT***E-R16-3**LI1-EX-B1140 LT***E-R16-S**LI1-EX-B1140 LT***E-R16-F**LI1-EX-B1140	**20-4 mA Loop Powered**
Stainless Steel Level Probe, Dual 3/4 NPTConnection, Tri-clamp Adapter 	LT***E-R16-3**LI0-EX-D	**4-20 mA Loop Powered**
	LT***E-R16-3**LI1-EX-D	**20-4 mA Loop Powered**

* Float ordered separately, see page M118.
** For flange dimensions, see page M117.

FM APPROVED

TURCK 'R16' level probes are FM approved as intrinsically safe for installation in Class I, Division 1 hazardous locations when installed per **TURCK** control drawing IS-1.111 (www.turck.com/fmcd).

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Voltage	Probe Style (Finish)	Pressure Rating (psi)	Connection Type	Agency Approval	Mating Cord, Cable Length/Jacket	Wiring Diagram #
13.5-30 VDC	316 Stainless Steel	1015	4-pin ***minifast***	FM	RKM 46-*M	1
	316 Stainless Steel	1015	4-pin ***minifast***	FM	RKM 46-*M	1
13.5-30 VDC	316 Stainless Steel	1015	Dual 3/4 NPT	FM	2M/PVC	2
	316 Stainless Steel	1015	Dual 3/4 NPT	FM	2M/PVC	2
13.5-30 VDC	316 Stainless Steel	1015	4-pin ***minifast***	FM	RKM 46-*M	1
	Sanitary (316 SS w/240 grit)	1015	4-pin ***minifast***	FM	RKM 46-*M	1
	Food Grade (316 SS w/180 grit)	1015	4-pin ***minifast***	FM	RKM 46-*M	1
	316 Stainless Steel	1015	4-pin ***minifast***	FM	RKM 46-*M	1
	Sanitary (316 SS w/240 grit)	1015	4-pin ***minifast***	FM	RKM 46-*M	1
	Food Grade (316 SS w/180 grit)	1015	4-pin ***minifast***	FM	RKM 46-*M	1
13.5-30 VDC	316 Stainless Steel	1015	Dual 3/4 NPT	FM	2M/PVC	2
	316 Stainless Steel	1015	Dual 3/4 NPT	FM	2M/PVC	2

Wiring Diagrams

Diagram 1

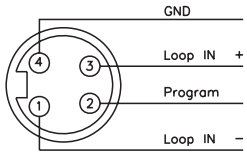
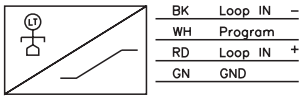
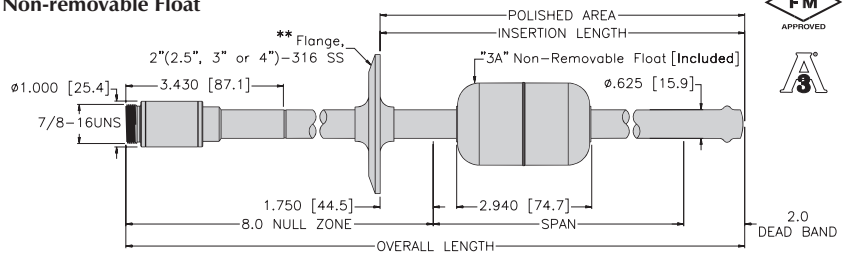
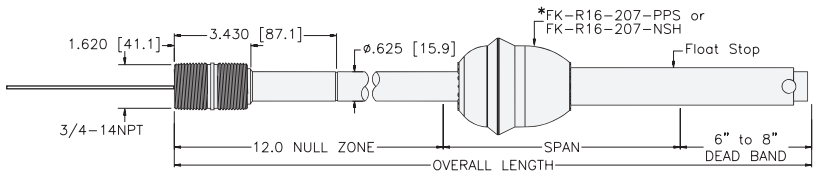
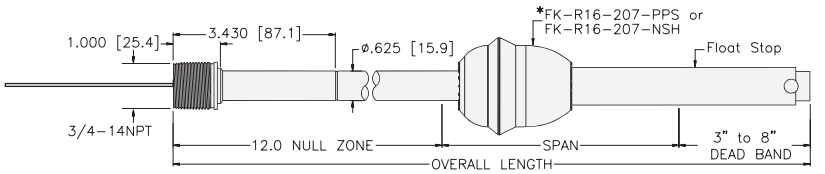


Diagram 2



* Length in meters.

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Housing Style	Part Number	Output
Stainless Steel Level Probe, *minifast*® Connection, Tri-clamp Adapter, Non-removable Float 	LT***E-R16-S**LIO-EX-B1140/3A	**4-20 mA Loop Powered**
	LT***E-R16-S**LI1-EX-B1140/3A	**20-4 mA Loop Powered**
PVDF Level Probe, Dual 3/4 NPT Connection 	LT***E-R16-PLIO-EX-D	**4-20 mA Loop Powered**
	LT***E-R16-PLI1-EX-D	**20-4 mA Loop Powered**
PVDF Level Probe, Single 3/4 NPT Connection 	LT***E-R16-PLIO-EX-S LT***E-R16-PCLIO-EX-S	**4-20 mA Loop Powered**
	LT***E-R16-PLI1-EX-S LT***E-R16-PCLI1-EX-S	**20-4 mA Loop Powered**

* Float ordered separately, see page M118.
** For flange dimensions, see page M117.

FM APPROVED

TURCK 'R16' level probes are FM approved as intrinsically safe for installation in Class I, Division 1 hazardous locations when installed per **TURCK** control drawing IS-1.111 (www.turck.com/fmcd).

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Voltage	Probe Style (Finish)	Pressure Rating (psi)	Connection Type	Agency Approval	Mating Cord, Cable Length/Jacket	Wiring Diagram #
13.5-30 VDC	Sanitary (316 SS w/240 grit)	1015	4-pin ***minifast***	3A, FM	RKV 46-*M	1
	Sanitary (316 SS w/240 grit)	1015	4-pin ***minifast***	3A, FM	RKV 46-*M	1
13.5-30 VDC	PVDF	145	Dual 3/4 NPT	FM	2M/PVC	2
	PVDF	145	Dual 3/4 NPT	FM	2M/PVC	2
13.5-30 VDC	PVDF	145	Single 3/4 NPT	FM	2M/PVC	2
	PVDF	145	Single 3/4 NPT	FM	2M/PVC	2
	PVDF	145	Single 3/4 NPT	FM	2M/PVC	2
	PVDF	145	Single 3/4 NPT	FM	2M/PVC	2

Wiring Diagrams

Diagram 1

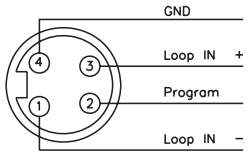
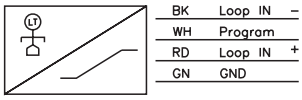


Diagram 2



* Length in meters.

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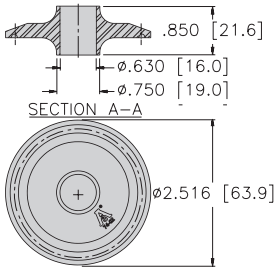
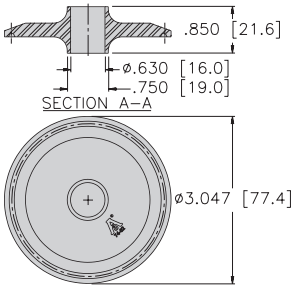
All dimensions shown as: Inches [mm]

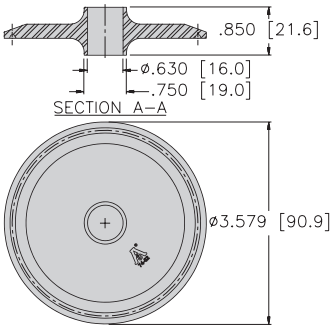
Flange Options



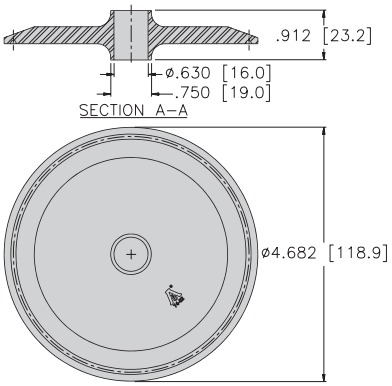
Flange, 2 inch Tri-clamp



Flange, 2.5 inch Tri-clamp



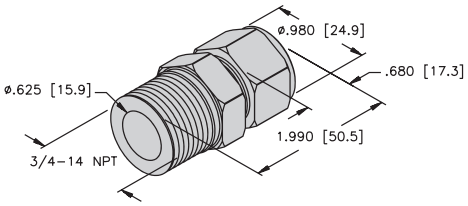
Flange, 3 inch Tri-clamp



Flange, 4 inch Tri-clamp

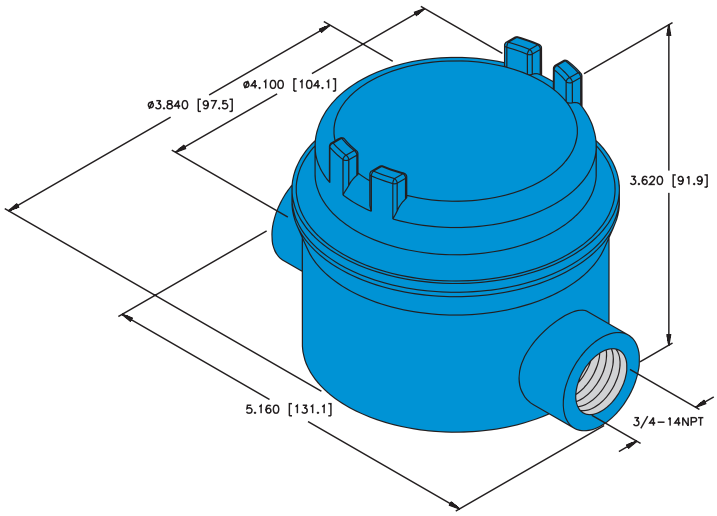
Level Probe Accessories

Tube Coupling



TC-R16-SS
(LT0305)

Junction Box



TB-R16S
(LT0294)

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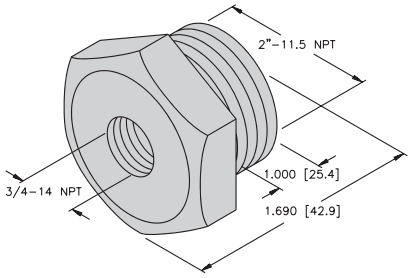
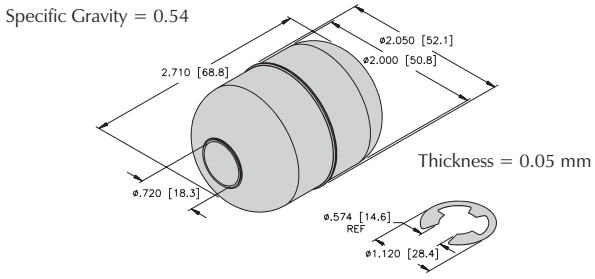
Level Probe Accessories

Bushing (316 Stainless Steel)



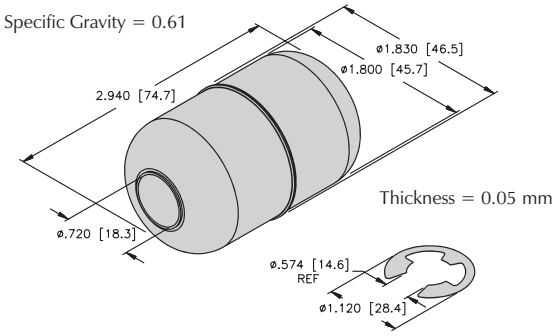
BU-R16-2x3/4 NPT-SS (LT0306)

Float Kit (316 Stainless Steel)



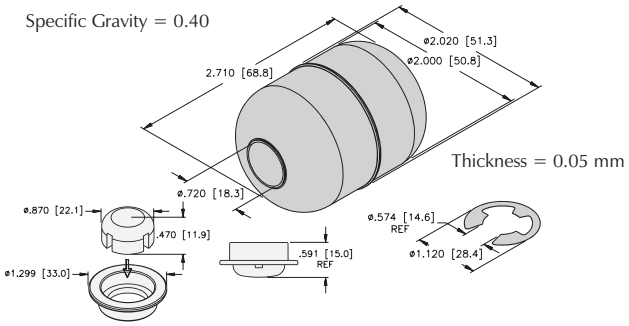
FK-R16-205-SSES (LT0299)

Float Kit (316 Stainless Steel)



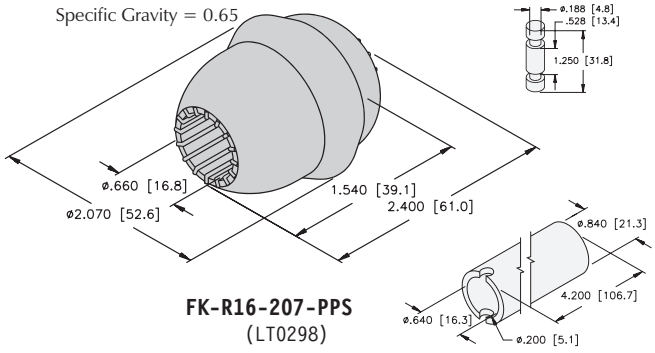
FK-R16-183-SSES (LT0296)

Float Kit (Nitrophyl)



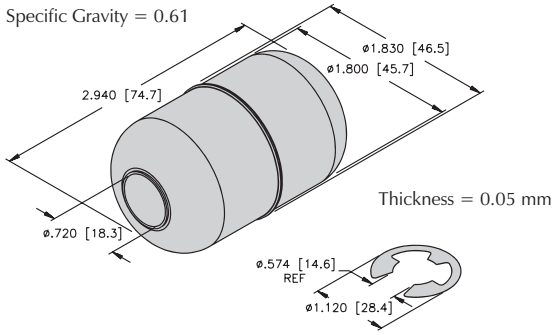
FK-R16-202-NSH (LT0297)

Float Kit (PVDF)



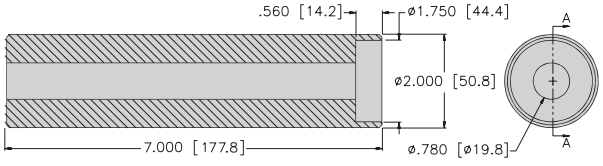
FK-R16-207-PPS
(LT0298)

Float Kit (316 Polished Stainless Steel)



FK-R16-183-SSFE (LT0302)

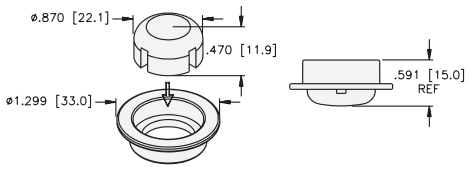
Weight Kit (316 Stainless Steel)



For use on PVDF probes 145-288 inches long.

WK-R16 Weight Kit (LT0295)

Probe Foot (ECTFE)



PF-R16
(LT0292)

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TURCK
Process Automation – Instrumentation

R16 Level Probe Worksheet

Liquid to be measured _____

Fluid Properties (check all that apply)

___ Turbulent

___ Foam

___ Solids

Product Build-Up Yes ____ No _____

Temperature Range _____°F to _____°F

Pressure Range _____ to _____

Viscosity Range _____ to _____

Specific Gravity _____

4 mA Starting Point Top___ Bottom ___

Approvals Required

UL___ CSA___ FM___ 3A___ Food Grade___

Tank Location Indoors____ Outdoors____

Tank Material _____

Additional Comments _____

_____

**Allow overhead clearance for installation and removal of sensor.*

Customer

_____

Phone Number

_____

Date

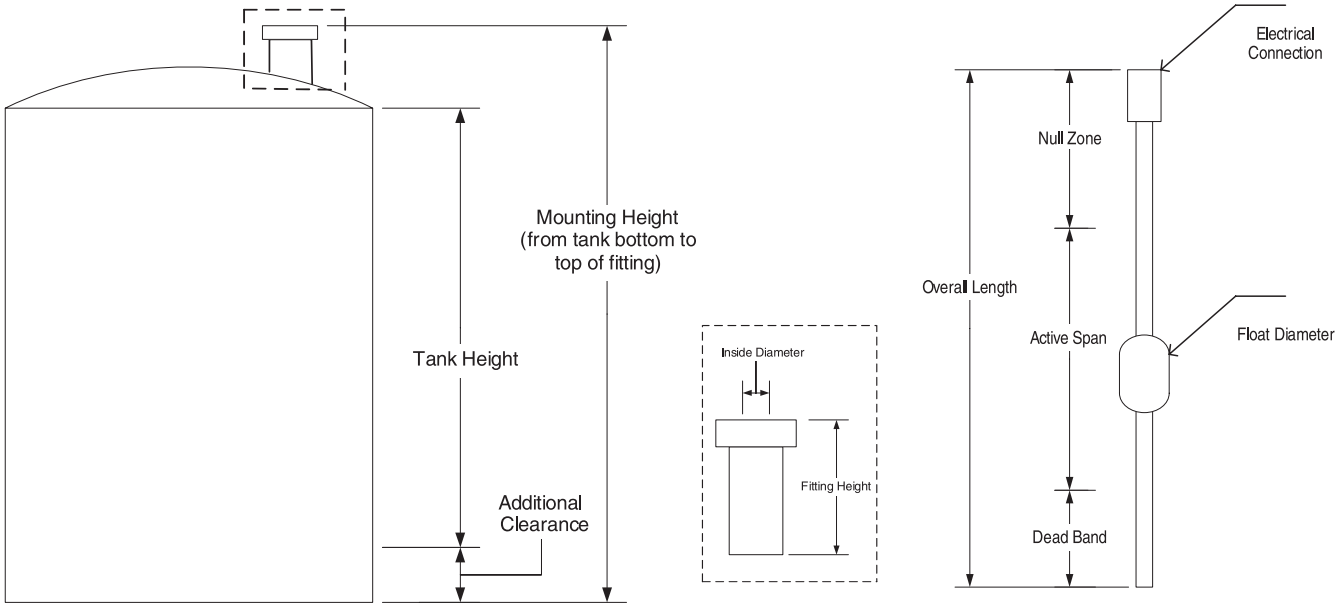
_____

Project

_____

Quantity

_____



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Conductive Level Probes and Controllers

TURCK offers liquid level probes for use in conjunction with our Level control Monitors to provide a simple solution for liquid level applications. The resistance between the terminals is measured to determine the level of the medium in the tank.

Level Controllers

The level control logic is built in to the controller which offers a variety of options to fit any application.

- Adjustable Sensitivity
- Single Set-points
- Multiple Inputs
- On/Off Delay
- Programmable Outputs

These devices can be used in applications to control the filling and draining of a tank or as high and low level alarms. The level controller is able to differentiate between a variety of liquids, as well as distinguishing between liquid and foam. Many of the monitors have adjustable on and off-delays for use in turbulent liquid level applications, as well as the necessary logic to control overflow monitoring.

Level Probes and Probe Holders

TURCK also offers stainless steel probes, and stainless steel holders with ceramic insulators. The probes are used to provide single-point level control, while the holders are sealed to withstand applications up to 2500 psi at +70°F (+21°C). These parts provide reliable liquid level control in a wide variety of applications.

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MK91-121-R.. and MK91-12-R.. Specifications

Galvanic Isolation	between input, output and supply circuits, test voltage 2.5 kVrms
Probe Voltage	0.02-5 V_{PP}/150 Hz (delta)
Sensitivity Ranges (Switching Thresholds)	
- Range 1	0.2-1 kΩ
- Range 2	0.8-4 kΩ
- Range 3	2.5-15 kΩ
- Range 4	10-100 kΩ
Hysteresis	approx. 10%
Switch-on Delay	0-20 s (adj.)
Switch-off Delay	0-20 s (adj.)
Contact Material	silver alloy + 3 µ Au
Switching Capacity	≤500 VA / 60 W
Protection	IP 20
Mounting	DIN 50022 or pull-out tabs
Operating Temperature	-25° to +60°C (-13° to +140°F)
Line Frequency (AC)	48-62 Hz
Ripple (DC)	≤10%

MK91-R11.. Specifications

Galvanic Isolation	between input and output circuit, insulation test voltage 4 kV/8 mm input circuit and supply voltage galvanically connected
Switching Point Deviation in Supply Voltage Range	≤1%
Operating Characteristics at:	V = 24 V, R_M = 40 k
- Rectangular Signal	f = 1 Hz
- Amplitude of Electrode Voltage	±2 V
- Amplitude of Electrode Current	±50 µA
Contact Material	silver alloy + 3µ Au
Switching Capacity	≤500 VA / 60 W
Protection	IP 20
Mounting	DIN 50022 or pull-out tabs
Operating Temperature	-25° to +60°C (-13° to +140°F)
Line Frequency (AC)	48-62 Hz
Ripple (DC)	≤10%

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MS91-12-R.. Specifications

Galvanic Isolation	between input, output and supply circuits
Probe Voltage	typ. 5 V_{PP}/100 Hz (delta)
Sensitivity Ranges (Switching Thresholds)	
- Range 1	0.1-1 kΩ
- Range 2	0.5-5 kΩ
- Range 3	2-20 kΩ
- Range 4	10-100 kΩ
Hysteresis	10%
Switch-on /Switch-off Delay	0.1-15 s (adj.
Contact Material	AgCdO
Switching Capacity	≤500 Va/60 W
Protection	IP 20
Mounting	DIN 50022 or pull-out tabs
Operating Temperature	-25° to +60°C (-13° to +140°F)
Line Frequency (AC)	48-62 Hz
Ripple (DC)	≤10%

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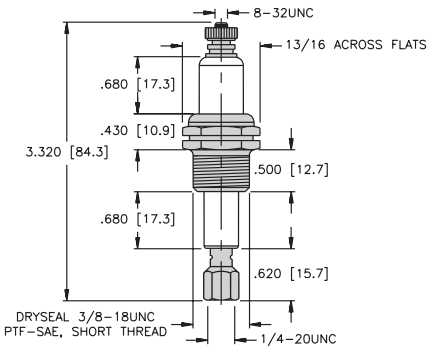
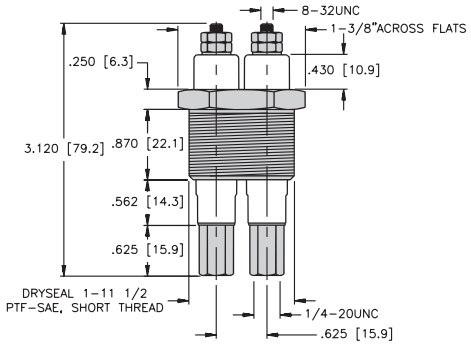
Housing Style	Part Number	ID Number	Number of Probes	Maximum Pressure (psi)	Fluid Connection
Probe Holder 	WCC-1138	A3365	1	2500	3/8 NPT
Probe Holder 	WCT-2	A3375	2	2500	1 in. NPT

For use with Amplifiers on pages M125 - M128.

Material

Probe Holders	303/304 Stainless Steel
Insulators	Ceramic
Probes	304 Stainless Steel

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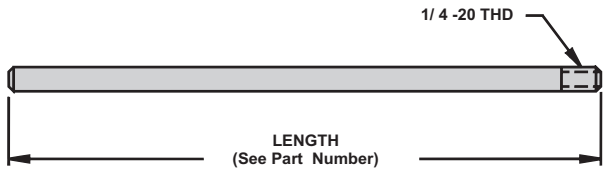
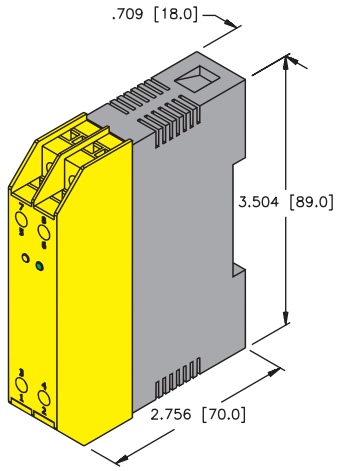
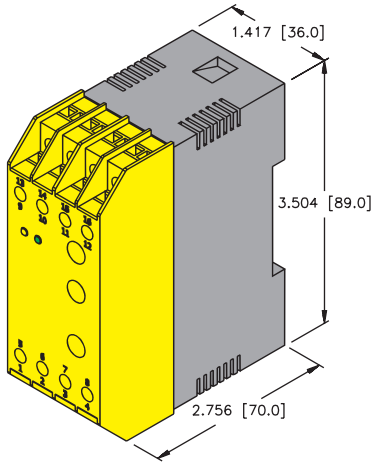
Housing Style	Part Number	ID Number	Material
Stainless Steel Probes	91-SSP 1 Ft.	A3000	304 Stainless Steel
	91-SSP 2 Ft.	A3002	304 Stainless Steel
	91-SSP 3 Ft.	A3004	304 Stainless Steel
	91-SSP 4 Ft.	A3006	304 Stainless Steel
	91-SSP 5 Ft.	A3008	304 Stainless Steel
	91-SSP 6 Ft.	A3010	304 Stainless Steel



For use with Amplifiers on pages M125 - M128.

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

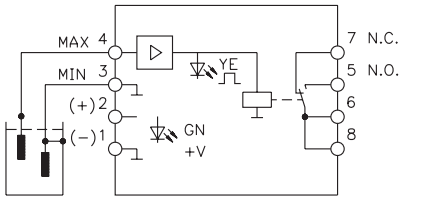
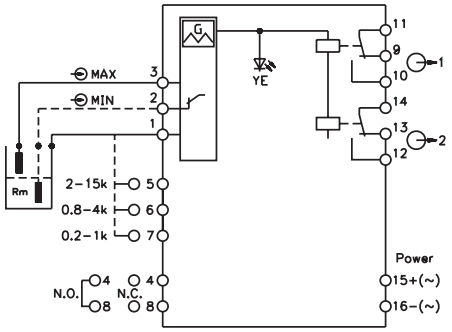
Housing Style	Part Number	ID Number	Features	Output
Level Control Monitor with Fixed Switch Point 	MK91-R11/24VDC	M7525202	*Single Level Controller 10 second delay*	**(1) SPDT Relay**
Level Control Monitor, Potentiometer/Jumper Programmable 	MK91-121-R/24VDC	M7545087	*Dual Level Controller, Adjustable Delay*	**(2) SPDT Relays/Parallel**
	MK91-121-R/115VAC	M7545082		
	MK91-121-R/230VAC	M7545080		

Additional specifications on pages M121.

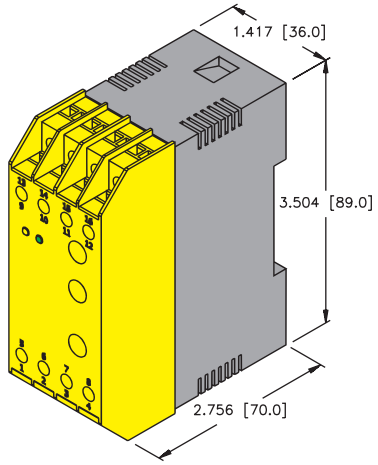
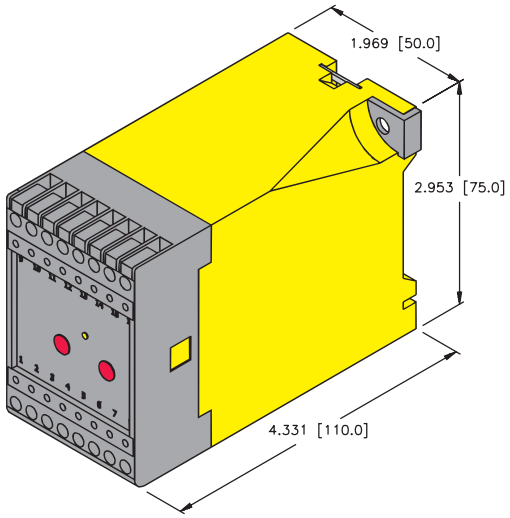
Material

Housing	PC/ABS

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Voltage	Switching Current	Switch Point	Current Consumption	Hysteresis	Power LED	Output LED	Wiring Diagram #	Wiring Diagrams
19-29 VDC	≤3 A	40 kΩ Fixed	≤20 mA at 24 VDC	Approx. 5%	GN	YE	1	Diagram 1  Diagram 2 
20-28 VDC	≤3 A	0.2-100 kΩ	≤1.5 W	Approx. 10%	GN	YE	2	
98-126 VAC	≤3 A	0.2-100 kΩ	3 VA/<15 mARMS	Approx. 10%	GN	YE	2	
184-264 VAC	≤3 A	0.2-100 kΩ	3 VA/<15 mARMS	Approx. 10%	GN	YE	2	

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Housing Style	Part Number	ID Number	Features	Output
Level Control Monitor 24 VDC, Dip-Switch Programmable 	MK91-12-R/24VDC	M7545077	*Dual Level Controller, Adjustable Time Delay*	**(2) SPDT Relays/Parallel**
	MK91-12-R/115VAC	M7545072		
	MK91-12-R/230VAC	M7545070		
Level Control Monitor, Potentiometer/Jumper Programmable 	MS91-12-R/24VDC	M5220700	*Dual Level Controller, Adjustable Time Delay*	**(2) SPDT Relays**
	MS91-12-R/115VAC	M5221000		
	MS91-12-R/230VAC	M5220000		

Additional specifications on page M122.

Material

Housing	PC/ABS

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Voltage	Switching Current	Switch Point	Current Consumption	Hysteresis	Power LED	Output LED	Wiring Diagram #
20-28 VDC	≤3 A	0.2-100 kΩ	≤1.5 W	Approx. 10%	GN	YE	1
98-126 VAC	≤3 A	0.2-100 kΩ	3 VA/<15 mARMS	Approx. 10%	GN	YE	1
184-264 VAC	≤3 A	0.2-100 kΩ	3 VA/<15 mARMS	Approx. 10%	GN	YE	1
20-28 VDC	≤4 A	0.1-100 kΩ	≤3.6 W	Approx. 10%	GN	YE	2
98-126 VAC	≤4 A	0.1-100 kΩ	≤5 VA	Approx. 10%	GN	YE	2
184-264 VAC	≤4 A	0.1-100 kΩ	≤5 VA	Approx. 10%	GN	YE	2

Wiring Diagrams

Diagram 1

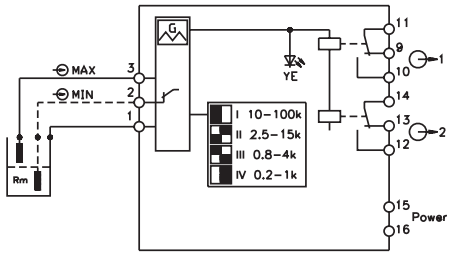
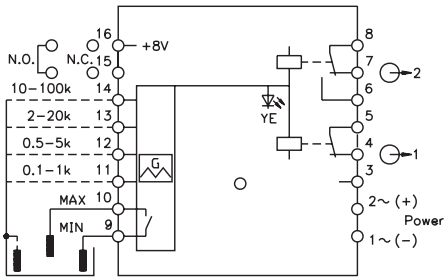


Diagram 2



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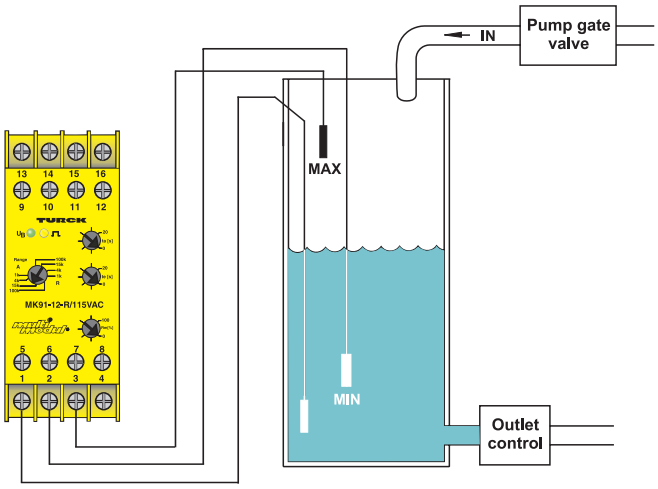
Level Detection Application Examples

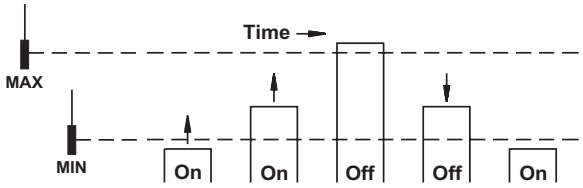
Control for Pump-in "Filling" a Tank



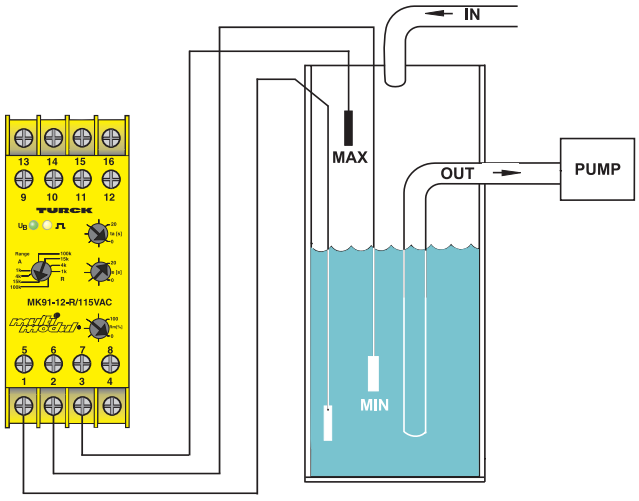
Example Application using MK91-12-R/...

The MK91-12-R will start a pump or open a fill valve when the liquid drops below the MIN level probe and will remain on until the MAX level probe is reached.

The relay then de-energizes and stays off until the MIN level is reached. The pump or valve does not cycle constantly, as would be the case if only one sensor were used.



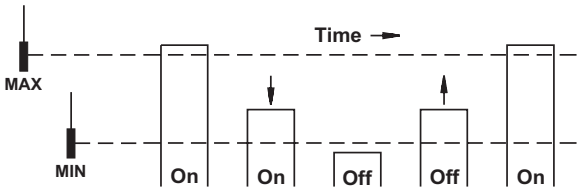
Control for Pump-out "Draining" a Tank



Example Application using MK91-12-R/...

The MK91-12-R will start a pump when the liquid reaches the MAX level probe and remain on until the MIN level probe is reached.

The relay then de-energizes and stays off until the MAX level is reached. The pump or valve does not cycle constantly, as would be the case if only one sensor were used.



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Notes:

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Glossary

Abrasion Resistance
Ability of wire, cable or material to resist surface wear.

ABS
American Bureau of Shipping. Establishes and administers standards for the design, construction, and operational maintenance of marine vessels and structures.

AC Alternating Current
Current in which the charge-flow periodically reverses and is represented by: I = I0cos (2 f + f) [I= Im cos (vt+f] where I is the current, I0 is the amplitude, f the frequency, f the phase angle.

Active Hub
A multiple port repeater or amplifier that lengthens the branching ability of a bus.

Address
A unique logical point on the bus.

Ambient Temperature
The temperature of a medium (gas or liquid) surrounding an object.

Ampere (A)
The unit of current. One ampere is the current flowing through one ohm of resistance at one volt potential.

Amplifier
A product that strengthens a signal in real time, precisely copying the old signal. Links two portions of the same bus together when the signal is weakened by electrical losses as it travels down a wire. An amplifier is used when the signal is weak, but not distorted.

Analog I/O
Variable 2-wire continuous low level current or voltage signal.

ANSI
Abbreviation for American National Standards Institute.

Armored Cable
A cable provided with a wrapping of metal for mechanical protection.

***armorfast*®**
TURCK's brand name for a cordset with metal clad cable
(NEC type MC)

AWG (American Wire Gauge)
The standard system used for designating wire diameter. The lower the AWG number, the larger the diameter. Also called the Brown and Sharpe (B&S) wire gauge.

AWM (Appliance Wiring Material)
A UL designation covering insulated wire and cable for internal wiring of appliances and equipment.

Axial Approach
The approach of the target with its center maintained on the sensor reference axis.

Axially Polarized Ring Magnet
A ring magnet whose poles are the two flat sides of the disk. Mounted on pistons for ***permaprox***® cylinder position sensing through nonmagnetic cylinder walls.

BA - Bitwise Arbitration
A form of collision detection on a network. All senders must also be receivers. Bus line must be a specific length or less so all nodes hear the bit at the same time.

Barrier Box
Limits current voltage to an area.

Binder
A spirally served tape or thread used for holding assembled cable components in place awaiting subsequent manufacturing operations.

Bit Encoding
A time reference placed on an electrical or light signal to distinguish high and low bits.

Bit
One piece of data that means either 'High-Low' or 'ON-OFF'.

Braid
A fibrous or metallic group of filaments interwoven in cylindrical form to form a covering over one or more wires.

Branch
One type is a double-sided node that connects two connects two a segments together that are the same protocol but different transmission speeds. The other is a smart repeater that only repeats the data between two bus segments when the source and destination are in different protocols.

Bus Junction
TURCK's designation for a Connectorized passive hub.

Bus Module
TURCK's designation for any field node, whether it uses terminal screws, connectors, or a combination of connecting means.

Bus Occupant
Any active or passive device on a network.

Bus Station
TURCK's designation for a fully Connectorized field node, but not a master or gateway.

Bus
A simple straight-line topology.

Busline
Any group of wires that carries data from node to node.

Byte
8 bits of information.

Cable
A stranded conductor with or without insulation and other coverings (single-conductor cable), or a combination of conductors (multiple-conductor cable).

Capacitive Proximity Sensor
A proximity sensor producing an electrostatic field that senses conductive targets and nonconductive materials having a dielectric constant of >1 within its sensing zone.

Carrier
The bit encoded signal carrying the data can ride on top of an AC or DC carrier. Advantages to using a carrier are that both power and data can be sent on just 2 wires and longer transmission capabilities without distortion.

CD - Collision Detection
A form of collision detection on a network. All senders must also be receivers. If two nodes start talking at the same time they will hear a collision. Both stop talking, wait a random amount of time, then look for a clear line to start talking again.

Checksum
A numerical representation of all the bits that is prepared by the sender and included in the message. The receiver performs the same calculation and compares the results. If they are not equal the data is considered bad and not used.

Client/Server
Upload/download information, set point changes, alarm management, remote diagnostics and one-to-one communications.

Color Code
Wire or circuit identification by color, utilizing solid colors, tracers, braids, surface printing, etc.

Complementary Output
Two outputs, one N.O. and one N.C., that can be used simultaneously. ***The sum of both load currents cannot exceed the sensor's rated Continuous Load Current***.

Conductivity
The ability of a material to allow electrons to flow, measured by the current per unit of voltage applied. It is the reciprocal of resistivity.

Conductor
A wire (or combination of wires not insulated from one another) suitable for carrying electric current.

Conduit
A tube or trough in which insulated wires and cables are run.

Connector
A device used to provide rapid connect / disconnect service for electrical cable and wire terminations.

Contact Holder
Insulating device that holds the contacts in their proper position

Contact
The parts of a connector that actually carry the electrical current and that are touched together or separated to control the flow.

Continuous Load Current
The maximum current allowed to continuously flow through the sensor output in the ON state.

Cord
A small, flexible insulated cable.

Cordset
Portable cord fitted with a wiring device at one or both ends.

Correction Factors
Percentage of the rated operating distance (Sn) that represents the operating distance for targets constructed from materials other than mild steel (mild steel's correction factor is 1.0).

CPE (Chlorinated Polyethylene)
A flexible material with high tear strength and good resistance to most inorganic chemicals. It is inherently difficult to ignite. A Thermoset plastic.

Creepage
The conduction of electricity across the surface of a dielectric.

Crimp Termination
A connection in which a metal sleeve is secured to a conductor by mechanically crimping the sleeve with pliers, presses or automated crimping machines.

Current (I)
The rate of transfer of electricity. Practical unit is the ampere, which represents the transfer of one coulomb per second. In a simple circuit, current (I) produced by a cell or electromotive force (E) when there is an external resistance (R) and internal resistance (r) is: I = E / R + r)

Current Carrying Capacity
The maximum current an insulated conductor can safely carry without exceeding its insulation and jacket temperature limitations.

Cut-Through Resistance
The ability of a material to withstand mechanical pressure, usually a sharp edge or small bending radius, without separation.

Dielectric Strength
The voltage that an insulator can withstand before breakdown occurs. Usually expressed as a voltage gradient (such as volts per mil).

Differential Travel (Hysteresis)
The difference between the operating point as the target approaches the sensor face, and the release point as the target moves away. Given as a percentage of the operating distance (Sn).

Direct Current (DC)
An electric current that flows in only one direction.

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Glossary

Discrete I/O
Signaling where the supply is typically switched to designate a change ofstate.

DNV
Det Norske Veritas. Management system certification body.

Drain Wire
In a cable, the bare wire laid over the component or components and used as a ground connection.

Dropline
A reduced branch (spur) from a trunk line.

Dynamic Output
A sensor output that stays energized for a set duration of time, independent of the time the target is present (one-shot).

Earth
British terminology for zero-reference ground.

EDS - Electronic Data Sheet
Electronically readable ASCII text files that contain both general and device-specific parameters for communication and network configuration (DeviceNet™).

EIA RS-485
A standard that defines the number of signal generators (the components that create the signal), the receiver and a combination of the called a transceiver. It also defines the electrical signal.

Embeddable (Shielded) Proximity Sensor
A sensor that can be flush-mounted in any material without that material influencing the sensing characteristics.

End of Message
Lets other occupants of the bus know the transmission is over and other messages can be sent.

EPDM
Ethylene-propylene-diene monomer rubber. A material with good electrical insulating properties. A Thermoset plastic.

eurofast ®
M12x1 threads, single key, 2 - 6, 8, 10, 12-pin

Explicit Message
A command from another node.

Exposed Run/Direct Burial
Cable construction meeting the crush and impact requirements of metal clad cables without metal clad. For use as exposed wiring between cable tray and equipment.

extremelife™
Heavy duty cable for extreme temperature environments. These cables provide excellent resistance to extreme cold temperatures and oilfield drilling muds.

Extruded Cable
Cable with conductors that are uniformly insulated and formed by applying a homogeneous insulation material in a continuous extrusion process.

Fillers
Non-conducting components cabled with the insulated conductors or optical fibers to impart roundness, flexibility, tensile strength, or a combination of all three, to the cable.

firefast ®
High temperature protective sleeving.

FKS - Frequency Shift Key
A common bit encoding method for modulated signals.

flexlife-10 ®
Unique cable designed for robotic and other continuous motion applications.

Free Zone
The space around a proximity sensor that must be kept free of any material capable of affecting the sensing characteristics.

Gateway
A node on two different buses that serves as a signal and data translator between the buses.

Ground Loop
A completed circuit between shielded pairs of a multiple pair created by random contact between shields. An undesirable circuit condition in which interference is created by ground currents when grounds are connected at more than one point.

Ground Potential
The potential of the earth. A circuit, terminal or chassis is said to be at ground potential when it is used as a reference point for other potentials in the system.

Ground
An electrical connection to the earth, generally through a ground rod. Also a common return to a point of zero potential, such as the metal chassis of equipment.

GSD - General Station Description
Electronically readable ASCII text files that contain both general and device-specific parameters for communication and network configuration (PROFIBUS).

HART
Two-way digital communication protocol for process measurement.

Hygroscopic
Capable of absorbing moisture from the air.

IEC
European Standardization agency; International Electrotechnical Commission.

IEEE
Institute of Electrical and Electronics Engineers

Inductive Magnet Operated Sensor (*permaprox* ®)
A solid-state sensor consisting of a sensing element susceptible to magnetic field strengths of 20-350 Gauss, and switching circuitry similar to that of an inductive proximity sensor.

Inductive Proximity Sensor
A proximity sensor producing an electromagnetic field that senses only metal targets within its sensing zone.

Input
A signal (or power) which is applied to a piece of electrical apparatus or the terminals on the apparatus to which a signal or power is applied.

Inrush Current
The maximum short-term load current that the output of a sensor can tolerate.

Insulation
A material having good dielectric properties that is used to separate close electrical components, such as cable conductors and circuit components.

IP Rating
Ingress Protection rating per IEC 529.

Irradiation
In insulation, the exposure of the material to high-energy emissions for the purpose of favorably altering the molecular structure.

ITC
Instrument Tray Cable. NEC classification for cable resistant to the spread of fire and suitable for use in cable trays. 150 V rating.

Jacket
Pertaining to wire and cable, the outer protective covering, may also provide additional insulation.

LAS - Link Active Scheduler
Controls communication on the bus. Creates a token circulation list that defines access on the bus. Multiple devices may have LAS but only one can communicate at a time.

Lateral Approach
The approach of a target perpendicular to the sensor reference axis.

LED
Light Emitting Diode used to indicate device status.

Limited Peer-to-Peer
An exclusive one-to-one relationship between the input node and the output node. Also called exclusive peer-to-peer.

Line Voltage
The value of the potential existing on a supply or power line.

Load
A device that consumes power from a source and uses that power to perform a function.

lokfast™ **Guard**
Guards for minifast and eurofast connections in hazardous locations. The guard requires a tool to remove.

M Threading
ISO 68 Metric straight threading, designated as "Nominal Size" X "Pitch", in mm. (Ex. M5X0.5)

Manchester
A common bit encoding for digital signals.

MC
Metal Clad Cable. NEC classification for cable resistant to crush and impact based on an outer covering of metal.

Media Access
The "right-of-way" for talking on the bus.

Message Collision Avoidance
A process for eliminating communication collisions on a network. The two major ways to handle a potential collision are CD (Collision Detection) and BA (Bitwise Arbitration).

Messaging
Ways to communicate on the network. The three major types in the run mode are Solicited, Unsolicited and Explicit.

microfast ®
½"-20UNF threads, dual key, 2 - 6-pin

microfast ®
½"-20UNF threads, dual key, 2 - 6 pin

minifast ®
7/8"-16UN threads, 2 - 6-pin

minifast **B size**
1"-16UN threads, 6 - 8 pin

minifast **C size**
1 1/8"-16UN threads, 9, 10, 12-pin

Minimum Load Current
The minimum amount of current that is required by the sensor for reliable operation.

Moisture Resistance
The ability of a material to resist absorbing moisture from the air or from water when immersed.

Molded Plug
A connector molded onto either end of a cord or cable.

MOV
Acronym for Metal Oxide Varistor. A solid state device used to suppress voltage surges \ spikes

MSHA
Mine Safety and Health Administration

multibox ®
Junction boxes, 4, 6, 8 and 16 port

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Glossary

multifast
M23x1 threads, 12, 16 and 19-pin or M27 threads, 26 and 28-pin

Mylar
DuPont trademark for polyester film.

NAMUR Sensor
A 2-wire variable-resistance DC sensor whose operating characteristics conform to DIN 19 234. Requires a remote amplifier for operation. Typically used for intrinsically safe applications.

NAMUR
The acronym for a European standards organization.

National Electrical Code (NEC)
A set of regulations governing construction and installation of electrical wiring and apparatus in the United States, established by the American National Board of Fire Underwriters.

NEMA Rating
An enclosure rating per NEMA Standard 250.

NEMA
National Electrical Manufacturers Association.

Neoprene
A synthetic rubber with good resistance to oil, chemical, and flame. Also called polychloroprene. A Thermoset plastic.

Node
An addressable device on the bus.

Noise
In a cable or circuit, any extraneous signal that tends to interfere with the signal normally present in or passing through the system.

No-Load Current
The current drawn by a DC proximity sensor from the power supply when the outputs are not connected to a load.

Nonembeddable (Nonshielded) Proximity Sensor
A sensor is nonembeddable when a specified free zone must be maintained around its sensing face in order not to influence the sensing characteristics.

Normally Closed (N.C.)
The output is OFF when the target is detected by the sensor.

Normally Open (N.O.)
The output is ON when the target is detected by the sensor.

NPN Output (Current Sinking)
A transistor output that switches the common or negative voltage to the load. Load is between sensor and positive supply voltage.

NPN Output
Transistor output that switches the common or negative voltage to the load (current sinking). Load connected between output and positive supply.

NPSM Threading
American National Standard Straight Pipe Thread for Free-Fitting Mechanical Parts.

NPT Threading
American National Standard Taper Pipe Thread.

NRZ - Non Return to Zero
An encoding method on differential signals such as RS-485 and CANbus.

Off-State (Leakage) Current
The current that flows through the load circuit when the sensor is in the OFF-state. Also known as leakage or residual current.

Ohm (Ω)
The electrical unit of resistance. The value of resistance through which a potential difference of one volt will maintain a current of one ampere.

Ohm's Law
E = I x R. Voltage (E) is directly proportional to the product of current (I) and resistance (R) of circuit.

Operating Distance
A distance at which the target approaching the sensing face along the reference axis causes the output signal to change.

Output
The useful power or signal delivered by a circuit or device.

Overload Protection
The ability of a sensor to withstand load currents between continuous load rating and short-circuit condition with
no damage.

PA (Polyamide, Nylon)
An abrasion-resistant thermoplastic with good chemical resistance, also known as polyamide.

Passive Hub
A multi-port tee.

pentafast ®
M5 threads, 3 and 4-pin

PG Threading
Steel conduit threading per German standard DIN 40 430.

picofast ®
Snap lock or M8x1 threads, 3, 4 and 6-pin

Plastic
High-polymeric substances, including both natural and synthetic products, but excluding the rubbers, that are capable of flowing under heat and pressure.

PLTC
Power Limited Tray Cable. NEC classification for cable resistant to the spread of fire and suitable for use in cable trays. 300 V rating.

Plug
A connector associated with being attached to a cable.

PNP Output (Current Sourcing)
Transistor output that switches the positive voltage to the load. Load is between sensor and common.

PNP Output
Transistor output that switches the positive voltage to the load (current sourcing). Load connected between output and common.

POM (Polyoxymethylene, Acetal, Delrin)
Polyoxymethylene - a crystalline thermoplastic polymer with a high melting point. It is suitable for mechanical parts or electrical insulators that require structural strength at above normal temperatures.

Potting
The sealing of a cable termination or other component with a liquid that thermosets into an elastomer.

Power Conditioner
Device used to condition the power to be used for a bus segment. Allows power and data to exist on the same wires.

Power Tap
A tee which provides power to the network.

powerfast ®
1 3/8"-16 threads, 2, 3 and 4 pin or M23 threads, 6, 7 and 9 pins.

Programmable Output
Sensor output whose N.O. or N.C. function can be selected by means of a jumper or specific terminal connection.

Protocol
A small program that is embedded in sending and listening devices to organize the meaning of bits. DeviceNet, AS-interface, PROFIBUS, Ethernet, etc. are all examples of different protocols.

Publisher / Subscriber
Scheduled distribution of data to nodes on the subscriber list.

PUR (Polyurethane)
Broad class of polymers noted for good abrasion and solvent resistance.

PVC (Polyvinyl Chloride)
A general-purpose thermoplastic widely used for wire and cable insulation and jackets.

Radially Polarized Ring Magnet
A ring magnet whose poles are the inner and outer diameter rings.

Rated Operating Distance (Sn)
A conventional quantity used to designate the operating distance. It does not take into account either manufacturing tolerances or variations due to external conditions such as voltage and temperature.

Reference Axis
An axis perpendicular to the sensing face and passing through its center.

Repeatability
The difference between actual operating distances measured at a constant temperature and voltage over an 8-hour period. It is expressed as a percentage (%) of rated operating distance (Sn).

Repeater
Strengthens the bus signal by producing a fresh signal without distortions. It also links two portions of the same bus together. A repeater is used when the signal is weak or distorted.

Resistance (R)
A measure of the difficulty in moving electrical current through a medium when voltage is applied. It is measured in ohms.

Response frequency
The maximum rate that the output can change in response to the input and still maintain linearity.

Response Time
The time required for the device switching element to respond after the target enters or exits the sensing zone.

Retractile Cord
A cord having a specially treated jacket or insulation so that it will retract like a spring. Retractility may be added to all or part of a cord's length.

Reverse Polarity Protection
Internal components that keep the sensor from being damaged by incorrect polarity connection to the power supply.

Ring
A network topology where every node is also a repeater. Information comes into a node, information that pertains to that node is read, new information is added and the message is sent on to the next node.

Ripple
The alternating component remaining on a DC signal after rectifying, expressed in percentage of rated voltage.

RoHS
Restriction of Hazardous Substances

Router
A higher level bridge for connection of wide area networks.

RTD
Resistance Temperature Detector

Rubber
A general term used to describe wire insulation made of thermosetting elastomers, such as natural or synthetic rubbers, neoprene, Hypalon, CPE butyl rubber and others.

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Glossary

Scanner Module
Allen-Bradley's designation for the gateway that plugs into their PLC and interfaces the PLCs bus to the network.

Sensing Face
The surface of the proximity sensor through which the electromagnetic (or electrostatic) field emerges.

Serial Data Communication
"ON-OFF" or "HIGH-LOW" electrical signals.

Serial Data Transfer
Information transmitted one piece at a time in a specific order.

Serve
A filament or group of filaments such as fibers or wires, wound around a central core.

Shield
In cables, a metallic layer placed around a conductor or group of conductors to prevent electrostatic or electromagnetic interference between the enclosed wires and external fields.

Shielded twisted pair
Two conductors twisted together with a metallic covering.

Short-Circuit Protection
The ability of a sensor to withstand a shorted condition (no current-limiting load connected) without damage.

Signal
Any visible or audible indication that can convey information. Also, the information conveyed through a communication system.

Simple Device
Anything that does not have LAS capabilities.

SJOOW
Junior hard service, rubber insulated, portable cord with oil resistant rubber outer jacket. Stranded copper conductors with separator and individual oil and water resistant rubber insulation. Two or more color coded conductors cabled with filler, wrapped with separator and rubber jacketed overall. 300 V.

Slew Rate
The rate of change of the output voltage with respect to a step change in input. A change in output of 0 to 10 volts at a slew rate of 1.25 V/ms would take 8 ms to slew to the new value.

Solicited Message
A response to another node or a response when it is the node's predetermined time to speak.

Solid Conductor
A conductor consisting of a single wire.

Solid State
Pertains to circuits and components using semiconductors without moving parts. Example: transistors, diodes, SCR, etc.

SOOW
Heavy duty, rubber-insulated portable cord with oil resistant rubber outer jacket. Stranded copper conductors with separator and individual oil and rubber insulation. Two or more color-coded conductors cabled with filler, wrapped with separator and rubber jacketed overall. 600 V.

Spanner
TURCK's designation for a double-sided slave node. Unit has bi-directional data from one control area segment to another in a free form format.

Star
Bus lines radiate from a single point.

Start of Message
A certain number of high bits that start a message. These consecutive bits allow the listener time to prepare to receive the data.

Static Output
A sensor output that stays energized as long as the target is present.

STOW
Heavy duty, PVC insulated, portable cord with oil resistant PVC outer jacket. Stranded copper conductors, PVC insulation. Two or more color coded conductors cabled with filler, wrapped with separator and PVC jacketed overall. Approved for outdoor use. 600 V.

Stranded Conductor
A conductor composed of groups of wires twisted together.

Switching Frequency
The maximum number of times per second that the sensor can change state (ON and OFF) under ideal conditions, usually expressed in Hertz (Hz).

System Tee
A field wireable tee.

Tee
Creates a branch or drop from a bus.

Temperature Rating
The maximum temperature at which a material may be used in continuous operation without loss of its basic properties.

Terminating Resistor
A resistor that is put at the beginning and end of the main bus line to stabilize and minimize reflections.

Thermoplastic
A material that will soften, flow or distort appreciably when subjected to heat and pressure.

Thermoset
A material that hardens or sets when heat is applied, and which, once set, cannot be re-softened by heating. The application of heat is called "curing".

Time-Delay Before Availability
The length of time after power is applied to the sensor before it is ready to operate correctly, expressed in milliseconds (ms).

Topology
A bus term that describes how the data lines connect the nodes together.

TPE
Thermo Plastic Elastomer. Broad class of polymers noted for flexibility and weld slag resistance.

TPR
Thermo Plastic Rubber. Another name for TPE.

Trunk line
The main bus line.

Twisted Pairs
A cable composed of two small, insulated conductors twisted together without a common covering.

Unlimited Peer-to-Peer
Output node gets information from several input nodes.

Unsolicited Message
A response to a change-of-state at the node.

***Uprox* Sensor ®**
An inductive proximity sensor that detects all metals at the same range. Uprox sensors are inherently weld-field immune, operate over a wider temperature range and have a higher switching frequency than standard inductive sensors.

***V*fast* ®**
DIN 43650, type A, B, I and C

VDE
German approval agency.

***versafast* ™**
M16 threads, 5, 6, 7, 8, 12, 14 and 19 pin

***Versafast* ™**
M16 threads, 5, 6, 7, 8, 12, 14 and 19 pin

Volt (V)
A unit of electrical pressure. One volt is the electrical pressure that will cause one ampere of current to flow through one ohm of resistance.

Voltage Rating
The highest voltage that may be continuously applied to a wire in conformance with standards or specifications.

Voltage
The term most often used in place of electromotive force, potential difference, or voltage drop. Designates the electric pressure existing between two points that is capable of producing a current when a closed circuit is connected between these points.

VW-1
A flammability rating established by Underwriters Laboratories for wires and cables that pass a specially designed vertical flame test, formerly designated FR-1.

Weld-Field Immunity (WFI)
The ability of a sensor not to false-trigger in the presence
of strong magnetic fields typically produced by resistance welders.

Wicking
The longitudinal flow of a liquid in a wire or cable due to capillary action.

Wire-Break Protection
Results in the output being OFF on a DC sensor if either supply wire is broken.

Word
2 bytes.

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TURCK
Process Automation Products

REGISTRATION INSTRUCTIONS

(TO BE COMPLETED BY THE END USER OF THE SENSORS)
THIS INFORMATION WILL BE KEPT IN STRICT CONFIDENCE

STEP 1: Please make a Photocopy of this form.
STEP 2: Fill in all information below.
STEP 3: Line 13 (to put this warranty into effect, it must be validated by the signature of the End-User and an authorized **TURCK** Distributor or Representative.
STEP 4: Return this Registration to **TURCK** (keep a copy for your records).

Date: _____

LIFETIME WARRANTY REGISTRATION
(INDUCTIVE, INDUCTIVE MAGNET & CAPACITIVE SENSORS ONLY)

Please Print
End User

1. Company Name: _____
2. Division: _____ Dept: _____
3. Address: _____
4. City: _____ State: _____ Zip: _____
5. Phone: ( ) _____ Your Name: _____
   Your Title: _____
6. Industry (Type of Product Manufactured or Service Performed at this Location): _____
   _____
   _____
7. Approx. Date Purchased: _____
8. Approx. Date Installed: _____
9. What is the General Application for this Product? _____
   _____
10. Which OEM Supplied the Mechanical Equipment on which the Sensors are Installed?
    Name: _____ Location: _____
11. **TURCK** Sensors Installed:

Catalog Number	Approx. Quantity
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

12. Why were **TURCK** Sensors Specified for this Application?
    _____
    _____
13. Distributor or Representative Signature: _____
    Company Name: _____ Date: _____
    End User Signature: _____ Date: _____
14. **Return to USA:**
    TURCK Inc.
    3000 Campus Drive
    Minneapolis, MN. 55441
    Attn: Warranty Department
    Phone: (763) 553-7300
    Fax: (763) 553-0708

    Return to Canada:
    CHARTWELL ELECTRONICS, INC.
    140 Duffield Drive
    Markham, Ontario
    Canada, L6G 1B5
    Phone: (905) 513-7100
    Fax: (905) 513-7101

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Warranty Terms and Conditions

RISK OF LOSS

Delivery of the equipment to a common carrier shall constitute delivery to the Purchaser and the risk of loss shall transfer at that time to Purchaser. Should delivery be delayed due to an act or omission on the part of the Purchaser, risk of loss shall transfer to the Purchaser upon notification by **TURCK Inc.** that the order is complete and ready for shipment.

WARRANTIES

TURCK INC. (hereinafter **"TURCK"**) offers five (5) WARRANTIES to cover all products sold. They are as follows:

1) The **12-MONTH WARRANTY** is available for the products listed - generally those not covered by **LIFETIME**, **5-YEAR**, **24-MONTH** or **18-MONTH** warranty. No registration required.
2) The **18-MONTH WARRANTY** is available for the products listed - generally those not covered by **LIFETIME** or **5-YEAR WARRANTY**. No registration is required.
3) The **24-MONTH WARRANTY** is available for the products listed - generally those not covered by **LIFETIME**, **5-YEAR** or **18-MONTH**. No registration is required.
4) The **5-YEAR WARRANTY** is available generally for the products listed. No registration is required.
5) A **LIFETIME WARRANTY** is available for the products listed. It becomes effective when the accompanying **TURCK LIFETIME WARRANTY REGISTRATION** is completed and returned to **TURCK**.

GENERAL TERMS AND CONDITIONS FOR ALL WARRANTIES

- **12-MONTH STANDARD WARRANTY**
- **18-MONTH STANDARD WARRANTY**
- **24-MONTH STANDARD WARRANTY**
- **5-YEAR WARRANTY**
- **LIFETIME WARRANTY**

TURCK warrants the Products covered by the respective WARRANTY AGREEMENTS to be free from defects in material and workmanship under normal and proper usage for the respective time periods listed above from the date of shipment from **TURCK**. In addition, certain specific terms apply to the various WARRANTIES.

THESE EXPRESS WARRANTIES ARE IN LIEU OF AND EXCLUDE ALL OTHER REPRESENTATIONS MADE - BOTH EXPRESSED AND IMPLIED. THERE ARE NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE FOR PRODUCTS COVERED BY THESE TERMS AND CONDITIONS.

TURCK warrants that the goods sold are as described, but no promise, description, affirmation of fact, sample model or representation, oral or written shall be part of an order, unless set forth in these terms and conditions, or are in writing and signed by an authorized representative of **TURCK**. These WARRANTIES do not apply to any Product which has been subject to misuse, negligence, or accident - or to any Product which has been modified or repaired, improperly installed, altered, or disassembled -except according to **TURCK's** written instructions.

These WARRANTIES are subject to the following conditions:

1) These WARRANTIES are limited to the electronic and mechanical performance only, as expressly detailed in the Product specifications and NOT to cosmetic performance.
2) These WARRANTIES shall not apply to any cables attached to, or integrated with the Product. However, the **18-MONTH WARRANTY** shall apply to cables sold separately by **TURCK**.
3) These WARRANTIES shall not apply to any Products which are stored, or utilized, in harsh environmental or electrical conditions outside **TURCK's** written specifications.
4) The WARRANTIES are applicable only to Products shipped from **TURCK** subsequent to January 1, 1988.

ADDITIONAL SPECIFIC TERMS FOR -

(12-MONTH STANDARD WARRANTY) for Linear Displacement Transducers and RFID products.

(18-MONTH STANDARD WARRANTY) FOR ULTRASONIC SENSORS, CABLES AND ALL NON-SENSING PRODUCTS SOLD BY TURCK INC. INCLUDING MULTI-SAFE, MULTI-MODUL, MULTI-CART AND RELATED AMPLIFIER PRODUCTS, RELAYS AND TIMERS.

(24-MONTH STANDARD WARRANTY) FOR ENCODERS.

5-YEAR WARRANTY FOR INDUCTIVE AND CAPACITIVE PROXIMITY SENSORS: The periods covered for the above WARRANTIES and Products shall be 12 MONTHS, 18-MONTHS, 24-MONTHS and 5-YEARS, respectively, from the date of shipment from TURCK.

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Warranty Terms and Conditions

ADDITIONAL SPECIFIC TERMS FOR - (continued)

LIFETIME WARRANTY (OPTIONAL - REGISTRATION REQUIRED) FOR INDUCTIVE, INDUCTIVE MAGNET OPERATED AND CAPACITIVE PROXIMITY SENSORS SOLD TO THE ORIGINAL PURCHASER FOR THE LIFETIME OF THE ORIGINAL APPLICATION.

The following terms apply to the LIFETIME WARRANTY in addition to the General Terms:

1) This WARRANTY shall be effective only when the LIFETIME WARRANTY REGISTRATION has been completed, signed by the End User and an authorized **TURCK** Representative or Distributor and has been received by **TURCK** no later than six (6) months after installation in the End User's Plant, or two (2) years from the date product was shipped from **TURCK**, whichever is sooner.
2) This warranty is available only to **TURCK's** authorized Representatives, Distributors and to the Original User. (The term "Original User" means that person, firm, or corporation which first uses the Product on a continuous basis in connection with the operation of a production line, piece of machinery, equipment, or similar device.) In the event the ownership of the product is transferred to a person, firm or corporation other than the Original User, this WARRANTY shall terminate.
3) This WARRANTY is applicable only to the Original Application. In the event the machinery, equipment, or production line to which the Product is connected, or on which it is installed, is substituted, changed, moved or replaced, the WARRANTY shall terminate.
4) This WARRANTY shall be valid only if the Product was purchased by the Original User from **TURCK**, or from an authorized **TURCK** Distributor, or was an integral part of a piece of machinery and equipment obtained by the Original user from an Original Equipment Manufacturer, which itself, was purchased directly from **TURCK** or from an authorized Distributor.

PURCHASER'S REMEDIES

This Remedy shall apply to all WARRANTIES. If a **TURCK** Distributor desires to make a WARRANTY Claim, the Distributor shall, if requested by **TURCK**, ship the Product to **TURCK's** factory in Minneapolis, Minnesota, postage or freight prepaid. If the User desires to make a WARRANTY Claim, they shall notify the authorized **TURCK** Distributor from whom it was purchased or, if such Distributor is unknown, shall notify **TURCK**. **TURCK** shall, at its option, take any of the following two courses of action for any products which **TURCK** determines are defective in materials or workmanship.

1) Repair or replace the Product and ship the Product to the Original Purchaser or to the authorized **TURCK** Distributor, postage or freight prepaid; or
2) Repay to the Original Purchaser that price paid by the Original Purchaser; provided that if the claim is made under the LIFETIME WARRANTY, and such Product is not then being manufactured by **TURCK**, then the amount to be repaid by **TURCK** to the Original Purchaser shall be reduced according to the following schedule:

Number of Years Since Date of Purchase by Original Purchaser	Percent of Original Purchase Price To Be Paid by TURCK
10	50%
15	25%
20	10%
More than 20	5%

PURCHASER'S REMEDIES SHALL BE LIMITED EXCLUSIVELY TO THE RIGHT OF REPLACEMENT, REPAIR OR REPAYMENT AS PROVIDED AND DOES NOT INCLUDE ANY LABOR COST OR REPLACEMENT AT ORIGINAL PURCHASER'S SITE. TURCK SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF ANY WARRANTY, EXPRESSED OR IMPLIED, APPLICABLE TO THE PRODUCT, INCLUDING WITHOUT LIMITATION, ANY DAMAGES RESULTING FROM PROPERTY DAMAGE, PERSONAL INJURY OR BUSINESS INTERRUPTION.

CONSIDER SAFETY AND PROTECTION PRECAUTIONS

TURCK takes great care to design and build reliable and dependable products, however, some products can fail eventually. You must take precautions to design your equipment to prevent property damage and personal injury in the unlikely event of failure. As a matter of policy, **TURCK** does NOT recommend the installation of electronic controls as the sole device FOR THE PROTECTION OF PERSONNEL in connection with power driven presses, brakes, shears and similar equipment and, therefore, the customer should build in redundancy or dual control using approved safety devices for these applications.

GOVERNING LAW

The sale and purchase of Products covered hereby and all terms and conditions hereof shall be governed by the law of the State of Minnesota.

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TURCK

PROCESS AUTOMATION

THE ASSET MANAGEMENT PRODUCT COMPANY

TURCK products enable active management of the physical layer in a modern Asset Management System. In other words, the administration of the infrastructure for the connection of fieldbus devices and control systems is made possible. **TURCK** was involved from the very start in the FDT/DTM concept. And today all significant physical layer components feature DTM's. This includes the classic point-to-point wiring (interface technology), the point-to-bus wiring (remote I/O) as well as bus-to-bus communication (fieldbus technology).

FDT

FOUNDATION

The DPC system (Diagnostic Power Conditioner) supports the commissioning of a fieldbus system and detects creeping changes within individual fieldbus segments over a long period of time. Provided with a suitable alarm function, interferences and even down times can be prevented. The DPC system monitor FF-H1 segments, but it also implements self-diagnostics and diagnostics of the FF-High-Speed-Ethernet. This data can be displayed via standard FF function blocks or graphically via a DTM.

····Sense It!····Connect It!····Bus It!

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1-800-553-0016
email: process@turck.com
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Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

TURCK USA

TURCK Inc.
3000 Campus Drive
Minneapolis, MN 55441
Phone: (763) 553-7300
Fax: (763) 553-0708
Application Support:
1-800-544-7769

TURCK Mexico

TURCK MEXICO S. DE R.L. DE C.V.
Carr. Saltillo-Zacatecas km 4.5 s/n
Parque Industrial "La Angostura"
Saltillo, COAH. C.P. 25070
MEXICO
Phone: +52 (844) 411-6647/46
Fax: +52 (844) 482-6926
Toll free: 01-800-01-88725 (Mexico only)
E-mail: ventasmexico@turck.com

TURCK Canada

CHARTWELL
ELECTRONICS, INC.
140 Duffield Drive
Markham, Ontario
Canada, L6G 1B5
Phone: (905) 513-7100
Fax: (905) 513-7101
Toll Free: 1-877-513-7769

TURCK
World Headquarters

Hans TURCK GmbH & Co. KG
Witzlebenstrasse 7
D-45472 Muelheim an der Ruhr
Federal Republic of Germany
Phone: (+49) 208-49 52-0
Fax: (+49) 208-49 52 264

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