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System Description	. 106	<i>E</i>
Selection Guideline	. 125	IS H1
Products Advanced Diagnostics Power Supplies		Fieldbus
Advanced Diagnostics	. 140	Ë
Power Supplies	. 154	NOI.
Field Distribution	. 216	DAT
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Advanced Diagnostics Power Supplies Field Distribution DART Fieldbus Process Interfaces	. 264	N
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Introduction

F

FOUNDATION Fieldbus H1

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FieldConnex® is the infrastructure and connection technology for fieldbus in process automation. It supports FOUNDATION Fieldbus H1 based on IEC standard IEC 61158-2 and

provides power and communication on the same cable. With guality components for your process automation system and demands in the field, our highly reliable and energy-efficient design enables you to easily design and implement segments that will keep running.

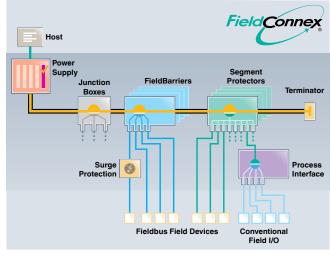


Figure 1 System diagram: Schematic connections between all components of the fieldbus infrastructure.

The color coding in the diagram above guides you through the process of selecting the right FieldConnex® components and options. Each chapter is clearly marked with the symbol for the component.

The following chapters describe all components - both hardware and software - that make up the FieldConnex® portfolio. This includes features, benefits, engineering concepts, and available options. Cross references to the "Technology" section, manuals, white papers, or other documents are provided for easy comprehension.

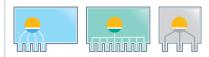
System Components

Diagrams show the context in which FieldConnex® components are applied in a segment. Symbols in the diagrams are defined for all product groups as follows:



Fieldbus power supplies (orange) power the segment and provide connections to the DCS systems. Different versions and options suit all kinds of installations, starting from laboratory and

test installations, to small-scale remote installations, up to large-scale process plants with 10 000 segments or more.



Device couplers (blue, green, or gray) provide the connection points for field

instruments. They come in enclosures ready to install in the field and are customized with accessories to fit the solution. Pepperl+Fuchs provides pre-engineered and pre-wired cabinets and housing solutions for plug and play.



Physical laver diagnostics (magenta) monitor the fieldbus physical layer and signals. This approach simplifies all practical

aspects on handling the fieldbus.



Process Interfaces (purple) connect simple analog or digital I/O devices to the fieldbus. The process interface collects status, process data, and diagnostics and transmits the information

via fieldbus to the DCS.



Accessories (yellow) such as terminators and surge protectors complete the product line

Physical Layer Diagnostics

The quality of the installation itself can be monitored economically with FieldConnex® Advanced Diagnostics. Operator and maintenance staff can keep the physical laver from the power supply, junction boxes, and all connections between the DCS and the instrument in clear view. The system notifies the user when changes in the physical layer become critical issues during the operation of the automation system.

At the core is the Advanced Diagnostic Module (ADM), which is the first of its kind to monitor fieldbus signals for their quality. The system includes a software interface that allows the worker to analyze the installation from the safety of the control room.

A built-in expert system interprets a large number of measurements reported by the ADM. It provides information about possible causes and suggests courses of corrective action in plain text. Faults and possible causes are already known ahead of time for well-planned and necessary trips to the field. This way, unnecessary trips are avoided.

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FieldConnex® Advanced Diagnostics reports alarms automatically to the DCS and plant asset management. This includes field-installed components with extra features to handle fault scenarios typical for fieldbus systems. This includes climate monitoring in the control cabinet, water ingress in junction boxes/instrument head, or wear of surge protectors. The alarm information reaches the DCS or maintenance station, traveling in parallel to normal fieldbus communication without requiring a fieldbus address or extra engineering.

FieldConnex® Advanced Diagnostics gives users the certainty that environmental conditions, manual intervention, or any other potentially unknown cause will not harm the quality of the installation. This increases the overall availability so that fieldbus can be applied even in safety-critical applications.

Explosion Protection

FieldConnex® can be implemented in any hazardous area (Zones and Divisions) with a large selection of explosion protection concepts. The concepts are designed to meet the needs of modern-day process automation systems for ease of application, system availability, and live maintenance.

To learn more about explosion protection concepts, see the "Application Guideline" in the "Technology" section.

In order to meet the requirements of your plant, both the power supply and device coupler must support the chosen explosion protection concept of your plant. The following aspects have a major impact on choosing the right power supply and device coupler:

- Type of hazardous area
- Preferred explosion protection concept
- Maximum cable length and device count per segment

For a complete selection of FieldConnex® components, see the "Selection Guideline" for FOUNDATION Fieldbus H1.

High reliability and availability of all FieldConnex® system components result from our long-lasting expertise and the quality of our manufacturing. This is possible because of a highly integrated value chain, from product design, to production and quality control through delivery and implementation in your plant.

Enclosure and Cabinet Solutions

Aside from superior power supply components and field installation, Pepperl+Fuchs offers complete solutions built at our factories and ready for installation on site. Pre-engineered fieldbus junction boxes are made from a range of materials and include all components and accessories pre-wired and tested.

Our engineering departments assist with control cabinets built to order. Factory acceptance testing is available at our many facilities around the world. With premium fieldbus components and our value in engineering, we look to reduce your cost and time required on site for installation, testing, and plant startup.

Power Supplies



FieldConnex® fieldbus power supplies come in two versions: modular Power Hubs with a motherboard as wiring interface and simplex all-in-one power supplies.



The FieldConnex® Power Hub with many choices and options to Figure 2 fit the specific need with regards to plant availability, wiring, and diagnostics.



All-in-one solutions work well in smaller applications and Figure 3 laboratory environments.

Detailed selection tables are located in the "Selection Guideline".

Common Attributes

Heat Dissipation

FieldConnex® power supplies are designed for low heat dissipation. This contributes to a longer service life and, more importantly, to reduced heat dissipation, enabling a higher packing density in the control room cabinet. In most cases, heat dissipation rather than the actual cabinet floor space is the limiting factor in cabinet detail engineering.

The actual heat dissipation depends on layout and load conditions. To assist the decision-making process, selection tables indicate low heat dissipation as follows '-', '--', '---' where '---' stands for the lowest heat dissipation and the best performance.

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FOUNDATION Fieldbus H1

Selection Guideline

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DIN Rail Installation

All power supplies mount firmly on the DIN rail for easy installation in the cabinet.

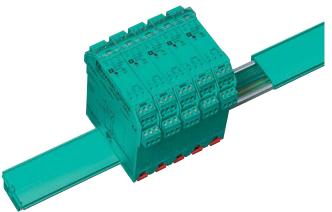


Figure 4

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Simplex power supplies support the Pepperl+Fuchs Power Rail, reducing wiring



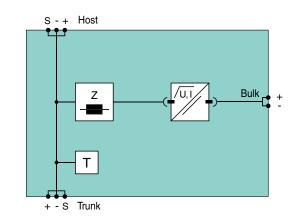
Figure 5 DIN rail installation is standard for all FieldConnex® power supplies

Supply and Conditioner

A selection of output voltages allows for designs for general purpose areas and hazardous areas. Additionally, fieldbus power is available in two forms:

- 1. Power Supply Modules provide galvanic isolation, impedance matching, and a choice of controlled output voltages.
- 2. Galvanic isolation provides many long-term benefits for communication stability and plant availability.

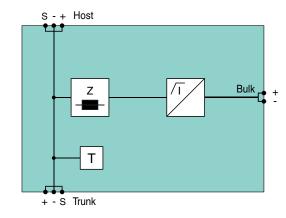
Where device couplers without galvanic isolation are applied, galvanic isolation of the power supply increases overall availability because communication behaves much more robustly towards unwanted conditions such as ground faults. Therefore, we recommend power supplies with galvanic isolation as state-of-the-art.

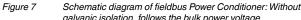




Schematic diagram of fieldbus power supply. Galvanic isolation and controlled voltage output detail of MBHD-FB1-4*

Power Conditioner Modules provide impedance matching and short circuit limitation. The output voltage closely follows the bulk power voltage. Power Conditioners do not have galvanic isolation. They contain fewer electronic components and because of that have low heat dissipation. However, in modern-day plants, galvanic isolation is specified. Power Conditioners are purchased mostly as replacement.





galvanic isolation, follows the bulk power voltage

Applications for general purpose and safe areas with descriptions of explosion protection concepts are located in the "Application Guideline" of the "Technology" section.

Passive Impedance Matching

All FieldConnex® power supplies and Power Hubs feature passive impedance matching circuits. Passive components have a significantly lower heat dissipation compared to circuits using a series transistor.

Passive impedance matching is the only way to provide a perfectly balanced design. This contributes to a higher tolerance regarding grounding faults or module failures in redundant power supplies. A longer service life is guaranteed by using only resistors and inductances.

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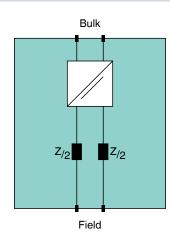


Figure 8 Impedance matching with purely passive design

For many of our products, we manufacture even the inductances. Thus we keep control over the quality of our manufacturing, components, and our circuit design.

Impedance Matching with CREST

Crosstalk and Resonance Suppression Technology (CREST) offers the best signal quality. In addition to the impedance matching circuits, filters ensure optimum signal quality. CREST provides additional impedance between segments in the case of ground faults on one or more segments, protecting the signal waveform from distortions.

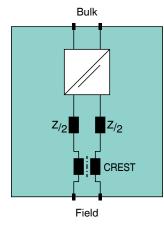


Figure 9 CREST cancels noise and other disturbances through current compensated inductances.

For a complete discussion of impedance matching and CREST, see the "Technology" section.

Power Hubs

The FieldConnex[®] Power Hub is a modular fieldbus power supply. It is comprised of a motherboard that serves as a wiring interface and plug-in modules for the power supply and diagnostics. In order to meet the different demands regarding options, economics, and availability, we offer three different versions as described below. All Power Hubs share the following attributes.

Redundancy

Power Supply Modules hold all electronic components. For high availability, motherboards can host two Power Supply Modules per segment acting as redundant pairs. This allows for:

- High segment availability
- Low number and cost of spares
- Low replacement cost through modularity



Figure 10 Each module feeds one segment. Two modules serve as redundancy pairs.

On most motherboards, the connection to bulk power is redundant: selected motherboards offer independent and redundant host connections with short circuit current limitation.



Figure 11 Redundant connections to bulk power (all Power Hubs)

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Figure 12 Redundant host connections (selected Power Hubs)

Module Mounting without Tools

All plug-in modules lock securely onto the motherboard via Quick Lok Bars. Installation and replacement of modules is fast and easy without tools.

FieldConnex® Power Hubs provide a socket for the Advanced Diagnostic Module (ADM) for four segments each.



Installation of power and diagnostic modules works without tools Figure 13

Passive Motherboard

The motherboard is the wiring interface installed in the control room cabinet. It consists of passive components only for a long, uninterrupted service life. The impedance matching circuits are located in the motherboard.

Compared to electronic versions located in the power module, the impedance is always properly matched. This contributes to good signal quality and better communication reliability.

Connection Options to the DCS

Motherboards or cable connectors are customized to match the DCS system of your choice. The following solutions are available:

- Custom cable connectors (Yokogawa)
- Plug-in sockets for fieldbus modules (Invensys)
- Side-by-side plug design matching connectors (Emerson) and the like
- Specially designed chassis to fit the installation rail (Honeywell)

Custom cables can be prepared for any other DCS configuration together with the generic DB-25 connector on selected motherboards. For this customization, contact your Pepperl+Fuchs representative.





Figure 14 Host system connectors with cables to any DCS system for fast and error-free wiring of the control cabinet

Grounding Rail and Connectors with **Retaining Screws**

The motherboard can be fitted with a grounding rail for convenient and secure grounding of the cable shield. Typically, the shield is grounded centrally in the control room. Any type of grounding and shielding concept can be implemented.

All recent models feature plug-in connectors with retaining screws. The connection is long-lived and is designed to endure constant vibrations.

The fieldbus infrastructure does not require a SIL rating because the entire communication channel is already certified and approved for SIL 3 through the fieldbus protocol.

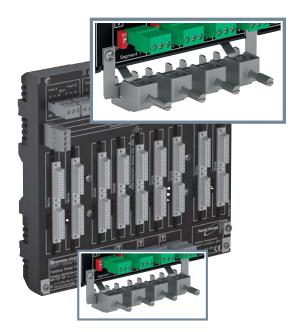
For a detailed discussion, see the "Technology" section.

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Grounding rail installed on the motherboard. This simplifies Figure 15 installation and is one of the most popular options.

Available Types of Power Hubs

FieldConnex® offers three types of Power Hubs for different applications. Power Hubs are equipped with a slot for the Advanced Diagnostic Module. This enables monitoring of the fieldbus physical layer itself.

DART Fieldbus is available with selected Power Hubs. For details beyond mechanical attributes, see also the section below.

High-Density Power Hub/DART Power Hub:

Standard version with a good cost-benefit ratio. Provides all essential features for today's fieldbus-based process plant automation, including marine and offshore.

Compact Power Hub:

Small and endurable version. Occupies the least amount of floor space per segment; is designed for a long service life and low heat dissipation

Universal Power Hub:

Universal version for extra signal reliability and redundancy. Provides the most options for best signal quality such as CREST redundant host connections.

Power Hub Type	Type Code of Motherboard	A State HCD2 Module HCD2 MOdu		Power Supply Redundancy	Power Dissipation per Segment	CREST	Terminators: Selectable/Fixed		
High-density	MBHD*	HD2*	4	S	++		F		
Compact	MBHC* HCD2*	8	S	+++		F			
Universal	MB*	HD2*	4	0	+	Х	S		
Table 1 FieldConnex® Power Hub type by main attribute For power supply redundancy: S = standard, O = option									

Simplex Power Supply

All-in-one simplex power supplies provide power to one segment and connections to a single host via plug-in terminals. They come with an integrated terminator, and some can be powered via Power Rail. The simplex power supplies are configuration-free and preferably used in laboratory setups, skid mounts, and other compact applications.



Figure 16 Five power supplies KLD2-FBPS-1.25.360 installed on a Power Rail: they are small in size and mount side by side on the DIN rail. Mobile Advanced Diagnostic Module connected in parallel.

Removable connectors provide receptacles for the connection with test equipment such as the mobile diagnostic module and measuring devices. Connection and disconnection are quick and the wiring remains undisturbed.

Current versions are only 20 mm wide and can be fitted on the DIN rail without requiring spacing for cooling purposes.

Type Cod	2-FBPS-1.25.360 2-FBPS-1.12.220 2-PC-1.1.IEC 2-PR-1.IEC	Types	Width (mm)	CREST	Terminators: Selectable/Fixed	
KLD2-FBF	S-1.25.360	Supply	20		F	
KLD2-FBF	S-1.12.220	Supply	20		F	
KLD2-PC-1.1.IEC		Conditioner	20	Х	F	
KLD2-PR-	1.IEC	Repeater	80	Х	F	
Table 2	Comparison of	main attributes for	simplex po	wer suppl	lies	

Comparison of main attributes for simplex power supplies

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Installation and Distribution



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Fieldbus installation components, in general referred to as device couplers, are wiring

interfaces with an enclosure that can be fitted for different demands of degree of protection and mechanical methods of explosion protection.

FieldConnex® device couplers combined with FieldConnex® power supplies provide protection methods that meet the demands of general purpose and all explosion hazardous areas. They come in three basic types:

FieldBarrier: Comprises short circuit current limitation, galvanic isolation, and intrinsically safe power limitation at the spur. For hazardous area Zone 1 and Div. 2 with instruments in Zone 0 ... 1 and Div. 1 ... 2.

The FieldBarrier is an innovation by Pepperl+Fuchs that has become a de facto standard for hazardous area applications requiring long cable lengths and high device counts. The FieldConnex® FieldBarrier has paved the way for fieldbus in process automation and has a large installation base in the market.

- Segment Protector: With short circuit current limitation. The recommended and economical choice for installations in general purpose and hazardous areas Zone 1 ... 2 and Div. 2.
- Junction Box: Simple, without short circuit current limitation. Is used when live access to a device is not critical, mainly for general-purpose applications or with intrinsically safe power supplies. Associated apparatus for hazardous areas Zone 1 ... 2 and Div. 2.

Short circuit current limitation

Short circuit current limitation for each spur protects the segment from faults at a spur. In case of a short circuit condition, the segment remains in operation as the device coupler limits the current. We strongly recommend applying device couplers with short circuit current limitation.

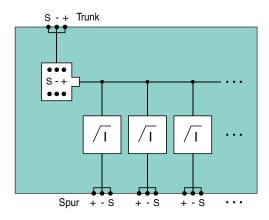


Figure 17 Short circuit current limitation at the spur enables live work on a field instrument while protecting the remainder of the segment.

FieldBarrier

Originally an innovation by Pepperl+Fuchs, the FieldConnex® FieldBarrier with galvanic isolation revolutionized the fieldbus industry. It is the fundamental building block of the High-Power Trunk Concept which is a de facto standard today allowing for long cable lengths and high device counts.

Typical Features

FieldBarriers comprise the following features:

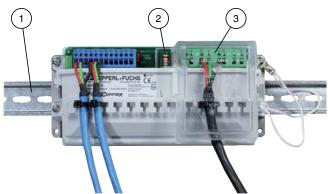


Figure 18 FieldBarrier on a DIN rail.

- 1. DIN rail installation: FieldBarriers are DIN rail mountable, typically without requiring tools.
- 2. LED indicators: LEDs provide indication for power and short circuit condition per spur. This supports installation and troubleshooting, and simplifies fault recognition.
- 3. Bus powering: The FieldBarrier draws the power required for indicators, power limitation, and short circuit current limitation from the fieldbus itself.

For a detailed discussion of explosion protection plans using FieldBarriers, see the "Application Guideline" in the "Technology" section.



Figure 19

FieldBarrier: The additional translucent cover prevents an unintended disconnection of the trunk. Spurs are intrinsically safe

The FieldBarrier acts as an intrinsically safe barrier between trunk and spurs with galvanic isolation. An important safety feature is the IP30 cover for the trunk connectors that protects against unintended opening of the trunk circuits.

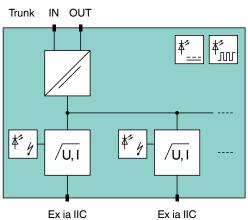
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FieldConnex® FieldBarrier: Galvanic isolation between trunk and Figure 20 spurs, short circuit limitation, and intrinsically safe explosion protection at each spur.

Most devices installed in the hazardous area Zone 0/Class I. Div. 1 are connected to the fieldbus via a FieldConnex® FieldBarrier.

For enclosures with a degree of protection up to IP66 or equivalent Enclosure Type Rating, see "Fieldbus Junction Box Housing Solutions" in this section.

Segment Protectors

Segment Protectors are available for different applications. Their common attributes are short circuit current limitation and LED indicators.

Typical Features

Segment Protectors comprise the following features:

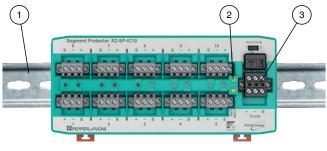


Figure 21 Segment Protector on a DIN rail. Number of spurs can be selected from 4 ... 12

- 1. DIN rail installation: Segment Protectors are DIN rail mountable, typically without requiring tools.
- 2. LED indicators: LEDs provide indication for power, communication, and short circuit condition per spur. This supports installation and troubleshooting, and simplifies fault recognition.
- 3. Bus powering: The Segment Protector draws the power required for indicators, power limitation, and short circuit current limitation from the fieldbus itself.

R2-SP-N*:

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Edition

Standard solution for the application in general purpose and Zone 2/Div. 2 areas. Supports latest standard for intrinsic safety 'Ex ic'. Comes with a choice 4 ... 12 outputs.

R2-SP-IC*:

Segment Protector with progressive short circuit current limitation. It detects faults typical for fieldbus installations, such as contact bounce. It detects these faults and sends an alarm via Advanced Diagnostics to the maintenance station indicating the affected spur.

RM-SP*:

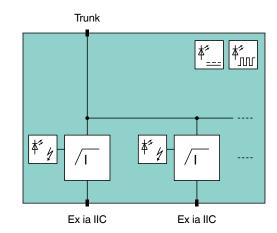
Modular solution for equipment in confined space such as skid-mounted applications. Also for Zone 2/Div. 2. Trunk module with two spurs can be expanded with modules of four spurs each.

R-SP-E12:

For explosion-proof/flameproof enclosure protection in Zone 1/Div. 2.

R3-SP-IBD12:

The DART version for Zone 1 with trunk and spurs intrinsically safe Ex ib IIC.



FieldConnex® Segment Protector: Short circuit limitation and Figure 22 intrinsically safe explosion protection at each spur.

For more details on DART Fieldbus, see "DART Fieldbus Components" as well as the "Application Guideline" in the "Technology" section, and the "Selection Guideline" for FOUNDATION Fieldbus H1.



Figure 23 Segment Protector in aluminum housing with LEDs visible from the outside



Most Segment Protectors have a choice of trunk and spur

connectors fitted with plugs or spring clamp terminals. More recent Segment Protectors feature removable terminals with

> R2 Segment Protector: LED indicators, short circuit current limitation at each spur, removable terminals with retaining

screws, and sockets for test plugs.

Segment Protectors as of version R2-SP-N* feature a

T-connector on the trunk line delivered with a terminator

already in place. This is a simple, yet intuitive and reliable way

When installed, the T-connector is attached to the trunk

When looping to the next Segment Protector in the same

or another enclosure, the terminator has to be removed.

Even the Segment Protector itself can be exchanged without

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The terminator on the next T-connector is already

Termina

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Trunk with T-Connector

of ensuring proper termination:

cable. The terminator is in place.

interfering with communication on the trunk.

ng-Clamp

F-connector

Х

Х

Receptacles for Test Connectors

retaining screws and test plug sockets.

FOUNDATION Fieldbus H1

FOUNDATION Fieldbus H1

Guideline Selection

Figure 24

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R2-SP-N*

R2-SP-IC

RM-SP*

R3-SP-IBD12 X

installed.

Diagnostics Advanced

Accessories

Div. 2 Div. 2 R-SP-E12 Ex d Zone 1 Х Zone 1

Х

Table 3 Attributes and selection criteria of Segment Protectors



Figure 25 The T-connector designed by Pepperl+Fuchs allows for easy and fault-free installation.

With its innovative design, the R2-SP-N* Segment Protector series is the result of more than a decade's experience of using fieldbus technology for superior availability.

For enclosures with a degree of protection up to IP66 or equivalent Enclosure Type Rating, see "Fieldbus Junction Box Housing Solutions" in this section.

Junction Box

Simple junction boxes are used for connections in fieldbus installations where manual intervention is typically only required offline, e.g., while the plant is set into service mode.



Simple junction box with IP67 for general purpose and Figure 26 intrinsically safe installation.

FieldConnex® junction boxes F2-JB-* come with our declaration as associated apparatus for hazardous area Zone 1 (Div. 2). They can be operated together with intrinsically safe fieldbus power supplies.

See description of aluminum housings for more information.

Fieldbus Junction Box Housing Solutions

Our wide range of FieldConnex® Fieldbus Junction Boxes are manufactured in-house to guarantee superior consistency and quality. Pre-engineered products are popular due to the many choices and options. They accommodate practically all requirements from the process industry. The FieldConnex® Fieldbus Junction Boxes are pre-wired and host device couplers and accessories. They are ready to install on site, reducing installation cost and time.

For hazardous areas, the Fieldbus Junction Box comes with a certificate for Zones 1/2/21/22 and Class I, Div. 2.

For special requirements, our engineering department is prepared to build custom-tailored solutions according to your needs.

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Stainless Steel

Our stainless steel enclosures are the sturdiest and most impact-resistant on the market today. They are an ideal choice for environments requiring frequent washing of the equipment. They offer fully watertight seals and are the perfect choice for highly corrosive areas where standard enclosures would not remain tight. Stainless steel enclosures are available with degree of protection rating IP67 and Type 6.



Figure 27 Stainless steel enclosure with three FieldBarriers, a terminator, and pre-wired trunk connections.

Polyester

Glass fiber reinforced polyester (GRP) Fieldbus Junction Boxes are the perfect choice where low weight or costs are required. They represent an ideal solution for most installations that require a degree of protection rating of up to IP66 and Type 4X.



Figure 28 GRP enclosure with a pre-installed R2 Segment Protector

Aluminum

The FieldConnex® F2* Fieldbus Junction Boxes are compact, lightweight, and sturdy. For non-corrosive environments, aluminum enclosures are an even more economical choice. They are the best match for most installations that require degree of protection ratings IP67 and Type 4X.



Figure 29

Very space-saving: FieldBarrier in an aluminum enclosure.

See the respective datasheets for complete choices of cable glands and options available.

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DART Fieldbus Components



FOUNDATION Fieldbus H1

Guideline

Diagnostics

Supplies Power

Distribution

Fieldbus DART

Interfaces Process

Field

Advanced

Selection

FieldConnex[®] DART Fieldbus implements the intrinsically safe High-Power Trunk Concept. It provides the power to drive long

segments and supplies a high number of field instruments. At the same time, the trunk remains intrinsically safe. DART Fieldbus consists of DART Power Hubs and DART Segment Protectors.

For a complete description of DART technology and operation, see the "Technology" section.

Components for DART Fieldbus are certified Ex ib IIC allowing installation in Zone 1 and gas group IIC.

The DART Power Hub is based on the FieldConnex® Highdensity Power Hub. It provides power to the segment and features connections to the control system. Due to the DART technology, the Power Hub detects a spark before it occurs and switches it off.



Figure 30

DART Power Hub: redundant Power Supply Modules and intrinsically safe energy limitation.

The DART Segment Protector (type R3-SP*) has a similar design as the R2-SP* Segment Protector and provides the same features.

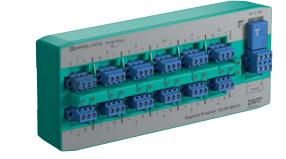


Figure 31 DART Segment Protector –Short circuit protection and Zone 1 certified terminator.

The segment retains its intrinsically safe rating when equipment is connected that is intrinsically safe (Ex ia), e.g., measurement tools. However, for DART to operate properly, only components listed in the certificate are permitted on the trunk.

Advanced Diagnostics



The fieldbus physical layer becomes a proactively manageable asset with the Advanced Diagnostic Module (ADM). The ADM automates

commissioning and documentation, monitors the segment online, and identifies even gradually occurring faults in real time.

Advanced Diagnostics is designed to support three practical tasks or use cases: commissioning, monitoring, and troubleshooting.

Three use cases for Advanced Diagnostics are described in the "Technology" section.

Modules and Hardware

The FieldConnex® Advanced Diagnostic Module (ADM) for the FieldConnex® Power Hub system provides real-time monitoring and local data storage of physical layer values for up to four segments. It automatically triggers alarm messages and communicates with the operator and maintenance station, enabling access for commissioning, monitoring, and troubleshooting.

Passive input circuits leave the physical layer unchanged, providing true, exact measurements. The ADM detects gradual or sudden changes and helps trace even intermittent malfunctions. It can be configured to monitor each segment closely.

Three versions are available for different types of applications and use cases:



Figure 32 Stationary ADM (HD2-DM-*) plugs into the FieldConnex® Power Hub. It monitors up to four segments online and in real time.

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Advanced Diagnostics

FOUNDATION Fieldbus H1

Advanced Diagnostic Module

The Advanced Diagnostic Module plugs into the FieldConnex[®] Power Hub. Full measurement capabilities for four segments make this module the best choice for providing highest plant availability and the lowest commissioning and maintenance costs.

Advanced Diagnostic Module with Relay Output

Advanced Diagnostic Module with relay output only. Working without a software interface, physical layer monitoring starts by plugging in the module without any extra engineering. Optionally, the user can set warning thresholds via DIP switches. The module reports unwanted conditions via voltage-free contact. In combination with the mobile ADM, this is an economical tool for commissioning and troubleshooting.

Basic Diagnostic Module

The Basic Diagnostic Module monitors the fieldbus Power Hub health status only and issues warnings via a voltage-free contact.

Additional options and applications are the stand-alone motherboard and the mobile version of the ADM:



Figure 33 Stationary ADM on stand-alone motherboard for retrofitting any segment.

Stand-alone Advanced Diagnostics

In combination with a stand-alone motherboard, the HD2-DM-A provides full function diagnostics. It can be wired to any segment in parallel to the existing power supply and includes remote software support via the Diagnostic Manager. This is the ultimate choice for retrofitting any existing fieldbus installation.



Figure 34 Mobile ADM DM-AM-KIT for the traveling fieldbus professional.

Mobile Advanced Diagnostic Module

The mobile ADM is made for the traveling fieldbus practitioners. This full-fledged tool supports all working procedures throughout the complete lifecycle of a segment. Featuring a USB connection for power and communication with any laptop, the mobile ADM is intended for work in the field. Connected to any 24 V power supply, it can even be left unattended while monitoring a troubled segment.

Diagnostic Gateway

A gateway provides full access to up to 62 stationary ADMs via Ethernet and up to 16 ADMs via FF-node integration and EDDI. It connects the ADMs to higher-level control systems. Inside the control cabinet, a simple bus provides the bandwidth for physical layer diagnostic information. Thus, the bandwidth of the fieldbus itself remains untouched.



Figure 35 Gateway KT-MB-GT2AD to fieldbus diagnostic information

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Advanced Diagnostics

FOUNDATION Fieldbus H1

Optional inputs and outputs for analog and digital measurements and two high-power control outputs are designed for cabinet control. Even a humidity sensor is on board. The gateway can be configured as a local controller activating heaters, fans, or air-conditioning. Door contacts allow for alarming unauthorized access.

For a brief description of DCS integration, see below and the manual for full details.

Diagnostic Manager Software

The Diagnostic Manager, Professional Edition is the software program that displays the data of the ADM and runs the functions that make working with fieldbus quick and easy. The Diagnostic Manager automatically detects the Diagnostic Gateways and all Advanced Diagnostic Modules. The system is set up in minutes.

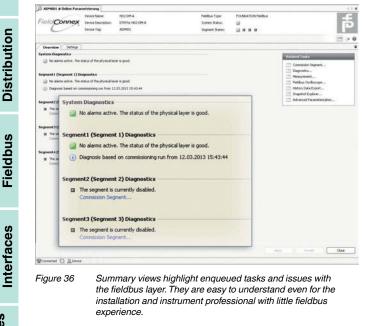
The Diagnostic Manager communicates simultaneously with all diagnostic modules. It runs on a PC in the safety of the control room. Multiple PCs running the Diagnostic Manager can access diagnostic information simultaneously, enabling a flexible distributed architecture.

Embedded in the Diagnostic Manager software is an expert system. This system learns and interprets the electrical values and behavior of each segment. A commissioning wizard documents a complete segment with only a few mouse clicks.

For fieldbus experts: The integrated oscilloscope triggers fieldbus-related events and stores up to ten consecutive shots. Working with fieldbus has never been easier.

A basic edition is available for free in the download section of www.pepperl-fuchs.com. It provides immediate access for reading and monitoring the physical layer for up to three ADMs simultaneously.

See the manual for full details on the Diagnostic Manager.



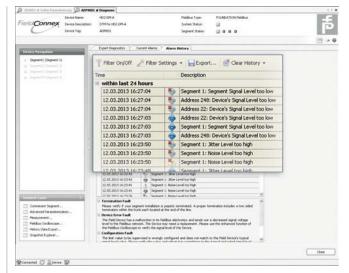


Figure 37 Alarm lists with time stamps and plain text messages provide insight into actual faults.

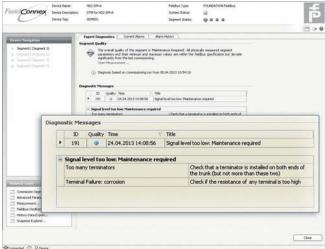
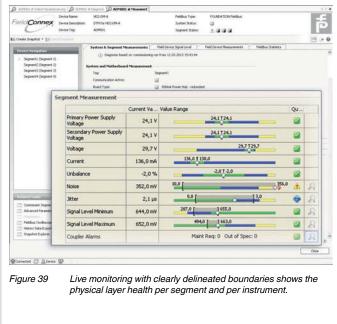


Figure 38

Clearly visible indicators guide the user. The expert system provides interpretation in easy-to-understand text.



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FOUNDATION Fieldbus

Guideline

Diagnostics

Power Supplies

Advanced

Selection

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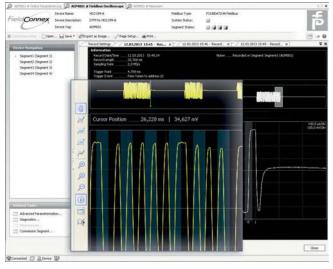
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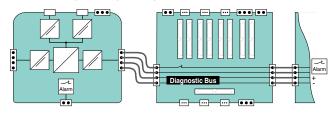
Figure 40 A fieldbus oscilloscope shows the signal as it is. This often helps the fieldbus expert to draw additional conclusions.

The Diagnostic Bus

FieldConnex® Advanced Diagnostics is equipped with a dedicated diagnostic bus. It provides the bandwidth for data transmission from the ADMs to the maintenance and operator station, without compromising the bandwidth of the respective segment. The diagnostic bus is the major prerequisite for any Advanced Diagnostics with value-added tools such as:

- Commissioning wizard
- Expert system
- Fieldbus oscilloscope
- Historian

The engineering and commissioning are quick and easy. FieldConnex® Power Hubs already include the dedicated diagnostic bus based on RS 485 hardware. Short linking cables (ACC-MB-HDC) connect adjacent motherboards. This is the economical and convenient way for engineering advanced physical layer diagnostics.



A dedicated, automatically configured diagnostic bus takes care Figure 41 of transmitting data to and from the ADMs.

Each cabinet is fitted with a Diagnostic Gateway (KT-MB-GT2AD) that can connect two diagnostic busses and alarm lines for the voltage-free common alarm contact. From here, it is connected to the existing Ethernet backbone.

System Integration into DCS

FieldConnex® Advanced Diagnostics includes DCS integration for major DCS vendors. Integration for further vendors is underway. Integration packages with automatic setup are currently available for free for:

- Yokogawa PRM
- Emerson AMS Suite
- Honeywell Experion PKS ABB 800xA

The Diagnostic Manager is also tested and approved for popular DTM frames, for example:

- FieldCare (Endress+Hauser)
- FieldMate (Yokogawa)
- **PACT***ware*[™]

The Diagnostic Manager also provides an OPC interface for integration of common alarms into any DCS.

FF-H1 node integration of up to 16 ADMs / 64 segments is available with the Advanced Diagnostic Gateway.

For an up-to-date list, compatibility information, and free downloads go to the Pepperl+Fuchs website at http://www.pepperl-fuchs.com

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Process Interfaces



The FieldConnex® process interfaces integrate simple conventional inputs and outputs into the DCS via fieldbus communication. On the fieldbus side, they act as transmitters. The

output connections provide power for low-power valves, sensors, or conventional signals with no additional wiring required. Multiple I/Os are connected to the DCS via one fieldbus address. Types of sensors include:

- Proximity switches
- On/off low-power valves
- **Digital inputs**
- Temperature sensors
- Other simple I/Os

The process interface can be installed close to the sensors in Zone 1/Class I, Div. 2. The sensors themselves can be located in Zone 0/Class I, Div. 1.

Integration into the DCS is automated via standard EDDL or FDT/DTM technology. This is a simple and standardized way to keep engineering costs to a minimum. Using process interfaces is a cost-effective solution to bring simple I/O signals into the DCS. Choices of housing materials and types and custom-built cabinets enable an optimum application within the topology of your plant.

Valve Coupler

The valve coupler connects up to four low-power solenoid valves and positioning sensors to the DCS via a single fieldbus address. A detailed list of compatible valves can be found online on the respective datasheets. The valve coupler allows for remote operation of the valve and monitoring with two end-position sensors.

In addition, the valve coupler provides the following functions:

- Measuring and storing actual values for break-away and runtime per valve
- Storing maximum and minimum values
- Conducting partial stroke tests in either valve position

It generates alarm messages for preset limit values, lead breakage, or short circuits on the cable. Information is immediately accessible and allows for proactive user intervention to avoid unwanted conditions such as stuck valves.

The valve coupler is certified as intrinsically safe for installation in Zone 1. Inputs and outputs can be located in Zone 0.

The two end position sensors per valve can be accessed via one cable. The respective inputs of the valve coupler can be used as an eight-channel DI block.

Pre-configured solutions such as the FieldConnex® pneumatic interface combine multiple valve couplers, solenoid and amplifier valves, and a FieldBarrier in one convenient and easy-to-install housing. The pneumatic interface controls up to 32 valves via one fieldbus cable and pressurized air. Contact your Pepperl+Fuchs representative for details.

Distribution Field

-ieldbus DART

Interfaces Process

Diagnostics

Advanced

FOUNDATION Fieldbus H1

Selection Guideline

Selection Table

Type Code	Function	Inputs	Outputs	Terminals	Degree of protection	Installation in	l/O in
FD0-VC-Ex4.FF	Valve Coupler	8 DI	4 DO		IP65	Zone 1/Div. 2	Zone 0/Div. 1
F.VC0.P21.A04.*.*.***.**000	Valve Coupler Junction Box	8 DI	4 DO		IP66, NEMA 4X	Zone 1, Zone 21	Zone 0
F.VC0.S20.A04.*.*.***.**000	Valve Coupler Junction Box	8 DI	4 DO		IP66, NEMA 4X	Zone 1, Zone 21	Zone 0
RD0-TI-Ex8.FF.SC	Temperature Input	8 AI		Spring clamp	IP20	Zone 1/Div. 2	Zone 0/Div. 1
RD0-TI-Ex8.FF.ST	Temperature Input	8 AI		Screw terminal	IP20	Zone 1/Div. 2	Zone 0/Div. 1
F.TI0.P12.*08.F.0.***.***.**00	Temperature Inter- face Junction Box	8 AI		Screw terminal	IP66, NEMA 4X	Zone 1, Zone 2, Zone 21, Zone 22	Zone 0
F.TI0.S12.*08.F.0.***.***.**00	Temperature Inter- face Junction Box	8 AI		Screw terminal	IP66, NEMA 4X	Zone 1, Zone 2, Zone 21, Zone 22	Zone 0

Table 7 Type code selection table for process interfaces

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Figure 42 FieldConnex® process interfaces: Connect simple digital and analog I/O to the DCS via fieldbus.

Temperature Multi-Input Device

The FieldConnex® Temperature Multi-Input Device (TMI) is a fieldbus communication and wiring interface for up to eight analog signals. It provides the necessary intrinsically safe power for the operation of sensors in hazardous area Zone 0/ Div 1.

Via a single fieldbus address, the TMI transmits all eight signals to the DCS system in an efficient and cost-effective way. It matches a wide variety of sensors. The following types of devices and signals can be connected:

- Resistive temperature sensors, includes 2-, 3-, and 4-wire versions
- Thermocouples
- Other resistance and millivolt signals

The following features are important for fieldbus integration and superior plant performance:

- Individual parameter sets per input
- Short update cycles
- Cold junction compensation
- Continuous monitoring of sensor and wire
- Transmission via up to eight AI or one MAI function blocks
- Input potential separation

Accessories



Accessories for FieldConnex® are terminators and surge protectors. They are available in two basic forms: IP20-proof DIN-rail-mountable and in an IP67-proof

sturdy stainless steel housing.

Other products such as power supplies come with their own set of accessories (grounding rail, connector cables, ...). For more information on these products, refer to the respective data sheets at www.pepperl-fuchs.com.

Diagnostic-Enabled Accessories

Diagnostic-enabled accessories such as selected surge protectors and enclosure leakage sensors communicate alarm information to the DCS. Depending on their mounting position, diagnostic-enabled accessories can communicate with the affected spur, field device, or device coupler.

Data is transmitted to the DCS in parallel to regular fieldbus communication utilizing the existing Advanced Diagnostics infrastructure. The accessories do not require a fieldbus address. Implementation is plug-and-play and extra engineering or planning is not required.

Surge Protectors

FieldConnex® surge protection modules protect field instruments, control systems, and the fieldbus infrastructure from damage through overvoltage and power surges. Possible causes for power surges are: lightning strikes, surges, or cross-talk from power cables. The surge protector drains the power surge to the earth potential. The surge protector consists of multiple gas discharge tubes (GDT) and is connected to the fieldbus lead, optionally with a shield and earth potential. During normal operation, the GDT constitutes an open circuit. In case of a power surge, the GDT short circuits briefly, eliminating the power surge to earth potential.

Terminal Mounting

These surge protectors fit on Power Hubs and device couplers. They sense the impact of each lightning strike. The surge protectors indicate need for replacement via Advanced Diagnostics, superseding the demand for recurring manual inspection. This feature is available with no engineering required. Retrofit on existing installations is possible without the diagnostics option.





PEPPERL+FUCHS 121

Figure 44 Surge protectors for trunk and spur. Hook on Power Hub or Segment Protector without extra wiring.



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Figure 43 Temperature Multi-Input Device

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Self Diagnostics for Surge Protector

Selected surge protectors monitor count and severity of overvoltage spikes endured over their lifetime. The results are then transmitted via Advanced Diagnostics to the maintenance station.

Replacement takes place only once the surge protector is worn out. This saves on replacement costs and otherwise necessary manual checks.

DIN Rail Mounting

FieldConnex® surge protectors enable the coordinated use in an EMC-oriented Lightning Protection Zones Concept in accordance with IEC 61312-1. They are in accordance with the fieldbus standard IEC 61158-2 and are certified as intrinsically safe according to IEC 60079-11 including DART Fieldbus.



Surge protector for cabinet installation with click-to-latch plug-in Figure 45 desian

The surge protector for cabinet installation consists of a base and a plug-in unit. The base module is mounted on the DIN rail. It holds the plug-in module via an easy-to-operate locking mechanism. Firm contact increases the reliability of the unit and increases plant up-time. The base module comes in two versions, differing in the behavior upon removal of the plug-in module. Either the segment remains connected or it is disconnected.

The plug-in module contains the gas discharge tubes, and is available in two versions for different types of shielding and grounding:

- 1. Shield tied directly to earth. This module is applied where the central grounding point is located, typically in the cabinet. The module serves as the central grounding point for the segment. It is used in the field where multi-point grounding is applied.
- 2. Shield tied to earth via gas discharge tube (GDT). This version is used for field installation, where the shield has no direct connection to local earth. (that is, the shield is floating or capacitive grounding is used).

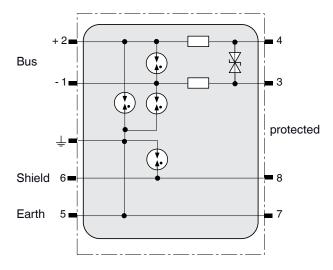


Figure 46 Typical schematic view of a surge protector with gas discharge tubes between +, -, shield, and earth.

The fieldbus planner decides which module fits the installation and maintenance requirements of the customer site best in each case.

Terminator

A fieldbus terminator is an electronic component with two basic functions:

- 1. It provides the impedance to suppress signal reflections.
- 2. It translates data signals that are transmitted as current change into a detectable voltage change as specified in the fieldbus standard IEC 61158-2.

One terminator is required at each end of the fieldbus trunk. FieldConnex® power supplies and device couplers carry integrated fieldbus terminators. If required, a separate "external" terminator can help to provide visibility to the installation and maintenance team, thus reducing the potential for human error.

See the description of Manchester bus-powered encoding in the "Technology" section for a thorough description.

FieldConnex® terminators feature a high-availability design with a resistor and multiple capacitors. Only a minor change in impedance results from the failure of a capacitor, leaving the basic function intact. This change in impedance is detected through online monitoring with the Advanced Diagnostic Module, allowing for corrective action before plant performance is jeopardized.

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For field installation, stainless steel housings with IP67 degree of protection feature a choice of threads.

FieldConnex® includes devices in sturdy IP67 housings designed for installation of terminators or surge protectors in hazardous areas. These units come with a choice of threads and offer explosion protection.



Figure 47 Terminator or surge protector for field installation - the threading can be chosen.

Enclosure Leakage Sensor

Small amounts of water or liquid chemicals can be damaging to fieldbus installation materials such as connectors and electronic components. The enclosure leakage sensor detects water ingress and signals the affected spur. Users get a water indicator inside an enclosure directly and without extra engineering - all included with Advanced Diagnostics.

The alarm information reaches the DCS or maintenance station, traveling in parallel to normal fieldbus communication without requiring a fieldbus address. Engineering is all done with the purchase of the component and installing it in parallel to the segment. Getting control of installation issues should always be this simple.



Enclosure Leakage Sensor - small enough to fit into an Figure 48 instrument head.

F

Accessories

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Zone 1 ... 2 Div. 1 ... 2

Zone 1/Div. 2

Zone 1/Div. 2

Zone 1/Div. 2

Zone 1/Div. 2

Div. 1 ... 2

or Thread

lount

No additional

No additional

No additional

No additional

No additional

No additional wiring

wiring

wiring

wiring

wiring

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M 20

M 20

1/2" NPT

1/2" NPT

protection

Degree of

IP20

IP20

IP20

IP20

IP20

IP20

IP67

IP67

IP67

IP67

Selection Tables

Surge Protectors

SCP-LBF-IA1.36.IE.1 1

SCP-LBF-IA1.36.IE.0

TCP-LBF-IA1.36.IE.1 1

TCP-LBF-IA1.36.IE.0

TPH-LBF-IA1.36.DE.1¹

TPH-LBF-IA1.36.DE.0

FS-LBF-D1.32

FS-LBF-I1.32

FN-LBF-D1.32

FN-LBF-I1.32

Power

Distribution Field

DART Fieldbus

Process Interfaces

Accessories

Table 4 Surge Protector selection table

¹ Requires device couplers with diagnostic function

Supplies	Surge Protectors for DIN Rail installation	installation G DIN Rail G DIN Rail			Housing for Installation in	Degree of protection	Module Type (1 x base & 1 x plug in required)	Installation in
u	DB-LBF-I1	Ex i	Continuous		Cabinet	IP20	Base	Zone 1/Div. 2
Ē	DP-LBF-I1.36.DE			Direct			Plug-in	
Distribution	DP-LBF-I.36.IE			Via GDT			Plug-in	
sti -	DB-LBF-I1.I	Ex i	Interrupted		Cabinet	IP20	Base	Zone 1/Div. 2
ā	DP-LBF-I1.36.DE			Direct			Plug-in	
	DP-LBF-I.36.IE			Via GDT			Plug-in	
	Table 5 Surge Protector for DIN ra	ail installation sele	ection table					

Continuous: Continuous fieldbus signal for uninterrupted operation during exchange of plug-in module

Interrupted: Interrupting the fieldbus signal. The segment is disconnected during exchange of the plug-in module.

Connection Shield to Earth

Via GDT

Via GDT

Via GDT

Via GDT

Direct

Direct

None

None

None

None

Housing for Installa-

Device coupler

Device coupler

Device coupler

Device coupler

Power Hub

Power Hub

Cable gland

Cable gland

Cable gland

Cable gland

ion on

Explosion Protection

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Ex ia

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Ex ia

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Ex i

Ex d

Ex i

Terminators	Explosion Protection	Housing for Installation on Degree of protection		Mount or Thread	Installation in
KMD0-FT-Ex	Ex i	DIN Rail	IP67		Zone 1/Div. 2
FN-FT-Ex1.D.IEC	Ex d	Cable gland	IP67	1⁄2" NPT	Zone 1/Div. 2
FN-FT-Ex1.I.IEC	Exi	Field	IP67	1⁄2" NPT	
FS-FT-Ex1.D.IEC	Ex d	Field	IP67	M 20	
FS-FT-Ex1.I.IEC	Exi	Field	IP67	M 20	Zone 1/Div. 2
FP-FT-Ex1.D.IEC	Ex d	Field	IP67	PG 13.5	
FP-FT-Ex1.I.IEC	Ex i	Field	IP67	PG 13.5	Zone 1/Div. 2

Table 6 Terminator selection table

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Selection Guideline

This selection guideline takes you through the process of selecting all components of the fieldbus infrastructure, power supply, device coupler, and accessories that are right for your process automation system. It allows selection of system attributes in this order:

- Fieldbus system
- Explosion protection if necessary
- DCS system connection
- Product attributes

Selecting Your FieldConnex[®] Infrastructure

First, select and verify that the chosen concept for explosion protection is applicable in the hazardous area. See table below.

Second, select the appropriate power supply. There are simplex power supplies and modular power hubs. With Power Hubs, a power supply module must also be selected. Choices for FieldConnex[®] Advanced Diagnostics are not included in

this part and are handled in separate planning steps. If you would like to apply FieldConnex[®] Advanced Diagnostics, it is sufficient to select a Power Hub with socket for an Advanced Diagnostic Module.

Decision criteria for a power supply are:

- DCS connections
- Redundancy
- Space requirements
- Attributes contributing to availability

Third, select the device coupler that is right for you. All FieldConnex[®] device couplers come fitted with housing, prewiring, and accessories. This section lists datasheets for enclosures in various protection ratings and materials.

Methods of Explosion Protection by Hazardous Area

Verify that the type of ignition protection is available for the hazardous area. The following table matches explosion protection applications with chapters from this selection guideline. Although other combinations are possible, the table contains only practical solutions.

	Spurs: Ex ia	Barrier:	(lanically :x d/e	s Ex ic	s Ex ic	s Ex nL/Non-	Incendive	Advanced Diagnostics
Area in which the field devices are located	Intrinsically Safe Trunk and {	Trunk with FieldBarrier:	Trunk and Spurs Ex ib (DART)	High-Power Trunk with Mechanically Protected Trunk and Spurs Ex d/e	Trunk with Spurs	High-Power Trunk with Spurs Ex ic (Entity)	runk with Spurs Id Wiring	High-Power Trunk with Non-Incendive Spurs	Power Supplies
	Intrinsically S	High-Power T Spurs Ex ia	Trunk and Sp	High-Power T Protected Tru	High-Power T (FISCO)	High-Power T (Entity)	High-Power Trunk with Incendive Field Wiring	High-Power T Spurs	Field Distribution
General Purpose Area									_
Zone 2									T su
Zone 1									DART Fieldbus
Zone 0									Ξ
Class I, Division 2									_
Class I, Division 1									es es
Page	126	127	129	130	132	134	136	138	Process
									Process Interfaces

Edition

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



Diagnostics Advanced

Supplies Power

Distribution

General Selection Guidelines

We recommend a FieldConnex[®] Power Hub Motherboard to fit the DCS connections. This is easy to install as it reduces wiring in the control room cabinet with a design that integrates well with the DCS system.

The DB25 connector of the generic motherboard, *.GEN or *.HSC enables an easy and effective fit to any DCS. Custom cables for connection are provided upon request. Inquire with your local representative or sales office.

- High-density motherboards MBHD-* High-density motherboards are a cost-effective solution to fieldbus installations.
- Compact motherboards **MBHC-*** Compact motherboards offer the highest packing density in the cabinet with superior design and low heat dissipation.
- Universal motherboards MB-* Universal motherboards offer the largest choice of options, for example CREST. CREST is a passive filtering circuit allowing best transmission of fieldbus signal quality.

Important

In Zone 2/Div. 2 environments, it is vital to select the right combination of power supply and device coupler (Segment Protector). The power supply limits the voltage while the Segment Protector limits the current. On occasion, even the connection and protection of the host interface requires review and certification. Only then is explosion protection ensured at the spur.

Intrinsically Safe Trunk and Spurs: Ex ia

Intrinsically safe power supplies Ex ia are not available for FOUNDATION Fieldbus H1. Refer to Ex ib DART Fieldbus below for a complete solution of intrinsically safe fieldbus infrastructure.

Interfaces Process

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Edition

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High-Power Trunk with FieldBarrier: Spurs Ex ia

All FieldConnex[®] power supplies and power modules are applicable. The selection below shows reasonable choices.

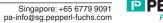
Power Hub Motherboard or Power Supply	N° of Segments	Redundant Power Supply	Redundant Host Connection	Slot for Advanced Diagnostics	Packing Density/Size	Power Dissipation per Segment	CREST	Terminators: Selectable/Fixed	Grounding Bar Available	HD2-FBCL-1.500	HD2-FBPS-1.25.360	HD2-FBPS-1.500	HCD2-FBPS-1.500	FOUNDATION Fieldbus H1
For Yokogawa AKB 336 system cable														ر م
MBHD-FB1-4R.YO	4				++			F						Selection Guideline
MB-FB-4R.YO	4				+	-		S						elecuido
MB-FB-4.YO	4				+	-		S						Ω Ω
MBHC-FB-8R.YO	8				+++			F						
For Invensys Foxboro FBM 228														Advanced Diagnostics
MB-FB-4R.GEN	4				+	-		S						anc nos
MB-FB-4.GEN	4				+	-		S						Advanced Diagnostic:
FBTA-228-BPFB-8	8				+	-		F						
FBTA-228-BPFB-R-4R	4				+	-		F						
FBTA-228-BPFB-R-8R	8				+++			F						/er lies
For Honeywell C-Series														Power Supplies
MB-FB-4R.HO.SC	4				++			F				1		-
For any host system														_
MBHD-FB1-4R	4				++			F						Field Distribution
MB-FB-1R	1				+	-		S						Field tribut
MB-FB-2R	2				+	-		S						Fi
MB-FB-4R	4				+	-		S						
MB-FB-4R.GEN	4				+	-		S						
MB-FB-4	4				+	-		S						DART
MB-FB-4.GEN	4				+	-		S						DART
MBHC-FB-8R	8				+++			F						ΞĒ
MBHC-FB-8R.HSC*	8				+++			F						
MBHC-FB-8R.RH*	8				+++			F						es es
Simplex power supply														Process Interfaces
KLD2-FBPS-1.25.360	1				++	-		F		_	_	_	_	Pro
KLD2-PC-1.1.IEC	1				++	-		F		_	_	—	_	_
KLD2-PR-1.IEC (Repeater)	1				++	-		F		_	_	_	_	es
+ +++ Indicates reduced space re Indicates low to lowest heat			uaria ha	they for	achinat	danaitu								essories

... --- Indicates low to lowest heat dissipation. Lower is better for cabinet density.

¹ Separate bulk power supply recommended for segments

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Selection Guideline

Advanced Diagnostics

Power Supplies

Distribution Field

DART Fieldbus

Process Interfaces

Accessories

Device Coupler	Enclosure Material	No. of Outputs	Output Protection Rating	Spur Short Circuit Current Limitation	Installation in
RD0-FB-Ex4.*	None ¹	4	Ex ia		Zone 1/Div. 2
F2D0-FB-Ex4.* (Enclosure)	Aluminum	4	Ex ia	•	Zone 1/Div. 2
F.FB0.S**.A**.1.0.***.***	Stainless Steel	4, 8, 12	Ex ia		Zone 1/Div. 2
F.FB0.P**.A**.1.0.***.***	GRP	4, 8, 12	Ex ia		Zone 1/Div. 2

Wildcards (*) denote number of spurs or other options such as selections for cable glands and accessories. Consult the respective data sheet for ordering details or ask your Pepperl+Fuchs sales engineer or representative for availability of your choices.

¹ Denotes wiring interface for DIN rail installation, IP20.

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Trunk and Spurs Ex ib (DART)

For DART Fieldbus, only one matching power supply is available.

Power Hub Motherboard or Power Supply	N° of Segments	Redundant Power Supply	Redundant Host Connection	Slot for Advanced Diagnostics	Packing Density/Size	Power Dissipation per Segment	Terminators: Selectable/Fixed	Grounding Bar Available	FOUNDATION Fieldbus H1
For Yokogawa AKB 336 system cable									- 0
KT-MB-FB-D-4R.YO	4				++	-	F		Selection Guideline
For Invensys Foxboro FBM 228									ide
KT-MB-FB-D-4R.GEN	4				++	-	F		Sel Gu
For any host system									
KT-MB-FB-D-4R.GEN	4				++	-	F		s S
KT-MB-FB-D-4R	4				++	-	F		vanced jnostics
									ja (a

+ ... +++ Indicates reduced space requirements.

... --- Indicates low to lowest heat dissipation. Lower is better for cabinet density.

Only one device coupler matches this application.

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						lie
	а		ר Rating	tt c		Power Supplie
Device Coupler	Enclosure Material	o. of Outputs	Output Protection	Spur Short Circuit Current Limitation	Installation in	Field Distribution
	ū	No.	Ō	ดีอี	<u>_</u>	
R3-SP-IBD12	None	12	Ex ib		Zone 1	T
						DART Fieldbu

Pepperl+Fuchs Group www.pepperl-fuchs.com Process Interfaces

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Germany: +49 621 776 2222 Singapore: +65 6779 9091 Singapore: +65 6779 9091 pa-info@de.pepperl-fuchs.com pa-info@sg.pepperl-fuchs.com PROTECTING YOUR PROCESS 129

F

High-Power Trunk with Mechanically Protected Trunk and Spurs Ex d/e

All FieldConnex[®] power supplies and power modules are applicable. The selection below shows reasonable choices.

_		louulot	u o u	phoab	10. 1110	001000			no rout				
FOUNDATION Fieldbus H1	Power Hub Motherboard or Power Supply	N° of Segments	Redundant Power Supply	Redundant Host Connection	Slot for Advanced Diagnostics	Packing Density/Size	Power Dissipation per Segment	CREST	Terminators: Selectable/Fixed	Grounding Bar Available	HD2-FBPS-1.25.360	HD2-FBPS-1.500	HCD2-FBPS-1.500
	For Yokogawa AKB 336 system cable												
line	MBHD-FB1-4R.YO	4				++			F				
Selection Guideline	MB-FB-4R.YO	4				+	-		S				
ຮັ	MB-FB-4.YO	4				+	-		S				
	MBHC-FB-8R.YO	8				+++			F				
ed ics	For Invensys Foxboro FBM 228												
ost	MB-FB-4R.GEN	4				+	-		S				
Advanced Diagnostics	MB-FB-4.GEN	4				+	-		S				
۵ï	FBTA-228-BPFB-8	8				+	-		F				
	FBTA-228-BPFB-R-4R	4				+	-		F				
Power Supplies	FBTA-228-BPFB-R-8R	8				+++			F				
ddr	For Honeywell C-Series												
L N	MB-FB-4R.HO.SC	4				++			F				
	For any host system												
ion	MBHD-FB1-4R	4				++			F				
Field stribution	MB-FB-1R	1				+	-		S				
	MB-FB-2R	2				+	-		S				
Ω	MB-FB-4R	4				+	-		S				
	MB-FB-4R.GEN	4				+	-		S				
Bus	MB-FB-4	4				+	-		S				
DART Fieldbus	MB-FB-4.GEN	4				+	-		S				
ш	MBHC-FB-8R	8				+++			F				
	MBHC-FB-8R.HSC*	8				+++			F				
Process Interfaces	MBHC-FB-8R.RH*	8				+++			F				
oce	Simplex power supply												
Pr	KLD2-FBPS-1.25.360	1				++	-		F		—	—	—
	KLD2-PR-1.IEC (Repeater)	1				++	-		F		—	—	—
Accessories	 + +++ Indicates reduced space requireme Indicates low to lowest heat dissipa 		ver is be	etter for	cabinet	density.							

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			br			
Device Coupler	Enclosure Material	No. of Outputs	Output Protection Rating	Spur Short Circuit Current Limitation	Installation in	TION Fieldbus H1
R-SP-E12	None ¹	12	—		Zone 1	DATI
F.SPE.S**.A**.1.0.***.****	Stainless Steel	12, 24	—		Zone 1	N
F.SPE.P**.A**.1.0.***.***	GRP	12, 24	—		Zone 1	N

Wildcards (*) denote number of spurs or other options such as selections for cable glands and accessories. Consult the respective data sheet for ordering details or ask your Pepperl+Fuchs sales engineer or representative for availability of your choices.

¹ Denotes wiring interface for DIN rail installation, IP20.

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F

High-Power Trunk with Spurs Ex ic (FISCO)

Special power modules are provided limiting the voltage to $U_0 = 17.5 \text{ V}$.

FOUNDATION Fieldbus H1	Power Hub Motherboard or Power Supply	N° of Segments	Redundant Power Supply	Redundant Host Connection	Slot for Advanced Diagnostics	Packing Density/Size	Power Dissipation per Segment	CREST	Terminators: Selectable/Fixed	Grounding Bar Available	HD2-FBPS-1.17.500
	For Yokogawa AKB 336 system cable	2	ш.		0)					U	-
ne	MBHD-FB1-4R.YO	4				++			F		
Selection Guideline	MB-FB-4R.YO	4				+	-		S		
	MB-FB-4.YO	4				+	-		S		
	For Invensys Foxboro FBM 228										
sd	MB-FB-4R.GEN	4				+	-		S		
Advanced Diagnostics	MB-FB-4.GEN	4				+	-		S		
dva agn	For any host system										
Dia	MBHD-FB1-4R	4				++			F		
	MB-FB-1R	1				+	-		S		
er ies	MB-FB-2R	2				+	-		S		
Power Supplies	MB-FB-4R	4				+	-		S		
ч S	MB-FB-4R.GEN	4				+	-		S		
	MB-FB-4	4				+	-		S		
ion	MB-FB-4.GEN	4				+	-		S		
Field Distribution	 + +++ Indicates reduced space requirements. Indicates low to lowest heat dissipation. Lower is been specified as a specified of the specified of	etter for	cabinet	density.							

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Device Coupler	Enclosure Material	No. of Outputs	Output Protection Rating	Spur Short Circuit Current Limitation	Installation in	FOUNDATION Fieldbus H1
R2-SP-N*	None ¹	4, 6, 8, 10, 12	Ex ic		Zone 2/Div. 2	DA
F.SP4.S**.B**.1.0.***.***0	Stainless Steel	824	Ex ic		Zone 2/Div. 2	Z
F.SP4.P**.B**.1.0.***.***0	GRP	824	Ex ic		Zone 2/Div. 2	ō
SPJB-**-AL*.***	Aluminum	4, 6, 8, 10, 12	Ex ic		Zone 2/Div. 2	
SPJB-**-CS*.***	Carbon Steel	4, 6, 8, 10, 12	Ex ic		Zone 2/Div. 2	uo uo
SPJB-**-FB*.***	Fiberglass	4, 6, 8, 10, 12	Ex ic		Zone 2/Div. 2	Selection
SPJB-**-PCW.***	Polycarbonate	4, 6, 8, 10, 12	Ex ic		Zone 2/Div. 2	Sel
SPJB-**-SS*.***	Stainless Steel	4, 6, 8, 10, 12	Ex ic		Zone 2/Div. 2	

Wildcards (*) denote number of spurs or other options such as selections for cable glands and accessories. Consult the respective data sheet for ordering details or ask your Pepperl+Fuchs sales engineer or representative for availability of your choices.

¹ Denotes wiring interface for DIN rail installation, IP20.

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High-Power Trunk with Spurs Ex ic (Entity)

Special power modules are provided limiting the voltage $U_0 = 24$ V.

FOUNDATION Fieldbus H1

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FOUNDATION Fieldbus	Power Hub Motherboard or Power Supply	N° of Segments	Redundant Power Supply	Redundant Host Connection	Slot for Advanced Diagnostics	Packing Density/Size	Power Dissipation per Segmen	CREST	Terminators: Selectable/Fixed	Grounding Bar Available	HD2-FBPS-1.23.500	HCD2-FBPS-1.23.500
	For Yokogawa AKB 336 system cable											
tion	MBHD-FB1-4R.YO	4				++			F			
Selection Guideline	MB-FB-4R.YO	4				+	-		S			
ຶ ອັ	MB-FB-4.YO	4				+	-		S			
	MBHC-FB-8R.YO	8				+++			F			
ed iics	For Invensys Foxboro FBM 228											
Advanced Diagnostics	MB-FB-4R.GEN	4				+	-		S			
vdva agr	MB-FB-4.GEN	4				+	-		S			
Di	For any host system											
	MBHD-FB1-4R	4				++			F			
er ies	MB-FB-1R	1				+	-		S			
Power Supplies	MB-FB-2R	2				+	-		S			
Ъ Sc	MB-FB-4R	4				+	-		S			
	MB-FB-4R.GEN	4				+	-		S			
ion	MB-FB-4	4				+	-		S			
Field Distribution	MB-FB-4.GEN	4				+	-		S			
Fi İstri	MBHC-FB-8R	8				+++			F			
Ō	MBHC-FB-8R.HSC*	8				+++			F			
	MBHC-FB-8R.RH*	8				+++			F			
RT bus												

DART Fieldbus

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Indicates reduced space requirements.

Indicates low to lowest heat dissipation. Lower is better for cabinet density.

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Device Coupler	Enclosure Material	No. of Outputs	Output Protection Rating	Spur Short Circuit Current Limitation	Installation in	FOUNDATION Fieldbus H1
R2-SP-N*	None ¹	4, 6, 8, 10, 12	Ex ic		Zone 2/Div. 2	DA.
F.SP4.S**.B**.1.0.***.***0	Stainless Steel	824	Ex ic		Zone 2/Div. 2	Z
F.SP4.P**.B**.1.0.***.***0	GRP	824	Ex ic		Zone 2/Div. 2	ō
SPJB-**-AL*.***	Aluminum	4, 6, 8, 10, 12	Ex ic	•	Zone 2/Div. 2	
SPJB-**-CS*.***	Carbon Steel	4, 6, 8, 10, 12	Ex ic		Zone 2/Div. 2	on
SPJB-**-FB*.***	Fiberglass	4, 6, 8, 10, 12	Ex ic		Zone 2/Div. 2	ecti deli
SPJB-**-PCW.***	Polycarbonate	4, 6, 8, 10, 12	Ex ic		Zone 2/Div. 2	Selection Guideline
SPJB-**-SS*.***	Stainless Steel	4, 6, 8, 10, 12	Ex ic	•	Zone 2/Div. 2	

Wildcards (*) denote number of spurs or other options such as selections for cable glands and accessories. Consult the respective data sheet for ordering details or ask your Pepperl+Fuchs sales engineer or representative for availability of your choices.

¹ Denotes wiring interface for DIN rail installation, IP20.

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High-Power Trunk with Spurs Ex nL/Non-Incendive Field Wiring

Special power modules are provided that limit the voltage. Match the voltage output to the respective input voltage of the field instrument.

FOUNDATION Fieldbus	Power Hub Motherboard or Power Supply	N° of Segments	Redundant Power Supply	Redundant Host Connection	Slot for Advanced Diagnostics	Packing Density/Size	Power Dissipation per Segment	CREST	Terminators: Selectable/Fixed	Grounding Bar Available	HD2-FBPS-1.17.500	HD2-FBPS-1.23.500	HCD2-FBPS-1.23.500
ne	For Yokogawa AKB 336 system cable		_				_						
ection	MBHD-FB1-4R.YO	4				++			F				
Selection Guideline	MB-FB-4R.YO	4				+	-		S				
	MB-FB-4.YO	4				+	-		S				
cs d	MBHC-FB-8R.YO	8				+++			F				
nce osti	For Invensys Foxboro FBM 228												
Advanced Diagnostics	MB-FB-4R.GEN	4				+	-		S				
	MB-FB-4.GEN	4				+	-		S				
	FBTA-228-BPFB-8	8				+	-		F				
es	FBTA-228-BPFB-R-4R	4				+	-		F				
Power Supplies	FBTA-228-BPFB-R-8R	8				+++			F				
Su	For Honeywell C-Series									!	!		
	MB-FB-4R.HO.SC	4				++			F				
u	For any host system												
putio	MBHD-FB1-4R	4			-	++			F				
Field stribution	MB-FB-1R	1				+	-		S				
Dis	MB-FB-2R	2				+	-		S				
	MB-FB-4R	4				+	-		S				
I	MB-FB-4R.GEN	4				+	-		S				
DART Fieldbus	MB-FB-4	4				+	-		S				
Fie	MB-FB-4.GEN	4				+	-		S				
	MBHC-FB-8R	8				+++			F				
s S S S S	MBHC-FB-8R.HSC*	8				+++			F				
Process Interfaces	MBHC-FB-8R.RH*	8				+++			F				

Indicates low to lowest heat dissipation. Lower is better for cabinet density.

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Device Coupler	Enclosure Material	No. of Outputs	Output Protection Rating	Spur Short Circuit Current Limitation	Installation in	FOUNDATION Fieldbus H1
R2-SP-N*	None ¹	4, 6, 8, 10, 12	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	DA
F.SP4.S**.B**.1.0.***.***0	Stainless Steel	824	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	Z
F.SP4.P**.B**.1.0.***.***.***0	GRP	824	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	ō
SPJB-**-AL*.***	Aluminum	4, 6, 8, 10, 12	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	-
SPJB-**-CS*.***	Carbon Steel	4, 6, 8, 10, 12	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	ne
SPJB-**-FB*.***	Fiberglass	4, 6, 8, 10, 12	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	ectio
SPJB-**-PCW.***	Polycarbonate	4, 6, 8, 10, 12	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	Selection Guideline
SPJB-**-SS*.***	Stainless Steel	4, 6, 8, 10, 12	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	
F2-JBSC-* (Aluminum Enclosure)	Aluminum	4, 6, 8	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	cs
RM-SPTM-N2 (Trunk Module)	None ¹	2	Ex nL		Zone 2/Div. 2	nce osti
RM-SPEM-N4 (Extension Module)	None ¹	4	Ex nL		Zone 2/Div. 2	Advanced Diagnostics
Wildoardo (*) donoto number of course	or other entions qual	a a coloctiona for a	able alanda and accessories. Consult	the reepe	tive data aboat far	

Wildcards (*) denote number of spurs or other options such as selections for cable glands and accessories. Consult the respective data sheet for ordering details or ask your Pepperl+Fuchs sales engineer or representative for availability of your choices.

¹ Denotes wiring interface for DIN rail installation, IP20.

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Power Supplies

Distribution

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Accessories

High-Power Trunk with Non-Incendive Spurs

All FieldConnex[®] power supplies and power modules are applicable. The selection below shows reasonable choices.

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FOUNDATION Fieldbus H1	Power Hub Motherboard or Power Supply	N° of Segments	Redundant Power Supply	Redundant Host Connection	Slot for Advanced Diagnostics	Packing Density/Size	Power Dissipation per Segment	CREST	Terminators: Selectable/Fixed	Grounding Bar Available	HD2-FBPS-1.25.360	HD2-FBPS-1.500	HCD2-FBPS-1.500
	For Yokogawa AKB 336 system cable												
ion line	MBHD-FB1-4R.YO	4				++			F				
Selection Guideline	MB-FB-4R.YO	4				+	-		S				
Se Gu	MB-FB-4.YO	4				+	-		S				
	MBHC-FB-8R.YO	8				+++			F				
ed iics	For Invensys Foxboro FBM 228												
Advanced Diagnostics	MB-FB-4R.GEN	4				+	-		S				
	MB-FB-4.GEN	4				+	-		S				
	FBTA-228-BPFB-8	8				+	-		F				
	FBTA-228-BPFB-R-4R	4				+	-		F				
Power Supplies	FBTA-228-BPFB-R-8R	8				+++			F				
Power	For Honeywell C-Series												
- õ	MB-FB-4R.HO.SC	4				++			F				
	For any host system												
ion	MBHD-FB1-4R	4				++			F				
Field stribution	MB-FB-1R	1				+	-		S				
Fi İstri	MB-FB-2R	2				+	-		S				
	MB-FB-4R	4				+	-		S				
	MB-FB-4R.GEN	4				+	-		S				
RT bus	MB-FB-4	4				+	-		S				
DART Fieldbus	MB-FB-4.GEN	4				+	-		S				
ш	MBHC-FB-8R	8				+++			F				
	MBHC-FB-8R.HSC*	8				+++			F				
Process Interfaces	MBHC-FB-8R.RH*	8				+++			F				
Process nterface	Simplex power supply												
Pr	KLD2-FBPS-1.25.360	1				++	-		F		—	—	—
	KLD2-PR-1.IEC (Repeater)	1				++	-		F		_	_	_
ries	+ +++ Indicates reduced space requirement	nts.											

Indicates low to lowest heat dissipation. Lower is better for cabinet density.

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			D L			F
Device Coupler	Enclosure Material	No. of Outputs	Output Protection Rating	Spur Short Circuit Current Limitation	Installation in	FOUNDATION Fieldbus H1
R2-SP-N*	None ¹	4, 6, 8, 10, 12	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	DA
F.SP4.S**.B**.1.0.***.***0	Stainless Steel	824	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	N
F.SP4.P**.B**.1.0.***.***0	GRP	824	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	Ö
SPJB-**-AL*.***	Aluminum	4, 6, 8, 10, 12	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	
SPJB-**-CS*.***	Carbon Steel	4, 6, 8, 10, 12	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	ne
SPJB-**-FB*.***	Fiberglass	4, 6, 8, 10, 12	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	ectio
SPJB-**-PCW.***	Polycarbonate	4, 6, 8, 10, 12	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	Selection Guideline
SPJB-**-SS*.***	Stainless Steel	4, 6, 8, 10, 12	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	
F2-JBSC-* (Aluminum Enclosure)	Aluminum	4, 6, 8	Ex nL/Non-Incendive Field Wiring		Zone 2/Div. 2	cs d
RM-SPTM-N2 (Trunk Module)	None ¹	2	Ex nL		Zone 2/Div. 2	nce osti
RM-SPEM-N4 (Extension Module)	None ¹	4	Ex nL	•	Zone 2/Div. 2	Advanced Diagnostics

Wildcards (*) denote number of spurs or other options such as selections for cable glands and accessories. Consult the respective data sheet for ordering details or ask your Pepperl+Fuchs sales engineer or representative for availability of your choices.

¹ Denotes wiring interface for DIN rail installation, IP20.

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Power Supplies

Distribution Field

DM-AM-KIT

_ FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Power Supplies

Features

- · Comprehensive diagnostics for fieldbus physical layer
- · Mobile kit for the fieldbus professional
- · Precise measurements through passive circuits
- · For commissioning and troubleshooting
- Installation in Zone 2/Class I, Div. 2
- Connection to energy limited fieldbus segments Ex nL permissible
- · USB interface for PC connection and power supply

Function

Designed for maintenance personnel and traveling fieldbus expert, the FieldConnex[®] Mobile Advanced Diagnostic Module (ADM) is a comprehensive measurement tool for single segments. It can be set up at any point on the segment. Its passive input circuits leave the physical layer untouched for exact data. The ADM detects gradual or sudden changes and helps trace even intermittent malfunctions.

The Mobile ADM primarily supports commissioning and troubleshooting. It is powered via USB 2.0 full-speed port and communicates with any laptop or desktop. In addition, a mounting bracket and connection for an external power supply enable the installation in a cabinet for continuous monitoring without USB connection.

The Diagnostic Manager is the software for display and operation from the safety of the control room. The Professional Edition provides powerful functions and wizards simplifying and automating work procedures: an embedded expert system, a data historian, and a built-in oscilloscope (see datasheet DTM-FC.AD*).

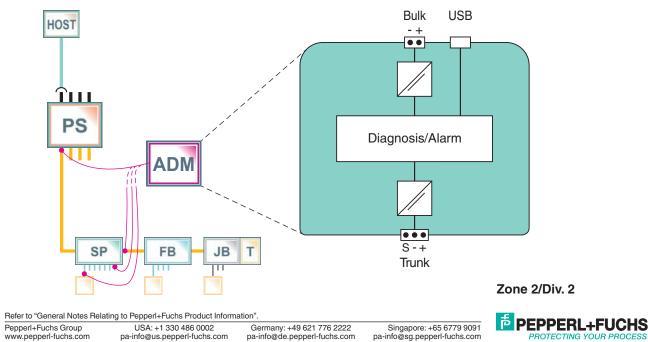




Assembly



140



912868 (US) / 220231 (EU)05/2013 Edition

Technical data		
Fieldbus interface		
Number of segments	1	Ξ
Interface		
Interface type	USB: square type B socket	Fieldbus
Directive conformity		<u>a</u>
Electromagnetic compatibility		0
Directive 2004/108/EC	EN 61326-1:2006	
Standard conformity		
Electromagnetic compatibility	NE 21:2006	Z
Protection degree	IEC 60529	2
Shock resistance	EN 60068-2-27	
Vibration resistance	EN 60068-2-6	D
Mechanical specifications		Ī
Connection type	fieldbus: removable screw terminals with retaining screws external power: removable screw terminals with retaining screws USB: square type B socket	FOUNDATION
Core cross-section	2.5 mm ²	
Data for application in conn areas	nection with Ex-	ine
Statement of conformity	TÜV 05 ATEX 2923 X	
Group, category, type of pro temperature class	otection, 🛞 II 3G Ex nA [nL] IIC T4	Selection Guideline
Directive conformity		
Directive 94/9/EC	IEC 60079-15:2003	
		cs cs
Functional Overview		ance nosti
Fieldbus voltage Unbalance detection	The segment voltage is measured in a range of 0 V 35 V. A capacitive or resistive short between any fieldbus wire and shield is measured and given in a range	Advanced Diagnostics

Functional Overview

Fieldbus voltage Unbalance detection	The segment voltage is measured in a range of 0 V 35 V. A capacitive or resistive short between any fieldbus wire and shield is measured and given in a range	Adv Diag
	between -100 % +100 %. (-100% = short against - wire, +100% = short against +wire)	ú
Termination	Over- and Undertermination are detected and reported.	lie
Communication level	Node specific communication levels are measured in a range of 0 V 2.5 V.	Power upplie
Jitter	Jitter is a measurement for the timing of each bit. Each component connected (power supply, field instrument, cable,) to the segment influences jitter. It is an excellent indicator for segment health. The jitter is either segment or device specific measured in a range of 0 µsec 8 µsec.	Power Supplie
Signal polarity	For each node the polarity of the signal modulation is given.	c
Noise measurement	The noise is measured in a frequency range between 100 Hz 140 kHz. The noise measurement is node address specific to detect device specific noise emission.	Field tributio
Communication errors statistics	Segment-specific error counters e.g. for CRC errors and framing errors are displayed.	Fi

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Accessories

HD2-DM-A

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Supplies Power

- Comprehensive diagnostics for fieldbus physical layer • and power supply
- Plug-in Module for the FieldConnex Power Hub
- Precise measurements through passive circuits
- · For commissioning, online monitoring and troubleshooting
- Installation in Zone 2/Class I, Div. 2
- System state and fault indication via LEDs
- · Display of data in the safety of the control room
- · Automatic setup of diagnostic system
- · Full software integration into DCS and PAM possible

Function

Designed as a plug-in module for the FieldConnex® Power Hub, this Advanced Diagnostic Module (ADM) is a comprehensive measurement tool for the physical layer of up to four fieldbus segments. It's passive input circuits leave the physical layer untouched for exact data. The ADM detects gradual or sudden changes and helps trace even intermittent malfunctions.

The ADM supports commissioning, online monitoring and troubleshooting. It can be integrated tightly into the DCS and PAM via a separate diagnostic bus, making the fieldbus physical layer itself a managable asset. Configuration tools automate setup of the ADM and of selected DCS. The Diagnostic Manager is the software for display and operation from the safety of the control room. The Professional Edition provides powerful functions and wizards simplifying and automating work procedures: Embedded expert system data historian and a built-in oscilloscope are included. (see datasheet DTM-FC.AD*).

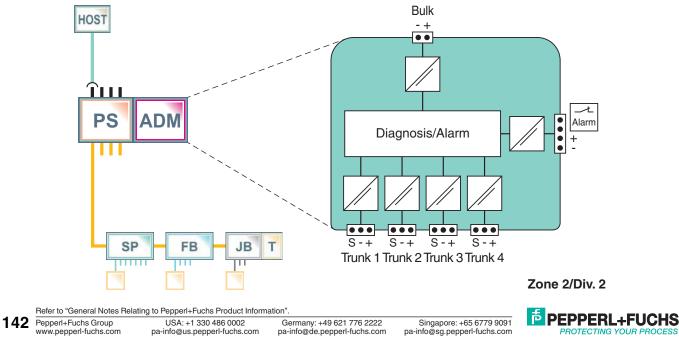


Assembly





Connection



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Edition

Power Supplies

Field Distribution

DART Fieldbus

Process Interfaces

Accessories

Fieldbus interface		
Number of segments	4	Ŧ
Indicators/operating means		
Fault signal	VFC alarm 1 A, 50 V DC, normally closed	Fieldbus
Interface		9
Interface type	diagnostic bus: RS 485	0
Directive conformity		
Electromagnetic compatibility		
Directive 2004/108/EC	EN 61326-1:2006	Z
Standard conformity		FOUNDATION
Electromagnetic compatibility	NE 21:2006	
Protection degree	IEC 60529	õ
Shock resistance	EN 60068-2-27	Z
Vibration resistance	EN 60068-2-6	
Ambient conditions		0
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	LL
Mechanical specifications		
Connection type	Motherboard specific	c e
Core cross-section	Motherboard specific	ii tio
Data for application in connection with Exareas		Selection Guideline
Statement of conformity	TÜV 04 ATEX 2500 X	N G
Group, category, type of protection, temperature class	⟨ II 3G EEx nA IIC T4	(0)
Directive conformity		ic so
Directive 94/9/EC	EN 60079-15:2003	st
International approvals		Advanced Diagnostics
FM approval	CoC 3024816, CoC 3024816C	ag
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	Di A

Functional Overview

Expert system	Built-in expert system interprets behavior of each segment based on rules and gives pointed information in clear text. Precisely diagnosis causes and suggests remedies, which are easy to understand.
Supply input voltage	The supply voltage of the primary and secondary input is measured in a range of 0 V 40 V.
Segment power	The health of the primary and backup fieldbus power supply is monitored. Mismatch of
redundancy integrity	redundancy pairs is detected and causes an alarm.
Fieldbus voltage	The segment voltage is measured in a range of 0 V \dots 35 V.
Fieldbus current	The current feed into a fieldbus segment is measured in a range of 0 A 1 A depending on the used power supply.
Unbalance detection	A capacitive or resistive short between any fieldbus wire and shield is measured and given in a range between -100% +100%.
	(-100% = short against - wire, +100% = short against +wire)
Termination	Over- and Undertermination are detected and reported.
Signal level	Node specific signal levels are measured in a range of 0 V 2.5 V.
Jitter	Jitter is a measurement for the timing of each bit. Each component connected (power supply, field instrument, cable,) to the segment influences jitter. It is an excellent indicator for segment health. The jitter is either segment- or device-specifically measured in a range of 0 µsec 8 µsec.
Signal polarity	For each node the polarity of the signal modulation is given.
Noise measurement	Noise is measured in a frequency range between 100 Hz 140 kHz. Noise measurement is node-address-specific in order to detect device-specific noise.
Oscilloscope function	The built-in oscilloscope is a powerful tool for signal voltage behavior analysis. It allows for analysis of specific frames and occurring communication errors. Trigger conditions, as e. g. different frame types, CRC errors, framing errors are either node-address-specific or unspecific. The frame contents detected in the sampled period are analyzed and shown.
Live list generation	A list of all connected devices and additional status information is generated. The ADM detects initial connection of a device to a segment in operation. A message reminds the user to re-run the commissioning wizard.
Alarm management	For all measured values, either segment- or node-specific, alarm limits exist. In addition, warning limits can be defined. When these limits are violated, alarms are generated.
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Features

- Diagnostics for fieldbus physical layer and power supply
- Plug-in Module for the FieldConnex Power Hub
- Plug and play no engineering required
- For online monitoring
- Installation in Zone 2/Class I, Div. 2
- System state and fault indication via LEDs
- · Alarm limits configurable via DIP switches
- · Fault indication transmission by voltage free contact

Function

Designed as a plug-in module for the FieldConnex® Power Hub, the Advanced Diagnostic Module (ADM) with relay output is a monitoring tool for the physical layer of up to four fieldbus segments. Passive input circuits leave the physical layer untouched, avoiding alteration of the signal. The ADM indicates unwanted conditions via voltage-free contact. It provides physical layer diagnostics "plug-and-play", without additional engineering. If desired, the values for maintenance and out-of-specification limit ranges are configurable via DIP switches. LED signals indicate that a limit has been exceeded. For commissioning and troubleshooting, a comprehensive diagnostic module such as the FieldConnex(R) mobile ADM (see DM-AM-KIT) is recommended.

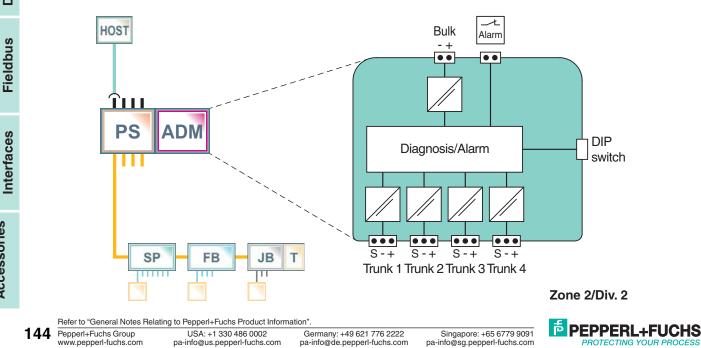


Assembly





connection



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

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Technical data		
Fieldbus interface		
Number of segments	4	Ŧ
Indicators/operating means		
Fault signal	VFC alarm 1 A, 50 V DC, normally closed	ieldbus
Directive conformity		q
Electromagnetic compatibility		2
Directive 2004/108/EC	EN 61326-1:2006	i e
Standard conformity		Щ.
Protection degree	IEC 60529	Z
Shock resistance	EN 60068-2-27	DATIO
Vibration resistance	EN 60068-2-6	
Ambient conditions		à
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	FOUN
Data for application in connection with Ex	÷	
areas		0
Statement of conformity	TÜV 04 ATEX 2500 X	ш.
Group, category, type of protection, temperature class	🐼 ll 3G EEx nA ll T4	c 0
Directive conformity		lin
Directive 94/9/EC	IEC 60079-15	Selection Guideline
		ele uid
Menitered Values Overview		ა ი

Monitored Values Overview

For each value maintenance and out-of-specification limit ranges are configurable via DIP switches.

Jitter	Jitter is a measurement for the timing of each bit. Each component connected (power supply, field instrument, cable,) to the segment influences jitter. It is an excellent indicator for segment health. The jitter is either segment- or device-specifically measured in a range of 1.6 µsec 4.8 µsec.
Signal Level	The voltage level of the communication signal, node specific measurement.
Noise	Unwanted disturbance. Often caused by overlay of a number of disturbances. Leads to signal deterioration.

Diagnostics Advanced

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HD2-DM-B

Selection Guideline

Diagnostics Advanced

Supplies Power

Field

Process

F

Features

- · Basic monitoring for power supply output and health
- Plug-in Module for the FieldConnex Power Hub
- Plug and play no engineering required
- · For online monitoring
- Installation in Zone 2/Class I, Div. 2
- · System state and fault indication via LEDs

Function

Designed as a plug-in module for the FieldConnex® Power Hub, the Basic Diagnostic Module HD2-DM-B provides basic system diagnostics. It checks for proper operation of bulk power supplies and monitors the connected trunks for overload or short-circuit conditions. All Power Hub modules are checked for proper function. On redundant power modules it indicates missmatching pairs.

The module indicates a fault condition via voltage-free contact. It provides monitoring "plug-and-play" without additional engineering. LED signals indicate a fault for easy detection.



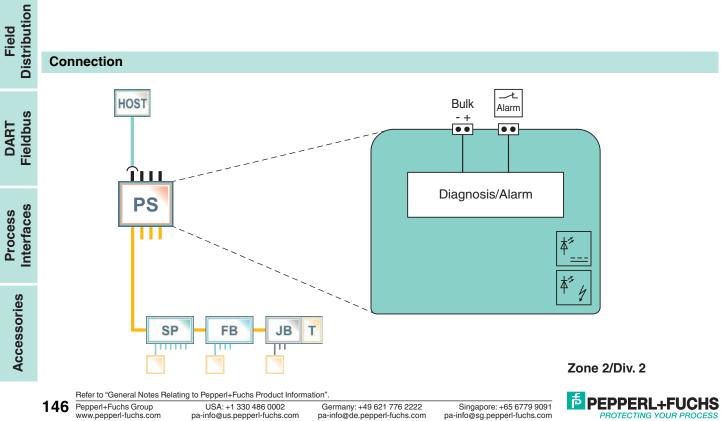
Assembly



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Edition

Connection



HD2-DM-B

Technical data		
Indicators/operating means		
Fault signal	VFC alarm 1 A, 50 V DC, normally closed	- E
Directive conformity		
Electromagnetic compatibility		ŝ
Directive 2004/108/EC	EN 61326-1:2006	<u>0</u>
Standard conformity		
Electromagnetic compatibility	NE 21:2006	<u>o</u>
Protection degree	IEC 60529	<u> </u>
Shock resistance	EN 60068-2-27	Z
Vibration resistance	EN 60068-2-6	0
Ambient conditions		FOUNDATION Fieldbus
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	0
Mechanical specifications		z
Connection type	Motherboard specific	5
Core cross-section	Motherboard specific	0
Data for application in connection with Ex	•	L
areas		
Statement of conformity	TÜV 04 ATEX 2500 X	E B
Group, category, type of protection, temperature class	€ II 3G EEx nA C IIC T4	Selection Guideline
Directive conformity		uid
Directive 94/9/EC	EN 60079-15:2003	N U
International approvals		
FM approval	CoC 3024816, CoC 3024816C	(0
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nC IIC T4	bed
		Advanced Diagnostics

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KT-MB-DMA

Assembly

Features

- · Comprehensive diagnostics for fieldbus physical layer
- · Module and motherboard for retrofit of any installation
- · Precise measurements through passive circuits
- · For commissioning, online monitoring and troubleshooting
- Installation in Zone 2/Class I. Div. 2
- System state and fault indication via LEDs
- · Display of data in the safety of the control room
- Full software integration into DCS and PAM possible

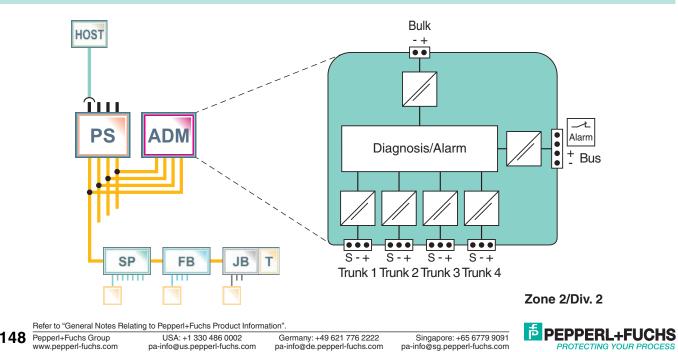
Function

The kit of FieldConnex® Advanced Diagnostic Module (ADM) and motherboard is a comprehensive measurement tool for the physical layer for retrofitting of up to four fieldbus segments. Its passive input circuits leave the physical layer untouched for exact data. The ADM detects gradual or sudden changes and helps trace even intermittent malfunctions. The ADM supports commissioning, online monitoring and troubleshooting. It can be integrated tightly into the DCS and PAM via a separate diagnostic bus, making the fieldbus physical layer itself a managable asset. Configuration tools automate setup of the ADM and of selected DCS. The Diagnostic Manager is the software for display and operation from the safety of the control room. The Professional Edition provides powerful functions and wizards simplifying and automating work procedures: Embedded expert system data historian and a built-in oscilloscope are included. (see datasheet DTM-FC.AD*).





Connection



Fieldbus DART

Interfaces Process

Accessories

Technical data		_
Fieldbus interface		
Number of segments	4	Ŧ
Indicators/operating means		s
Fault signal	VFC alarm 1 A, 50 V DC, normally closed	ň
Interface		Fieldbu
Interface type	diagnostic bus: RS 485	0
Directive conformity		<u>e</u>
Electromagnetic compatibility		
Directive 2004/108/EC	EN 61326-1:2006	Z
Standard conformity		FOUNDATIO
Electromagnetic compatibility	NE 21	
Protection degree	IEC 60529	ð
Shock resistance	EN 60068-2-27	Z
Vibration resistance	EN 60068-2-6	5
Mechanical specifications		0
Connection type	screw terminals	<u> </u>
Core cross-section	2.5 mm ²	
International approvals		c e
FM approval	CoC 3024816, CoC 3024816C	ii ti
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	ec
		Selection Guideline

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Assembly

Selection Guideline

Advanced Diagnostics

Power Supplies

Features

- System integration kit for Advanced Diagnostics
- DCS integration via Diagnostic Manager or device DTM
- Simple automatic setup of Advanced Diagnostics
- Summary alarm handling

Function

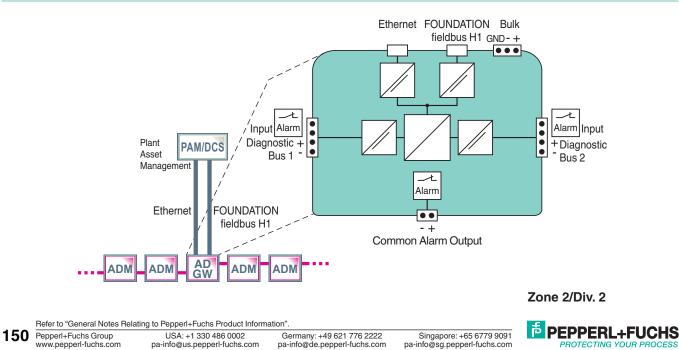
The FieldConnex[®] Diagnostic Gateway is the interface between stationary Advanced Diagnostic Modules (ADM) and the control system. It offers access to all ADM data in two ways: via Ethernet and the Diagnostic Manager software or via FOUNDATION Fieldbus H1 and DTM/EDD or both. The gateway configures itself and automatically detects the ADMs. The Diagnostic Manager automatically finds gateways on the same subnet. The setup of the diagnostic bus and all connected modules is automatic. This significantly simplifies engineering of FieldConnex[®] Advanced Diagnostics.





Accessories

Field



KT-MB-GT2AD.FF

Technical data			
Ethernet Interface			
Port	100 BASE-TX	ī	
Protocol	TCP/IP and UDP/IP		
Services	ICMP, DHCP, AutoIP, HTTP	<u>u</u>	Ś
Diagnostic Bus			2
Number of Diagnostic Bus Channels	2		2
Cable length/Channel	30 m		2
Directive conformity			
Electromagnetic compatibility		Z	Ę
Directive 2004/108/EC	EN 61326-1:2006	ATIO	2
Low voltage			F
Directive 73/23/EEC	EN 61010	2	5
Standard conformity		2	Z
Electrical isolation	IEC 62103		2
Electromagnetic compatibility	NE 21)
Protection degree	IEC 60529		-
Climatic conditions	DIN IEC 721		
Shock resistance	EN 60068-2-27	5	Je
Vibration resistance	EN 60068-2-6	ţ	ile
Ethernet	IEEE 802.3	e	ğ
Ambient conditions		Selection	Guideline
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	0)	0

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Diagnostics Advanced

Power Supplies

Distribution Field

Fieldbus DART

Assembly

F

Features

- · System integration kit for Advanced Diagnostics
- DCS integration via Diagnostic Manager or device DTM
- · Simple automatic setup of Advanced Diagnostics
- · Alarm handling and integrated I/O for cabinet monitoring/control

Function

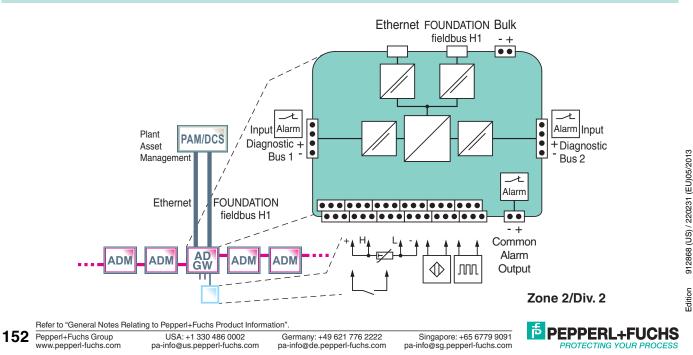
The FieldConnex[®] Diagnostic Gateway is the interface between stationary Advanced Diagnostic Modules (ADM) and the control system. It offers access to all ADM data in two ways: via Ethernet and the Diagnostic Manager software or via FOUNDATION Fieldbus H1 and DTM/EDD or both. The gateway configures itself and automatically detects the ADMs. The Diagnostic Manager automatically finds gateways on the same subnet. The setup of the diagnostic bus and all connected modules is automatic. This significantly simplifies engineering of FieldConnex® Advanced Diagnostics. Inputs for frequency, temperature, humidity, and NAMUR sensors and 2 relay contacts allow control of the control cabinet. The cabinet and physical layer diagnostics become easy-to-manage plant assets.



Edition



Connection



Technical data		•
Ethernet Interface		
Port	100 BASE-TX	
Protocol	TCP/IP and UDP/IP	
Services	ICMP, DHCP, AutoIP, HTTP	E C
Diagnostic Bus		Fieldbus
Number of Diagnostic Bus Channels	2	
Cable length/Channel	30 m	<u>e</u>
Indicators/operating means		
Fault signal	buzzer on	Z
Directive conformity		FOUNDATION
Electromagnetic compatibility		
Directive 2004/108/EC	EN 61326-1:2006	0
Low voltage		Z
Directive 73/23/EEC	EN 61010	
Standard conformity		O.
Electrical isolation	IEC 62103	
Electromagnetic compatibility	NE 21	
Protection degree	IEC 60529	E e
Climatic conditions	DIN IEC 721	lir
Shock resistance	EN 60068-2-27	Selection Guideline
Vibration resistance	EN 60068-2-6	Sel
Ethernet	IEEE 802.3	0,0
Ambient conditions		
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	_ <u> </u>
		Advanced Diagnostics

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Power Supplies

Distribution Field

Fieldbus DART

Interfaces Process

Accessories

MB-FB-1R

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Supplies Power

- · 1 segment, redundant
- · Supports all PLC and DCS hosts
- · High-Power Trunk: Live work on devices in any hazardous area
- · Features for best signal quality, low heat dissipation
- Optional Advanced Diagnostics
- · Passive impedance and CREST technology for high reliability
- Supports Ex ic/nL voltage limitation
- Installation in Zone 2/Div. 2

Function

The FieldConnex[®]Universal Power Hub is a modular fieldbus power supply, providing the most options for most reliable communication. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring. The motherboard is the wiring interface and mounting plate

with common screw terminals for all DCS and PLC host systems. Sockets for all modules enable simple installation and replacement without tools. Certain motherboards enable power redundancy with seamless transfer. Pairs of modules feed each segment.

Availability and a long service life are achieved through: only one passive impedance filter per segment with CREST for superior signal transmission, optimized design for low power dissipation and high-availability fieldbus termination. Any mounting direction allows optimized and space-saving cabinet layout.

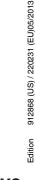
Assembly







Host Host S - + HOST S - + ... -+ Bulk 1 • Bulk Ζ CREST -+ Bulk 2 1 PS Alarm Bulk 2 ... Trunk Т т SP FB JB + - S Trunk Refer to "General Notes Relating to Pepperl+Fuchs Product Information PEPPERL+FUCHS 154



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Technical data		
Supply		
Connection	redundant	Ŧ
Rated voltage	19.2 35 V SELV/PELV	
Rated current	16 A	ŝ
Power loss	0.5 W	Fieldbus
Fieldbus interface		0
Number of segments		<u>e</u>
Redundant	1	
Host-side	general purpose host	Z
Terminating resistor	fixed 100 Ω	FOUNDATION
Indicators/operating means		
Fault signal	VFC alarm 1 A, 50 V DC, normally closed	ð
Directive conformity		Z
Electromagnetic compatibility		5
Directive 2004/108/EC	EN 61326-1:2006	0
Standard conformity		ш.
Electromagnetic compatibility	NE 21:2006	
Protection degree	IEC 60529	c e
Shock resistance	EN 60068-2-27	ii ii
Vibration resistance	EN 60068-2-6	Selection Guideline
Mechanical specifications		3ui
Connection type	screw terminals	0.0
Core cross-section	2.5 mm ²	
Mounting	DIN mounting rail	_ <i>v</i>
Data for application in connection with Ex-		tic
areas		 ncos
Statement of conformity	TÜV 04 ATEX 2500 X	va gn
Group, category, type of protection, temperature class	🐼 II 3G EEx nA C IIC T4	Advanced Diagnostics
Directive conformity		
Directive 94/9/EC	IEC 60079-15:2003	
International approvals		es
FM approval	CoC 3024816, CoC 3024816C	pli
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	Power Supplies
Certificates and approvals		SL SL
Marine approval	DNV A-10798	

Compatible power modules

Compatible	e power modules							d ution
		HD2-FBP	S-1.17.500 HD2-FBP	S-1.23.500 HD2-FBP	S-1.25.360			Field Distribution
					HD2-FBP			
						HD2-FBC	CL-1.500	<u>s</u>
Power Output					-		1	DART
Voltage (V)		15 17	21 23	25 28	28 30	_1		A b €
Current (mA)		500	500	360	500	500		L in the second
Limit U ₀ (V)		17.5	24	-	-	-		
Device in	Type of Protection		-	-			Required Installation Components	
Zone 0/Div. 1	Intrinsically safe Ex ia						FieldBarrier	, o
Zone 1/Div. 1	Intrinsically safe Ex ia						FieldBarrier	ss ce
Zone 1/Div. 1	Flameproof Ex d			•		-	Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2	Process Interfaces
Zone 2	Intrinsically safe Ex ic (FISCO)						Selected Segment Protectors	리티
Zone 2	Intrinsically safe Ex ic (Entity)						Selected Segment Protectors	
Div. 2	Non-incendive						Any Segment Protector; power module selection depends on voltage of field device	ories
Safe Area	No specific type of protection			■		■	Segment Protector recommended	SS
	Ro specific type of protection	1				•	Segment Protector recommended	Accessories

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PROTECTING YOUR PROCESS 155

MB-FB-2R

Features

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FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

- 2 segments, redundant, individual modules per • segment
- · Supports all PLC and DCS hosts
- High-Power Trunk: Live work on devices in any hazardous area
- · Features for best signal quality, low heat dissipation
- Optional Advanced Diagnostics
- · Passive impedance and CREST technology for high reliability
- Supports Ex ic/nL voltage limitation
- Installation in Zone 2/Div. 2

Function

The FieldConnex[®]Universal Power Hub is a modular fieldbus power supply, providing the most options for most reliable communication. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring.

The motherboard is the wiring interface and mounting plate with common screw terminals for all DCS and PLC host systems. Sockets for all modules enable simple installation and replacement without tools. Certain motherboards enable power redundancy with seamless transfer. Pairs of modules feed each segment.

Availability and a long service life are achieved through: only one passive impedance filter per segment with CREST for superior signal transmission, optimized design for low power dissipation and high-availability fieldbus termination. Any mounting direction allows optimized and space-saving cabinet layout.



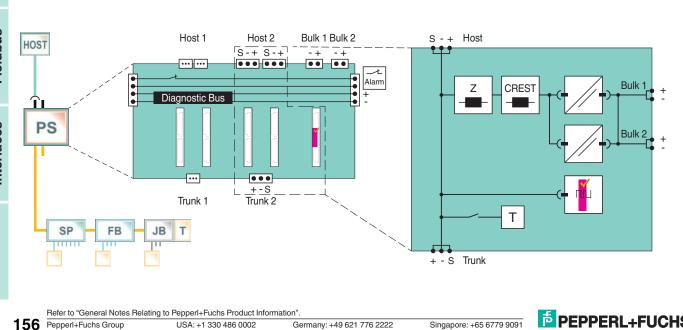
Assembly





Connection

Supplies Power



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PEPPERL+FUCHS

912868 (US) / 220231 (EU)05/2013

Edition

Technical data		
Supply		
Connection	redundant	Ŧ
Rated voltage	19.2 35 V SELV/PELV	
Rated current	16 A	ů.
Fieldbus interface		Fieldbus
Number of segments		
Redundant	2	i.
Host-side	redundant general purpose host	
Terminating resistor	selectable 100 Ω	Z
Indicators/operating means		FOUNDATION
Fault signal	VFC alarm output via connectors	
Directive conformity		0
Electromagnetic compatibility		Z
Directive 2004/108/EC	EN 61326-1:2006	
Standard conformity		O
Electromagnetic compatibility	NE 21:2006	
Protection degree	IEC 60529	
Shock resistance	EN 60068-2-27	L S
Vibration resistance	EN 60068-2-6	Selection Guideline
Mechanical specifications		ec
Connection type	screw terminals	le on
Core cross-section	2.5 mm ²	0,0
Mounting	DIN mounting rail	
Data for application in connection with Exareas		ed
Statement of conformity	TÜV 04 ATEX 2500 X	nc
Group, category, type of protection, temperature class	🐼 II 3G EEx nA C IIC T4	Advanced Diagnostics
Directive conformity		⊡ Þ
Directive 94/9/EC	IEC 60079-15:2003	
International approvals		
FM approval	CoC 3024816, CoC 3024816C	es
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	pli
Certificates and approvals		Power Supplies
Marine approval	DNV A-10798	S H

Compatible power modules

			HD2-FBP	S-1.17.500					Field Distributi
				HD2-FBP	S-1.23.500				Field tribut
					HD2-FBP	S-1.25.360			list
						HD2-FBP	S-1.500		
							HD2-FBC	CL-1.500	
	Power Output								S
	Voltage (V)		15 17	21 23	25 28	28 30	_1		DART Fieldbu
	Current (mA)		500	500	360	500	500		DART
	Limit U ₀ (V)	-	17.5	24	-	-	-		
	Device in	Type of Protection						Required Installation Components	
	Zone 0/Div. 1	Intrinsically safe Ex ia						FieldBarrier	
	Zone 1/Div. 1	Intrinsically safe Ex ia						FieldBarrier	, o
2013	Zone 1/Div. 1	Flameproof Ex d					-	Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2	Process Interfaces
/90(r	Zone 2	Intrinsically safe Ex ic (FISCO)						Selected Segment Protectors	ro Ter
Ē	Zone 2	Intrinsically safe Ex ic (Entity)						Selected Segment Protectors	
912868 (US) / 220231 (EU)05/2013	Div. 2	Non-incendive						Any Segment Protector; power module selection depends on voltage of field device	es
ر 88	Safe Area	No specific type of protection						Segment Protector recommended	ori
dition 91286	¹ follows bull	k power supply							Accessories

 Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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PEPPERL+FUCHS 157

d ution

MB-FB-4

Features

- · 4 segments, individual modules per segment
- · Supports all PLC and DCS hosts
- · High-Power Trunk: Live work on devices in any hazardous area
- · Features for best signal quality, low heat dissipation
- Optional Advanced Diagnostics
- · Passive impedance and CREST technology for high reliability
- Supports Ex ic/nL voltage limitation
- Installation in Zone 2/Div. 2

Function

The FieldConnex[®]Universal Power Hub is a modular fieldbus power supply, providing the most options for most reliable communication. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring. The motherboard is the wiring interface and mounting plate

with common screw terminals for all DCS and PLC host systems. Sockets for all modules enable simple installation and replacement without tools. Certain motherboards enable power redundancy with seamless transfer. Pairs of modules feed each segment.

Availability and a long service life are achieved through: only one passive impedance filter per segment with CREST for superior signal transmission, optimized design for low power dissipation and high-availability fieldbus termination. Any mounting direction allows optimized and space-saving cabinet layout.

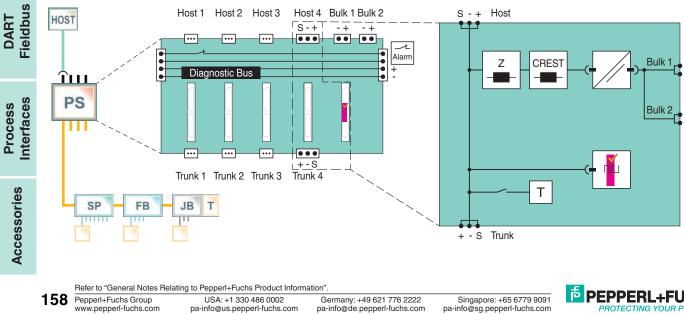


Assembly





Connection



PEPPERL+FUCHS

+

912868 (US) / 220231 (EU)05/2013

Edition

Technical data		
Supply		
Connection	redundant	Ŧ
Rated voltage	19.2 35 V SELV/PELV	
Rated current	16 A	ů.
Fieldbus interface		Fieldbus
Number of segments		
Simplex	4	<u>e</u>
Host-side	general purpose host	
Terminating resistor	selectable 100 Ω	Z
Indicators/operating means		0
Fault signal	VFC alarm output via connectors	FOUNDATION
Directive conformity		0
Electromagnetic compatibility		Z
Directive 2004/108/EC	EN 61326-1:2006	
Standard conformity		O
Electromagnetic compatibility	NE 21:2006	<u> </u>
Protection degree	IEC 60529	
Shock resistance	EN 60068-2-27	e e
Vibration resistance	EN 60068-2-6	lir
Mechanical specifications		Selection Guideline
Connection type	screw terminals	Sel
Core cross-section	2.5 mm ²	0.0
Mounting	DIN mounting rail	
Data for application in connection with Exact areas	-	ed tics
Statement of conformity	TÜV 04 ATEX 2500 X	nc
Group, category, type of protection, temperature class	€ II 3G EEx nA C IIC T4	Advanced Diagnostics
Directive conformity		Di A
Directive 94/9/EC	IEC 60079-15:2003	
International approvals		
FM approval	CoC 3024816, CoC 3024816C	es
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	pli
Certificates and approvals		Power Supplies
Marine approval	DNV A-10798	S E

Compatible power modules

			HD2-FBP	S-1.17.500					p	Distributi
				HD2-FBP	S-1.23.500				Field	lirib
					HD2-FBP	S-1.25.360			_	ist
						HD2-FBP	S-1.500			
							HD2-FBC	L-1.500		
	Power Output									S
	Voltage (V)		15 17	21 23	25 28	28 30	_1		井	Fieldbus
	Current (mA)		500	500	360	500	500		DART	þ
	Limit U ₀ (V)	-	17.5	24	-	-	-			Ш
	Device in	Type of Protection						Required Installation Components		
	Zone 0/Div. 1	Intrinsically safe Ex ia						FieldBarrier		
	Zone 1/Div. 1	Intrinsically safe Ex ia						FieldBarrier		S
2013	Zone 1/Div. 1	Flameproof Ex d					•	Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2	rocess	Interfaces
/90(r	Zone 2	Intrinsically safe Ex ic (FISCO)						Selected Segment Protectors	ŗ	fer
Ē	Zone 2	Intrinsically safe Ex ic (Entity)						Selected Segment Protectors	Ē	Ē
912868 (US) / 220231 (EU)05/2013	Div. 2	Non-incendive						Any Segment Protector; power module selection depends on voltage of field device	es	
D) 88	Safe Area	No specific type of protection						Segment Protector recommended	, i	5
dition 91286	¹ follows bulk	<power supply<="" td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>Accessories</td><td>Accos</td></power>							Accessories	Accos

 Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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d ution

MB-FB-4.GEN

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Advanced Diagnostics

Power Supplies

- · 4 segments, individual modules per segment
- · Customizable for any host system
- High-Power Trunk: Live work on devices in any hazardous area
- · Features for best signal quality, low heat dissipation
- Optional Advanced Diagnostics
- Passive impedance and CREST technology for high reliability
- Supports Ex ic/nL voltage limitation
- Installation in Zone 2/Div. 2

Function

The FieldConnex[®]Universal Power Hub is a modular fieldbus power supply, providing the most options for most reliable communication. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring. The motherboard is the wiring interface and mounting plate with a DB-25 connector for PROFIBUS PA gateway or customizable cable connections to any DCS. Sockets for individual power modules enable simple installation and can be replaced without tools. Certain motherboards enable

power redundancy with seamless transfer. Pairs of modules feed each segment.

Availability and a long service life are achieved through: only one passive impedance filter per segment with CREST for superior signal transmission, optimized design for low power dissipation and high-availability fieldbus termination. Any mounting direction allows optimized and space-saving cabinet layout.



Assembly

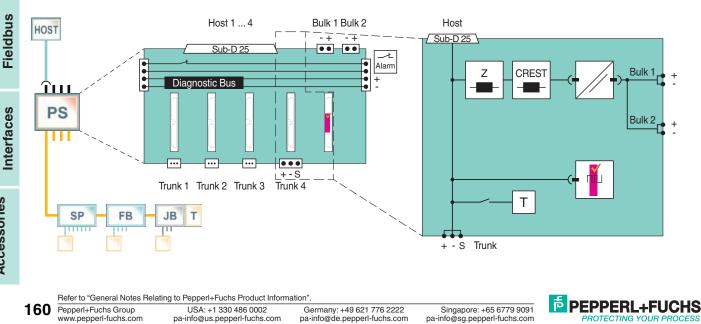


912868 (US) / 220231 (EU)05/2013

Edition



Connection



MB-FB-4.GEN

		-
Technical data		
Supply		
Connection	redundant	- E
Rated voltage	19.2 35 V SELV/PELV	
Rated current	16 A	Fieldbus
Fieldbus interface		q
Number of segments		0
Simplex	4	<u>e</u>
Terminating resistor	selectable 100 Ω	
Indicators/operating means		Z
Fault signal	VFC alarm output via connectors	2
Directive conformity		FOUNDATION
Electromagnetic compatibility		D
Directive 2004/108/EC	EN 61326-1:2006	Z
Standard conformity		5
Electrical isolation	IEC 62103	0
Electromagnetic compatibility	NE 21:2006	ш.
Protection degree	IEC 60529	
Shock resistance	EN 60068-2-27	r e
Vibration resistance	EN 60068-2-6	itio
Mechanical specifications		Selection Guideline
Connection type	screw terminals	Sel Su
Core cross-section	2.5 mm ²	0,0
Mounting	DIN mounting rail	
Data for application in connection with Ex-		- S
areas		ti š
Statement of conformity	TÜV 04 ATEX 2500 X	os
Group, category, type of protection, temperature class	€ II 3G EEx nA C IIC T4	Advanced Diagnostics
Directive conformity		ם ۲
Directive 94/9/EC	IEC 60079-15:2003	

Compatible power modules

HD2-FBPS-	HD2-FBPS-1.17.500								
	HD2-FBPS	S-1.23.500							
		HD2-FBP	S-1.25.360						
			HD2-FBP	S-1.500					
				HD2-FBCL-1.500					

					HD2-FBP	S-1.500		5
						HD2-FBC	CL-1.500	Field
Power Output								Field
Voltage (V)		15 17	21 23	25 28	28 30	_1		ΞĘ
Current (mA)		500	500	360	500	500		i c
Limit U ₀ (V)		17.5	24	-	-	-		
Device in	Type of Protection						Required Installation Components	
Zone 0/Div. 1	Intrinsically safe Ex ia						FieldBarrier	, u
Zone 1/Div. 1	Intrinsically safe Ex ia						FieldBarrier	P T
Zone 1/Div. 1	Flameproof Ex d						Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2	DART
Zone 2	Intrinsically safe Ex ic (FISCO)						Selected Segment Protectors	
Zone 2	Intrinsically safe Ex ic (Entity)						Selected Segment Protectors	l
Div. 2	Non-incendive	•					Any Segment Protector; power module selection depends on voltage of field device	Process
Safe Area	No specific type of protection						Segment Protector recommended	0, T
¹ follows bulk	power supply		•	•	•	•		<u>d</u>

Edition 912868 (US) / 220231 (EU)05/2013

Power Supplies

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PEPPERL+FUCHS 161 PROTECTING YOUR

MB-FB-4.YO

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Advanced Diagnostics

Power Supplies

- · 4 segments, individual modules per segment
- Customized for Yokogawa, ALF 111
- High-Power Trunk: Live work on devices in any hazardous area
- · Features for best signal quality, low heat dissipation
- Optional Advanced Diagnostics
- Passive impedance and CREST technology for high reliability
- Supports Ex ic/nL voltage limitation
- Installation in Zone 2/Div. 2

Function

The FieldConnex[®]Universal Power Hub is a modular fieldbus power supply, providing the most options for most reliable communication. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring. The motherboard is the wiring interface with connectors for

direct DCS hook-up via the AKB 336 system cable. Sockets for all modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment.

Availability and a long service life are achieved through: only one passive impedance filter per segment with CREST for superior signal transmission, optimized design for low power dissipation and high-availability fieldbus termination. Any mounting direction allows optimized and space-saving cabinet layout.



Assembly

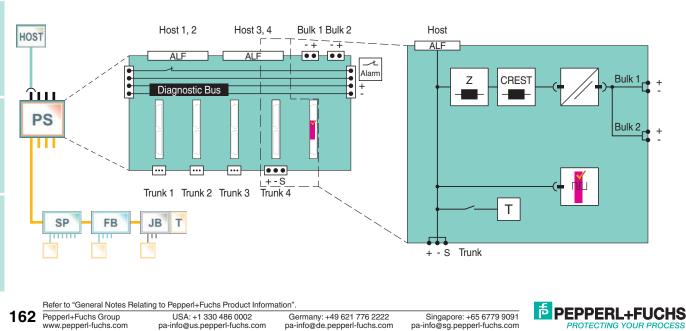


912868 (US) / 220231 (EU)05/2013

Edition



Connection



MB-FB-4.YO

Technical data			**
Supply			
Connection	redundant		E
Rated voltage	19.2 35 V SELV/PELV		
Rated current	16 A		3
Fieldbus interface		2	2
Number of segments		7	D
Simplex	4		Ð
Host-side	redundant Yokogawa ALF111 for AKB336 interface cable		L
Terminating resistor	selectable 100 Ω	Z	Z
Indicators/operating means		C	2
Fault signal	VFC alarm output via connectors	F	
Directive conformity			1
Electromagnetic compatibility			Z
Directive 2004/108/EC	EN 61326-1:2006		5
Standard conformity		C	5
Electromagnetic compatibility	NE 21:2006	L	L
Protection degree	IEC 60529		
Shock resistance	EN 60068-2-27	2	Ð
Vibration resistance	EN 60068-2-6	tio	lin
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	U O	de
Mechanical specifications		Selection	Guideline
Connection type	screw terminals	S	G
Core cross-section	2.5 mm ²		
Mounting	DIN mounting rail		S
Data for application in connection with Exareas		Advanced	Diagnostics
Statement of conformity	TÜV 04 ATEX 2500 X	/ai	Ĕ
Group, category, type of protection, temperature class	😥 II 3 G Ex nA II T4	Adv	Diaç
Declaration of conformity	PF 10 CERT 1569		
Directive conformity			
Directive 94/9/EC	EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2005, EN 60079-27:2006	<u> </u>	es
International approvals		Power	Supplies
FM approval	CoC 3024816, CoC 3024816C	0	dr
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4		ึง
Certificates and approvals			
Marine approval	DNV A-10798		
			no
Compatible newsrandules		σ	tribution
Compatible power modules		Field	ibu
		ίΞ.	ţ

Compatible power modules

		HD2-FBP	S-1.17.500					Distr
			HD2-FBP	S-1.23.500				
				HD2-FBPS	S-1.25.360			
					HD2-FBP	S-1.500		ď
						HD2-FBC	L-1.500	DART
Power Output								DART
Voltage (V)		15 17	21 23	25 28	28 30	_1		
Current (mA)		500	500	360	500	500		
Limit U ₀ (V)		17.5	24	-	-	-		
Device in	Type of Protection						Required Installation Components	a
Zone 0/Div. 1	Intrinsically safe Ex ia						FieldBarrier	Process
Zone 1/Div. 1	Intrinsically safe Ex ia						FieldBarrier	Process
Zone 1/Div. 1	Flameproof Ex d						Segment Protector R-SP-E12 or any	2
							Segment Protector installed in Zone 2	
Zone 2	Intrinsically safe Ex ic (FISCO)	-					Segment Protector installed in Zone 2 Selected Segment Protectors	
Zone 2 Zone 2		•	•				•	
	Intrinsically safe Ex ic (FISCO)	•	•	•	•		Selected Segment Protectors	Accessories Int

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PEPPERL+FUCHS 163 PROTECTING YOUR PH

MB-FB-4R

Assembly

Features

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FOUNDATION Fieldbus H1

Selection Guideline

Advanced Diagnostics

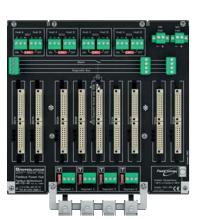
- 4 segments, redundant, individual modules per segment
- Supports all PLC and DCS hosts
- High-Power Trunk: Live work on devices in any hazardous area
- · Features for best signal quality, low heat dissipation
- Optional Advanced Diagnostics
- Passive impedance and CREST technology for high reliability
- Supports Ex ic/nL voltage limitation
- Installation in Zone 2/Div. 2

Function

The FieldConnex[®]Universal Power Hub is a modular fieldbus power supply, providing the most options for most reliable communication. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring.

The motherboard is the wiring interface and mounting plate with common screw terminals for all DCS and PLC host systems. Sockets for all modules enable simple installation and replacement without tools. Certain motherboards enable power redundancy with seamless transfer. Pairs of modules feed each segment.

Availability and a long service life are achieved through: only one passive impedance filter per segment with CREST for superior signal transmission, optimized design for low power dissipation and high-availability fieldbus termination. Any mounting direction allows optimized and space-saving cabinet layout.





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Edition



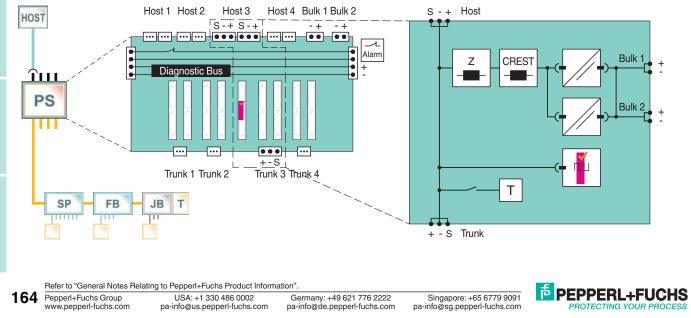
Field Distribution

Connection

Power Supplies

DART Fieldbus





Technical data		
Supply		
Connection	redundant	Ŧ
Rated voltage	19.2 35 V SELV/PELV	
Rated current	16 A	ů, se se se se se se se se se se se se se
Fieldbus interface		Fieldbus
Number of segments		
Redundant	4	i.
Host-side	redundant general purpose host	
Terminating resistor	selectable 100 Ω	Z
Indicators/operating means		FOUNDATION
Fault signal	VFC alarm output via connectors	
Directive conformity		0
Electromagnetic compatibility		Z
Directive 2004/108/EC	EN 61326-1:2006	
Standard conformity		O
Electromagnetic compatibility	NE 21:2006	
Protection degree	IEC 60529	
Shock resistance	EN 60068-2-27	L S
Vibration resistance	EN 60068-2-6	itic lite
Mechanical specifications		Selection Guideline
Connection type	screw terminals	oel Sel
Core cross-section	2.5 mm ²	0,0
Mounting	DIN mounting rail	
Data for application in connection with Exareas		ed
Statement of conformity	TÜV 04 ATEX 2500 X	nc
Group, category, type of protection, temperature class	€ II 3G EEx nA C IIC T4	Advanced Diagnostics
Directive conformity		Di A
Directive 94/9/EC	IEC 60079-15:2003	
International approvals		
FM approval	CoC 3024816, CoC 3024816C	es
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	pli
Certificates and approvals		Power Supplies
Marine approval	DNV A-10798	S E

Compatible power modules

			1102 1 01 1	0 1.17.000					T O
				HD2-FBP	S-1.23.500				Fiel Distrib
					HD2-FBP	S-1.25.360			is
						HD2-FBP	S-1.500		
							HD2-FBC	CL-1.500	
	Power Output								S
	Voltage (V)		15 17	21 23	25 28	28 30	-1		DART
	Current (mA)		500	500	360	500	500		DART
	Limit U ₀ (V)		17.5	24	-	-	-		Lie D
	Device in	Type of Protection			_			Required Installation Components	
	Zone 0/Div. 1	Intrinsically safe Ex ia						FieldBarrier	
	Zone 1/Div. 1	Intrinsically safe Ex ia						FieldBarrier	S
3	Zone 1/Div. 1	Flameproof Ex d						Segment Protector R-SP-E12 or any	Process Interfaces
/20-								Segment Protector installed in Zone 2	fa
J)05	Zone 2	Intrinsically safe Ex ic (FISCO)						Selected Segment Protectors	5 j
Щ Ш	Zone 2	Intrinsically safe Ex ic (Entity)						Selected Segment Protectors	리트
023-	Div. 2	Non-incendive						Any Segment Protector; power module	
912868 (US) / 220231 (EU)05/2013								selection depends on voltage of field device	es
U) 8	Safe Area	No specific type of protection						Segment Protector recommended	ori
	¹ follows bulk	c power supply						·	Accessories
dition									<

HD2-FBPS-1.17.500

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ld ution

MB-FB-4R.GEN

Assembly

Features

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FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

- 4 segments, redundant, individual modules per • segment
- Customizable for any host system
- High-Power Trunk: Live work on devices in any hazardous area
- · Features for best signal quality, low heat dissipation
- Optional Advanced Diagnostics
- Passive impedance and CREST technology for high reliability
- Supports Ex ic/nL voltage limitation
- Installation in Zone 2/Div. 2

Function

The FieldConnex[®]Universal Power Hub is a modular fieldbus power supply, providing the most options for most reliable communication. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring. The motherboard is the wiring interface and mounting plate with a DB-25 connector for PROFIBUS PA gateway or

customizable cable connections to any DCS. Sockets for individual power modules enable simple installation and can be replaced without tools. Certain motherboards enable power redundancy with seamless transfer. Pairs of modules feed each segment.

Availability and a long service life are achieved through: only one passive impedance filter per segment with CREST for superior signal transmission, optimized design for low power dissipation and high-availability fieldbus termination. Any mounting direction allows optimized and space-saving cabinet layout.





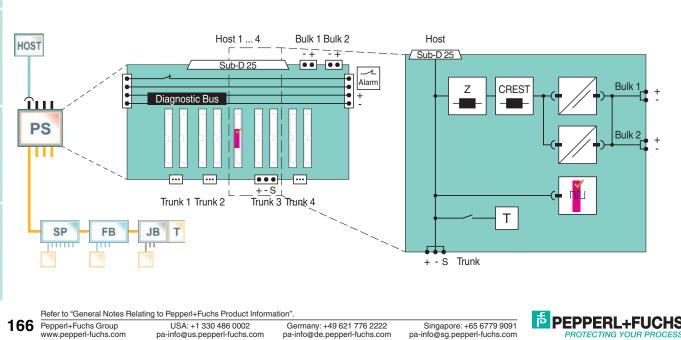


Connection

Supplies

Power

-ieldbus DART



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Edition

MB-FB-4R.GEN

Technical data					
Supply		, 			
Connection	redundant	- -			
Rated voltage	19.2 35 V SELV/PELV				
Rated current	16 A	ů š			
Fieldbus interface		Fieldbus			
Number of segments		0			
Redundant	4	<u>e</u>			
Terminating resistor	selectable 100 Ω				
Indicators/operating means		Z			
Fault signal	VFC alarm output via connectors	2			
Directive conformity		FOUNDATION			
Electromagnetic compatibility		6			
Directive 2004/108/EC	EN 61326-1:2006	Z			
Standard conformity					
Electrical isolation	IEC 62103	Ö			
Electromagnetic compatibility	NE 21:2006				
Protection degree	IEC 60529				
Shock resistance	EN 60068-2-27	n e			
Vibration resistance	EN 60068-2-6				
Mechanical specifications		Selection Guideline			
Connection type	screw terminals	Sel Su			
Core cross-section	2.5 mm ²	0,0			
Mounting	DIN mounting rail				
Data for application in connection with Ex- areas		ed tics			
Statement of conformity	TÜV 04 ATEX 2500 X	DC DC			
Group, category, type of protection, temperature class	🐼 II 3G EEx nA C IIC T4	Advanced Diagnostics			
Directive conformity		Di			
Directive 94/9/EC	IEC 60079-15:2003				

Compatible power modules

HD2-FBP	S-1.17.500			
	HD2-FBPS	S-1.23.500		
		HD2-FBP	S-1.25.360	
			HD2-FBP	S-1.500
				HD2-FBCL-1.500

					HD2-FBP	S-1.500		c
						HD2-FBC	CL-1.500	Field
Power Output		-						Field tribut
Voltage (V)		15 17	21 23	25 28	28 30	_1		Ξ.
Current (mA)		500	500	360	500	500		Sic
Limit U ₀ (V)		17.5	24	-	-	-		
Device in	Type of Protection	•		•	•	•	Required Installation Components	
Zone 0/Div. 1	Intrinsically safe Ex ia						FieldBarrier	<u>v</u>
Zone 1/Div. 1	Intrinsically safe Ex ia						FieldBarrier	PL PL
Zone 1/Div. 1	Flameproof Ex d						Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2	DART
Zone 2	Intrinsically safe Ex ic (FISCO)						Selected Segment Protectors	
Zone 2	Intrinsically safe Ex ic (Entity)						Selected Segment Protectors	
Div. 2	Non-incendive	•		•			Any Segment Protector; power module selection depends on voltage of field device	Process nterfaces
Safe Area	No specific type of protection						Segment Protector recommended	00 Ta
¹ follows bulk	power supply						·	

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Power Supplies

PEPPERL+FUCHS 167

PROTECTING YOUR PR

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Features

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FOUNDATION Fieldbus H1

Selection Guideline

Advanced Diagnostics

Supplies

Power

- 4 segments, redundant, individual modules per segment
- Customized for Honeywell, C-Series
- High-Power Trunk: Live work on devices in any hazardous area
- · Optimized for size and quality, low heat dissipation
- Optional Advanced Diagnostics
- Passive impedance and CREST technology for high reliability
- Installation in Zone 2/Div. 2

Function

The FieldConnex[®]Universal Power Hub is a modular fieldbus power supply, providing the most options for most reliable communication. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring. The motherboard is the mounting plate for installation in the Honeywell C-channel. It connects to existing bulk power,

communication and fault indication. Sockets for all modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment.

Availability and a long service life are achieved through: only one passive impedance filter per segment with CREST for superior signal transmission, optimized design for low power dissipation and high-availability fieldbus termination. Any mounting direction allows optimized and space-saving cabinet layout.

Assembly

A Dispositio Medica any A

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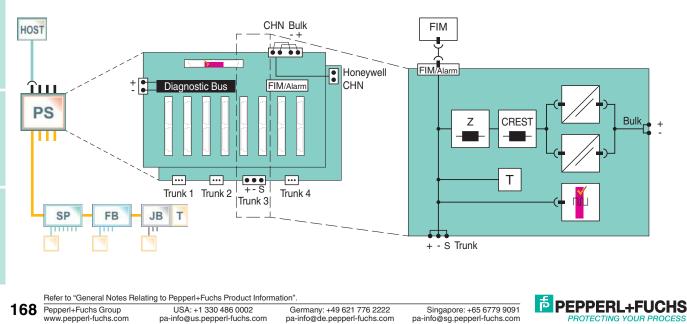


912868 (US) / 220231 (EU)05/2013

Edition



Connection



Technical data		
Supply		
Connection	Channel or external supply	Ŧ
Rated voltage	19.2 35 V SELV/PELV	
Rated current	6.3 A	ñ
Power loss	typ. 0.2 W per segment	Fieldbus
Fieldbus interface		
Number of segments		<u>e</u>
Redundant	4	
Host-side	Honeywell Series C 300 System connector	FOUNDATION
Terminating resistor	integrated 100 Ω	<u>o</u>
Indicators/operating means		
Fault signal	to Honeywell C 300 System	6
Directive conformity		Z
Electromagnetic compatibility		5
Directive 2004/108/EC	EN 61326-1:2006	0
Standard conformity		ш.
Electromagnetic compatibility	NE 21:2006	
Protection degree	IEC 60529	E B
Shock resistance	EN 60068-2-27	ir to
Vibration resistance	EN 60068-2-6	ec
Mechanical specifications		Selection Guideline
Connection type	Honeywell channel or plug with screw flange	0.0
Core cross-section	2.5 mm ² if supplied via plug with screw flange	
Mounting	Honeywell channel	v
International approvals		tic
FM approval	CoC 3024816, CoC 3024816C	Advanced Diagnostics
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	n a

Compatible power modules

		HD2-FBP	S-1.17.500	S-1.23.500			Power Supplies
					S-1.25.360		Sup Po
					HD2-FBP	S-1.500	
Power Output							
Voltage (V)		15 17	21 23	25 28	28 30		u
Current (mA)		500	500	360	500		utio
Limit U ₀ (V)		17.5	24	-	-		Field
Device in	Type of Protection					Required Installation Components	Field
Zone 0/Div. 1	Intrinsically safe Ex ia					FieldBarrier	Di
Zone 1/Div. 1	Intrinsically safe Ex ia					FieldBarrier	
Zone 1/Div. 1	Flameproof Ex d					Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2	<u>0</u>
Zone 2	Intrinsically safe Ex ic (FISCO)					Selected Segment Protectors	bu bu
Zone 2	Intrinsically safe Ex ic (Entity)					Selected Segment Protectors	DART
Div. 2	Non-incendive					Any Segment Protector; power module selection depends on voltage of field device	Ц Ц
Safe Area	No specific type of protection					Segment Protector recommended	1

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PEPPERL+FUCHS 169

MB-FB-4R.YO

Assembly

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Supplies Power

- 4 segments, redundant, individual modules per • segment
- Customized for Yokogawa, ALF 111
- High-Power Trunk: Live work on devices in any hazardous area
- · Features for best signal quality, low heat dissipation
- Optional Advanced Diagnostics
- · Passive impedance and CREST technology for high reliability
- Supports Ex ic/nL voltage limitation
- Installation in Zone 2/Div. 2

Function

The FieldConnex[®]Universal Power Hub is a modular fieldbus power supply, providing the most options for most reliable communication. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring.

The motherboard is the wiring interface with connectors for direct DCS hook-up via the AKB 336 system cable. Sockets for all modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment.

Availability and a long service life are achieved through: only one passive impedance filter per segment with CREST for superior signal transmission, optimized design for low power dissipation and high-availability fieldbus termination. Any mounting direction allows optimized and space-saving cabinet layout.







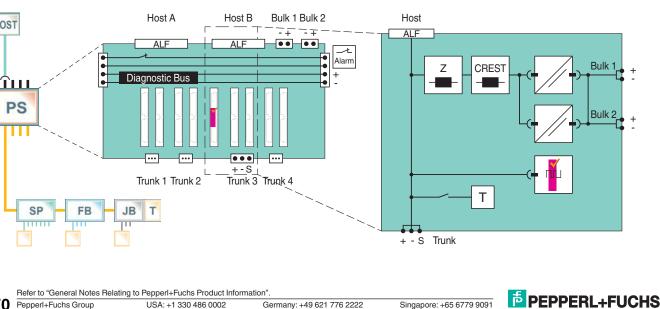
-ieldbus DART

Connection

HOST

Accessories

170



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Edition

MB-FB-4R.YO

Technical data		F
Supply		
Connection	redundant	Ξ
Rated voltage	19.2 35 V SELV/PELV	
Rated current	16 A	Fieldbus
Fieldbus interface		<u>0</u>
Number of segments		
Redundant	4	<u>e</u>
Host-side	redundant Yokogawa ALF111 with AKB336 interface cables	<u> </u>
Terminating resistor	selectable 100 Ω	Z
Indicators/operating means		<u>0</u>
Fault signal	VFC alarm output via connectors	
Directive conformity		FOUNDATION
Electromagnetic compatibility		Z
Directive 2004/108/EC	EN 61326-1:2006	5
Standard conformity		0
Electromagnetic compatibility	NE 21:2006	L
Protection degree	IEC 60529	
Shock resistance	EN 60068-2-27	E e
Vibration resistance	EN 60068-2-6	ir tio
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	Selection Guideline
Mechanical specifications		3ui
Connection type	screw terminals	0.0
Core cross-section	2.5 mm ²	
Mounting	DIN mounting rail	_ <i>s</i>
Data for application in connection with Ex- areas		Advanced Diagnostics
Statement of conformity	TÜV 04 ATEX 2500 X	val
Group, category, type of protection, temperature class	🐼 II 3 G Ex nA II T4	Ad ¹ Diaç
Declaration of conformity	PF 10 CERT 1569	
Directive conformity		
Directive 94/9/EC	EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2005, EN 60079-27:2006	es
International approvals		Power Supplies
FM approval	CoC 3024816, CoC 3024816C	o d
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	_ 2
Certificates and approvals		
Marine approval	DNV A-10798	_

Compatible power modules

Compatible	e power modules							Field
		HD2-FBP	S-1.17.500 HD2-FBP	S-1.23.500				Distr
				HD2-FBP	S-1.25.360			
					HD2-FBP	S-1.500		c,
						HD2-FBC	CL-1.500	DART
Power Output								DART
Voltage (V)		15 17	21 23	25 28	28 30	_ ¹		
Current (mA)	Current (mA)		500	360	500	500		
Limit U ₀ (V)		17.5	24	-	-	-		
Device in	Type of Protection						Required Installation Components	u
Zone 0/Div. 1	Intrinsically safe Ex ia						FieldBarrier	SS
Zone 1/Div. 1	Intrinsically safe Ex ia						FieldBarrier	ce fe
Zone 1/Div. 1	Flameproof Ex d					•	Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2	Process
Zone 2	Intrinsically safe Ex ic (FISCO)						Selected Segment Protectors	
Zone 2	Intrinsically safe Ex ic (Entity)						Selected Segment Protectors	(0
Div. 2	Non-incendive						Any Segment Protector; power module selection depends on voltage of field device	Accessories
	No specific type of protection						Segment Protector recommended	ő

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MBHD-FB1-4R

Assembly

Features

- 4 segments, redundant, individual modules per • segment
- · Supports all PLC and DCS hosts
- High-Power Trunk: Live work on devices in any hazardous area
- · Optimized for size and quality, low heat dissipation
- Optional Advanced Diagnostics
- Passive impedance for high reliability
- · Mountable in any direction
- Installation in Zone 2/Div. 2
- · Supports Ex ic/nL voltage limitation

Function

The FieldConnex[®] High-Density Power Hub is a modular fieldbus power supply for four segments, fulfilling the needs for all general applications. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring.

The motherboard is the wiring interface with connectors for all DCS and PLC host systems. Sockets for all modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment.

Availability and a long service life is achieved through: only one passive impedance filter per segment, optimized design for low power dissipation, high-availability fieldbus termination and plug-in connectors with retaining screws. Any mounting direction allows optimized and space-saving cabinet layout.



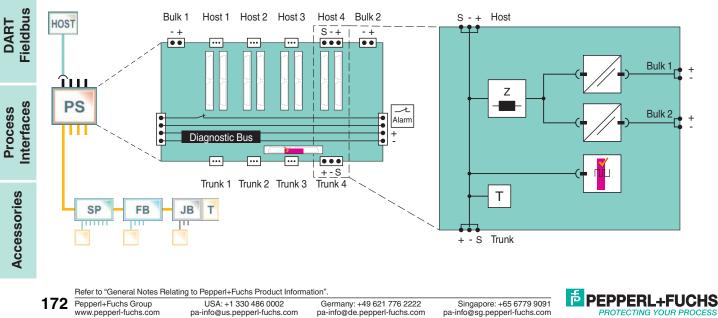




Supplies Power

Distribution Field

Connection





912868 (US) / 220231 (EU)05/2013

Edition

Diagnostics

Advanced

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MBHD-FB1-4R

Connection type plug with screw flange Core cross-section 2.5 mm ² Mounting DIN mounting rail Data for application in connection with Exareas IV 06 ATEX 553229 X Statement of conformity TÜV 06 ATEX 553229 X Group, category, type of protection, temperature class II 3 G Ex nA II T4 Directive conformity EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006 International approvals CoC 3024816, CoC 3024816C Approved for Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4 Certificates and approvals DNV A-10798	Technical data		
Connection redundant Rated voltage 19.235 V SELV/PELV Rated voltage 19.235 V SELV/PELV Rated voltage 19.235 V SELV/PELV Redundant 16.4 Power loss Vp. 0.39 W per segment Fieldbus interface Number of segments Redundant 4 Host-side redundant general purpose host Terminating resistor 100 Ω Integrated Indicators/operating means Fault signal VFC alarn output via connectors Directive conformity Directive conformity VFC alarn output via connectors Directive conformity Electromagnetic compatibility Directive conformity Electromagnetic compatibility Directive conformity NE 21:2006 Standard conformity NE 21:2006 Protection digree Electromagnetic compatibility Vie zion resistance EN 80068-26 Corresion resistance EN 80068-27 Vioration resistance EN 80068-27 Connection type plug with screw flange Corre cores-section 2.5 mm² Corre cores-section 2.5 mm² Connection type plug with screw flange Core cores-section 2.5 mm² Statement of conformity	Supply		
Rated current 16 A Power loss typ. 0.39 W per segment Fieldbus interface Number of segments Redundant 4 Host-side redundant general purpose host Terminating resistor 100 Ω integrated Indicators/operating means Fault signal Pietotive conformity Image: Comparison of the second of the se		redundant	÷
Power losstyp. 0.39 W per segmentFieldus interfaceNumber of segmentsRedundant4Host-sideredundant general purpose hostImport of segmentsIndicators/operating meansIndicators/operating meansFault signalVFC alarm output via connectorsDirective conformityElectromagnetic compatibilityDirective conformityElectromagnetic compatibilityDirective conformityElectromagnetic compatibilityDirective conformityElectromagnetic compatibilityNet 21:2006Standard conformityProtection degreeElectromagnetic compatibilityNet 21:2006Standard conformityProtection degreeElectromagnetic compatibilityNet 21:2006Standard conformityProtection degreeElectromagnetic compatibilityNet 21:2006Corroscion resistanceEn 60068-2-7Corroscion resistanceCorroscion resistanceCorroscion resistanceEn colose 2-7Obrity PpPlug with screw flangeCorroscion resistanceDiscutive application in connection with Ex-areasStatement of conformityTUV 06 ATEX 553229 XGroup, category, type of protection, fw II 3 G Ex nA II T4International approvalsDirective 20470Directive 20470Corroscion FelsenceDirective 20470Colos I, Division 2, Groups A, B, C	Rated voltage	19.2 35 V SELV/PELV	
Fieldbus interface Number of segments Number of segments Redundant Redundant 4 Host-side redundant general purpose host Terminating resistor 100 Ω integrated Indicators/operating means	Rated current	16 A	ŝ
Fieldbus interface Number of segments Redundant 4 Host-side redundant general purpose host Terminating resistor 100 Ω integrated Indicators/operating means	Power loss	typ. 0.39 W per segment	q
Redundant4Host-sideredundant general purpose hostTerminating resistor100 Ω integratedIndicators/operating meansIntegratedFault signalVFC alarm output via connectorsDirective conformityIntegratedElectromagnetic compatibilityIntegratedDirective conformityIntegratedElectromagnetic compatibilityNE 21:2006Standard conformityIntegratedElectromagnetic compatibilityNE 21:2006Protection degreeIEC 60529Shock resistanceEN 0008-2:27Vibration resistanceEN 0008-2:66Corrosion resistanceEN 0008-2:66Corrosion resistanceEN 0008-2:67MountingDilw with screw flangeCorrosion resistance2.5 mm²MountingDiN mounting railData for application in connection with ExareasStatement of conformityStatement of conformityTÜV 06 ATEX 553229 XGroup, category, type of protection, temperature classSol 13 G Ex nA II T4Directive enformityEN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006International approvalsCoC 3024816, CoC 3024816CApproved forClass 1, Division 2, Groups A, B, C, D, T4/Class 1, Zone 2, AEx/Ex nA II C T4Certificates and approvalsDNV A-10798	Fieldbus interface		FOUNDATION Fieldbus
Host-side redundant general purpose host Terminating resistor 100 Ω integrated Indicators/operating means Indicators/operating means Fault signal VFC alarm output via connectors Directive conformity Electromagnetic compatibility Directive 2004/108/EC EN 61326-1:2006 Standard conformity Electromagnetic compatibility Protection degree EIC 60529 Shock resistance EN 60068-2-27 Vibration resistance EN 60068-2-27 Corrosion resistance EN 60068-2-6 Corrosion resistance EN 60078-0-20 Mechanical specifications Enterwidange Core cross-section 2.5 mm² Mounting DIN mounting rail Data for application in connection with Example autor of conformity TÜV 06 ATEX 553229 X Group, category, type of protection, temperature class EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006 <	Number of segments		<u>e</u>
Terminating resistor 100 Ω Integrated Indicators/operating means VFC alarm output via connectors Fault signal VFC alarm output via connectors Directive conformity Electromagnetic compatibility Directive 2004/108/EC EN 61326-1:2006 Standard conformity Electromagnetic compatibility Directive 2004/108/EC EN 61326-1:2006 Standard conformity NE 21:2006 Protection degree IEC 60529 Shock resistance EN 60068-2:27 Vibration resistance EN 60068-2:7 Vibration resistance EN 60068-2:7 Corrosion resistance acc. to ISA-S71.04-1985, severity level G3 Mechanical specifications E Connection type plug with screw flange Connection type Dilv mounting rail Data for application in connection with Exarces Statement of conformity Group, category, type of protection, temperature class Will 13 G Ex nA II T4 Directive 204/9/EC EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006 International approvals CoC 3024816C Proved for Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4 <	Redundant	4	ш.
Indicators/operating means VFC alarm output via connectors Fault signal VFC alarm output via connectors Directive conformity EN 61326-1:2006 Standard conformity EN 61326-1:2006 Standard conformity Electromagnetic compatibility Protection degree EC 60529 Shock resistance EN 60068-2-27 Vibration resistance EN 60068-2-6 Corrosion resistance EN 60068-2-6 Corrosion resistance EN 60068-2-6 Cornection type plug with screw flange Core cross-section 2.5 mm ² Mounting DIN mounting rail Data for application in connection with Exares Statement of conformity Group, category, type of protection, temperature class EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006 International approvals EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006 FM approval Coc 3024816, Coc 3024816C Approval for Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4 Certificates and approvals EN 4-10798	Host-side	redundant general purpose host	Z
Fault signal VFC alarm output via connectors Directive conformity Electromagnetic compatibility Directive 2004/108/EC EN 61326-1:2006 Standard conformity NE 21:2006 Electromagnetic compatibility NE 21:2006 Protection degree IEC 60529 Shock resistance EN 60068-2-6 Corrosion resistance EN 60068-2-6 Corrosion resistance ex. to ISA-S71.04-1985, severity level G3 Mechanical specifications E. Corrosion resistance Corross-section 2.5 mm ² Mounting DIN mounting rail Data for application in connection with Exareas Statement of conformity Group, category, type of protection, temperature class ÉN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006 Directive doff EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006 International approvals Cocc 3024816, Coc 3024816C Paproval for Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4 Certificates and approvals DNV A-10798	Terminating resistor	100 Ω integrated	<u>o</u>
Fault signal VFC alarm output via connectors Directive conformity Electromagnetic compatibility Directive 2004/108/EC EN 61326-1:2006 Standard conformity NE 21:2006 Protection degree IEC 60529 Shock resistance EN 60068-2-6 Corrosion resistance EN 60068-2-6 Cornoction type plug with screw flange Cornoction type plug with screw flange Core cross-section 2.5 mm ² Mounting DIN mounting rail Data for application in connection with Exareas Si 3229 X Group, category, type of protection, temperature class Si 11 3 G Ex nA II T4 Directive exoformity Fü 40079-0:2006, EN 60079-11:2007, EN 60079-15:2006 International approvals Coc 3024816, CoC 3024816C Paproval Coc 3024816, CoC 3024816C Approval for Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4 Certificates and approvals Marine approval	Indicators/operating means		
Electromagnetic compatibility Iterative 2004/108/EC EN 61326-1:2006 Standard conformity Electromagnetic compatibility NE 21:2006 Protection degree IEC 60529 Shock resistance EN 60068-2-27 Vibration resistance EN 60068-2-6 Corrosion resistance ac. to ISA-S71.04-1985, severity level G3 Mechanical specifications Electromagnetic compatibility Connection type plug with screw flange Corrosion sestance 2.5 mm² Mounting DIN mounting rail Data for application in connection with Exarcs Statement of conformity Group, category, type of protection, temperature class FN 80079-0:2006, EN 60079-11:2007, EN 60079-15:2006 Directive conformity Coc 3024816, Coc 3024816C Approved for Class 1, Division 2, Groups A, B, C, D, T4/Class 1, Zone 2, AEx/Ex nA IIC T4 Certificates and approvals DNV A-10798		VFC alarm output via connectors	
Directive 2004/108/ECEN 61326-1:2006Standard conformityElectromagnetic compatibilityNE 21:2006Protection degreeIEC 60529Shock resistanceEN 60068-2-27Vibration resistanceEN 60068-2-6Corrosion resistanceacc. to ISA-S71.04-1985, severity level G3Mechanical specificationsCorros-sectionCorre cross-section2.5 mm²MountingDIN mounting railData for application in connection with ExaresareasStatement of conformityGroup, category, type of protection, temperature classEN 60079-01:2006, EN 60079-11:2007, EN 60079-15:2006Directive 94/9/ECEN 60079-01:2006, EN 60079-11:2007, EN 60079-15:2006International approvalsFM approvalCol cass I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4Certificates and approvalsDNV A-10798	Directive conformity		Z
Standard conformity Electromagnetic compatibility NE 21:2006 Protection degree IEC 60529 Shock resistance EN 60068-2-27 Vibration resistance EN 60068-2-6 Corrosion resistance acc. to ISA-S71.04-1985, severity level G3 Mechanical specifications En 60068-2-6 Connection type plug with screw flange Cornection type plug with screw flange Cornection in type DIW mounting rail Data for application in connection with Exares TÜV 06 ATEX 553229 X areas Statement of conformity Statement of conformity TÜV 06 ATEX 553229 X Group, category, type of protection, temperature class II 3 G Ex nA II T4 Directive 94/9/EC EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006 International approvals Coc 3024816, Coc 3024816C Approved for Calss I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4 Certificates and approvals DIV A-10798	Electromagnetic compatibility		5
Electromagnetic compatibility NE 21:2006 Protection degree IEC 60529 Shock resistance EN 60068-2-27 Vibration resistance EN 60068-2-6 Corrosion resistance acc. to ISA-S71.04-1985, severity level G3 Mechanical specifications EN 60068-2-6 Connection type plug with screw flange Corn cross-section 2.5 mm ² Mounting DIN mounting rail Data for application in connection with Exarces Exarces Statement of conformity TÜV 06 ATEX 553229 X Group, category, type of protection, temperature class fill 3 G Ex nA II T4 Directive 94/9/EC EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006 International approvals FM approval FM approval for Coc 3024816, Coc 3024816C Approved for Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4 Certificates and approvals Envision 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	Directive 2004/108/EC	EN 61326-1:2006	0
Protection degreeIEC 60529Shock resistanceEN 60068-2-27Vibration resistanceEN 60068-2-6Corrosion resistanceacc. to ISA-S71.04-1985, severity level G3Mechanical specificationsEN 60068-2-6Connection typeplug with screw flangeConnection typeplug with screw flangeCore cross-section2.5 mm²MountingDIN mounting railData for application in connection with ExaresareasStatement of conformityStatement of conformityTÜV 06 ATEX 553229 XGroup, category, type of protection, temperature classDirective 94/9/ECEN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006International approvalsFM approvalCoC 3024816, CoC 3024816CApproval forClass I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4Certificates and approvalsMarine approvalDNV A-10798	Standard conformity		<u> </u>
Connection type plug with screw flange Core cross-section 2.5 mm² Mounting DIN mounting rail Data for application in connection with Exareas	Electromagnetic compatibility	NE 21:2006	
Connection type plug with screw flange Core cross-section 2.5 mm² Mounting DIN mounting rail Data for application in connection with Exareas	Protection degree	IEC 60529	c @
Connection type plug with screw flange Core cross-section 2.5 mm² Mounting DIN mounting rail Data for application in connection with Exareas	Shock resistance	EN 60068-2-27	Selection Guideline
Connection type plug with screw flange Core cross-section 2.5 mm² Mounting DIN mounting rail Data for application in connection with Exareas	Vibration resistance	EN 60068-2-6	de co
Connection type plug with screw flange Core cross-section 2.5 mm² Mounting DIN mounting rail Data for application in connection with Exareas	Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	lei
Core cross-section 2.5 mm² Mounting DIN mounting rail Data for application in connection with Exareas Image: Content of Conformity Statement of conformity TÜV 06 ATEX 553229 X Group, category, type of protection, temperature class Image: Conformity Directive conformity Image: Conformity Directive 94/9/EC EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006 International approvals CoC 3024816, CoC 3024816C Approved for Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4 Certificates and approvals DNV A-10798	Mechanical specifications		ω Q
MountingDIN mounting railData for application in connection with ExareasImage: Constraint of conformityTÜV 06 ATEX 553229 XStatement of conformityTÜV 06 ATEX 553229 XGroup, category, type of protection, temperature classfix II 3 G Ex nA II T4Directive conformityEN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006International approvalsCoC 3024816, CoC 3024816CFM approvalCoC 3024816, CoC 3024816CApproved forClass I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4Certificates and approvalsDNV A-10798	Connection type	plug with screw flange	_
Group, category, type of protection, temperature class II 3 G Ex nA II 14 Directive conformity Directive 94/9/EC EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006 International approvals FM approval CoC 3024816, CoC 3024816C Approved for Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4 Certificates and approvals Marine approval DNV A-10798	Core cross-section	2.5 mm ²	v
Group, category, type of protection, temperature class II 3 G Ex nA II 14 Directive conformity Directive 94/9/EC EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006 International approvals FM approval CoC 3024816, CoC 3024816C Approved for Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4 Certificates and approvals Marine approval DNV A-10798	Mounting	DIN mounting rail	tic
Group, category, type of protection, temperature class II 3 G Ex nA II 14 Directive conformity Directive 94/9/EC EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006 International approvals FM approval CoC 3024816, CoC 3024816C Approved for Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4 Certificates and approvals Marine approval DNV A-10798	Data for application in connection with E	K-	Advanced Diagnostics
Group, category, type of protection, temperature class II 3 G Ex nA II 14 Directive conformity Directive 94/9/EC EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006 International approvals FM approval CoC 3024816, CoC 3024816C Approved for Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4 Certificates and approvals Marine approval DNV A-10798	Statement of conformity	TÜV 06 ATEX 553229 X	Adviac
Directive 94/9/ECEN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006International approvalsCoC 3024816, CoC 3024816CFM approvalCoC 3024816, CoC 3024816CApproved forClass I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4Certificates and approvalsDNV A-10798		€ II 3 G Ex nA II T4	ā
International approvals CoC 3024816, CoC 3024816C FM approval CoC 3024816, CoC 3024816C Approved for Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4 Certificates and approvals DNV A-10798	Directive conformity		
Approved for Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4 Certificates and approvals DNV A-10798	Directive 94/9/EC	EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006	es es
Approved for Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4 Certificates and approvals DNV A-10798	International approvals		Power Supplies
Approved for Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4 Certificates and approvals DNV A-10798	FM approval	CoC 3024816, CoC 3024816C	o Id
Marine approval DNV A-10798	Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	ы S
	Certificates and approvals		
Compatible power modules	Marine approval	DNV A-10798	
Compatible power modules			on
Compatible power modules			rți d
	Compatible power modules		Field stribution
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Compatible power modules

		HD2-FBP	S-1.17.500				Dis
			HD2-FBP	S-1.23.500			
				HD2-FBP	S-1.25.360		
					HD2-FBP	S-1.500	
Power Output		•			•		DART
Voltage (V)		15 17	21 23	25 28	28 30		D lei
Current (mA)		500	500	360	500		ш.
Limit U ₀ (V)		17.5	24	-	-		
Device in	Type of Protection					Required Installation Components	
Zone 0/Div. 1	Intrinsically safe Ex ia					FieldBarrier	ss
Zone 1/Div. 1	Intrinsically safe Ex ia					FieldBarrier	ces fac
Zone 1/Div. 1	Flameproof Ex d					Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2	Process nterfaces
Zone 2	Intrinsically safe Ex ic (FISCO)					Selected Segment Protectors	_
Zone 2	Intrinsically safe Ex ic (Entity)					Selected Segment Protectors	
Div. 2	Non-incendive					Any Segment Protector; power module selection depends on voltage of field device	Accessories
	No specific type of protection					Segment Protector recommended	Š

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Assembly

Features

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FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics

Advanced

- 4 segments, redundant, individual modules per • segment
- Customized for Yokogawa, ALF 111
- High-Power Trunk: Live work on devices in any hazardous area
- · Optimized for size and quality, low heat dissipation
- Optional Advanced Diagnostics
- Passive impedance for high reliability
- · Mountable in any direction
- Installation in Zone 2/Div. 2
- Supports Ex ic/nL voltage limitation

Function

The FieldConnex[®] High-Density Power Hub is a modular fieldbus power supply for four segments, fulfilling the needs for all general applications. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring.

The motherboard is the wiring interface with connectors for direct DCS hook-up via the AKB 336 system cable. Sockets for all modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment.

Availability and a long service life is achieved through: only one passive impedance filter per segment, optimized design for low power dissipation, high-availability fieldbus termination and plug-in connectors with retaining screws. Any mounting direction allows optimized and space-saving cabinet layout.



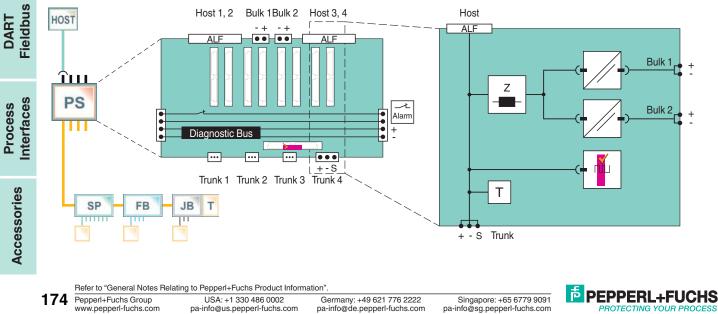




Supplies Power

Distribution Field

Connection



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Technical data		e	.
Supply			
Connection	redundant		Ξ
Rated voltage	19.2 35 V SELV/PELV		
Rated current	16 A		FOUNDATION Fieldbus
Power loss	typ. 0.39 W per segment		ā
Fieldbus interface			D
Number of segments			<u>e</u>
Redundant	4		ш
Host-side	redundant Yokogawa ALF111 with AKB336 interface cables		Z
Terminating resistor	100 Ω integrated		<u>o</u>
Indicators/operating means			
Fault signal	VFC alarm output via connectors		2
Directive conformity			Z
Electromagnetic compatibility			5
Directive 2004/108/EC	EN 61326-1:2006		0
Standard conformity			ш
Electromagnetic compatibility	NE 21:2006		
Protection degree	IEC 60529	ç	= e
Shock resistance	EN 60068-2-27	tio	
Vibration resistance	EN 60068-2-6		Guideline
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3		i i i
Mechanical specifications		0	0
Connection type	plug with screw flange		
Core cross-section	2.5 mm ²		S
Mounting	DIN mounting rail	ed	ti c
Data for application in connection with Exarcas	x-	Advanced	Auvanceu Diagnostics
Statement of conformity	TÜV 06 ATEX 553229 X	p	iac i
Group, category, type of protection, temperature class	🕼 II 3 G Ex nA II T4	4	Ξ
Directive conformity			
Directive 94/9/EC	EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006		es -
International approvals		Power	Supplies
FM approval	CoC 3024816, CoC 3024816C	Ó	
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4		ັທັ
Certificates and approvals			
Marine approval	DNV A-10798		_
			uo
-		σ	uti d
Compatible power modules		Field	j i
		U	rieiu istribution

Compatible power modules

		HD2-FBP	S-1.17.500				Dis
			HD2-FBP	S-1.23.500			
				HD2-FBP	S-1.25.360		
					HD2-FBP	S-1.500	DART
Power Output							ART
Voltage (V)		15 17	21 23	25 28	28 30		D/
Current (mA)		500	500	360	500		ш.
Limit U ₀ (V)		17.5	24	-	-		
Device in	Type of Protection	•	•	•		Required Installation Components	
Zone 0/Div. 1	Intrinsically safe Ex ia					FieldBarrier	ss
Zone 1/Div. 1	Intrinsically safe Ex ia					FieldBarrier	Ses fac
Zone 1/Div. 1	Flameproof Ex d					Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2	Process nterfaces
Zone 2	Intrinsically safe Ex ic (FISCO)					Selected Segment Protectors	-
Zone 2	Intrinsically safe Ex ic (Entity)					Selected Segment Protectors	
Div. 2	Non-incendive					Any Segment Protector; power module selection depends on voltage of field device	ories
Safe Area	No specific type of protection					Segment Protector recommended	SS
							Accessories

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MBHC-FB-8R

Features

- 8 segments, redundant, individual modules per segment
- Supports all PLC and DCS hosts
- High-Power Trunk: Live work on devices in any hazardous area
- · Best quality, smallest size and lowest heat dissipation
- Optional Advanced Diagnostics
- Passive impedance for high reliability
- Supports Ex ic voltage limitation
- Installation in Zone 2/Div. 2

Function

The FieldConnex[®] Compact Power Hub is a modular fieldbus power supply for eight segments with lowest power dissipation and smallest foot print. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring.

The motherboard is the wiring interface with connectors for all DCS and PLC host systems. Sockets for all modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment.

This design allows the most compact cabinet layout for large scale projects. Excellent availability and a very long service life is achieved through: passive impedance filter per segment, high-availability fieldbus termination and plug-in connectors with retaining screws and electronics optimized for lowest power dissipation and compactness.



Assembly



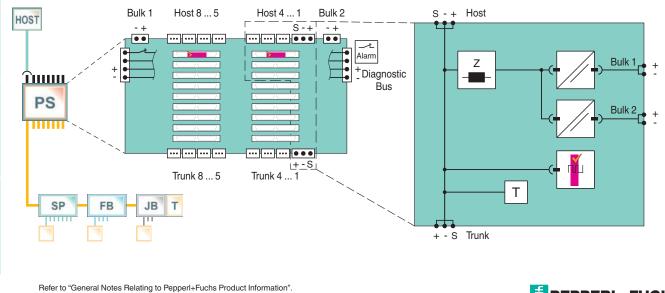


Connection

DART Fieldbus

Accessories

176



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Fe

Selection Guideline

Advanced Diagnostics

Power Supplies

MBHC-FB-8R

Technical data		F
Supply		
Connection	redundant	Ŧ
Rated voltage	19.2 35 V SELV/PELV	
Rated current	16 A	ŝ
Power loss	typ. 0.4 W per segment	FOUNDATION Fieldbus
Fieldbus interface		p
Number of segments	8 redundant	<u>e</u>
Host-side	general purpose host	ш.,
Terminating resistor	100 Ω integrated	Z
Indicators/operating means		<u>0</u>
Fault signal	VFC alarm 1 A, 50 V DC, normally closed	
Directive conformity		à
Electromagnetic compatibility		Z
Directive 2004/108/EC	EN 61326-1:2006	5
Standard conformity		0
Electromagnetic compatibility	NE 21:2006	ш.
Protection degree	IEC 60529	
Shock resistance	EN 60068-2-27	E 0
Vibration resistance	EN 60068-2-6	Selection Guideline
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	ec
Mechanical specifications		3ui
Connection type	plug with screw flange	0.0
Core cross-section	2.5 mm ²	
Mounting	DIN mounting rail	_ v
Data for application in connection with Exareas		Advanced Diagnostics
Statement of conformity	TÜV 10 ATEX 555761X	ya
Group, category, type of protection, temperature class	🐼 II 3G Ex nA IIC T4 Gc	Adi Diaç
Directive conformity		
Directive 94/9/EC	EN 60079-0:2012, EN 60079-11:2012, EN 60079-15:2010	er lies
		 Power Supplies
Compatible power modules		, Sc

Compatible power modules

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HCD2-FBPS-1.23.500 HCD2-FBPS-1.500

Power Output					ō
Voltage (V)		Itage (V) 21 23			eld buti
Current (mA)		500	500		Fiel
Limit U ₀ (V)		24	-		t t
Device in	Type of Protection			Required Installation Components	2
Zone 0/Div. 1	Intrinsically safe Ex ia			FieldBarrier	
Zone 1/Div. 1	Intrinsically safe Ex ia			FieldBarrier	
Zone 1/Div. 1	Flameproof Ex d			Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2	DART
Zone 2	Intrinsically safe Ex ic (Entity)			Selected Segment Protectors	D/
Div. 2	Non-incendive			Any Segment Protector; power module selection depends on voltage of field device	ш
Safe Area	No specific type of protection			Segment Protector recommended	
	1		1		

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Process Interfaces

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MBHC-FB-8R.HSC*

Features

- 8 segments, redundant, individual modules per • segment
- · Customizable cable connections to any PLC and DCS hosts
- High-Power Trunk: Live work on devices in any hazardous area
- · Best quality, smallest size and lowest heat dissipation
- · Left/right version for optimized cabinet layout
- Optional Advanced Diagnostics
- · Passive impedance for high reliability
- Supports Ex ic voltage limitation
- Installation in Zone 2/Div. 2

Function

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics

Supplies Power

Advanced

F

The FieldConnex[®] Compact Power Hub is a modular fieldbus power supply for eight segments with lowest power dissipation and smallest foot print. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring.

The motherboard is the wiring interface and mounting plate with system-specific cable connection for FOUNDATION fieldbus H1 hosts located on the left side of the motherboard. The version with type code extension ".R" has host connections on the right side for symmetrical cabinet layout. Sockets for all modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment. This design allows the most compact cabinet layout for large scale projects. Excellent availability and a very long service life is achieved through: passive impedance filter per segment, high-availability fieldbus termination and plug-in connectors with retaining screws and electronics optimized for lowest power dissipation and compactness.

Assembly

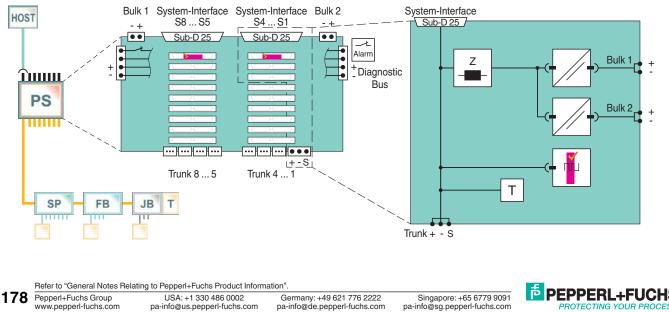




Distribution Field

Connection







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Technical data		•	F
Supply			
Connection	redundant		Ξ
Rated voltage	19.2 35 V SELV/PELV		
Rated current	16 A		ň
Power loss	typ. 0.4 W per segment		q
Fieldbus interface			Fieldbus
Number of segments	8 redundant		ie
Host-side	system specific cable connection		
Terminating resistor	100 Ω integrated		Z
Indicators/operating means			FOUNDATION
Fault signal	VFC alarm 1 A, 30 V DC, normally closed		
Directive conformity			6
Electromagnetic compatibility			Ē
Directive 2004/108/EC	EN 61326-1:2006		
Standard conformity			Ö
Electromagnetic compatibility	NE 21:2006		ш.,
Protection degree	IEC 60529		
Shock resistance	EN 60068-2-27		r e
Vibration resistance	EN 60068-2-6		ii.
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3		ec
Mechanical specifications			Selection Guideline
Connection type	plug with screw flange		0.0
Core cross-section	2.5 mm ²		
Mounting	DIN mounting rail		
Data for application in connection with Ex-			Advanced Diagnostics
areas			ne so
Statement of conformity	TÜV 10 ATEX 555761X		gr gr
Group, category, type of protection, temperature class	🐼 II 3G Ex nA IIC T4 Gc		Ac Dia
Directive conformity			
Directive 94/9/EC	EN 60079-0:2012, EN 60079-11:2012, EN 60079-15:2010		er lies
	- -		lie.

Compatible power modules

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USA: +1 330 486 0002 pa-info@us.pepperl-fuchs.com HCD2-FBPS-1.23.500 HCD2-FBPS-1.500

Power Output					ē
Voltage (V)		(V) 2123 2829.5			eld
Current (mA)		500	500		Fiel
Limit U ₀ (V)		24	-		t t
Device in	Type of Protection			Required Installation Components	2
Zone 0/Div. 1	Intrinsically safe Ex ia			FieldBarrier	
Zone 1/Div. 1	Intrinsically safe Ex ia			FieldBarrier	
Zone 1/Div. 1	Flameproof Ex d			Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2	ART
Zone 2	Intrinsically safe Ex ic (Entity)			Selected Segment Protectors	
Div. 2	Non-incendive			Any Segment Protector; power module selection depends on voltage of field device	ш
Safe Area	No specific type of protection			Segment Protector recommended	

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Assembly

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics

Supplies Power

Advanced

- 8 segments, redundant, individual modules per • segment
- · Supports all PLC and DCS hosts, redundant terminals
- High-Power Trunk: Live work on devices in any hazardous area
- · Best quality, smallest size and lowest heat dissipation
- · Left/right version for optimized cabinet layout
- Optional Advanced Diagnostics
- · Passive impedance for high reliability
- · Supports Ex ic voltage limitation
- Installation in Zone 2/Div. 2

Function

The FieldConnex[®] Compact Power Hub is a modular fieldbus power supply for eight segments with lowest power dissipation and smallest foot print. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring.

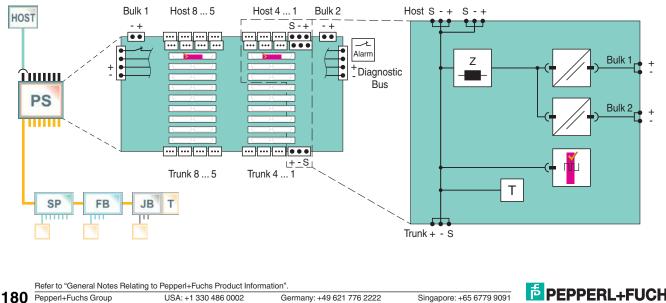
The motherboard is the wiring interface with redundant terminals for all DCS and PLC host systems on the left side of the motherboard. The version with type code extension ".R" has host connections on the right side for symmetrical cabinet layout. Sockets for all modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment. This design allows the most compact cabinet layout for large scale projects. Excellent availability and a very long service life is achieved through: passive impedance filter per segment, high-availability fieldbus termination and plug-in connectors with retaining screws and electronics optimized for lowest power dissipation and compactness.







Field



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912868 (US) / 220231 (EU)05/2013

Edition

Technical data		
Supply		
Connection	redundant	Ŧ
Rated voltage	19.2 35 V SELV/PELV	
Rated current	16 A	ŝ
Power loss	typ. 0.4 W per segment	Fieldbus
Fieldbus interface		9
Number of segments	8 redundant	<u>e</u>
Host-side	redundant general purpose host	
Terminating resistor	100 Ω integrated	Z
Indicators/operating means		<u></u>
Fault signal	VFC alarm 1 A, 50 V DC, normally closed	
Directive conformity		ð
Electromagnetic compatibility		Ī
Directive 2004/108/EC	EN 61326-1:2006	FOUNDATION
Standard conformity		0
Electromagnetic compatibility	NE 21:2006	ш.,
Protection degree	IEC 60529	
Shock resistance	EN 60068-2-27	n e
Vibration resistance	EN 60068-2-6	Selection Guideline
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	ec
Mechanical specifications		Sel
Connection type	plug with screw flange	0,0
Core cross-section	2.5 mm ²	 _
Mounting	DIN mounting rail	S
Data for application in connection with Ex-		Advanced Diagnostic:
areas		and
Statement of conformity	TÜV 10 ATEX 555761X	lva gn
Group, category, type of protection, temperature class	⟨Ex⟩ II 3G Ex nA IIC T4 Gc	 Advanced Diagnostics
Directive conformity		
Directive 94/9/EC	EN 60079-0:2012, EN 60079-11:2012, EN 60079-15:2010	er lies

Compatible power modules

Refer to "General Notes Relating to Pepperl+Fuchs Product Information"

USA: +1 330 486 0002 pa-info@us.pepperl-fuchs.com HCD2-FBPS-1.23.500 HCD2-FBPS-1.500

Power Output					Ō
Voltage (V)		ge (V) 21 23 28 29.5			eld buti
Current (mA)		500	500		-ie rib
Limit U ₀ (V)		24	-		Fic
Device in	Type of Protection			Required Installation Components	
Zone 0/Div. 1	Intrinsically safe Ex ia			FieldBarrier	
Zone 1/Div. 1	Intrinsically safe Ex ia			FieldBarrier	
Zone 1/Div. 1	Flameproof Ex d		•	Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2	DART
Zone 2	Intrinsically safe Ex ic (Entity)			Selected Segment Protectors	D/
Div. 2	Non-incendive			Any Segment Protector; power module selection depends on voltage of field device	ш
Safe Area	No specific type of protection			Segment Protector recommended	

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Pow Suppl

ion". Germany: +49 621 776 2222 Singapore: +65 6779 9091 pa-info@de.pepperl-fuchs.com pa-info@sg.pepperl-fuchs.com



Features

_

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

- 8 segments, redundant, individual modules per • segment
- Customized for Yokogawa, ALF 111
- High-Power Trunk: Live work on devices in any hazardous area
- · Best quality, smallest size and lowest heat dissipation
- Optional Advanced Diagnostics
- Passive impedance for high reliability
- Supports Ex ic voltage limitation
- Installation in Zone 2/Div. 2

Function

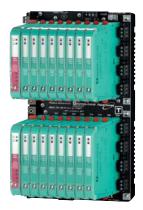
The FieldConnex[®] Compact Power Hub is a modular fieldbus power supply for eight segments with lowest power dissipation and smallest foot print. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring.

The motherboard is the wiring interface with connectors for direct DCS hook-up via the AKB 336 system cable. Sockets for all modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment.

This design allows the most compact cabinet layout for large scale projects. Excellent availability and a very long service life is achieved through: passive impedance filter per segment, high-availability fieldbus termination and plug-in connectors with retaining screws and electronics optimized for lowest power dissipation and compactness.



Assembly



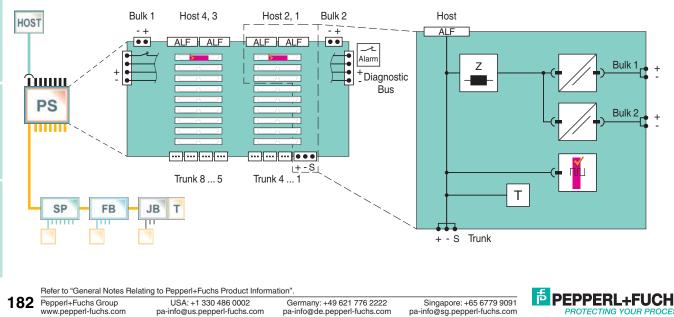


Connection

Supplies Power

Fieldbus DART

Accessories



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PEPPERL+FUCHS

Technical data		
Supply		
Connection	redundant	Ŧ
Rated voltage	19.2 35 V SELV/PELV	
Rated current	16 A	Ĕ
Power loss	typ. 0.4 W per segment	9
Fieldbus interface		Fieldbus
Number of segments	8 redundant	<u>e</u>
Host-side	redundant Yokogawa ALF111 with AKB336 interface cables	
Terminating resistor	100 Ω integrated	Z
Indicators/operating means		FOUNDATION
Fault signal	VFC alarm 1 A, 50 V DC, normally closed	
Directive conformity		ð
Electromagnetic compatibility		Ż
Directive 2004/108/EC	EN 61326-1:2006	5
Standard conformity		0
Electromagnetic compatibility	NE 21:2006	ш
Protection degree	IEC 60529	
Shock resistance	EN 60068-2-27	e e
Vibration resistance	EN 60068-2-6	Selection Guideline
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	dec
Mechanical specifications		iui i
Connection type	plug with screw flange	0.0
Core cross-section	2.5 mm ²	
Mounting	DIN mounting rail	<u>0</u>
Data for application in connection with Ex- areas		Advanced Diagnostics
Statement of conformity	TÜV 10 ATEX 555761X	/ar
Group, category, type of protection, temperature class	🐼 II 3G Ex nA IIC T4 Gc	Adv Diag
Directive conformity		
Directive 94/9/EC	EN 60079-0:2012, EN 60079-11:2012, EN 60079-15:2010	er lies

Compatible power modules

HCD2-FBPS-1.23.500 HCD2-FBPS-1.500

Power Output					ō
Voltage (V)		Itage (V) 21 23			eld buti
Current (mA)		500	500		Fiel
Limit U ₀ (V)		24	-		t t
Device in	Type of Protection			Required Installation Components	2
Zone 0/Div. 1	Intrinsically safe Ex ia			FieldBarrier	
Zone 1/Div. 1	Intrinsically safe Ex ia			FieldBarrier	
Zone 1/Div. 1	Flameproof Ex d			Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2	DART
Zone 2	Intrinsically safe Ex ic (Entity)			Selected Segment Protectors	D/
Div. 2	Non-incendive			Any Segment Protector; power module selection depends on voltage of field device	ш
Safe Area	No specific type of protection			Segment Protector recommended	
	1		1		

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Process Interfaces

Pow Suppl

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Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Advanced Diagnostics

- · 8 segments, individual modules per segment
- Supports all PLC and DCS hosts
- High-Power Trunk: Live work on devices in any hazardous area
- · Features for best signal quality, low heat dissipation
- Optional Advanced Diagnostics
- Passive impedance and CREST technology for high reliability
- Supports Ex ic/nL voltage limitation
- Installation in Zone 2/Div. 2

Function

The FieldConnex[®]Universal Power Hub is a modular fieldbus power supply, providing the most options for most reliable communication. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring. The motherboard is the wiring interface and mounting plate with sockets for FBM-228 host modules. Individual power modules enable simple installation and replacement without tools.

Availability and a long service life are achieved through: only one passive impedance filter per segment with CREST for superior signal transmission, optimized design for low power dissipation and high-availability fieldbus termination. Any mounting direction allows optimized and space-saving cabinet layout.

Assembly





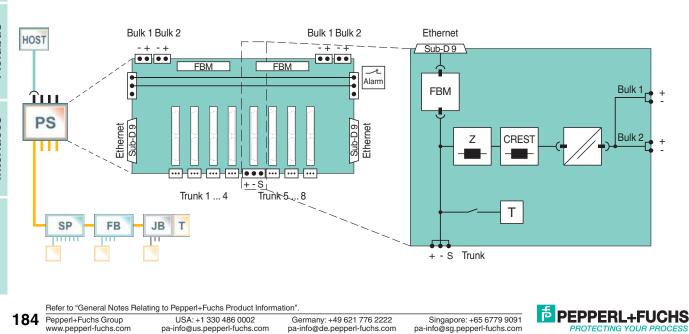
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Edition



Connection

Power Supplies



Technical data		F
Supply		
Connection	redundant	Ξ
Rated voltage	21.6 25.2 V	
Rated current	16 A	Fieldbus
Fieldbus interface		 e
Number of segments		No.
Simplex	8	i u
Host-side	Invensys FBM 228	
Terminating resistor	fixed	Z
Indicators/operating means		2
Fault signal	open collector, switched low	FOUNDATION
Directive conformity		
Electromagnetic compatibility		Z
Directive 2004/108/EC	EN 61326-1:2006	
Standard conformity		0
Electromagnetic compatibility	NE 21:2006	ш.,
Protection degree	IEC 60529	
Shock resistance	EN 60068-2-27	L e
Vibration resistance	EN 60068-2-6	Selection Guideline
Mechanical specifications		ec
Connection type	Cage tension spring terminals	sel suj
Core cross-section	$\leq 2.5 \text{ mm}^2$	0.0
Mounting	DIN mounting rail	_
Data for application in connection with Exareas		ed
Statement of conformity	TÜV 05 ATEX 2890 X	
Group, category, type of protection, temperature class	 II 3G EEx nA II T4 	Advanced
Directive conformity		Di A
Directive 94/9/EC	EN 60079-15:2003	
International approvals		
FM approval	CoC 3024816, CoC 3024816C	Power Supplies
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	Power

Compatible power modules

Intrinsically safe Ex ia

No specific type of protection

Flameproof Ex d

Non-incendive

Power Output Voltage (V) Current (mA) Limit U₀ (V) Device in ...

Zone 0/Div. 1

Zone 1/Div. 1

Zone 1/Div. 1

Div. 2

Safe Area

¹ follows bulk power supply

	HD2-FBP	S-1.17.500 HD2-FBP	S-1.23.500 HD2-FBP3	S-1.25.360 HD2-FBP	S-1.500		Field stribution
					HD2-FBC	Dis	
	15 17	21 23	25 28	28 30	_1		
	500	500	360	500	500		IS .
	17.5	24	-	-	-		ART Idbu
Type of Protection						Required Installation Components	DA
Intrinsically safe Ex ia						FieldBarrier	L I

FieldBarrier

device

Segment Protector R-SP-E12 or any

Segment Protector installed in Zone 2

selection depends on voltage of field

Segment Protector recommended

Any Segment Protector; power module

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Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Power

Field

- 4 segments, redundant, individual modules per • segment
- · Supports all PLC and DCS hosts
- High-Power Trunk: Live work on devices in any hazardous area
- · Features for best signal quality, low heat dissipation
- Optional Advanced Diagnostics
- · Passive impedance and CREST technology for high reliability
- Supports Ex ic/nL voltage limitation
- Installation in Zone 2/Div. 2

Function

The FieldConnex[®]Universal Power Hub is a modular fieldbus power supply, providing the most options for most reliable communication. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring.

The motherboard is the wiring interface and mounting plate with sockets for redundant FBM-228 host modules. Individual power modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment.

Availability and a long service life are achieved through: only one passive impedance filter per segment with CREST for superior signal transmission, optimized design for low power dissipation and high-availability fieldbus termination. Any mounting direction allows optimized and space-saving cabinet layout.

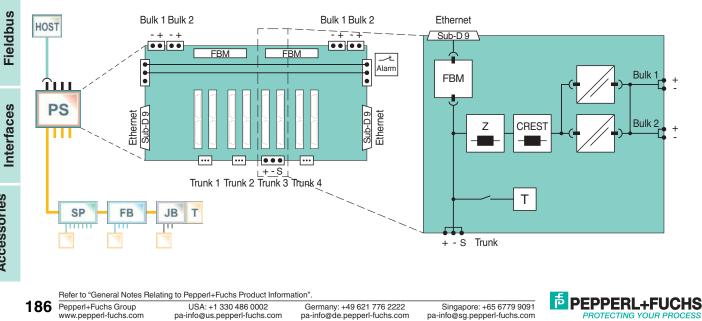
Assembly



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Edition

Connection



Technical data		
Supply		-
Connection	redundant	Ŧ
Rated voltage	21.6 25.2 V	S
Rated current	16 A	FOUNDATION Fieldbus
Fieldbus interface		90
Number of segments		
Redundant	4	i T
Host-side	redundant Invensys FBM 228	
Terminating resistor	fixed	~
Indicators/operating means		2
Fault signal	open collector, switched low	
Directive conformity		
Electromagnetic compatibility		Z
Directive 2004/108/EC	EN 61326-1:2006	
Standard conformity		O
Electromagnetic compatibility	NE 21:2006	
Protection degree	IEC 60529	
Shock resistance	EN 60068-2-27	L e
Vibration resistance	EN 60068-2-6	Selection Guideline
Mechanical specifications		ec
Connection type	Cage tension spring terminals	sel aui
Core cross-section	$\leq 2.5 \text{ mm}^2$	0.0
Mounting	DIN mounting rail	
Data for application in connection with Ex- areas		ed
Statement of conformity	TÜV 05 ATEX 2890 X	nc Dst
Group, category, type of protection, temperature class	🐼 II 3G EEx nA II T4	Advanced Diagnostics
Directive conformity		Ξ×
Directive 94/9/EC	EN 60079-15:2003	
International approvals		
FM approval	CoC 3024816, CoC 3024816C	r es
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	Power Supplies
••		5 6

Compatible power modules

Flameproof Ex d

Non-incendive

Refer to "General Notes Relating to Pepperl+Fuchs Product Information"

No specific type of protection

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HD2-FBPS-1.17.500							Ę		
			HD2-FBPS-1.23.500 HD2-FBPS-1.25.360					eld hution	
					HD2-FBPS-1.500 HD2-FBCL-1.500			Fie	SUIL
							L-1.500	Ë	ž
Power Output									
Voltage (V)		15 17	21 23	25 28	28 30	-1			
Current (mA)		500	500	360	500	500			n
Limit U ₀ (V)		17.5	24	-	-	-		R H	2
Device in	Type of Protection						Required Installation Components	DAR ⁻	
Zone 0/Div. 1	Intrinsically safe Ex ia						FieldBarrier	L ii	Ē
Zone 1/Div. 1	Intrinsically safe Ex ia						FieldBarrier	1	

device

Interfaces Process

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Segment Protector R-SP-E12 or any

Segment Protector installed in Zone 2

selection depends on voltage of field

Segment Protector recommended

Any Segment Protector; power module

Zone 1/Div. 1

Div. 2

Safe Area

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¹ follows bulk power supply

Assembly

Features

_

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Supplies

Power

- 8 segments, redundant, individual modules per • segment
- Customized for Invensys, FBM228
- High-Power Trunk: Live work on devices in any hazardous area
- · Best quality, smallest size and lowest heat dissipation
- Optional Advanced Diagnostics
- Passive impedance for high reliability
- · Dual, redundant bulk power connections

Function

The FieldConnex[®] Compact Power Hub is a modular fieldbus power supply for eight segments with lowest power dissipation and smallest foot print. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitorina.

The motherboard is the wiring interface and mounting plate with sockets for redundant FBM-228 host modules. Individual power modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment. Dual, redundant bulk power connections are configurable. They permit common or separate supply to FBM and power modules via Invensys or external power source.

This design allows the most compact cabinet layout for large scale projects. Excellent availability and a very long service life is achieved through: passive impedance filter per segment, high-availability fieldbus termination and plug-in connectors with retaining screws and electronics optimized for lowest power dissipation and compactness.



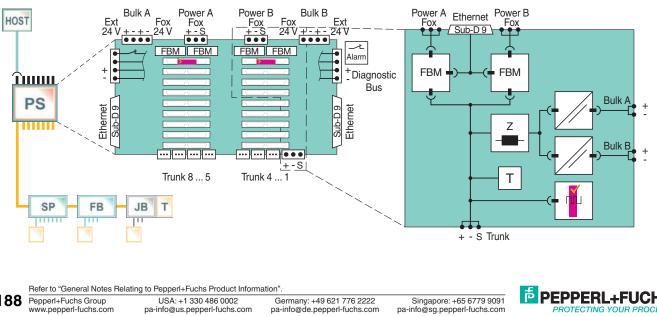




Connection

Fieldbus DART

Accessories



188

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PEPPERL+FUCHS

912868 (US) / 220231 (EU)05/2013

Edition

Technical data		
Supply		
Connection	redundant	Ŧ
Rated voltage	21.6 25.2 V Input for Power Hub selectable: Option 1: from regular Foxboro power supplies Option 2: one or two external bulk power supplies	Fieldbus ¹
Rated current	16 A	e
Power loss	typ. 0.4 W per segment	iii ii
Fieldbus interface		Z
Number of segments		ō
Redundant	8	FOUNDATION
Host-side	redundant Invensys FBM 228	A
Main cable (Trunk)		9
Rated current	≤ 500 mA per segment	5
Terminating resistor	100 Ω integrated	õ
Indicators/operating means		Ш. П. I.
Fault signal	VFC alarm output via connectors	
Directive conformity		
Electromagnetic compatibility		in or
Directive 2004/108/EC	EN 61326-1:2006	act and a set
Standard conformity		Selection Guideline
Electromagnetic compatibility	NE 21:2006	ŭ ŭ
Protection degree	IEC 60529	
Shock resistance	EN 60068-2-27	(0
Vibration resistance	EN 60068-2-6	ic ad
Mechanical specifications		ste
Mounting	two DIN rails	ar no
		Advanced Diagnostics
Power module		Di A

Power module

		HCD2-FBPS-1.500		'er lies
Power Output			•	Vel
Voltage (V)		28 30		Mo dd
Current (mA)		500		Su
Device in	Type of Protection	·	Required Installation Components	
Zone 0/Div. 1	Intrinsically safe Ex ia		FieldBarrier	
Zone 1/Div. 1	Intrinsically safe Ex ia		FieldBarrier	tion
Zone 1/Div. 1	Flameproof Ex d	•	Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2	bui
Safe Area	No specific type of protection		Segment Protector recommended	Stri
		•	•	Dis

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DART Fieldbus

Process Interfaces

HD2-FBPS-1.17.500

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Supplies Power

Field

Process

Accessories

- Output: 15 ... 17 V/500 mA
- Voltage limitation for FISCO ic, Entity ic, also FNICO and Ex nL
- · With galvanic isolation
- Installation in Zone 2/Class I, Div. 2
- · High efficiency, low heat dissipation for high packing density
- Hot swappable in redundant configuration
- · Module exchange without tools during operation

Function

This Power Supply Module is a system component for the FieldConnex[®] Power Hub and can be plugged into the motherboard. It adapts current and voltage for the supply of fieldbus segments and field devices.

The combination of this power supply, selected motherboards and R2 Segment Protectors provide outputs certified for explosion protection Ex ic according to FISCO or Entity. Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply. Two LEDs indicate power and status. In redundant configuration two modules are connected in parallel via simple circuits ensuring seamless operation.

	١
HD2- FBPS- 1.500	
18	

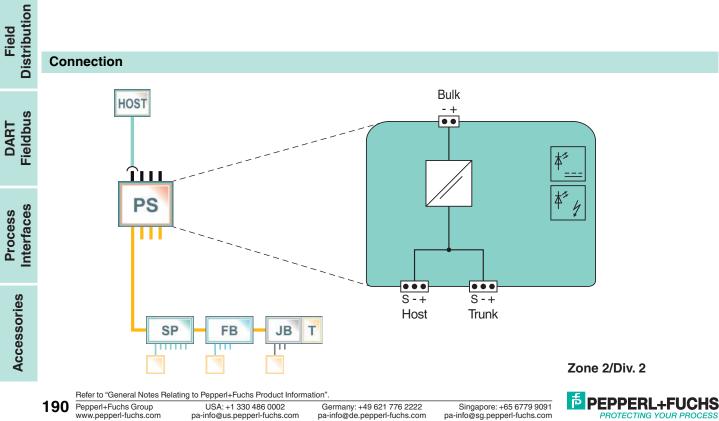
Assembly



912868 (US) / 220231 (EU)05/2013

Edition

Connection



HD2-FBPS-1.17.500

Technical data		F
Supply		
Rated voltage	19.2 35 V DC	Ŧ
Rated current	520 290 mA	
Power loss	typ. 1.3 W	FOUNDATION Fieldbus
Fieldbus interface		9
Rated voltage	15 17 V	2
Rated current	500 10 mA	<u>e</u>
Short-circuit current	550 mA	<u> </u>
Terminating impedance	Motherboard specific	Z
Directive conformity		2
Electromagnetic compatibility		
Directive 2004/108/EC	EN 61326-1:2006	ð
Standard conformity		Ē
Electromagnetic compatibility	NE 21:2006	
Protection degree	IEC 60529	0
Shock resistance	EN 60068-2-27	
Vibration resistance	EN 60068-2-6	
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	Selection Guideline
Mechanical specifications		ii ti
Connection type	Motherboard specific	ec de
Core cross-section	Motherboard specific	iui Sel
Mounting	motherboard mounting	0.0
Data for application in connection with Ex- areas		S
Outputs		ti cd
Voltage U _o	17.5 V	
Statement of conformity	TÜV 04 ATEX 2500 X	yal
Group, category, type of protection, temperature class	🐼 II 3 G Ex nA II T4	Advanced Diagnostics
Directive conformity		
Directive 94/9/EC	EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006	
International approvals		es
FM approval	CoC 3024816, CoC 3024816C	pli
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	 Power Supplies
Certificates and approvals		- S
Marine approval	DNV A-10798	

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Distribution Field

DART Fieldbus

Process Interfaces

HD2-FBPS-1.23.500

Features

_

FOUNDATION Fieldbus H1

Selection Guideline

Advanced Diagnostics

- Output: 21 ... 23 V/500 mA
- Voltage limitation for Entity ic and Ex nL
- With galvanic isolation
- Installation in Zone 2/Class I, Div. 2
- High efficiency, low heat dissipation for high packing density
- Hot swappable in redundant configuration
- Module exchange without tools during operation

Function

This Power Supply Module is a system component for the FieldConnex[®] Power Hub and can be plugged into the motherboard. It adapts current and voltage for the supply of fieldbus segments and field devices.

The combination of this power supply, selected motherboards and R2 Segment Protector provide outputs certified for explosion protection Entity Ex ic and Entity Ex nL.

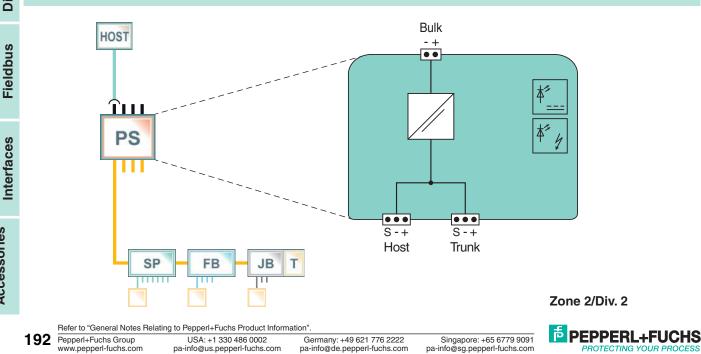
Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply. Two LEDs indicate power and status. In redundant configuration two modules are connected in parallel via simple circuits ensuring seamless operation.



Assembly



Connection



Power

HD2-FBPS-1.23.500

Technical data		F
Supply		
Rated voltage	19.2 35 V DC	Ξ
Rated current	700 390 mA	
Power loss	typ. 1.5 W	FOUNDATION Fieldbus
Fieldbus interface		q
Rated voltage	21 23 V	2
Rated current	500 10 mA	<u>e</u>
Short-circuit current	550 mA	<u> </u>
Terminating impedance	Motherboard specific	Z
Directive conformity		2
Electromagnetic compatibility		
Directive 2004/108/EC	EN 61326-1:2006	à
Standard conformity		Ē
Electromagnetic compatibility	NE 21:2006	
Protection degree	IEC 60529	0
Shock resistance	EN 60068-2-27	
Vibration resistance	EN 60068-2-6	
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	r e
Mechanical specifications		iir ți
Connection type	Motherboard specific	ec
Core cross-section	Motherboard specific	Selection Guideline
Mounting	motherboard mounting	0.0
Data for application in connection with Ex- areas		S
Outputs		ti ed
Voltage U _o	24 V	DC DC
Statement of conformity	TÜV 04 ATEX 2500 X	yaı
Group, category, type of protection, temperature class	😥 II 3 G Ex nA II T4	Advanced Diagnostics
Directive conformity		_
Directive 94/9/EC	EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006	
International approvals		es
FM approval	CoC 3024816, CoC 3024816C	pli
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	Power Supplies
Certificates and approvals		- S
Marine approval	DNV A-10798	

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Distribution Field

DART Fieldbus

Process Interfaces

HD2-FBPS-1.500

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Supplies Power

Field

Process

Accessories

- Output: 28 ... 30 V/500 mA
- · High-Power Trunk for high device count and long cable runs
- · With galvanic isolation
- Installation in Zone 2/Class I, Div. 2
- · High efficiency, low heat dissipation for high packing density
- Hot swappable in redundant configuration
- · Module exchange without tools during operation

Function

This Power Supply Module is a system component for the FieldConnex[®] Power Hub and can be plugged into the motherboard. It adapts current and voltage for the supply of fieldbus segments and field devices.

This power supply features the highest output power and allows for maximum cable lengths and highest number of devices in hazardous areas with the High-Power Trunk concept.

Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply. Two LEDs indicate power and status. In redundant configuration two modules are connected in parallel via simple circuits ensuring seamless operation.

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	HD2- FBPS- 1.500 Provide Annual Provide Annual Prov	
	ß	

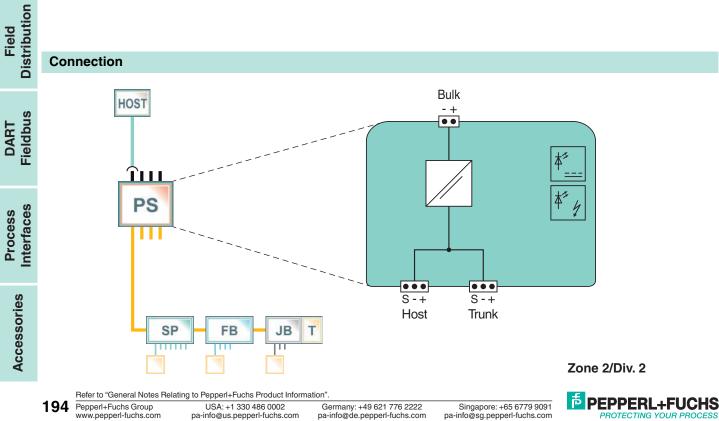
Assembly



912868 (US) / 220231 (EU)05/2013

Edition

Connection



Technical data		
Supply		
Rated voltage	19.2 35 V DC	Ŧ
Rated current	910 490 mA	
Power loss	typ. 1.8 W	ŝ
Fieldbus interface		ā
Rated voltage	28 30 V	Fieldbus
Rated current	500 10 mA	<u>e</u>
Short-circuit current	550 mA	<u> </u>
Terminating impedance	Motherboard specific	Z
Directive conformity		FOUNDATION
Electromagnetic compatibility		
Directive 2004/108/EC	EN 61326-1:2006	2
Standard conformity		Z
Electromagnetic compatibility	NE 21:2006	5
Protection degree	IEC 60529	0
Shock resistance	EN 60068-2-27	
Vibration resistance	EN 60068-2-6	
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	Selection Guideline
Mechanical specifications		itio
Connection type	Motherboard specific	ec de
Core cross-section	Motherboard specific	Sel
Mounting	motherboard mounting	0,0
Data for application in connection with Ex- areas		S
Statement of conformity	TÜV 04 ATEX 2500 X	ti ed
Group, category, type of protection, temperature class	🐼 II 3 G Ex nA II T4	Advanced Diagnostics
Directive conformity		ag
Directive 94/9/EC	EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2006	Di
International approvals		
FM approval	CoC 3024816, CoC 3024816C	
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	es
Certificates and approvals		Power Supplies
Marine approval	DNV A-10798	o d n
		- S

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Distribution Field

DART Fieldbus

Process Interfaces

HD2-FBCL-1.500

Features

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FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Supplies Power

Field

Process

Accessories

- · Output: bulk power voltage 500 mA
- · High-Power Trunk for high device count and long cable runs
- Without galvanic isolation
- Installation in Zone 2/Class I, Div. 2
- · Very low heat dissipation
- Hot swappable in redundant configuration
- · Module exchange without tools during operation

Function

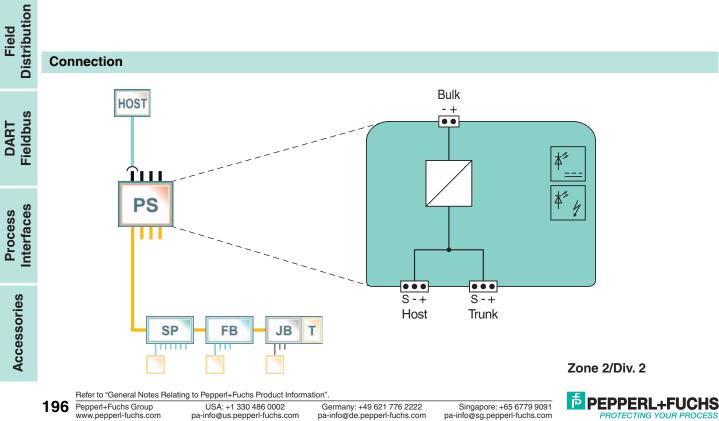
The Power Conditioner Module is a system component for the FieldConnex[®] Power Hub and can be plugged into any universal motherboard (Type code: MB-FB*). It adapts the current for the supply of fieldbus segments and field devices. The power conditioner limits the current and provides the voltage levels from the bulk power to the network without galvanic isolation. It has the smallest number of components for a very long service life. It provides short-circuit limitation towards the segment and the host interfaces. Two LEDs indicate power and status. In redundant configuration two modules are connected in parallel via simple circuits ensuring seamless operation.

Assembly





Connection



HD2-FBCL-1.500

Technical data		
Supply		1
Rated voltage	19.2 32 V DC	Ξ
Power loss	max. 0.8 W	
Fieldbus interface		FOUNDATION Fieldbus
Rated voltage	supply voltage minus ≤ 2.5 V at full load	<u>_</u>
Rated current	0 500 mA	0
Short-circuit current	600 mA	<u>e</u>
Host-rated current	0 40 mA	<u> </u>
Host short-circuit current	0 55 mA	Z
Terminating impedance	Motherboard specific	<u>0</u>
Directive conformity		
Electromagnetic compatibility		ð
Directive 2004/108/EC	EN 61326-1:2006	Ī
Standard conformity		5
Electromagnetic compatibility	NE 21:2006	0
Protection degree	IEC 60529	ш
Shock resistance	EN 60068-2-27	
Vibration resistance	EN 60068-2-6	E e
Mechanical specifications		Selection Guideline
Connection type	Motherboard specific	ec
Core cross-section	Motherboard specific	sel sui
Mounting	motherboard mounting	0.0
Data for application in connection with Ex- areas		S
Statement of conformity	TÜV 04 ATEX 2500 X	ti c
Group, category, type of protection, temperature class	😥 ll 3G EEx nA ll T4	Advanced Diagnostics
Directive conformity		ag
Directive 94/9/EC	EN 60079-15:2003	ΞÞ
International approvals		
FM approval	CoC 3024816, CoC 3024816C	
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	es
		Power Supplies

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Distribution Field

DART Fieldbus

Process Interfaces

HD2-FBPS-1.25.360

Features

- Output: 25 ... 28 V/360 mA
- Universal power supply for most applications
- With galvanic isolation
- Installation in Zone 2/Class I, Div. 2
- High efficiency, low heat dissipation for high packing density
- Hot swappable in redundant configuration
- Module exchange without tools during operation

Function

This Power Supply Module is a system component for the FieldConnex[®] Power Hub and can be plugged into the motherboard. It adapts current and voltage for the supply of fieldbus segments and field devices.

This power supply satisfies the needs of most fieldbus applications with regards to cable lengths and number of devices.

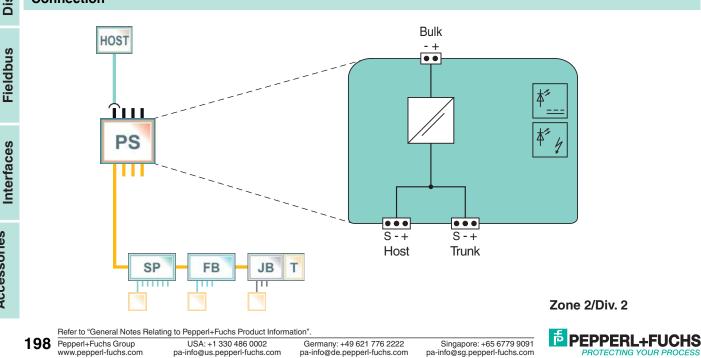
Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply. Two LEDs indicate power and status. In redundant configuration two modules are connected in parallel via simple circuits ensuring seamless operation.



Assembly



Connection



Edition

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Selection Guideline

Process

HD2-FBPS-1.25.360

Technical data		
Supply		
Rated voltage	19.2 35 V DC	- E -
Rated current	670 360 mA	
Power loss	typ. 2 W	Š
Fieldbus interface		Fieldbus
Rated voltage	25 28 V	0
Rated current	360 10 mA	<u>e</u>
Short-circuit current	typ. 400 mA	
Terminating impedance	Motherboard specific	Z
Directive conformity		FOUNDATION
Electromagnetic compatibility		
Directive 2004/108/EC	EN 61326-1:2006	ð
Standard conformity		Z
Electromagnetic compatibility	NE 21:2006	
Protection degree	IEC 60529	0
Shock resistance	EN 60068-2-27	- LL
Vibration resistance	EN 60068-2-6	
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	r e
Mechanical specifications		Selection Guideline
Connection type	Motherboard specific	ec
Core cross-section	Motherboard specific	Sel
Mounting	motherboard mounting	0,0
Data for application in connection with Ex- areas		S
Statement of conformity	TÜV 06 ATEX 553229 X	tic ed
Group, category, type of protection, temperature class	🐼 II 3 G Ex nA II T4	Advanced Diagnostics
Directive conformity		Adv Diag
Directive 94/9/EC	EN 60079-15:2005, EN 60079-0:2004	
International approvals		
FM approval	CoC 3024816, CoC 3024816C	es S
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	ve
Certificates and approvals		Power Supplies
Marine approval	DNV A-10798	с Г

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Distribution Field

DART Fieldbus

Process Interfaces

HCD2-FBPS-1.23.500

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

- Output: 21 ... 23 V/500 mA
- Voltage limitation for Entity ic and Ex nL
- With galvanic isolation
- Installation in Zone 2/Class I, Div. 2
- Highest efficiency, lowest heat dissipation for highest packing density
- Hot swappable in redundant configuration
- Module exchange without tools during operation

Function

This Power Supply Module is a system component for the FieldConnex[®] Power Hub and can be plugged into the motherboard. It adapts current and voltage for the supply of fieldbus segments and field devices.

The combination of this power supply, selected motherboards and R2 Segment Protector provide outputs certified for explosion protection Entity Ex ic and Entity Ex nL.

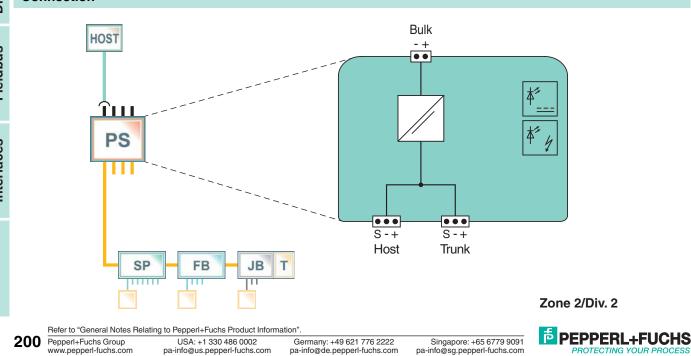
Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply. Two LEDs indicate power and status. In redundant configuration two modules are connected in parallel via simple circuits ensuring seamless operation.



Assembly



Connection



Advanced Diagnostics

HCD2-FBPS-1.23.500

Technical data		
Supply		
Rated voltage	19.2 35 V DC	Ŧ
Power loss	typ. 1.2 W	
Fieldbus interface		Fieldbus
Rated voltage	21 23 V	<u>a</u>
Rated current	500 10 mA	D
Short-circuit current	550 mA	<u>e</u>
Terminating resistor	Motherboard specific	
Directive conformity		Z
Electromagnetic compatibility		<u></u>
Directive 2004/108/EC	EN 61326-1:2006	
Standard conformity		FOUNDATION
Electromagnetic compatibility	NE 21:2006	Ī
Protection degree	IEC 60529	
Shock resistance	EN 60068-2-27	0
Vibration resistance	EN 60068-2-6	ш.,
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	
Mechanical specifications		r e
Connection type	Motherboard specific	itic li
Core cross-section	Motherboard specific	ec
Mounting	motherboard mounting	Selection Guideline
Data for application in connection with Ex	(-	0,0
areas		
Outputs		- 0
Voltage U _o	24 V	tic
Statement of conformity	TÜV 10 ATEX 555761X	So
Group, category, type of protection, temperature class	⟨ _€ ⟩ II 3G Ex nA IIC T4 Gc	Advanced Diagnostics
Directive conformity		Di
Directive 94/9/EC	EN 60079-0:2012, EN 60079-11:2012, EN 60079-15:2010	

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DART Fieldbus

Power Supplies

Distribution Field

HCD2-FBPS-1.500

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Supplies Power

- Output: 28 ... 30 V/500 mA
- · High-Power Trunk for high device count and long cable runs
- With galvanic isolation
- Installation in Zone 2/Class I, Div. 2
- · Highest efficiency, lowest heat dissipation for highest packing density
- Hot swappable in redundant configuration
- · Module exchange without tools during operation

Function

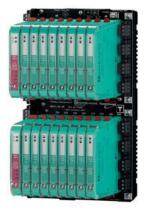
This Power Supply Module is a system component for the FieldConnex[®] Power Hub and can be plugged into the motherboard. It adapts current and voltage for the supply of fieldbus segments and field devices.

This power supply features the highest output power and allows for maximum cable lengths and highest number of devices in hazardous areas with the High-Power Trunk concept.

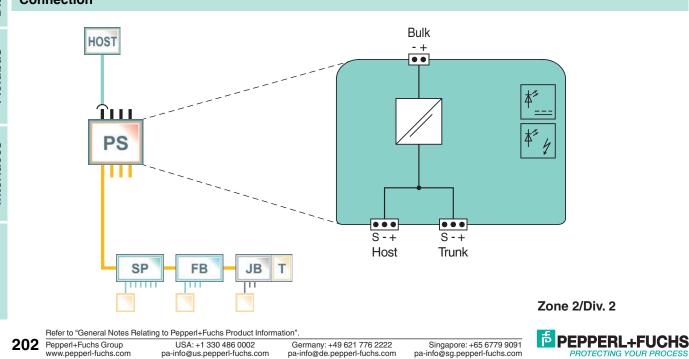
Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply. Two LEDs indicate power and status. In redundant configuration two modules are connected in parallel via simple circuits ensuring seamless operation.



Assembly



Connection



Interfaces

Distribution

Process

Field

HCD2-FBPS-1.500

Technical data		
Supply		
Rated voltage	19.2 35 V DC	Ŧ
Power loss	typ. 1.6 W	
Fieldbus interface		ň
Rated voltage	28 29.5 V	Fieldbus
Rated current	500 10 mA	0
Short-circuit current	550 mA	<u>e</u>
Terminating resistor	Motherboard specific	
Directive conformity		Z
Electromagnetic compatibility		2
Directive 2004/108/EC	EN 61326-1:2006	
Standard conformity		FOUNDATION
Electromagnetic compatibility	NE 21:2006	Z
Protection degree	IEC 60529	
Shock resistance	EN 60068-2-27	Ö
Vibration resistance	EN 60068-2-6	- U L
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	
Mechanical specifications		Selection Guideline
Connection type	Motherboard specific	itic
Core cross-section	Motherboard specific	ec ide
Mounting	motherboard mounting	Sel
Data for application in connection with Exareas		0,0
Statement of conformity	TÜV 10 ATEX 555761X	v
Group, category, type of protection, temperature class	€ II 3G Ex nA IIC T4 Gc	Advanced Diagnostics
Directive conformity		val
Directive 94/9/EC	EN 60079-0:2012, EN 60079-11:2012, EN 60079-15:2010	Adv
		Δ

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DART Fieldbus

Power Supplies

Distribution Field

KLD2-FBPS-1.12.220

Features

- Output: 12 ... 13 V/220 mA
- · For battery or solar-powered applications
- · For demanding environmental conditions
- Installation in Zone 2/Class I, Div. 2
- · Fixed, high-availability terminator
- · Low heat dissipation

Function

This fieldbus power supply is an all-in-one module for single fieldbus segments. It adapts current and voltage and provides the impedance filter required. Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply.

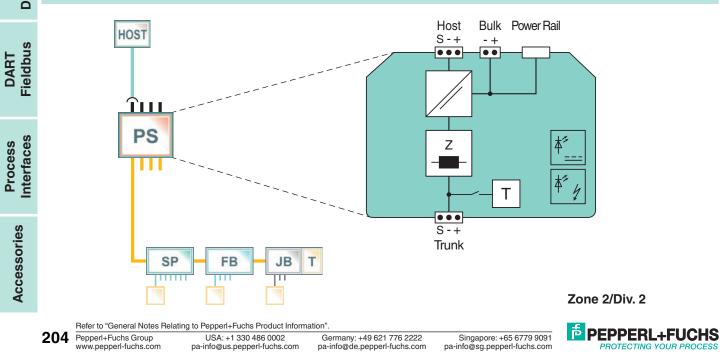
This supply is specifically designed for very demanding environmental conditions. Low input ratings and very low heat dissipation are suitable for battery or solar-powered application.

Availability and a long service life are achieved through a passive impedance filter and a design optimized for low heat dissipation. Modules can be mounted with no spacing required in any direction for an optimized and space-saving cabinet layout. The mobile Advanced Diagnostic Module connects directly to test plug sockets located on the plug-in terminal. In conjunction with the modular Segment Protector it is a perfectly expandable solution.

Assembly



Connection



F

KLD2-FBPS-1.12.220

Technical data		.
Supply		
Connection	Power Rail or terminals 8+, 11+; 9-, 12-	- E
Rated voltage	10 30 V DC	
Efficiency	> 85 %	ŝ
Rated current	350 120 mA	q
Power loss	typ. ≤ 0.5 W	0
Fieldbus interface		Fieldbus
Rated voltage	12 13 V	
Rated current	220 mA	Z
Terminating impedance	100 Ω	FOUNDATION
Directive conformity		
Electromagnetic compatibility		6
Directive 2004/108/EC	EN 61326-1:2006	Z
Standard conformity		
Electromagnetic compatibility	NE 21:2006	Ö
Protection degree	IEC/EN 60529	
Shock resistance	EN 60068-2-27	
Vibration resistance	EN 60068-2-6	n e
Ambient conditions		Selection Guideline
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	ide
Mechanical specifications		Sel Su
Connection type	Terminals	0,0
Core cross-section	up to 2.5 mm ²	_
Mounting	DIN rail mounting	T S
Data for application in connection with Ex- areas		Advanced Diagnostics
Statement of conformity	TÜV 06 ATEX 553079 X	an gu
Group, category, type of protection, temperature class	🐼 II 3G Ex nAc IIC T4	Ad Diaç
Directive conformity		
Directive 94/9/EC	EN 60079-15:2006, EN 60079-0:2009	
International approvals		es
FM approval	CoC 3024816, CoC 3024816C	Power Supplies
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	o d n
		- S

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Distribution Field

DART Fieldbus

Process Interfaces

KLD2-FBPS-1.25.360

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics

Supplies Power

Field

Process

Accessories

Advanced

- Output: 25 ... 27 V/360 mA
- · For most fieldbus applications
- · High-Power Trunk for high device count and long cable runs
- Installation in Zone 2/Class I, Div. 2
- · Fixed, high-availability terminator
- No spacing required between modules

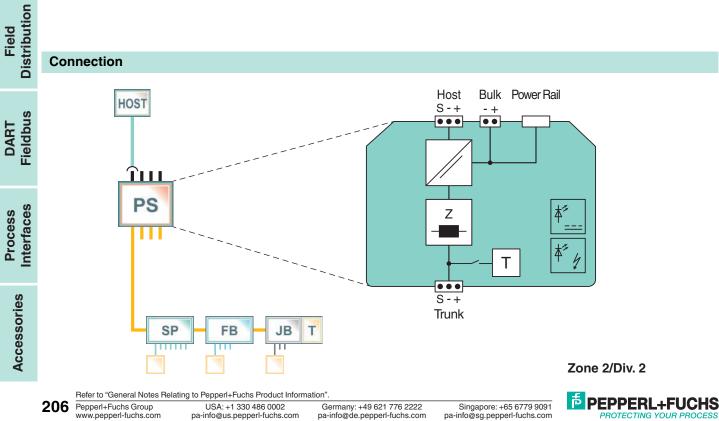
Function

This fieldbus power supply is an all-in-one module for single fieldbus segments. It adapts current and voltage and provides the impedance filter required. Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply.

Power output is designed for long cable lengths and device counts suiting the needs of most fieldbus applications. Fieldbus couplers provide explosion protection for live work at the spur where needed.

Availability and a long service life are achieved through a passive impedance filter and a design optimized for low heat dissipation. Modules can be mounted with no spacing required in any direction for an optimized and space-saving cabinet layout. The mobile Advanced Diagnostic Module connects directly to test plug sockets located on the plug-in terminal. In conjunction with the modular Segment Protector it is a perfectly expandable solution.

Connection





Assembly

KLD2-FBPS-1.25.360

Technical data		
Supply		
Connection	Power Rail or terminals 8+, 11+; 9-, 12-	Ŧ
Rated voltage	19.2 35 V DC	
Rated current	630 340 mA	ů.
Power loss	typ. 2,0 W	q
Fieldbus interface		Fieldbus
Rated voltage	25 27 V	
Rated current	360 mA	
Terminating impedance	100 Ω	Z
Directive conformity		FOUNDATION
Electromagnetic compatibility		T T
Directive 2004/108/EC	EN 61326-1:2006	
Standard conformity		Z
Electromagnetic compatibility	NE 21:2006	
Protection degree	IEC/EN 60529	O I
Shock resistance	EN 60068-2-27	L
Vibration resistance	EN 60068-2-6	
Ambient conditions		Le e
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	itic
Mechanical specifications		Selection Guideline
Connection type	Terminals	Sel
Core cross-section	up to 2.5 mm ²	0,0
Mounting	DIN rail mounting	
Data for application in connection with Exarcas	κ-	ed
Statement of conformity	TÜV 06 ATEX 553079 X	nc
Group, category, type of protection, temperature class	🐼 II 3G EEx nA II T4	Advanced Diagnostics
Directive conformity		Di P
Directive 94/9/EC	EN 60079-15:2003	
International approvals		
FM approval	CoC 3024816, CoC 3024816C	es
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, AEx/Ex nA IIC T4	we pli
Certificates and approvals		Power Supplies
Marine approval	DNV A-10798	- <u>v</u>

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Distribution Field

DART Fieldbus

Process Interfaces

KLD2-PC-1.1.IEC

Features

- Output: 14.7 ... 30.7 V/1 A
- · For very high segment load
- · High-Power Trunk for high device count and long cable runs
- · Installation only in safe areas
- · Selectable, high-availability terminator
- Low heat dissipation
- · Supply via Power Rail

Function

The fieldbus power conditioner is an all-in-one module for single fieldbus segments. It provides short-circuit limitation (1 A) and impedance matching only. The output voltage depends on the bulk power voltage.

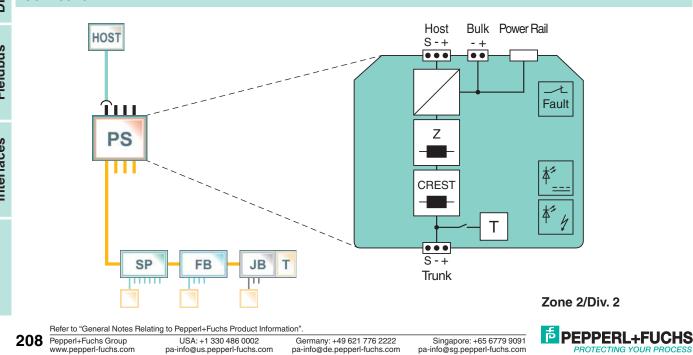
The device feeds high power to the trunk for maximum cable lengths and high device count in any hazardous area. Fieldbus couplers provide explosion protection for live work at the spur.

Availability and a long service life are achieved through: only one passive impedance filter per segment with CREST for superior signal transmission, optimized design for low power dissipation and high-availability fieldbus termination. Any mounting direction allows optimized and space-saving cabinet layout.

Assembly



Connection



F

KLD2-PC-1.1.IEC

Technical data		
Supply		
Connection	Power Rail or terminals 8+, 11+; 9-, 12-	Ŧ
Rated voltage	16 32 V DC	
Rated current	1.02 A	ň
Power loss	16 32 V at 1 A: ≤ 1.86 W; typ. 1.6 W	<u>a</u>
Fieldbus interface		Fieldbus
Field-side		ie
Rated voltage	14.7 30.7 V DC	
Rated current	1 A	Z
Terminating impedance	100 Ω switchable off and on via rotary switch: 1 -> on; 0 -> off	0
Error message output		FOUNDATION
Connection	Power Rail or terminals 7, 10	6
Rated voltage	32 V DC	Z
Rated current	10 mA	
Voltage drop	1.2 V at 10 mA	O .
Directive conformity		
Electromagnetic compatibility		
Directive 2004/108/EC	EN 61326-1:2006	L P
Standard conformity		Selection Guideline
Electromagnetic compatibility	NE 21:2006	ec
Protection degree	IEC/EN 60529	Sel
Climatic conditions	DIN IEC 721	0,0
Mechanical specifications		
Connection type	Terminals	T S
Core cross-section	up to 2.5 mm ²	sec
Mounting	DIN rail mounting	
International approvals		lva gn
UL approval	UL E106378, CUL E106378	Advanced Diagnostics
Approved for	Class I, Division 2, Groups A, B, C, D	

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DART Fieldbus

Power Supplies

Distribution Field

KLD2-PR-1.IEC

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Supplies Power

Field

Process

Accessories

- Output: 24 ... 26 V/400 mA
- · For extension of fieldbus segments
- · High-Power Trunk for high device count and long cable runs
- Installation in Zone 2/Class I, Div. 2
- · Fixed, high-availability terminator
- High efficiency, low heat dissipation
- · Supply via Power Rail

Function

The fieldbus power repeater is an all-in-one module with galvanic isolation for extending single fieldbus segments. It repeats the fieldbus signal thereby restoring waveform and signal level. The two segments interconnected are considered separate physical layers for extension of cable distance and device count.

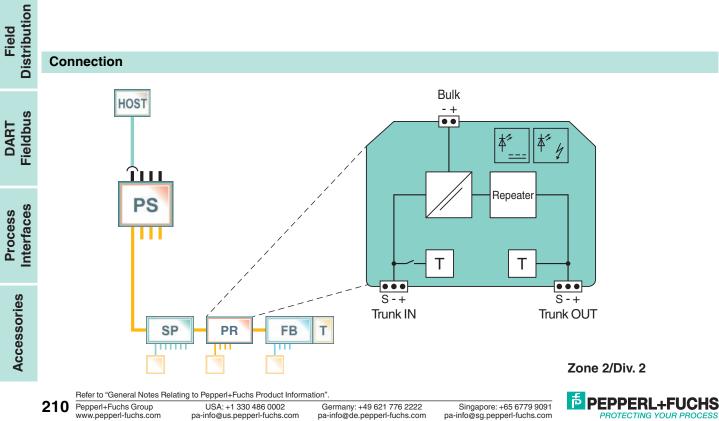
Power output is designed for long cable lengths and device counts suiting the needs of most fieldbus applications. Fieldbus couplers provide explosion protection for live work at the spur where needed.

Availability and a long service life are achieved through a passive impedance filter and an optimized design for low heat dissipation. Modules can be mounted with no spacing required in any direction for an optimized and space-saving cabinet layout.



Assembly

Connection



KLD2-PR-1.IEC

Technical data		.
Supply		
Connection	Power Rail or terminals 47+, 48-	Ξ
Rated voltage	20 35 V DC	
Ripple	≤ 10 %	ŝ
Rated current	380 mA 760 mA	ā
Fieldbus interface		FOUNDATION Fieldbus
Field-side		<u>e</u>
Rated voltage	24 26 V DC	<u> </u>
Rated current	≤ 400 mA	Z
Terminating impedance	100 Ω , integrated	<u>o</u>
Host-side		
Connection	Power Rail or terminals 28, 40+; 29, 41-	D
Rated voltage	9 32 V DC (supplied switch S2 in pos. I)	z
	0 V DC (not supplied switch S2 in pos. II)	5
Terminating impedance	100 Ω switchable off and on via rotary switch S1: 1 -> on; 0 -> off	0
Directive conformity		ш
Electromagnetic compatibility		
Directive 2004/108/EC	EN 61326-1:2006	c e
Standard conformity		Selection Guideline
Electrical isolation	EN 50178	qec
Electromagnetic compatibility	NAMUR NE 21	iui lei
Protection degree	IEC/EN 60529	S C
Climatic conditions	DIN IEC 721	_
Mechanical specifications		v
Connection type	Terminals	Advanced Diagnostics
Core cross-section	up to 2.5 mm ²	DC.SO
Mounting	DIN rail mounting	a va
Data for application in connection with Ex-		Ad
areas		
Statement of conformity	TÜV 01 ATEX 1788X	
Group, category, type of protection, temperature class	🐼 3G EEx nA II T4	es
Directive conformity		pli ve
Directive 94/9/EC	EN 50021:1999	Power Supplies
International approvals		ີ່ພິ
FM approval	CoC 3015900	
Approved for	Class I, Division 2, Groups A, B, C, D	
CSA approval	CoC 1192739	U U
Approved for	Class I, Division 2, Groups A, B, C, D	p i į
		Field Distribution

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DART Fieldbus

Process Interfaces

BP-FBPS-1.30.1

Features

- Adjustable output 15 ... 30 V/max.1 A
- · 8 hours operation at 500 mA without recharging
- · IP 54 Rain and splash proof
- · Rugged housing for outdoor use
- · Low battery and overload indication
- Output current meter
- · Selectable terminators for creating any type of termination
- · All in one no additional components required

Function

Validation of device communication and fieldbus installation testing can be done even when the line voltage or DCS system is not available. This allows on-site personnel to verify the quality of the installation at early stages.

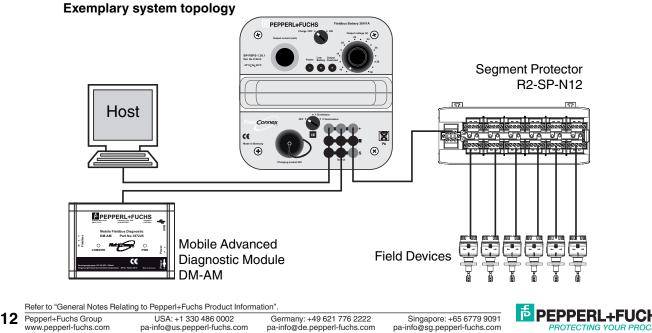
The fieldbus battery features a rugged housing for indoor/outdoor use during commissioning of fieldbus segments. The battery includes a fieldbus power conditioner. Its output voltage is adjustable to match the value of the later used fieldbus power supply. A battery charger is included.

The fieldbus battery complements the FieldConnex Mobile Advanced Diagnostic Module or any other equipment available for testing any fieldbus installation.



Assembly

Connection



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PEPPERL+FUCHS

912868 (US) / 220231 (EU)05/2013

Edition

F

Selection Guideline

DART Fieldbus

Interfaces Process

BP-FBPS-1.30.1

Diagnostics Advanced

Power Supplies

Distribution Field

Fieldbus DART

Interfaces Process

Accessories

Technical data		
Supply		
Battery charger	110 240 V AC, 50/60 Hz	Ξ
Charging voltage	24 V DC	
Connections		Fieldbus
Battery charger	DC Round socket	q
Fieldbus interface		2
Rated voltage	15 30 V DC, adjustable	<u>e</u>
Rated current	1 A	
Host-side	banana socket 4 mm	Z
Terminating resistor	$2x 100 \Omega$ on/off switchable via rotary switch	2
Diagnostic link	banana socket 4 mm	
Directive conformity		FOUNDATION
Electromagnetic compatibility		Ī
Directive 2004/108/EC	EN 61326-1:2006	5
Accumulator		O
Capacitance	7200 mAh	L L
Charging time	8 16 h	
		Selection Guideline

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USB-FBPS-1.11.45.NI

Features

- Output: min. 11 V/45 mA
- For 1...2 devices/test setups
- In conjunction with NI PCMCIA-FBUS card
- Permitted for Zone 2 operation
- Windows XP/Vista/7 compatible
- USB 1.1/2.0 compatible

Function

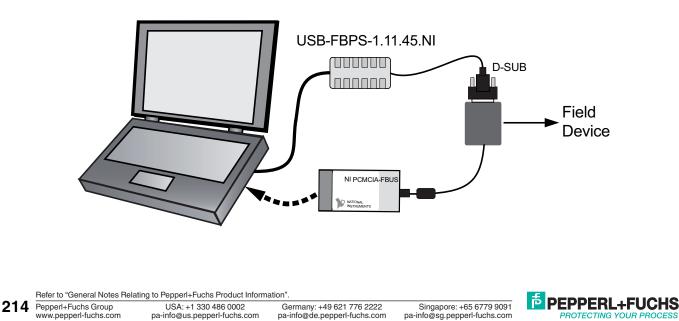
The USB-FBPS-1.11.45.NI fieldbus power supply powers one or two field devices. It connects via D-SUB female connector to the popular NI PCMCIA FBUS card by National Instruments.

This small unit is designed to enable commissioning and maintenance personnel to conduct single field device work typical during plant start-up or maintenance: device configuration download, functional test, and device tagging. The power supply provides the infrastructure from the convenience of a laptop or PC, or any other USB-port. This device complements the portfolio of FieldConnex[®] tools for the fieldbus practitioner on the go. It complements the mobile Diagnostic Module DM-AM for check-out, monitoring, and troubleshooting of single fieldbus segments.



Assembly

Connection



F

Power Supplies

Field Distribution

DART Fieldbus

Interfaces

Accessories

Process

USB-FBPS-1.11.45.NI

Technical data		.
Supply		
Connection	USB-Male Connector Typ A (Standard)	Ξ
Rated voltage	typ. 5 V	
Rated current	max. 350 mA	š
Power loss	typ. 250 mW	9
Fieldbus interface		Fieldbus
Rated voltage	min. 11 V	<u>e</u>
Rated current	45 mA	
Short-circuit current	typ. 60 mA	Z
Terminating resistor	50 Ω	2
Directive conformity		FOUNDATION
Electromagnetic compatibility		ð
Directive 2004/108/EC	EN 61326-1:2006	Z
Standard conformity		
Protection degree	IEC/EN 60529	0
Mechanical specifications		- LL
Connection type	USB-Male Connector Typ A (Standard)	
Data for application in connection with Exareas		Selection Guideline
Outputs		de
Voltage U _o	17.5 V	uiele
Declaration of conformity	PF 08 CERT 1303 X	აც
Group, category, type of protection, temperature class	€ II 3G Ex nA II T4	(0
Directive conformity		içed
Directive 94/9/EC	EN 60079-0:2006; EN 60079-15:2005; EN 60079-11:2007	ost s
		Advanced Diagnostics

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Power Supplies

Distribution Field

DART Fieldbus

Process Interfaces

R2-SP-N* (Ex ic)

Assembly

Features

- 4 ... 12 outputs Ex ic, Ex nL (FISCO or Entity) or non-• incendive (Div 2)
- · Short-circuit protection per output
- Segment Protector in Zone 2/Div. 2
- Instruments in Zone 2/Div. 2
- Power, Com, and Error LEDs
- T-connector for easy installation and maintenance
- · Test points for easy troubleshooting

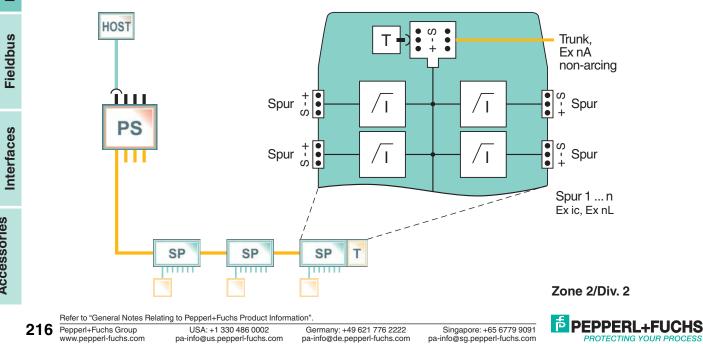
Function

The R2 Segment Protector, a fieldbus coupler for DIN-rail installation, connects 4 ... 12 instruments to the segment with intrinsic safety (Ex ic), energy limitation (Ex nL) and short circuit protection at each spur. This ensures proper operation of the segment during faults or hot work at the spur. The T-connector at the trunk allows for exchange of a Segment Protector with no effect on the remaining segment. The terminator is mounted at the 'T' and removed for network extensions always ensuring proper termination.

All plugs feature retaining screws. LEDs and test access points simplify troubleshooting and help to decrease repair time. Any grounding and shielding concept is possible based on FieldConnex enclosure solutions.

Segment Protector R2-SP	

Connection



F

Accessories

DART

912868 (US) / 220231 (EU)05/2013

Edition

R2-SP-N* (Ex ic)

Fieldbus interface		
Main cable (Trunk)		—
Rated voltage	9 31 V DC	I.
Rated current	≤ 4.5 A	IS
Outputs		p p
Rated voltage	≤ 31 V	q
Rated current	\leq 43 mA	O
Short-circuit current	max. 58 mA	ι II.
Quiescent current	\leq 8 mA (R2-SP-N4), \leq 8 mA (R2-SP-N6), \leq 8 mA (R2-SP-N8), \leq 10 mA (R2-SP-N10), \leq 10 mA (R2-SP-N12)	FOUNDATION Fieldbus
Voltage drop main cable/outputs	≤ 1.3 V	E
Voltage drop trunk In/Out	0 V	A
Terminating resistor	external type M-FT 100 Ω +/- 10 %	닉
Surge protection	Trunk overvoltage protection if voltage exceeds typ. 39 V, max. 41 V	5
Directive conformity		ō
Electromagnetic compatibility		Ľ.
Directive 2004/108/EC	EN 61326-1:2006	
Standard conformity		
Electromagnetic compatibility	NE 21:2006	lio
Protection degree	IEC 60529	
Shock resistance	EN 60068-2-27	Selection
Vibration resistance	EN 60068-2-6	S S S S S S S S S S S S S S S S S S S
Ambient conditions		
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	ď
Mechanical specifications		eq
Connection type	removable screw terminals with retaining screws	Advanced
Core cross-section	\leq 2.5 mm ² /AWG 12-24	Val
Housing material	Polycarbonate	^b d
Housing width	77 mm	
Housing height	93 mm (R2-SP-N4), 121 mm (R2-SP-N6), 148 mm (R2-SP-N8), 177 mm (R2-SP-N10), 205 mm (R2-SP-N12)	
Housing depth	42 mm	Power Supplies
Protection degree	IP20	Ne Ve
Mass	130 g (R2-SP-N4), 180 g (R2-SP-N6), 230 g (R2-SP-N8), 280 g (R2-SP-N10), 330 g (R2-SP-N12)	Power
Mounting	DIN rail mounting	- <u>v</u>
Data for application in connection with Exareas		
Main cable (Trunk)		d ution
Rated current	see Statement of Conformity	d t
Outputs		Fiel
Voltage U _o	24 V for IIC gas group, defined by trunk voltage	E F
-	32 V for IIB gas group	Ë
Current I _o	65 mA for IIC and IIB gas groups	
Inductance L _o	0.25 mH for IIC and IIB gas groups	
Capacitance C _o	60 nF for IIC and IIB gas groups	<u> </u>
Statement of conformity	TÜV 11 ATEX 081151 X	면
Group, category, type of protection, temperature class	 ₩ II 3G Ex nA [nL] [ic] IIC T4 	DART
Directive conformity		
Directive 94/9/EC	EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2005, EN 60079-27:2008	
International approvals	0.0000000000000000000000000000000000000	e
FM approval	CoC 3027877, CoC 3027877C	SS
Control drawing	No. 116-0280	Process
Approved for	Class I, Division 2, Groups A, B, C, D, T4/Class I, Zone 2, Ex nA [nL] IIC T4	Process
UL approval	E106378	
Approved for	Class I, Division 2, Groups A, B, C, D	
IECEx approval		(0
Approved for	⟨₺⟩ Ex nA [nL] [ic] IIC T4	Accessories
		<u> </u>
Certificates and approvals Marine approval	DNV A-10798	0

Edition 912868 (US) / 220231 (EU)05/2013

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R2-SP-IC*

Selection Guideline

Advanced Diagnostics

Power Supplies

F

Features

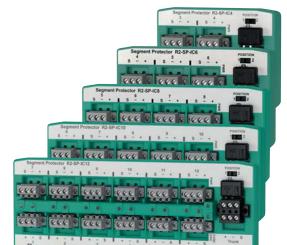
- 4 ... 12 outputs Ex ic (FISCO or Entity) or non-incendive (Div 2)
- Advanced fault isolation at the spur
- Segment Protector in Zone 2/Div. 2
- Instruments in Zone 2/Div. 2 or Zone 1/Div. 1
- · Advanced Diagnostics at the spur
- Power, Com, Diagnostics, and Error LEDs
- T-connector for easy installation and maintenance
- · Test points for easy troubleshooting

Function

The R2 Segment Protector with integrated diagnostics, a fieldbus coupler for DIN rail installation, connects 4 ... 12 instruments to the segment with intrinsic safety (Ex ic). Short-circuit, jabber, and bounce protection isolates most fault condition types from the segment. The short-circuit limit is adjustable for maximum load with Ex ic for gas groups IIB and IIC.

The T-connector at the trunk allows for exchange of a Segment Protector with no effect on the remaining segment. The terminator is mounted at the 'T' and removed for network extensions ensuring proper termination.

Segment Protectors with integrated diagnostics offer physical layer diagnostics at the spur. They are the basis for optional surge protectors with wear indication and enclosure leakage sensors all monitoring the quality of the installation for best availability.

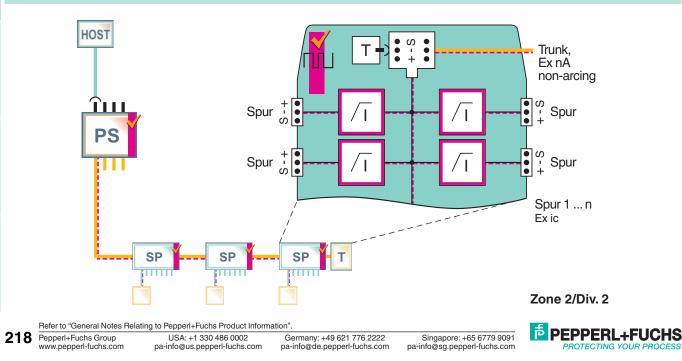




Assembly

Field Distribution

DART Fieldbus



Fieldbus interface		1
Main cable (Trunk)		Ŧ
Rated voltage	9 31 V DC	
Taled Volage	10.5 V DC minimum input voltage acc. to FF-846	Fieldbus
Rated current	< 4.5 A	p 1
Outputs		q
Rated voltage	≤ 31 V	D
Rated current	\leq 32 mA switch 1, position 1	i E
	\leq 43 mA switch 1, position 2	Z
Short-circuit current	46 mA switch 1, position 1	Ō
	65 mA switch 1, position 2	E
Quiescent current	\leq 15 mA (R2-SP-IC4), \leq 17 mA (R2-SP-IC6), \leq 17 mA (R2-SP-IC8), \leq 19 mA (R2-SP-IC10), \leq 19 mA (R2-SP-IC12)	FOUNDATION
Voltage drop main cable/outputs	≤ 1.2 V	5
Voltage drop trunk In/Out	0 V	1
Terminating resistor	external type M-FT 100 Ω +/- 10 %	L L
Surge protection	Trunk overvoltage protection if voltage exceeds typ. 39 V, max. 41 V	_
Directive conformity		1
Electromagnetic compatibility		u o
Directive 2004/108/EC	EN 61326-1:2006	oti
Standard conformity		Selection
Electromagnetic compatibility	NE 21:2006	e c
Protection degree	IEC 60529	
Climatic conditions	IEC 60721	
Shock resistance	EN 60068-2-27	
Vibration resistance	EN 60068-2-6	i i i i i i i i i i i i i i i i i i i
Ambient conditions		Advanced
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	Advanced
Mechanical specifications		Ad
Connection type	removable screw terminals with retaining screws	
Core cross-section	$\leq 2.5 \text{ mm}^2/\text{AWG } 12-24$	1
Housing material	Polycarbonate	
-	77 mm	er
Housing width Housing height	93 mm (R2-SP-IC4), 121 mm (R2-SP-IC6), 148 mm (R2-SP-IC8), 177 mm (R2-SP-IC10),	Ň
	205 mm (R2-SP-IC12)	Power
Housing depth	42 mm	
Protection degree		
Mass	130 g (R2-SP-IC4), 180 g (R2-SP-IC6), 230 g (R2-SP-IC8), 280 g (R2-SP-IC10), 330 g (R2-SP-IC12)	2
Mounting	DIN rail mounting	d tion
Data for application in connection with Ex-		Field
areas	TÜV 12 ATEX 098651 X	Field Dietribu
EC-Type Examination Certificate		č
Group, category, type of protection, temperature class	⟨͡͡ၖ⟩ II 3 G Ex nAc [ic] IIC T4	
Supply		
Maximum safe voltage U _m	35 V	E
Outputs		DART
Voltage U _o	32 V	DART
Current I _o	46 mA switch 1, position 1 65 mA switch 1, position 2	ü
Inductance L _o	0.25 mH switch 1, position 1 0.125 mH switch 1, position 2	
Capacitance C _o	60 nF	SS
Directive conformity		Ce Ce
Directive 94/9/EC	EN 60079-0:2009, EN 60079-11:2012, EN 60079-15:2010	Process
International approvals	EN 60079-15:2010	
International approvals		S
IECEx approval	IECEX TUN 12.0015 X	rie
Approved for	⟨⟨x⟩ Ex nAc [ic] IIC T4	Accessories
Certificates and approvals	nanding	ŝ
Marine approval	pending	×

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

PEPPERL+FUCHS 219

RM-SP*

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Supplies Power

Field

DART

Process

- 2 outputs Ex nL, expandable to up to 26 with short-• circuit protection
- · High-Power Trunk for high device count and long cable runs
- Segment Protector in Zone 2/Div. 2
- Instruments in Zone 2/Div. 2
- Power, Com, and Error LEDs
- Integrated overvoltage protection

Function

The modular Segment Protector, a fieldbus coupler for DIN rail, connects instruments to the fieldbus segment. It features the most compact design and easily expandability for skidmount applications.

The trunk module connects the Segment Protector to the segment. Expansion modules snap side-by-side interconnected via a system plug. The high-availability

terminator is mounted at the output. As it is removed for network extensions proper termination is always ensured. Short-circuit protection ensures proper operation of the segment in case of faults or hot work. Integrated LEDs simplfy troubleshooting and help decrease repair time.

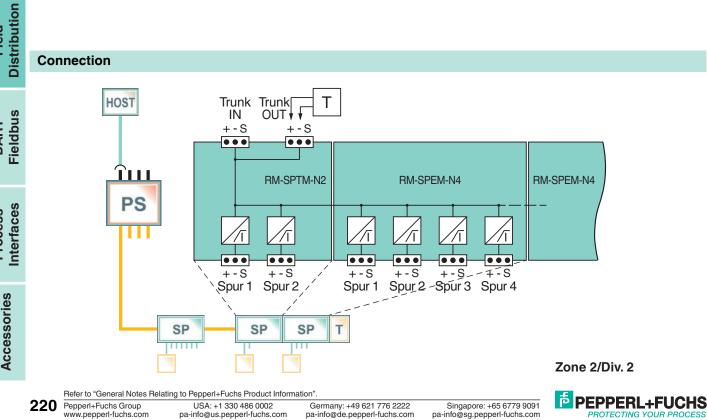
All connectors are plug-in type with receptacles for measuring tools, such as the mobile ADM. This leaves the wiring undisturbed. Any grounding and shielding concept is possible with FieldConnex enclosure solutions.

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and HECOT	Sours
8-11473 \$1-N-E	BAR GING M. PAR
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	(Annual St

Assembly



Connection



Fieldbus interface		
Main cable (Trunk)		E
Rated voltage	9 31 V DC	
Rated current	≤ 4.5 A	Ĭ
Outputs		2
Rated voltage	≤ 31 V	
Rated current	≤ 43 mA	<u>e</u>
Short-circuit current	max. 58 mA	
Inherent current consumption	7 mA (RM-SPTM-N2), 3.5 mA (RM-SPEM-N4) total current consumption = 7 mA + n * 3.5 mA with n = number of Extension Modules RM-SPEM-N4	FOUNDATION Fieldbus
Voltage drop main cable/outputs	≤ 1.3 V	
Terminating resistor	100 Ω external	
Surge protection	Trunk overvoltage protection if voltage exceeds typ. 39 V, max. 41 V	Z
Directive conformity		
Electromagnetic compatibility		C
Directive 2004/108/EC	EN 61326-1:2006	ш
Standard conformity		
Electromagnetic compatibility	NE 21:2006	Ę
Protection degree	IEC 60529	Selection
Shock resistance	EN 60068-2-27	Selection
Vibration resistance	EN 60068-2-6	Sel .
Ambient conditions		0) (
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	
Mechanical specifications		
Connection type	screw terminals, removable	ĕ :
Core cross-section	$\leq 2.5 \text{mm}^2/\text{AWG}$ 12-24	Advanced
Housing material	Polyamide PA 66	Advanced
Housing width	17.5 mm per device	- ¥:
Housing height	94 mm	
Housing depth	54 mm	-
Protection degree		
Mass	75 g per device	Power
Mounting	DIN rail mounting	Power
Data for application in connection with Ex- areas		م ا
Main cable (Trunk)		
Rated current	see Statement of Conformity	-
Outputs	see ordionion of opinionity	
Voltage U _o	24 V for IIC gas group, defined by trunk voltage	: م
	32 V for IIB gas group	eld.
Current I _o	65 mA for IIC and IIB gas groups	Fiel
Inductance L _o	0.25 mH for IIC and IIB gas groups	
Capacitance C _o	60 nF for IIC and IIB gas groups	
Statement of conformity	TÜV 11 ATEX 081152 X	
Group, category, type of protection, temperature class	€ II 3G Ex nA [nL] IIC T4	DART
Directive conformity		DART
Directive 94/9/EC	EN 60079-15:2005, EN 60079-0:2006	
International approvals		
UL approval	E106378	
Approved for	Class I, Division 2, Groups A, B, C, D	
Certificates and approvals		Process
	DNV A-10798	ŝ

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F2-SP-IC*

912868 (US) / 220231 (EU)05/2013

Edition

FOUNDATION Fieldbus H1

_

Selection Guideline



- 4 ... 10 outputs Ex ic (FISCO or Entity) or non-incendive (Div 2)
- Advanced fault isolation at the spur
- Segment Protector in Zone 2/Div. 2
- Instruments in Zone 2/Div. 2 or Zone 1/Div. 1
- Advanced Diagnostics at the spur
- Power, Com, Terminator, Diagnostics, and Error LEDs

Function

The F2 Segment Protector with integrated diagnostics, a device coupler in aluminum housing, connects 4 ... 10 instruments to the segment with intrinsic safety (Ex ic). Preengineering options are: cable glands in various materials; a choice of fixed or plug-in terminals with screw or spring-clamp connections. Short circuit, jabber, and bounce protection isolate most fault condition types from the segment.

The short circuit current limitation is adjustable for maximum load with Ex ic for gas groups IIB and IIC. The shield can be connected hard-to-ground or floating. A terminator with LED indication is selectable via jumper.

Short circuit protection ensures proper operation of the segment in case of unwanted faults at the spur. Work on devices always requires a hot work permit. The integrated fieldbus terminator features a high-availability design and can be chosen via a jumper

Assembly





Connection HOST IIB/IIC S⇒≟ **本**‴ Т 50 5 ERR • • ... + - S + - S + - S + - S Spur Spur Trunk Trunk Spur IN OUT 1 ... n SF SP Т SF Zone 2 Div. 2 Refer to "General Notes Relating to Pepperl+Fuchs Product Information PEPPERL+FUCHS 222 Pepperl+Fuchs Group www.pepperl-fuchs.com USA: +1 330 486 0002 pa-info@us.pepperl-fuchs.com Singapore: +65 6779 9091 pa-info@sg.pepperl-fuchs.com Germany: +49 621 776 2222 pa-info@de.pepperl-fuchs.com

Technical data		F
Fieldbus interface		-
Main cable (Trunk)		Ξ
Rated voltage	9 31 V DC, 10.5 V DC minimum input voltage acc. to FF-846	S
Rated current	≤ 4.5 A	Fieldbus
Outputs		ð
Rated voltage	< 31 V	Ð
Rated current	 ≤ 32 mA jumper 1, position 2 ≤ 43 mA jumper 1, position 1 	- iE
Short-circuit current	46 mA jumper 1, position 2	
	65 mA jumper 1, position 1	FOUNDATION
Quiescent current	≤ 15 mA (F2-SP-IC04), ≤ 17 mA (F2-SP-IC06), ≤ 17 mA (F2-SP-IC08), ≤ 19 mA (F2-SP-IC10)	Ē
Voltage drop main cable/outputs	≤ 1.2 V	N.
Voltage drop trunk In/Out	0 V	
Terminating resistor	selectable via Jumper 100 Ω +/- 10 %	5
Surge protection	trunk, spurs overvoltage protected if voltage exceeds typ. 39 V, max. 41 V	ō
Directive conformity		Ľ
Electromagnetic compatibility		
Directive 2004/108/EC	EN 61326-1:2006	_
Standard conformity		<u>.</u>
Electromagnetic compatibility	NE 21:2006	Selection
Protection degree	IEC 60529	ele.
Climatic conditions	IEC 60721	Ň (
Shock resistance	EN 60068-2-27	
/ibration resistance	EN 60068-2-6	
Ambient conditions		<u></u> .
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	Advanced
Mechanical specifications		/ar
Connection type	removable screw terminal, removable spring terminal, screw terminal	þ
Core cross-section	≤ 2.5 mm ² /AWG 12-24	< 1
Cable entry	cable gland, plug connection, and stopping plug options	1
Cable diameter	6 13 mm (cable glands plastic), 7 12 mm (cable glands nickel plated brass), 8.5 13 mm (cable	-
	glands stainless steel), 8.5 16 mm outside, 6 12 mm inside, 0 1.25 mm armor (cable glands nickel plated brass/stainless steel for armored cable)	Power
Housing material	ALSI12 (Cu) DIN1725 (Si 1.2 %), anodized	õ
Housing width	120 mm (stopping plug plastic/stainless steel), 140 mm (cable glands plastic/nickel plated brass/stainless steel), 160 mm (cable glands nickel plated brass/stainless steel for armored cable), 135 mm (plug connection M12 nickel plated brass/stainless steel)	шċ
Housing height	258 mm	
Housing depth	93 mm	q
Protection degree	IP66	<u>d</u>
Mass	max 2.6 kg, depending on model	Fiel
Mounting	panel mounting	Fiel
Data for application in connection with Ex-		(
areas		
EC-Type Examination Certificate	pending	
Group, category, type of protection, temperature class	🐼 II 3 G Ex nAc [ic] IIC T4	DART
Supply		0
Maximum safe voltage U _m	35 V	
Outputs		
Voltage U _o	32 V	
Current I _o	46 mA jumper 1, position 2 65 mA jumper 1, position 1	SSS
Inductance L _o	0.25 mH jumper 1, position 1 0.125 mH jumper 1, position 2	Process
Capacitance C _o	60 nF	с.
Directive conformity		
Directive 94/9/EC	EN 60079-0:2009, EN 60079-11:2012, EN 60079-15:2010	(1
International approvals		<u>ě</u>
ECEx approval	pending	Š
Approved for	pending	Accessories
Certificates and approvals		90
Marine approval	pending	9

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PROTECTING YOUR PROCESS 223

FOUNDATION Fieldbus H1

F

Selection Guideline



- 4 ... 12 outputs Ex ic, Ex nL (FISCO or Entity)
- Glass fiber reinforced polyester, impact resistant, IP66
- Configurable cable entries for trunk and spurs
- International approvals
- Installation in Zone 2

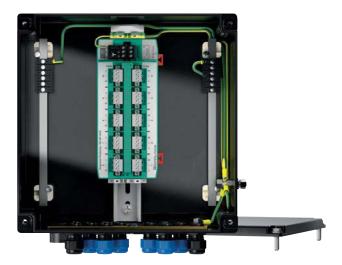
Function

This Segment Protector Junction Box is a device coupler with FieldConnex[®] Segment Protectors for Zone 2. Devices can be located in Zone 2. The number of outputs and size can be selected.

Glass fiber reinforced polyester provides corrosion resistance and is light weight. The surface resistance avoids electrostatic charge.

Trunk and spur entries can be selected individually from a range of cable glands and stopping plugs. A breather is included by default. Tag plate, grounding bar, surge protection for the trunk, and bus termination are available as options. This junction box is available pre-wired, with all accessories, for fast ordering, delivery, site installation, and commissioning.

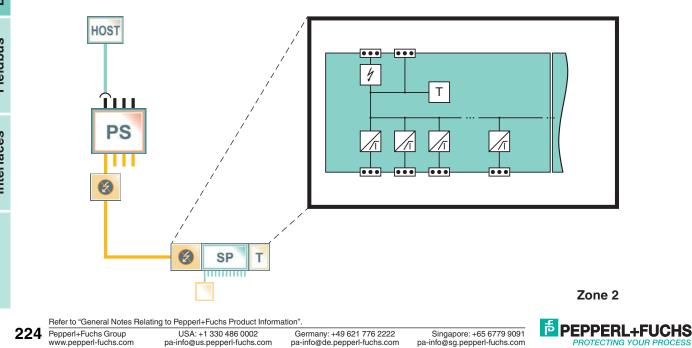
Assembly



912868 (US) / 220231 (EU)05/2013

Edition

Connection



Segment Protector R2-SP-N** For technical data on installed electronic component see data sheet.	H
	FOUNDATION Fieldbus
EN 60529	ā
EN 60079-0	P
	<u>e</u>
detachable cover with retaining screws	Ш.,
IP66	Z
cable gland and stopping plug options	<u>o</u>
	E
polyester, impact resistant, glass fiber reinforced	
black molded finish (RAL 9005)	¥
< 10 ⁹ Ω	5
<6%	ō
silicon, one piece	Ш.
brass	
grounding plate: 3 mm	C 0
(W x H x D) 271 x 271 x 136 mm (1 x R2-SP-N**) 544 x 271 x 136 mm (2 x R2-SP-N**)	Selection Guideline
thru-holes Ø6.5 mm	Se
grounding bolt M6. Stainless steel	
	cs cs
PF 08 CERT 1278 (assembled Junction Box), for additional certificates see www.pepperl-fuchs.com	sti
⟨ϵx⟩ II 3G Ex nA [nL] [ic] IIC T4	Advanced Diagnostics
	2 N D
EN 60079-0:2006, EN 600079-14:2003, EN 60079-15:2005, EN 60079-11:2007	Dia Ac
	-
IECEx PTB 09.0016, suitable Junction Box on request	
	For technical data on installed electronic component see data sheet. EN 60529 EN 60079-0 detachable cover with retaining screws IP66 cable gland and stopping plug options polyester, impact resistant, glass fiber reinforced black molded finish (RAL 9005) < 10 ⁹ Ω < 6 %

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Distribution Field

DART Fieldbus

Process Interfaces

Assembly

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Supplies Power

Field

Process

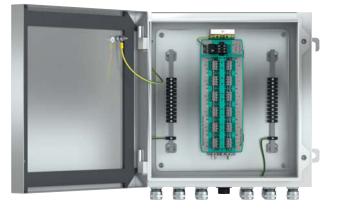
- 4 ... 12 outputs Ex ic, Ex nL (FISCO or Entity)
- · Stainless steel, electropolished, IP66
- · Configurable cable entries for trunk and spurs
- International approvals
- Installation in Zone 2

Function

This Segment Protector Junction Box is a device coupler with FieldConnex[®] Segment Protectors for Zone 2. Devices can be located in Zone 2. The number of outputs and size can be selected.

Electropolished stainless steel 316L provides high corrosion and impact resistance at a very wide temperature range. The integrated rain channel prevents standing water from damaging the one-piece seal.

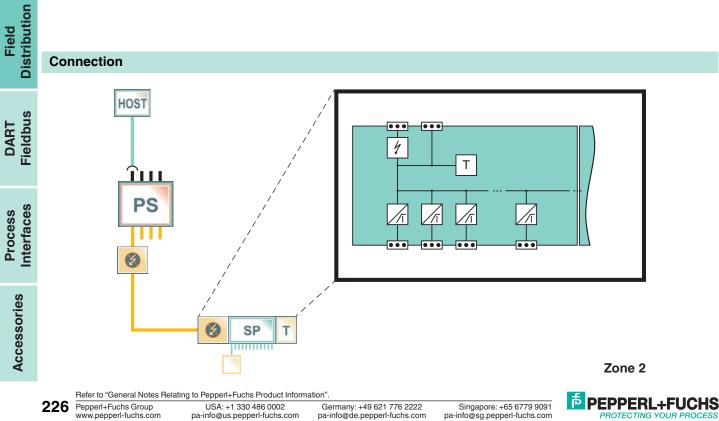
Trunk and spur entries can be selected individually from a range of cable glands and stopping plugs. A breather is included by default. Tag plate, grounding bar, surge protection for the trunk, and bus termination are available as options. This junction box is available pre-wired, with all accessories, for fast ordering, delivery, site installation, and commissioning.



912868 (US) / 220231 (EU)05/2013

Edition

Connection



Technical data		F
General specifications		
Installed components	Segment Protector R2-SP-N** For technical data on installed electronic component see data sheet.	Ŧ
Conformity		Fieldbus
Protection degree	EN 60529	Ā
Impact resistance	EN 60079-0	p
Mechanical specifications		<u>e</u>
Enclosure cover	detachable hinged door with captive retaining screws	
Protection degree	IP66	Z
Cable entry	cable gland and stopping plug options	<u> </u>
Material		E
Housing	Stainless steel 1.4404/AISI 316L	
Surface	electropolished	1
Seal	Neoprene, fire-resistant, one piece	5
Material thickness	enclosure body, enclosure cover, mounting plate: 1.5 mm gland plate: 3.0 mm	FOUNDATION
Dimensions	(W x H x D) 306 x 306 x 165 mm (1 x R2-SP-N**) 380 x 380 x 175 mm (2 x R2-SP-N**)	Selection Guideline
Mounting	thru-holes Ø10 mm	cti eli
Grounding	grounding bolt M10, brass	id
Data for application in connection with Exareas		Se G
Statement of conformity	PF 08 CERT 1278 (assembled Junction Box), for additional certificates see www.pepperl-fuchs.com	
Group, category, type of protection	🐼 II 3G Ex nA [nL] [ic] II C T4	b c
Directive conformity		Advanced Diagnostics
Directive 94/9/EC	EN 60079-0:2006, EN 600079-14:2003, EN 60079-15:2005, EN 60079-11:2007	an
International approvals		
IECEx approval	IECEx PTB 09.0016, suitable Junction Box on request	Ac
		_

Power Supplies

Distribution Field

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SPJB-**-AL*.***

Features F · Intrinsically safe (Ex ic)/non-incendive outputs FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Power Supplies

Field

Process

- Anodized aluminum, IP67 · Configurable cable entries for trunk and spurs
- · Packaged solution
- Installation in Class I, Division 2

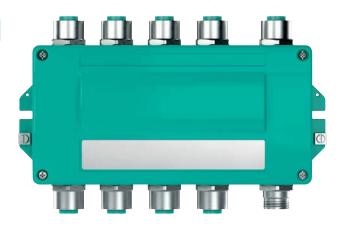
Function

This Segment Protector Junction Box is a device coupler with FieldConnex[®] Segment Protectors for Zone 2/Div 2. Devices can be located in Zone 2/Div 2. The number of outputs and size can be selected.

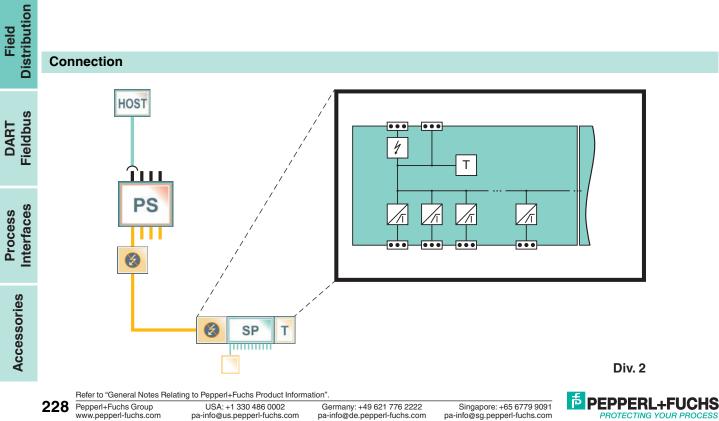
Anodized aluminum provides corrosion resistance also to salt and impact resistance with lower weight compared to stainless steel. The compact housing offers convenient mounting flanges with external grounding lug.

Trunk and spur entries can be selected individually from a range of cable glands and quick disconnects.

This junction box is available pre-wired, with all accessories, for fast ordering, delivery, site installation, and commissioning. Assembly



Connection



SPJB-**-AL*.***

Advanced Diagnostics

Power Supplies

Distribution Field

DART Fieldbus

Process Interfaces

Accessories

Technical data		
General specifications		
Installed components	Segment Protector R2-SP-N** For technical data on installed electronic component see data sheet.	H
Conformity		Fieldbus
Protection degree	EN 60529	<u>0</u>
Mechanical specifications		
Enclosure cover	detachable cover with retaining screws	<u>e</u>
Protection degree	IP67	
Cable entry	cable gland and stopping plug options	Z
Material		\underline{O}
Housing	aluminum	
Surface	epoxy polyester paint	
Seal	Polyurethane (PUR), one piece	z
Material thickness	enclosure body: 4 mm enclosure cover: 3 mm	FOUNDATION
Dimensions	(W x H x D) 114 x 258 x 84 mm	Ű.
Mounting	panel mount with M6 slots	– 0
Grounding	grounding bolt on enclosure body and enclosure cover	in of
		Selection Guideline

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SPJB-**-CS*.***

Features F FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Supplies Power

Field

Process

Assembly

- · Intrinsically safe (Ex ic)/non-incendive outputs • Carbon steel, NEMA 4
- · Configurable cable entries for trunk and spurs
- · Packaged solution
- Installation in Class I, Division 2

Function

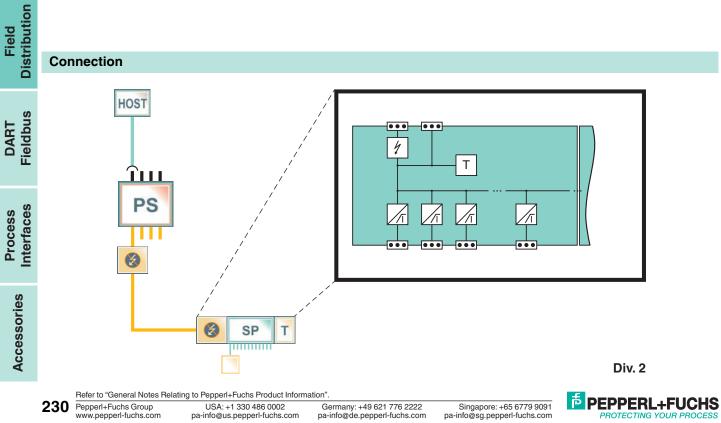
This Segment Protector Junction Box is a device coupler with FieldConnex[®] Segment Protectors for Zone 2/Div 2. Devices can be located in Zone 2/Div 2. The number of outputs and size can be selected.

Painted carbon steel provides good corrosion resistance. The optional window makes it easy to see the coupler's LEDs. Trunk and spur entries can be selected individually from a range of cable glands and quick disconnects.

This junction box is available pre-wired, with all accessories, for fast ordering, delivery, site installation, and commissioning.



Connection



Technical data		
General specifications		
Installed components	Segment Protector R2-SP-N** For technical data on installed electronic component see data sheet.	H
Conformity		ns
Protection degree	EN 60529	q
Mechanical specifications		
Enclosure cover	hinged door with cam lock	Fieldbu
Protection degree	IP66, NEMA 4, NEMA 4X, NEMA 12	
Cable entry	cable gland and stopping plug options	Z
Material		<u>o</u>
Housing	Steel	
Surface	gray paint	
Seal	oil-resistant, one piece	Z
Material thickness	enclosure body, enclosure cover: 1.6 mm window: 6 mm	FOUNDATION
Dimensions	(W x H x D) 203 x 254 x 102 mm window size: 197 x 95 mm	
Mounting	thru-holes Ø6.4 mm	on
Grounding	grounding bolt on enclosure body and enclosure cover	cti leli
		Selection Guideline

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SPJB-**-FB*.***

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Power Supplies

Field

- · Intrinsically safe (Ex ic)/non-incendive outputs
- · Glass fiber reinforced polyester, NEMA 4x
- · Configurable cable entries for trunk and spurs
- · Packaged solution
- Installation in Class I, Division 2

Function

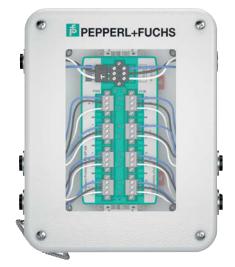
This Segment Protector Junction Box is a device coupler with FieldConnex[®] Segment Protectors for Zone 2/Div 2. Devices can be located in Zone 2/Div 2. The number of outputs and size can be selected.

Glass fiber reinforced polyester provides corrosion resistance and is light weight. The surface resistance avoids electrostatic charge.

Trunk and spur entries can be selected individually from a range of cable glands and quick disconnects.

This junction box is available pre-wired, with all accessories, for fast ordering, delivery, site installation, and commissioning.

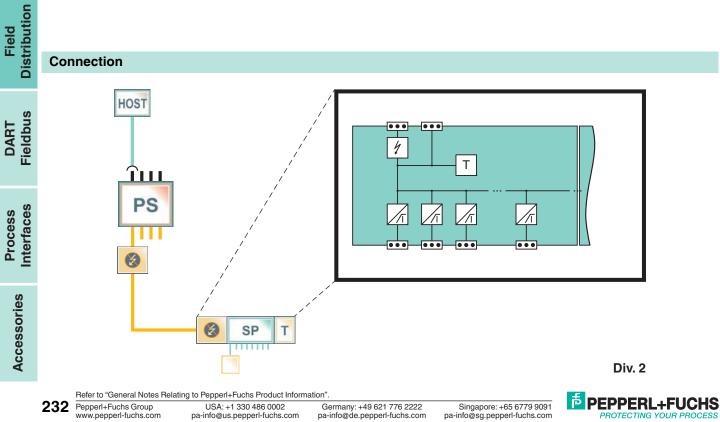
Assembly



912868 (US) / 220231 (EU)05/2013

Edition

Connection



Technical data		F
General specifications		
Installed components	Segment Protector R2-SP-N** For technical data on installed electronic component see data sheet.	E
Mechanical specifications		ns
Enclosure cover	detachable cover with stainless steel safety chain	q
Protection degree	NEMA 6P, NEMA 12	q
Cable entry	cable gland and stopping plug options	<u>e</u>
Material		L L
Housing	polyester, impact resistant, glass fiber reinforced	Z
Seal	Polyurethane (PUR), one piece	<u>o</u>
Material thickness	enclosure body: 4 mm enclosure cover: 3 mm	DAT
Dimensions	(W x H x D) 191 x 244 x 121 mm	Z
Mounting	Flanged mounting Ø8 mm holes	õ

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SPJB--PCW.*****

Assembly

Features F

- · Intrinsically safe (Ex ic)/non-incendive outputs
- · Impact resistant polycarbonate, NEMA 4x
- · Configurable cable entries for trunk and spurs
- · Packaged solution
- Installation in Class I, Division 2

Function

This Segment Protector Junction Box is a device coupler with FieldConnex[®] Segment Protectors for Zone 2/Div 2. Devices can be located in Zone 2/Div 2. The number of outputs and size can be selected.

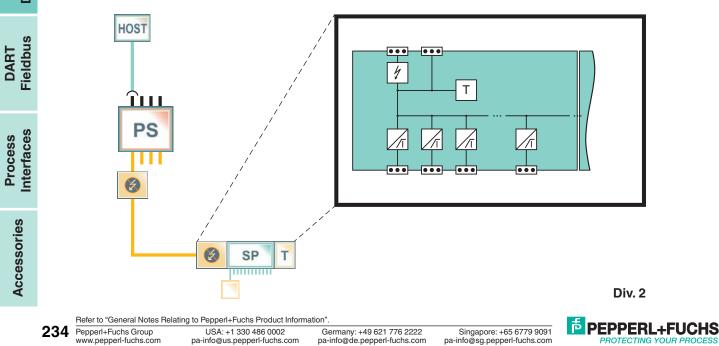
Impact-resistant polycarbonate provides corrosion resistance. It is light weight and easy to modify. The clear cover makes it easy to see the coupler's LEDs.

Trunk and spur entries can be selected individually from a range of cable glands and quick disconnects.

This junction box is available pre-wired, with all accessories, for fast ordering, delivery, site installation, and commissioning.



Connection



Technical data		
General specifications		
Installed components	Segment Protector R2-SP-N** For technical data on installed electronic component see data sheet.	H
Conformity		Fieldbus
Protection degree	EN 60529	<u>q</u>
Mechanical specifications		
Enclosure cover	detachable cover with retaining screws	<u>e</u>
Protection degree	IP67, NEMA 4, NEMA 4X, NEMA 6, NEMA 12, NEMA 13	
Cable entry	cable gland and stopping plug options	Z
Material		<u>o</u>
Housing	polycarbonate, impact resistant	
Seal	Polyurethane (PUR), one piece	
Material thickness	enclosure body: 4 mm enclosure cover: 3 mm	FOUNDATION
Dimensions	(W x H x D) 160 x 240 x 90 mm	D
Mounting	holes Ø4.5 mm	
		Selection Guideline

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Diagnostics Advanced

SPJB-**-SS*.***

Assembly

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Supplies Power

Field

Process

- · Intrinsically safe (Ex ic)/non-incendive outputs
- Stainless steel, brushed NEMA 4x
- · Configurable cable entries for trunk and spurs
- · Packaged solution
- Installation in Class I, Division 2

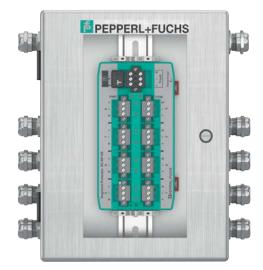
Function

This Segment Protector Junction Box is a device coupler with FieldConnex[®] Segment Protectors for Zone 2/Div 2. Devices can be located in Zone 2/Div 2. The number of outputs and size can be selected.

Electropolished stainless steel 316L provides high corrosion and impact resistance at a very wide temperature range. The flanged collar around the door prevents standing water from damaging the one-piece seal. The optional window makes it easy to see the coupler's LEDs.

Trunk and spur entries can be selected individually from a range of cable glands and quick disconnects.

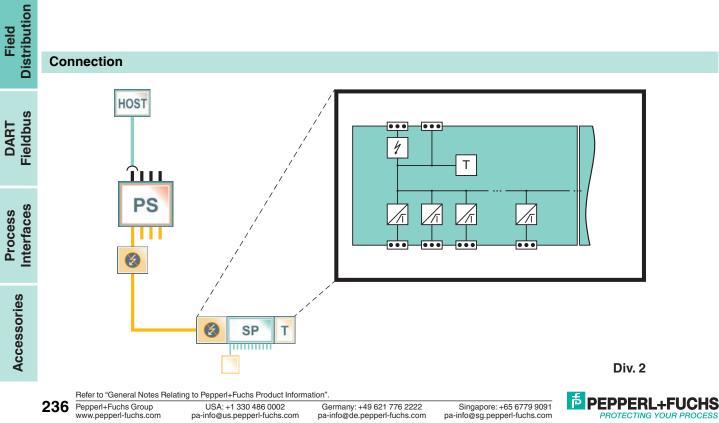
This junction box is available pre-wired, with all accessories, for fast ordering, delivery, site installation, and commissioning.



912868 (US) / 220231 (EU)05/2013

Edition

Connection



Technical data		
General specifications		
Installed components	Segment Protector R2-SP-N** For technical data on installed electronic component see data sheet.	H
Conformity		Fieldbus
Protection degree	EN 60529	<u>q</u>
Mechanical specifications		
Enclosure cover	hinged door with cam lock	<u>o</u>
Protection degree	IP66, NEMA 4, NEMA 4X, NEMA 12	
Cable entry	cable gland and stopping plug options	Z
Material		<u>o</u>
Housing	Stainless steel 1.4404/AISI 316L	
Surface	brushed finish	
Seal	oil-resistant, one piece	z
Material thickness	enclosure body, enclosure cover: 1.6 mm window: 6 mm	FOUNDATION
Dimensions	(W x H x D) 203 x 254 x 102 mm window size: 197 x 95 mm	
Mounting	thru-holes Ø6.4 mm	on
Grounding	grounding bolt on enclosure body and enclosure cover	cti lell
		Selection Guideline

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R-SP-E12

FOUNDATION Fieldbus H1

_

Selection Guideline

Features

- 12 increased safety outputs (Ex e)
- Segment Protector in Zone 1/Div. 2
- Instruments in Zone 1/Div. 1
- · Short-circuit protection per output
- · High power on trunk and spurs

Function

The R-SP-E12 Segment Protector is a fieldbus coupler that connects instruments to the fieldbus segment.

Flameproof (Ex d) field devices are connected to the trunk line via one output each. Trunk and spurs are certified increased safety (Ex e).

Short-circuit protection ensures proper operation of the segment in case of unwanted faults at the spur. Work on devices always requires a hot work permit. The integrated fieldbus terminator features high-availability design and is selectable.

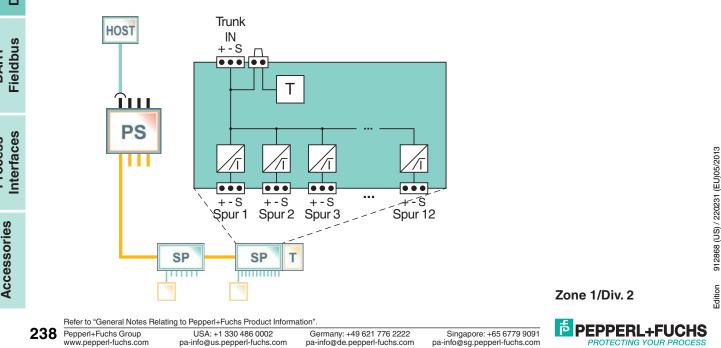
Connectors are fixed screw terminals. Any grounding and shielding concept is possible based on FieldConnex enclosure solutions.

Customizable housings host one or more Segment Protectors for different output counts.

Assembly



Connection



Technical data			
Fieldbus interface			_
Main cable (Trunk)			żι
Rated voltage	9 32 V DC		
Outputs			ä
Rated voltage	\leq 32 V	-	FOUNDATION Fieldbus
Rated current	≤ 40 mA	-	ž
Short-circuit current	max. 50 mA		i H
Self current consumption	≤ 9 mA		<u> </u>
Voltage drop main cable/outputs	\leq 1.3 V		\leq
Terminating impedance	100 Ω integrated	-	$\underline{\mathbf{P}}$
Terminating resistor	selectable 100 Ω integrated		
Surge protection	trunk, spurs overvoltage protected if voltage exceeds typ. 39 V, max. 41 V		à
Directive conformity			Z
Electromagnetic compatibility			5
Directive 2004/108/EC	EN 61326-1:2006	(0
Standard conformity			ш.
Electromagnetic compatibility	NE 21:2006		
Protection degree	IEC 60529	ç	: e
Shock resistance	EN 60068-2-27	Selection	Guideline
Vibration resistance	EN 60068-2-6	Ú O	de
Mechanical specifications		e	i i i
Connection type	screw fixing	S	0
Core cross-section	\leq 2.5 mm ² /AWG 12-24		
Housing material	Polycarbonate		S
Housing width	216 mm	ed	Ei C
Housing height	100 mm	DC DC	Solos:
Housing depth	50 mm	Advanced	Diagnostics
Protection degree	IP20	Þ	iaŭ
Mass	800 g		<u>`</u> О
Mounting	DIN rail mounting		
Data for application in connection with Exareas		<u> </u>	es
EC-Type Examination Certificate	PTB 04 ATEX 2100 X	e e e e e e e e e e e e e e e e e e e	b.
Group, category, type of protection, temperature class	🐼 II 2G EEx mb e IIC T4	Power	Supplies
Maximum values			
Rated voltage	\leq 35 V		
Prospective short-circuit current	100 A		U
Directive conformity		7	, Ĕ
Directive 94/9/EC	EN 50014:1997+A1+A2, EN 50019:2000, EN 60079-18:2004	Field	b D
International approvals		Ξ	it -
IECEx approval	IECEx PTB 05.0010X		Distribution
Approved for	Ex me II T4		

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DART Fieldbus

Process Interfaces

Features

- · Connection of Ex d certified devices
- · Glass fiber reinforced polyester, impact resistant, IP66
- · Configurable cable entries for trunk and spurs
- International approvals
- Installation in Zone 1

Function

This Segment Protector Junction Box is a device coupler with FieldConnex[®] Segment Protectors for Zone 1. Devices can be located in Zone 1. The number of outputs and size can be selected.

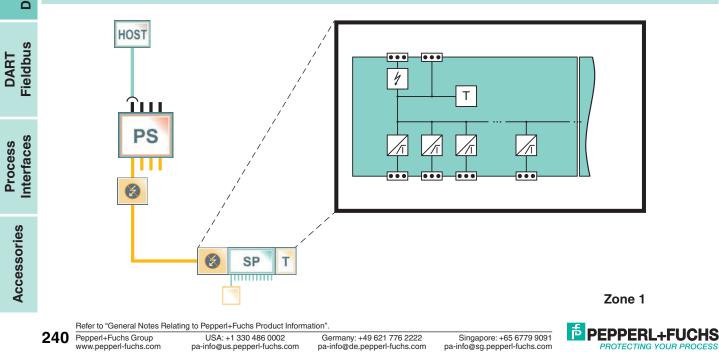
Glass fiber reinforced polyester provides corrosion resistance and is light weight. The surface resistance avoids electrostatic charge.

Trunk and spur entries can be selected individually from a range of cable glands and stopping plugs. A breather is included by default. Tag plate, grounding bar, surge protection for the trunk, and bus termination are available as options. This junction box is available pre-wired, with all accessories, for fast ordering, delivery, site installation, and commissioning.

Assembly



Connection



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

F

Process

Technical data		F
General specifications		
Installed components	Segment Protector R-SP-E12 For technical data on installed electronic component see data sheet.	H
Conformity		FOUNDATION Fieldbus
Protection degree	EN 60529	Ā
Impact resistance	EN 60079-0	P
Mechanical specifications		<u>e</u>
Enclosure cover	detachable cover with retaining screws	<u>ц</u>
Protection degree	IP66	Z
Cable entry	cable gland and stopping plug options	<u>o</u>
Material		E
Housing	polyester, impact resistant, glass fiber reinforced	A
Surface	black molded finish (RAL 9005)	¥
Surface resistance	< 10 ⁹ Ω	5
Water absorption	<6%	ō
Seal	silicon, one piece	L.
Grounding plate	brass	
Material thickness	grounding plate: 3 mm	c o
Dimensions	(W x H x D) 271 x 271 x 136 mm (1 x R2-SP-E12) 544 x 271 x 136 mm (2 x R2-SP-E12)	Selection Guideline
Mounting	thru-holes Ø6.5 mm	Se G
Grounding	grounding bolt M6, Stainless steel	_
Data for application in connection with Exareas		cs cs
EC-Type Examination Certificate	PTB 07 ATEX 1061 (assembled Junction Box), for additional certificates see www.pepperl-fuchs.com	sti
Group, category, type of protection	(Ex) II 2G Ex e mb IIC T4 (F.SPE.S**.A**.1.0.***.***.00) (Ex) II 2G Ex d e mb IIC T4 (F.SPE.S**.A**.1.0.***.***. (Ex) II 2G Ex d e mb IIC T4 (F.SPE.S**.A**.1.0.***.***.***)	Advanced Diagnostics
Directive conformity		
Directive 94/9/EC	EN 60079-0:2006, EN 600079-14:2003	
International approvals		رم ا
IECEx approval	IECEx PTB 07.0036, suitable Junction Box on request	Power Supplies
INMETRO	2008EC02CP015, suitable Junction Box on request	3 Q

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Distribution Field

DART Fieldbus

Process Interfaces

F.SPE.S**.A**.1.0.***.***

Assembly

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Power Supplies

Field

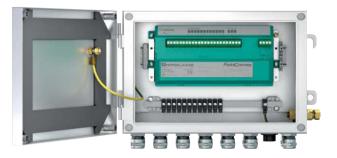
- · Connection of Ex d certified devices
- · Stainless steel, electropolished, IP66
- · Configurable cable entries for trunk and spurs
- International approvals
- Installation in Zone 1

Function

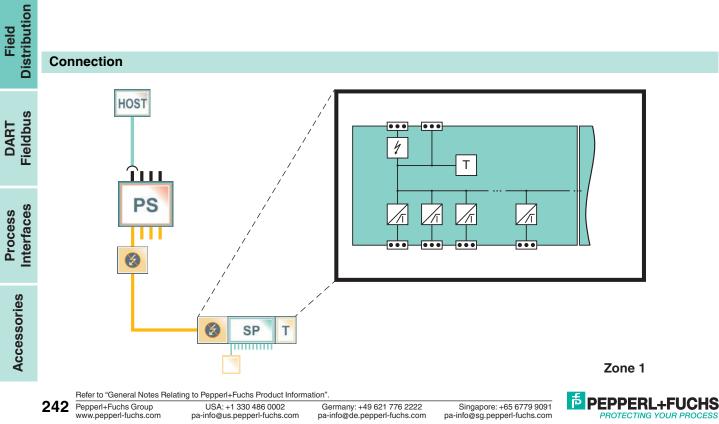
This Segment Protector Junction Box is a device coupler with FieldConnex[®] Segment Protectors for Zone 1. Devices can be located in Zone 1. The number of outputs and size can be selected.

Electropolished stainless steel 316L provides high corrosion and impact resistance at a very wide temperature range. Trunk and spur entries can be selected individually from a wide range of cable glands and stopping plugs. A breather is included by default. Tag plate, grounding bar, surge protection for the trunk are available as options.

This junction box is available pre-wired, with all accessories, for fast ordering, delivery, site installation, and commissioning.



Connection



Technical data		F
General specifications		
Installed components	Segment Protector R-SP-E12 For technical data on installed electronic component see data sheet.	Ŧ
Conformity		n S
Protection degree	EN 60529	q
Impact resistance	EN 60079-0	P
Mechanical specifications		<u>e</u>
Enclosure cover	detachable hinged door with captive retaining screws	Ш.,
Protection degree	IP66	Z
Cable entry	cable gland and stopping plug options	<u>o</u>
Material		E
Housing	Stainless steel 1.4404/AISI 316L	A
Surface	electropolished	부
Seal	Neoprene, fire-resistant, one piece	5
Material thickness	enclosure body, enclosure cover, mounting plate: 1.5 mm gland plate: 3.0 mm	FOUNDATION Fieldbus
Dimensions	(W x H x D) 300 x 200 x 120 mm (1 x R-SP-E12) 480 x 400 x 175 mm (2 x R-SP-E12)	Selection Guideline
Mounting	thru-holes Ø10 mm	eli cti
Grounding	grounding bolt M10, brass	id
Data for application in connection with E	x-	Se Gu
areas EC-Type Examination Certificate	PTB 07 ATEX 1061 (assembled Junction Box), for additional certificates see www.pepperl-fuchs.com	-
Group, category, type of protection	(ix) II 2G Ex e mb IIC T4 (F.SPE.S**.A**.1.0.***.****.**00) (ix) II 2G Ex d e mb IIC T4 (F.SPE.S**.A**.1.0.***.***.**T) (ix) II 2G Ex d e mb IIC T4 (F.SPE.S**.A**.1.0.***.***.**T)	Advanced Diagnostics
Directive conformity		va gn
Directive 94/9/EC	EN 60079-0:2006, EN 600079-14:2003	Adia
International approvals		
IECEx approval	IECEx PTB 07.0036, suitable Junction Box on request	
INMETRO	2008EC02CP015, suitable Junction Box on request	(0
		Power Supplies





Distribution Field

DART Fieldbus

RD0-FB-Ex4.*

Features

- 4 outputs Ex ia IIC
- FieldBarrier in Zone 1/Div. 2
- Instruments in Zone 0...1/Div. 1
- · Short-circuit protection per output
- Power, Com, and Error LEDs
- Supports FISCO and Entity
- · Integrated cable tie-downs
- · Supports all grounding methods

Function

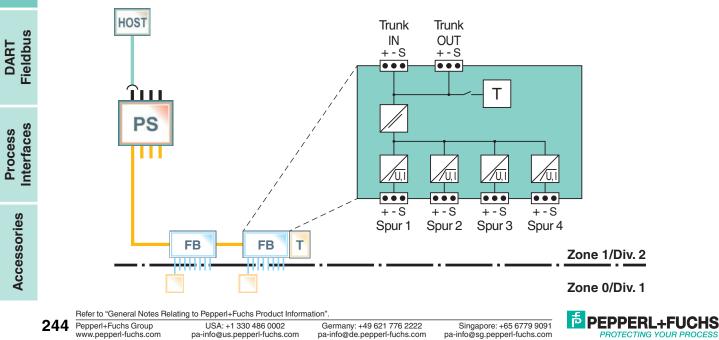
The FieldBarrier, a fieldbus coupler for DIN rail installation, connects four instruments with intrinsic safety (Ex ia/Ex ib) and short-circuit protection at each output. This ensures proper operation of the segment during faults or hot work at the spur.

High power on the trunk enables maximum cable lengths and device count in any hazardous area. The integrated fieldbus terminator features high-availability design and is selectable. Output terminals with a choice of fixed or spring clamp terminals connect one device each. LEDs simplify troubleshooting and help decrease repair time. Any grounding and shielding concept is possible based on FieldConnex enclosure solutions.



Assembly

Connection



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

F

Technical data		·
Fieldbus interface		- -
Main cable (Trunk) Connection	input (Trunk IN): terminals 3+, 4-, 5s	Ξ
Connection	output (Trunk IV): terminals 5-, 4-, 5s	S
Rated voltage	32 16 V DC	Fieldbus
Rated current	31 mA 26 mA (without load)	q
	77 mA 115 mA (at 20 mA load per input)	D
	120 mA 209 mA (at 40 mA load per input)	
	135 mA 241 mA (short-circuit on all outputs)	Z
Outputs		0
Rated voltage	10 13 V	FOUNDATION
Rated current	≤ 43 mA	A
Short-circuit current	50 mA	닞
Terminating impedance	100 Ω switchable	5
Electrical isolation		ō
Main wire/outputs	isolation is not affected by interference according to EN 50020, voltage peak value 375 V	Ľ.
Directive conformity		
Electromagnetic compatibility		c 9
Directive 2004/108/EC	EN 61326-1:2006	ii
Standard conformity		Selection
Electromagnetic compatibility	NE 21:2006	ele i
Protection degree	IEC/EN 60529	S C
Climatic conditions	DIN IEC 721	
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	c
Mechanical specifications	Record to make the sector in terms in the	ti d
Connection type	fixed terminals, plug-in terminals	Advanced
Core cross-section	up to 2.5 mm ²	Va
Housing material	Polycarbonate 100 mm	Ad
Housing width Housing height	217 mm	
	74 mm	
Housing depth Protection degree	IP20	
Protection degree Mass	1050 g	Power
Mounting	mounting on DIN rail in cabinet	Ň
Data for application in connection with Ex-		Power
areas		0
EC-Type Examination Certificate	PTB 02 ATEX 2086	1
Group, category, type of protection,	🐼 II 2(1G/D) G EEx me [ia] IIC T4	
temperature class		d tion
Main cable (Trunk)		
Maximum safe voltageU _m	253 V AC	Field
Outputs	in accordance to IEC 60079-27	Field
Voltage U _o	15.75 V	
Current I _o	248 mA	
Power Po	975 mW	
Declaration of conformity	PF 08 CERT 0579 Valid for F2 housing solution without plug connectors	DART
Group, category, type of protection,	⟨ II 3 D Ex tD A22 IP54 T135 °C (non-conductive dust)	DART
temperature class		
Directive conformity		L
Directive 94/9/EC	EN 50014:1997+A1+A2, EN 61241-0:2007, EN 61241-1:2007, EN 50020:1994, EN 50019:2000, EN	
	50028:1987	
International approvals		_ v 6
FM approval	CoC 3015728	Process
Control drawing	No. 116-0226	0 4
Approved for	Class I, Division 2, Groups A, B, C, D/Class I, Zone 2, AEx nA [ia] IIC T4	Process
CSA approval	CoC 1592754	
Control drawing		
Approved for	Class I, Division 2, Groups A, B, C, D/Class I, Zone 2, Ex nA [ia] IIC T4	S
IECEx approval	IECEx PTB 03.0003	Accessories
Approved for	Ex me [ia] IIC T4	So
Certificates and approvals		es
Marine approval	DNV A-10798	0

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Germany: +49 621 776 2222 pa-info@de.pepperl-fuchs.com

F2D0-FB-Ex4.*

FieldBarrier

912868 (US) / 220231 (EU)05/2013

Edition

Features F

- 4 outputs Ex ia IIC
- FieldBarrier in Zone 1/Div. 2
- Instruments in Zone 0...1/Div. 1
- · Short-circuit protection per output
- Power, Com, and Error LEDs
- Supports FISCO and Entity
- · Integrated cable tie-downs

Function

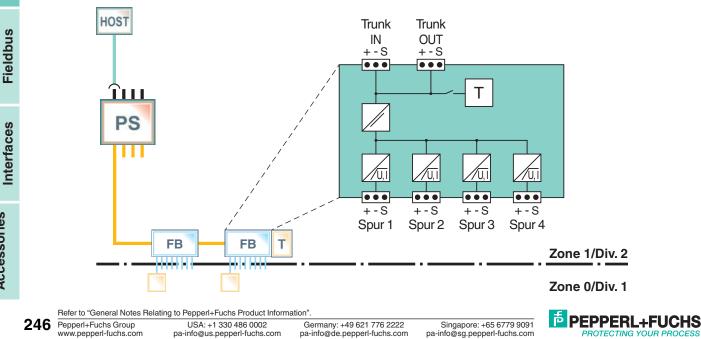
The FieldBarrier, a fieldbus coupler in an aluminum housing, connects four instruments with intrinsic safety (Ex ia/Ex ib) and short-circuit protection at each output. This ensures proper operation of the segment during faults or hot work at the spur. The housing (Type F2) is made of sturdy cast aluminum for installation in rough environments. High power on the trunk enables maximum cable lengths and device count in any hazardous area. The integrated fieldbus

terminator features high-availability design and is selectable. Output terminals with a choice of fixed or spring clamp terminals connect one device each. LEDs simplify troubleshooting and help decrease repair time. Hard and capacitive grounding and shielding concepts are selectable via jumper.



Assembly

Connection



FOUNDATION Fieldbus H1

Power

Process

Technical data		
Fieldbus interface		
Main cable (Trunk)		Ŧ
Conformity		
Protection degree	EN 60529	Fieldbus
Mechanical specifications		Ā
Enclosure cover	detachable cover with retaining screws	p
Protection degree	IP67	<u>e</u>
Cable entry	cable gland and stopping plug options	
Material		Z
Housing	ALSI12 (Cu) DIN1725 (Si 1.2 %), anodized	<u>o</u>
Surface	painted green	
Seal	silicon, one piece	
Housing width	140 mm (cable glands plastic/nickel plated brass/stainless steel),	¥
0	160 mm (cable glands nickel plated brass for armored cable),	FOUNDATION
	135 mm (plug connection M12 nickel plated brass/stainless steel, plug connection 7/8" stainless	Ō
	steel)	LL.
Housing height	258 mm	
Housing depth	84 mm	د ۵
Mass	3350 g	li jo
Mounting	thru-holes Ø6.5 mm	Selection Guideline
Grounding	M5 threading for grounding bolt	uid
Data for application in connection with Ex- areas		Ω Ω
EC-Type Examination Certificate	PTB 02 ATEX 2086	
Group, category, type of protection, temperature class	↔ II 2(1G/D) G EEx me [ia] IIC T4	ced
Declaration of conformity	PF 08 CERT 0579 Valid for F2 housing solution without plug connectors	an So
Group, category, type of protection, temperature class	↔ II 3 D Ex tD A22 IP54 T135 °C (non-conductive dust)	Advanced Diagnostics
Directive conformity		
Directive 94/9/EC	EN 50014:1997+A1+A2, EN 61241-0:2007, EN 61241-1:2007, EN 50020:1994,EN 50019:2000, EN 50028:1987	(0)
International approvals		ie sei
FM approval	CoC 3015728	» d
Control drawing	No. 116-0226	Power Supplies
Approved for	Class I, Division 2, Groups A, B, C, D/Class I, Zone 2, AEx nA [ia] IIC T4	S
CSA approval	CoC 1592754	
Control drawing	116-0266	
Approved for	Class I, Division 2, Groups A, B, C, D/Class I, Zone 2, Ex nA [ia] IIC T4	o
IECEx approval	IECEx PTB 03.0003	Field Distribution
Approved for	Ex me [ia] IIC T4	Field tribut
Certificates and approvals		Str T
Marine approval	DNV A-10798	Ö

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DART Fieldbus

Process Interfaces

Assembly

Features

- 4, 8 or 12 outputs Ex ia
- Impact resistance enclosure, IP66
- · Configurable cable entries for trunk and spurs
- Packaged certified solution
- Installation in Zone 1

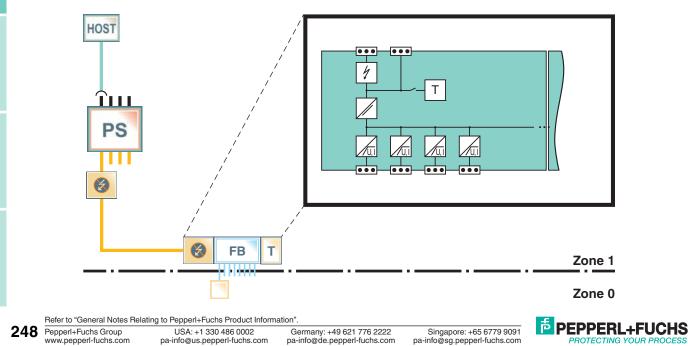
Function

This Junction Box is a device coupler with FieldConnex[®] FieldBarriers for Zone 1. Devices can be located in Zone 0. The number of outputs and size can be selected. Glass fiber reinforced polyester provides corrosion resistance and is light weight. The surface resistance avoids electrostatic charge.

Trunk and spur entries can be selected individually from a range of cable glands and stopping plugs. A breather is included by default. Tag plate, grounding bar, surge protection for the trunk, and bus termination are available as options. This junction box is available pre-wired, with all accessories, for fast ordering, delivery, site installation, and commissioning.



Connection



F

F.FB0.P**.A**.1.0.***.***

Technical data		
General specifications		1
Installed components	FieldBarrier RD0-FB-Ex4.COM For technical data on installed electronic component see data sheet.	H
Conformity		Fieldbus
Protection degree	EN 60529	ā
Impact resistance	EN 60079-0	
Mechanical specifications		<u>e</u>
Enclosure cover	detachable cover with retaining screws	
Protection degree	IP66	Z
Cable entry	cable gland and stopping plug options	<u>o</u>
Material		
Housing	polyester, impact resistant, glass fiber reinforced	ä
Surface	black molded finish (RAL 9005)	Ż
Surface resistance	< 10 ⁹ Ω	FOUNDATION
Water absorption	< 6 %	0
Seal	silicon, one piece	ш
Grounding plate	brass	
Material thickness	grounding plate: 3 mm	c e
Dimensions	(W x H x D) 271 x 271 x 136 mm (1 x RD0-FB-Ex4.COM) 544 x 271 x 136 mm (2 x RD0-FB-Ex4.COM) 544 x 544 x 136 mm (3 x RD0-FB-Ex4.COM)	Selection Guideline
Mounting	thru-holes Ø6.5 mm	1 •
Grounding	grounding bolt M6, Stainless steel	
Data for application in connection with Exareas		ced stics
EC-Type Examination Certificate	PTB 07 ATEX 1061 (assembled Junction Box), for additional certificates see www.pepperl-fuchs.com	un so
Group, category, type of protection	 (➡) II 2(1)G Ex e mb [ia] IIC T4 (F.FB0.***.A**.1.0.***.***.**00) (➡) II 2(1)G Ex d e mb [ia] IIC T4 (F.FB0.***.A**.1.0.***.***1) (➡) II 2(1)G Ex d e mb [ia] IIC T4 (F.FB0.***.A**.1.0.***.***.**3*) 	Advanced Diagnostics
Directive conformity		
Directive 94/9/EC	EN 60079-0:2006, EN 600079-14:2003	Ś
International approvals		Power Supplies
IECEx approval	IECEx PTB 07.0036, suitable Junction Box on request	Power upplie
INMETRO	2008EC02CP015, suitable Junction Box on request	Po
		_ 2

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Distribution Field

DART Fieldbus

Process Interfaces

Accessories

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Power Supplies

Field

Process

Accessories

- 4, 8 or 12 outputs Ex ia
- Electropolished enclosure, IP66
- · Configurable cable entries for trunk and spurs
- · Packaged certified solution
- Installation in Zone 1

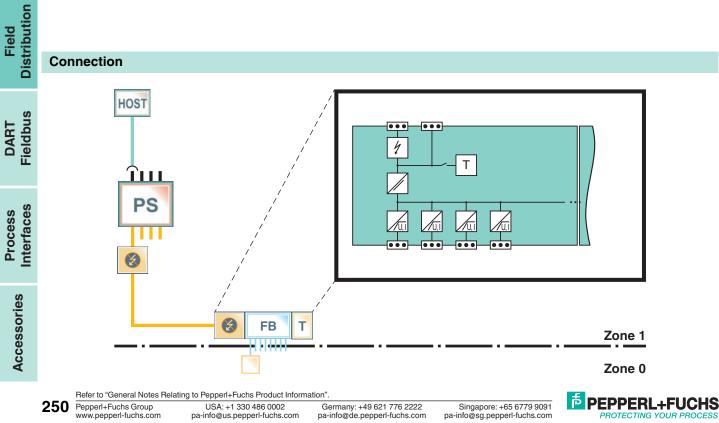
Function

This Junction Box is a device coupler with FieldConnex[®] FieldBarriers for Zone 1. Devices can be located in Zone 0. The number of outputs and size can be selected. Electropolished stainless steel 316L provides high corrosion and impact resistance at a very wide temperature range. Trunk and spur entries can be selected individually from a range of cable glands and stopping plugs. A breather is included by default. Tag plate, grounding bar, surge protection for the trunk, and bus termination are available as options. This junction box is available pre-wired, with all accessories, for fast ordering, delivery, site installation, and commissioning.

Assembly



Connection





F.FB0.S**.A**.1.0.***.***

Technical data		
General specifications		
Installed components	FieldBarrier RD0-FB-Ex4.COM For technical data on installed electronic component see data sheet.	H
Conformity		Fieldbus
Protection degree	EN 60529	q
Impact resistance	EN 60079-0	P
Mechanical specifications		<u>e</u>
Enclosure cover	detachable hinged door with captive retaining screws	
Protection degree	IP66	Z
Cable entry	cable gland and stopping plug options	<u>o</u>
Material		E
Housing	Stainless steel 1.4404/AISI 316L	
Surface	electropolished	Ż
Seal	Neoprene, fire-resistant, one piece	5
Material thickness	enclosure body, enclosure cover, mounting plate: 1.5 mm gland plate: 3.0 mm	FOUNDATION
Dimensions	(W x H x D) 300 x 200 x 120 mm (1 x RD0-FB-Ex4.COM) 380 x 380 x 175 mm (2 x RD0-FB-Ex4.COM) 480 x 400 x 175 mm (3 x RD0-FB-Ex4.COM)	Selection Guideline
Mounting	thru-holes Ø10 mm	ide
Grounding	grounding bolt M10, brass	Se
Data for application in connection with Exareas		
EC-Type Examination Certificate	PTB 07 ATEX 1061 (assembled Junction Box), for additional certificates see www.pepperl-fuchs.com	T S
Group, category, type of protection	 II 2(1)G Ex e mb [ia] IIC T4 (F.FB0.***.A**.1.0.***.***.00) II 2(1)G Ex d e mb [ia] IIC T4 (F.FB0.***.A**.1.0.***.***1) II 2(1)G Ex d e mb [ia] IIC T4 (F.FB0.***.A**.1.0.***.***.**3*) 	Advanced Diagnostics
Directive conformity		Ad
Directive 94/9/EC	EN 60079-0:2006, EN 600079-14:2003	
International approvals		
IECEx approval	IECEx PTB 07.0036, suitable Junction Box on request	(2)
INMETRO	2008EC02CP015, suitable Junction Box on request	ver olies

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PEPPERL+FUCHS 251

F2-JB-#.*

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Power Supplies

Field

Process

Accessories

- 4 ... 8 outputs Ex ia, ib
- Installation in Zone 0/Div. 1
- Instruments in Zone 0...1/Div. 1
- · Trunk and spurs intrinsically safe
- Supports FISCO and Entity

Function

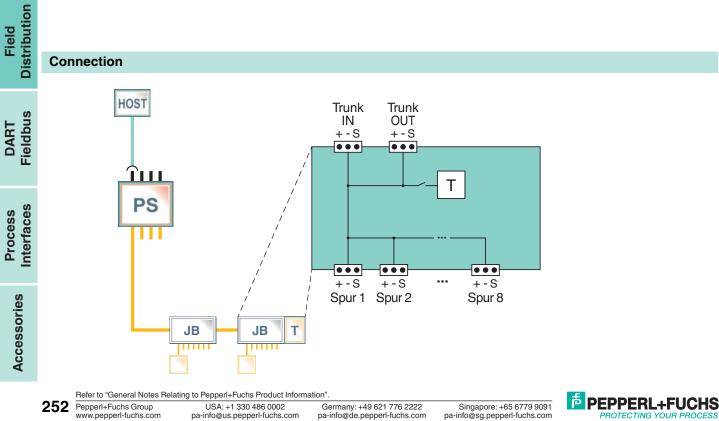
The Fieldbus Junction Box is a passive device coupler that connects instruments to intrinsically safe segments. The housing (Type F2) is made of sturdy aluminum for installation in rough environments Zone 1/Div. 2.

As an associated apparatus, the junction box is permitted for trunk and spur connections that are rated intrinsically safe (Ex ia, Ex ib) for instruments located in Zone 0 ... 1/Div. 2. A choice of fixed screw terminals or plug-in spring clamp connectors is available. Hard and capacitive grounding concepts are selectable via jumper.

Assembly



Connection



Power Supplies

Distribution Field

DART Fieldbus

Process Interfaces

Accessories

Fieldbus interface		
Main cable (Trunk)		
Connection	input (Trunk IN): terminals 1+, 2-, 3s output (Trunk OUT): terminals 4+, 5-, 6s	FOUNDATION Fieldbus H1
Rated voltage	≤ 35 V DC	q
Rated current	3 A DC at 70 °C, reduction 0.1A/K	d
Outputs		<u>e</u>
Rated voltage	see main cable	
Rated current	see main cable	Z
Directive conformity		0
Electromagnetic compatibility		E
Directive 2004/108/EC	EN 61326-1:2006	AC AC
Standard conformity		
Electromagnetic compatibility	NAMUR NE 21	5
Protection degree	IEC/EN 60529	0
Climatic conditions	DIN IEC 721	LL
Mechanical specifications		
Connection type	Terminals	c e
Core cross-section	up to 2.5 mm ²	li tio
Housing	258 mm x 114 mm x 84 mm (without cable glands)	e c.
Protection degree	IP67	Selection Guideline
Mass	1800 g	S C
Mounting	panel mounting	
		Advanced Diagnostics

Refer to "General Notes Relatin	ig to Pepperl+Fuchs Prodi
Pepperl+Fuchs Group www.pepperl-fuchs.com	USA: +1 330 486 00 pa-info@us.pepperl-fuc

duct Information" 6 0002 fuchs.com

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F2-JB-I#.*

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Power Supplies

Field

- 4 ... 8 outputs Ex ia, ib
- Installation in Zone 0/Div. 1
- Instruments in Zone 0...1/Div. 1
- · Trunk and spurs intrinsically safe
- Supports FISCO and Entity

Function

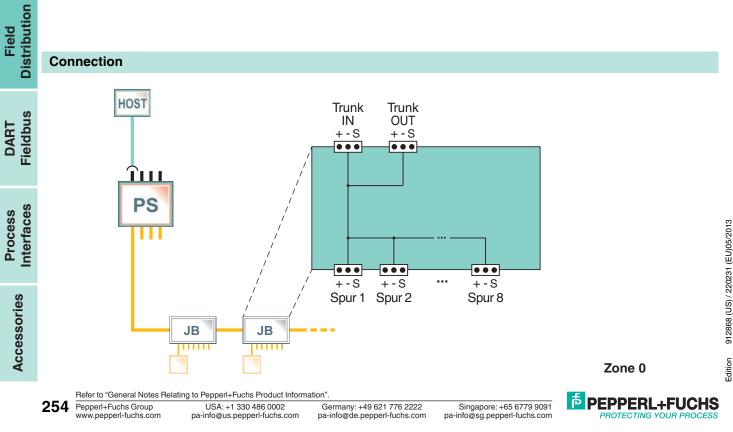
The Fieldbus Junction Box is a passive device coupler that connects instruments to intrinsically safe segments. The housing (Type F2) is made of sturdy aluminum for installation in rough environments Zone 1/Div. 2.

As an associated apparatus, the junction box is permitted for trunk and spur connections that are rated intrinsically safe (Ex ia, Ex ib) for instruments located in Zone 0 ... 1/Div. 2. A choice of fixed screw terminals or plug-in spring clamp connectors is available. Hard and capacitive grounding concepts are selectable via jumper.

Assembly



Connection



Fieldbus interface		
Main cable (Trunk)		Ŧ
Connection	input (Trunk IN): terminals 1+, 2-, 3s output (Trunk OUT): terminals 4+, 5-, 6s	FOUNDATION Fieldbus F
Rated voltage	≤ 35 V DC	p
Rated current	3 A DC	<u>P</u>
Outputs		<u>o</u>
Rated voltage	see main cable	
Rated current	see main cable	Z
Directive conformity		0
Electromagnetic compatibility		E
Directive 2004/108/EC	EN 61326-1:2006	d C
Standard conformity		Ż
Electromagnetic compatibility	NAMUR NE 21, EN 61326	5
Protection degree	IEC/EN 60529	Ō
Climatic conditions	DIN IEC 721	
Mechanical specifications		
Connection type		c e
Main cable (Trunk)	Terminals	Selection Guideline
Core cross-section	up to 2.5 mm ²	e c
Cable diameter		iu el
Main cable (Trunk)	5 10 mm	S C
Housing	258 mm x 114 mm x 84 mm (without cable glands)	
Protection degree	IP67	0
Mass	1800 g	tic
Mounting	panel mounting	nc
Data for application in connection wire areas	th Ex-	Advanced Diagnostics
Main cable (Trunk)	only for connection to intrinsically safe fieldbus circuits	Di A
Maximum values		
Voltage U _i	\leq 35 V	
Current I _i	\leq 3 A	Power Supplies
Directive conformity	standards	Power
Directive 94/9/EC	EN 50014, EN 50020, EN 50284	o q

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Distribution Field

DART Fieldbus

Process Interfaces

Accessories

KT-MB-FB-D-4R

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

- · 4 segments, load-sharing redundancy
- Output: 22 ... 24 V/360 mA, Ex ib IIC
- · DART for intrinsically safe, high-power segments
- Supports all PLC and DCS hosts
- · Individual modules per segment
- Optimized for size and quality, low heat dissipation
- · Passive impedance for high reliability
- Installation in Zone 2

Function

The FieldConnex[®] DART High-density Power Hub is a modular fieldbus power supply for four segments. It supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring. The kit comprises one motherboard and eight power supply modules (2 modules per

seament). DART (Dynamic Arc Recognition and Termination) enables the intrinsically safe High-Power Trunk Concept for a completely intrinsically safe segment certified acc. to IEC 60079-11.

Connections and fieldbus power are provided for all DCS and PLC host systems. Sockets for all modules enable simple installation and replacement without tools. Power redundancy is load-sharing with either module supplying half of load current. Three-port isolation between segment, bulk power and host enhances system reliability.

Availability and a long service life is achieved through: only one passive impedance filter per segment, optimized design for low power dissipation, high-availability fieldbus termination and plug-in connectors with retaining screws.



Assembly



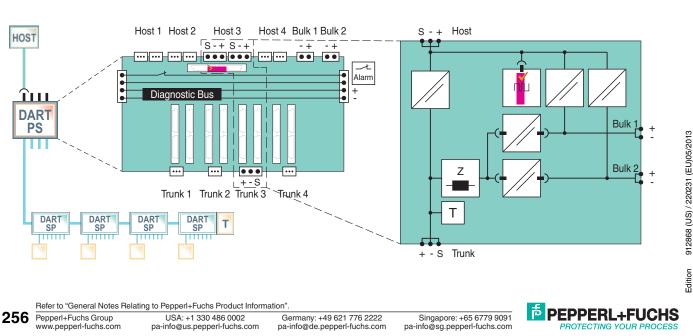


Supplies Power

Distribution Field

Connection





KT-MB-FB-D-4R

Technical data		F
Supply		
Connection	redundant	Ŧ
Rated voltage	19.2 35 V SELV/PELV	
Rated current	2730 1540 mA	Fieldbus
Fieldbus interface		<u>a</u>
Number of segments		<u>p</u>
Redundant	4	<u>e</u>
Rated voltage	20.8 22.3 V	ш.
Rated current	360 10 mA	Z
Short-circuit current	413 mA	2
Host-side	redundant general purpose host	
Host-rated voltage	10.1 11 V	FOUNDATION
Host-rated current	40 mA	Ż
Host short-circuit current	50 mA	5
Terminating resistor	100 Ω , integrated	0
Indicators/operating means		ш
Fault signal	VFC alarm output via connectors	
Directive conformity		сø
Electromagnetic compatibility		Selection Guideline
Directive 2004/108/EC	EN 61326-1:2006	de c
Standard conformity		el iui
Electromagnetic compatibility	NE 21:2006	ი ი
Protection degree	IEC 60529	_
Shock resistance	EN 60068-2-27	S
Vibration resistance	EN 60068-2-6	fic
Ambient conditions		nc
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	va gne
Mechanical specifications		Advanced Diagnostics
Connection type	plug with screw flange	
Core cross-section	2.5 mm ²	
Data for application in connection with Ex-		(0
areas		ie e
EC-Type Examination Certificate	PTB 10 ATEX 2034, PTB 10 ATEX 2020 X, PTB 11 ATEX 2010 X	» d
Group, category, type of protection,	🐼 II 2 G Ex ib IIC T4, 🐼 II (2) D [Ex ib] IIIC, 🐼 II 3(2) G Ex nAc [ib] IIC T4	Power Supplies
temperature class		0)
Supply		
Maximum safe voltage U _m	35 V	_
Host interface		Id ution
Maximum safe voltage U _m	35 V	but
Alarm output		Fiel Distribu
Maximum safe voltage U _m	35 V	ist
Directive conformity		D
Directive 94/9/EC	EN 60079-0:2009, EN 60079-11:2007, EN 60079-15:2006, EN 60079-25:2010, EN 61241-11:2006	
International approvals		
IECEx approval	pending	E S
Approved for	[Ex ib] IIC [Ex ib] IIIC Ex nAc II T4	DART Fieldbus
Certificates and approvals		ίĽ
	ponding	
Marine approval	pending	

Power module

				ocess
		HD2-FBPS-IBD-1.24.360	7	Proc
Power Output		·		
Voltage (V)		20.8 22.3		
Current (mA)		360		
Device in T	ype of Protection	· · ·	Required Installation Components	<u> </u>
Zone 1 In	ntrinsically safe Ex ib		Segment Protector R3-SP-IBD12	

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KT-MB-FB-D-4R.GEN

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Supplies Power

Distribution

Field

DART

Process

- · 4 segments, load-sharing redundancy
- Output: 22 ... 24 V/360 mA, Ex ib IIC
- · DART for intrinsically safe, high-power segments
- Redundant connection to PROFIBUS DP
- · Customizable for any host system
- Individual modules per segment
- · Optimized for size and quality, low heat dissipation
- · Passive impedance for high reliability
- Installation in Zone 2

Function

The FieldConnex[®] DART High-density Power Hub is a modular fieldbus power supply for four segments. It supports optional Advanced Diagnostics for fast fieldbus

commissioning and online monitoring. The kit comprises one motherboard and eight power supply modules (2 modules per segment).

DART (Dynamic Arc Recognition and Termination) enables the intrinsically safe High-Power Trunk Concept for a completely intrinsically safe segment certified acc. to IEC 60079-11.

A Sub-D 25-pin connector with fieldbus power hooks up to the Segment Coupler for direct PROFIBUS DP connection. Through designed custom cables this power hub is easily adaptable to any FF-control system. Sockets for all modules enable simple installation and replacement without tools. Power redundancy is load-sharing with either module supplying half of load current. Three-port isolation between segment, bulk power and host enhances system reliability. Availability and a long service life is achieved through: only one passive impedance filter per segment, optimized design for low power dissipation, high-availability fieldbus termination and plug-in connectors with retaining screws.

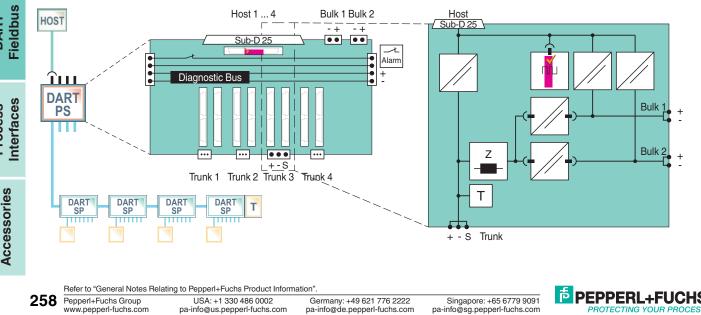


Assembly





Connection





912868 (US) / 220231 (EU)05/2013

Edition

KT-MB-FB-D-4R.GEN

Technical data		
Supply		
Connection	redundant	Ŧ
Rated voltage	19.2 35 V SELV/PELV	
Rated current	3230 1820 mA	ň
Fieldbus interface		FOUNDATION Fieldbus
Number of segments		<u> </u>
Redundant	4	i.
Rated voltage	20.8 22.3 V	<u> </u>
Rated current	360 10 mA	Z
Short-circuit current	413 mA	2
Host-side	25-pin Sub-D socket	
Host-rated voltage	10.1 11 V	6
Host-rated current	40 mA	Z
Host short-circuit current	50 mA	
Terminating resistor	100 Ω , integrated	Ö
Indicators/operating means		- LL
Fault signal	VFC alarm output via connectors	
Directive conformity		n e
Electromagnetic compatibility		ii ii
Directive 2004/108/EC	EN 61326-1:2006	Selection Guideline
Standard conformity		3ul
Electromagnetic compatibility	NE 21:2006	0,0
Protection degree	IEC 60529	
Shock resistance	EN 60068-2-27	v
Vibration resistance	EN 60068-2-6	tic
Ambient conditions		os
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	Advanced Diagnostics
Mechanical specifications		Ad
Connection type	plug with screw flange	
Core cross-section	2.5 mm ²	
Data for application in connection with Ex- areas		es
EC-Type Examination Certificate	PTB 10 ATEX 2034, PTB 10 ATEX 2020 X, PTB 11 ATEX 2010 X	pli
Group, category, type of protection, temperature class	🐼 II 2 G Ex ib IIC T4, 🐼 II (2) D [Ex ib] IIIC, 🐼 II 3(2) G Ex nAc [ib] IIC T4	Power Supplies
Supply		
Maximum safe voltage U _m	35 V	_
Host interface		Field Distribution
Maximum safe voltage U _m	35 V	rt g
Alarm output		Field tribut
Maximum safe voltage U _m	35 V	Sti
Directive conformity		ō
Directive 94/9/EC	EN 60079-0:2009, EN 60079-11:2007, EN 60079-15:2006, EN 60079-25:2010, EN 61241-11:2006	_
International approvals		
IECEx approval	pending	L S
Approved for	[Ex ib] IIC	DART Fieldbus
	[Ex ib] IIIC Ex pAo II T4	DA
Cartificates and approvals	Ex nAc II T4	ΞĒ
Certificates and approvals	nonding	
Marine approval	pending	

Power module

Power mod	lule			ocess erfaces
		HD2-FBPS-IBD-1.24.360	7	Proc
Power Output				
Voltage (V)		20.8 22.3		
Current (mA)		360		ies
Device in	Type of Protection	·	Required Installation Components	<u> </u>
Zone 1	Intrinsically safe Ex ib		Segment Protector R3-SP-IBD12	so
-	•	÷	·	ccesse
				Acc
				4

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KT-MB-FB-D-4R.YO

Features

- 4 segments, load-sharing redundancy
- Output: 22 ... 24 V/360 mA, Ex ib IIC
- DART for intrinsically safe, high-power segments
- Customized for Yokogawa, ALF 111
- Individual modules per segment
- Optimized for size and quality, low heat dissipation
- Passive impedance for high reliability
- Installation in Zone 2

Function

The FieldConnex[®] DART High-density Power Hub is a modular fieldbus power supply for four segments. It supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring. The kit comprises one motherboard and eight power supply modules (2 modules per

segment). DART (Dynamic Arc Recognition and Termination) enables the intrinsically safe High-Power Trunk Concept for a

completely intrinsically safe segment certified acc. to IEC 60079-11.

Connectors for the AKB 336 system cable allow for a direct hook-up. Sockets for all modules enable simple installation and replacement without tools. Power redundancy is loadsharing with either module supplying half of load current. Three-port isolation between segment, bulk power and host enhances system reliability.

Availability and a long service life is achieved through: only one passive impedance filter per segment, optimized design for low power dissipation, high-availability fieldbus termination and plug-in connectors with retaining screws.

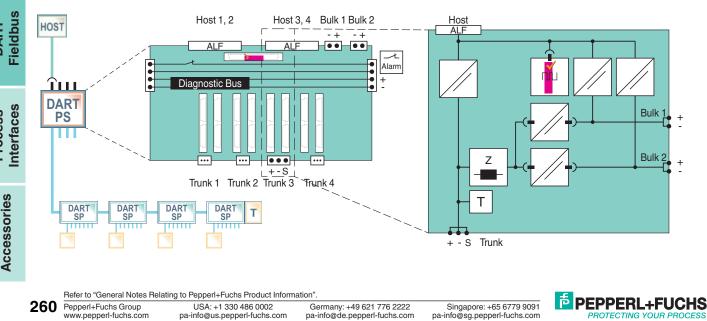


Assembly





Distribution Connection



F

Field

DART

Process

KT-MB-FB-D-4R.YO

Technical data		
Supply		
Connection	redundant	Ξ
Rated voltage	19.2 35 V SELV/PELV	
Rated current	16 A 2730 1540 mA	ŝ
Fieldbus interface		FOUNDATION Fieldbus
Number of segments		P
Redundant	4	<u>e</u>
Rated voltage	20.8 22.3 V	L LL
Rated current	360 10 mA	Z
Short-circuit current	413 mA	2
Host-side	redundant Yokogawa ALF111 with AKB336 interface cables	
Host-rated voltage	10.1 11 V	
Host-rated current	40 mA	Ż
Host short-circuit current	50 mA	5
Terminating resistor	100 Ω , integrated	0
Indicators/operating means		ш
Fault signal	VFC alarm output via connectors	1
Directive conformity		сø
Electromagnetic compatibility		lin tio
Directive 2004/108/EC	EN 61326-1:2006	deci
Standard conformity		Selection Guideline
Electromagnetic compatibility	NE 21:2006	აც
Protection degree	IEC 60529	1
Shock resistance	EN 60068-2-27	S
Vibration resistance	EN 60068-2-6	Advanced Diagnostics
Ambient conditions		
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	yai
Mechanical specifications		Ad iac
Connection type	plug with screw flange	
Core cross-section	2.5 mm ²	
Data for application in connection with Ex- areas		r es
EC-Type Examination Certificate	PTB 10 ATEX 2034, PTB 10 ATEX 2020 X, PTB 11 ATEX 2010 X	oli Pli
Group, category, type of protection, temperature class	(E) II 2 G Ex ib IIC T4, (E) II (2) D [Ex ib] IIIC, (E) II 3(2) G Ex nAc [ib] IIC T4	Power Supplies
Supply		1
Maximum safe voltage U _m	35 V	1
Host interface		E
Maximum safe voltage U _m	35 V	ld ution
Alarm output		eld but
Maximum safe voltage U _m	35 V	Fiel Distrib
Directive conformity		Ois
Directive 94/9/EC	EN 60079-0:2009, EN 60079-11:2007, EN 60079-15:2006, EN 60079-25:2010, EN 61241-11:2006	
International approvals		
IECEx approval	pending	S
Approved for	[Ex ib] IIC	bu ∛T
	[Ex ib] IIIC Ex nAc II T4	DART Fieldbus
Certificates and approvals		ш
Marine approval	pending	
manno approva	pointig	1

Power module

				es Se
		HD2-FBPS-IBD-1.24.360	1	Process
Power Output				
Voltage (V)		20.8 22.3		
Current (mA)		360		
Device in Type	e of Protection		Required Installation Components	
Zone 1 Intrir	sically safe Ex ib		Segment Protector R3-SP-IBD12	

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R3-SP-IBD12

Assembly

Features

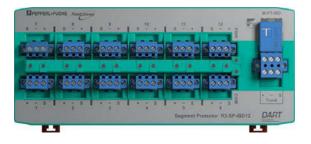
- 12 outputs Ex ib IIC
- Segment Protector in Zone 1
- Instruments in Zone 1
- · Short-circuit protection per output
- · Power, Com, and Error LEDs
- T-connector for easy installation and maintenance
- · Test points for easy troubleshooting

Function

The DART Segment Protector, a fieldbus coupler for DIN-rail installation, provides outputs for up to 12 intrinsically safe instruments (Ex ib IIC) to an intrinsically safe High-Power Trunk. It is equipped with short-circuit protection. This ensures proper operation of the segment during faults or hot work at the spur.

The T-connector at the trunk allows for exchange of a Segment Protector without effect on the remaining segment. The high-availability terminator is mounted at the 'T'. As it is removed for network extensions proper termination is always ensured.

All plugs feature retaining screws. LEDs and test access points simplfy troubleshooting and help to decrease repair time. Any grounding and shielding concept is possible based on FieldConnex enclosure solutions.





Connection HOST s-+ • • Fieldbus Т Trunk, DART Ex ib IIC •••• Spur Spur / 1 / 1 DART Interfaces PS s-+ + - S ••••• Spur Spur / 1 I Spur 1 ... n Ex ib IIC Accessories DART DART DART DART Т SP SP SP SP Zone 1 Refer to "General Notes Relating to Pepperl+Fuchs Product Information PEPPERL+FUCHS Pepperl+Fuchs Group www.pepperl-fuchs.com USA: +1 330 486 0002 pa-info@us.pepperl-fuchs.com Germany: +49 621 776 2222 pa-info@de.pepperl-fuchs.com Singapore: +65 6779 9091 pa-info@sg.pepperl-fuchs.com

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Technical data Fieldbus interface		
		- <u>-</u>
Main cable (Trunk)	14.5 24 V DC	Ξ
Rated voltage		<u>0</u>
Rated current	≤ 4.5 A	DC DC
Outputs		FOUNDATION Fieldbus
Number of outputs	12	0
Number of devices per output	1	- iĨ
Rated voltage	\geq 10.5 V, \leq 24 V	_
Rated current	≤ 34 mA	6
Short-circuit current	max. 47 mA	Ĕ
Self current consumption	typical 20 mA, \leq 25 mA	
Voltage drop main cable/outputs	$\leq 4 V$	
Voltage drop trunk In/Out	0 V	Z
Terminating resistor	external type M-FT-IBD 100 Ω +/- 10 %	
Directive conformity		0
Electromagnetic compatibility		ш.
Directive 2004/108/EC	EN 61326-1:2006	
Standard conformity		с 9
Electromagnetic compatibility	NE 21:2006	ii ii
Protection degree	IEC 60529	Selection Guideline
Shock resistance	EN 60068-2-27	ui de la compañía de la compañía de la compañía de la compañía de la compañía de la compañía de la compañía de
Vibration resistance	EN 60068-2-6	ა ე
Ambient conditions		
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	(0
Mechanical specifications		Advanced Diagnostics
Connection type	removable screw terminals with retaining screws	Advanced
Core cross-section	$\leq 2.5 \text{ mm}^2/\text{AWG}$ 12-24	ar nc
Data for application in connection with Ex		dv ag
areas		Di A
EC-Type Examination Certificate	PTB 10 ATEX 2034, PTB 10 ATEX 2018X	
Group, category, type of protection,	(εx) II 2G Ex ib IIC T4,	
temperature class	(iii) II (2) Ex ib) IIIC	ري د
Main cable (Trunk)	for connection to the DART Fieldbus System acc. to System Certificate PTB 10 ATEX 2034	Power
Outputs	Entity	Power Supplies
Voltage U _o	23 V	P P
	47 mA	
Power P _o	1.08 W	
-		ç
Inductance L _o	gas group IIC 170 μH gas group IIB 1 mH	d ution
Capacitance C _o	gas group IIC 60 nF	
Capacitance C ₀	gas group IIB 470 nF	Fiel
Directive conformity		Fiel Distribu
Directive 94/9/EC	EN 60079-0:2009, EN 60079-11:2007, EN 61241-11:2006	
International approvals	LIV 00070 0.2000, LIV 00070-11.2007, LIV 01241-11.2000	
IECEx approval	ponding	
	pending	L SL
Approved for	Ex ib IIC T4 [Ex ib] IIIC	La d
Certificates and approvals		DART Fieldbus
	nonding	ΞĒ
Marine approval	pending	

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Process Interfaces

Accessories

RD0-TI-Ex8.FF.*

Assembly

Features

_

- · For eight temperature or analog sensors
- Installation in Zone 1...2/Div. 2, intrinsically safe
- Sensors in Zone 0/Div. 1
- Connection to fieldbus acc. to FISCO or Entity
- DCS integration via device description and function blocks
- Concentrator method for simplified configuration
- Monitors sensor condition
- For T/C, RTD 2-, 3-, 4-wire, voltage and resistance
- Cold junction compensation
- Removable terminals

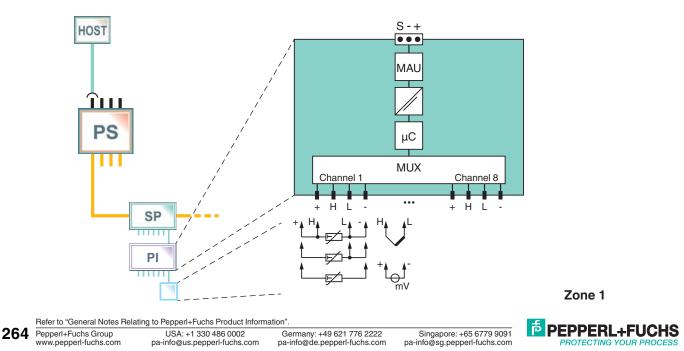
Function

The Temperature Multi-Input (TM-I) for DIN rail installation connects up to 8 analog inputs to the DCS via fieldbus. It is installed in a typically pre-wired field enclosure close to the sensors in the hazardous area. The TM-I is certified intrinsically safe and as associated apparatus: inputs are intrinsically safe even when the fieldbus connection is not. Analog inputs can be resistance temperature sensors with 2, 3, and 4 wires, measuring sensors, thermocouples, or millivolt signals.

The TM-I communicates all data, configuration, and alarms via one fieldbus address and function blocks (8xAI or 1xMAI) to the DCS. For simplified configuration it supports the concentrator method: inputs can be configured all at once or individually. Fieldbus powers the sensors and the temperature interface itself, additional power or wiring is not required. Cold junction compensation for thermocouples is integrated. The TM-I detects and reports lead breakage and short circuit conditions.



Connection



Fieldbus interface		
Physical layer profile	profile type 511 (FISCO), profile type 111 (Entity)	÷
ITK version	4.51	
Implementation	resource block 1x RS	Fieldbus
	function block 8x AI, 1x MAI	Ā
	transducer block 8x sensor TB, 1x concentrator TB	P
Execution time	AI, MAI 40 ms max.	<u>e</u> .
Macro cycle	typical for one device 8xAl or 1xMAl \leq 500 ms	L LL
Firmware update	via separate plug connection	Z
FDE (Fault Disconnect Equipment)	6.7 mA	<u>o</u>
Rated voltage	9 32 V	FOUNDATION
Rated current	≤ 23 mA	
Input		 Ż
Number	8	5
Grounding	grounding of thermoelements possible	 0
Error detection	lead breakage, wiring error, hardware device error	<u>ц</u>
Common mode voltage	Input to Input 600 V _{peak}	
Transfer characteristics		
Deviation		Selection Guideline
Cold junction compensation	± 0.5 °C (32.9 °F)	
Linearization	T/C input 0.1 °C RTD input 0.03 °C	 e i
Internal measurement cycle	for all sensor types ≤ 1 s	S S S S S S S S S S S S S S S S S S S
Directive conformity		
Electromagnetic compatibility		
Directive 2004/108/EC	EN 61326-1:2006	 Advanced
Standard conformity		
Electrical isolation	EN 60079-11	Val
Electromagnetic compatibility	NE 21:2006	Advanced
Protection degree	IEC 60529	
Shock resistance	EN 60068-2-27	
Vibration resistance	EN 60068-2-6	
Ambient conditions		rei
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	Power
Mechanical specifications		Po
Connection type	plug-in terminals	C.
Core cross-section		
Bus	up to 2.5 mm ²	_
Inputs	up to 2.5 mm ²	d ution
Housing material	Polycarbonate	
Protection degree	IP20	Field
Mass	360 g	t t
Mounting	mounting on DIN rail in cabinet	
Data for application in connection with Ex-		
areas		
EC-Type Examination Certificate Group, category, type of protection,	PTB 03 ATEX 2237	DART
temperature class		DART
Bus	FISCO see EC-Type Examination Certificate	
Statement of conformity	PTB 03 ATEX 2238 X	Ц
Group, category, type of protection, temperature class	(x) II 3G Ex nA II T4, (x) II 3G Ex nL IIC T4, (x) II (3)G [Ex nL] IIC	
Electrical isolation		S
Bus	see Statement of Conformity	es
Input	see EC-Type Examination Certificate	Process
Directive conformity		Pre-
Directive 94/9/EC	EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2005, EN 60079-27:2006	-
		ories
		Accessories

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F2D0-TI-Ex8.FF.*

Assembly

Features

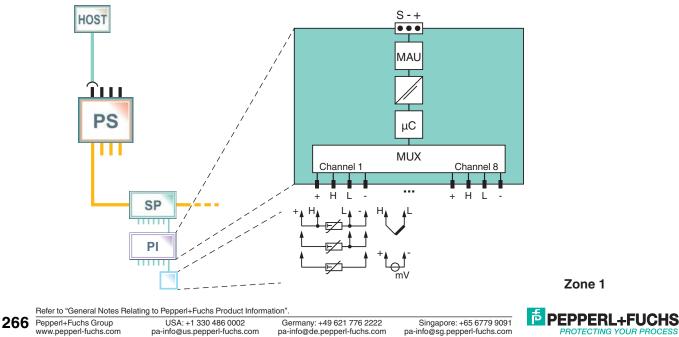
- · For eight temperature or analog sensors
- Installation in Zone 1...2/Div. 2, intrinsically safe
- Sensors in Zone 0/Div. 1
- · Connection to fieldbus acc. to FISCO or Entity
- · DCS integration via device description and function blocks
- · Concentrator method for simplified configuration
- · Monitors sensor condition
- For T/C, RTD 2-, 3-, 4-wire, voltage and resistance
- Cold junction compensation
- Removable terminals

Function

The Temperature Multi-Input (TM-I) with aluminum housing connects up to 8 analog inputs to the DCS via fieldbus. Cable gland material is selectable. It is installed close to the sensors in the hazardous area. The TM-I is certified intrinsically safe and as associated apparatus: inputs are intrinsically safe even when the fieldbus connection is not. Analog inputs can be resistance temperature sensors with 2, 3, and 4 wires, measuring sensors, thermocouples, or millivolt signals. The TM-I communicates all data, configuration, and alarms via one fieldbus address and function blocks (8xAl or 1xMAI) to the DCS. For simplified configuration it supports the concentrator method: inputs can be configured all at once or individually. Fieldbus powers the sensors and the temperature interface itself, additional power or wiring is not required. Cold junction compensation for thermocouples is integrated. The TM-I detects and reports lead breakage and short circuit conditions.



Connection



Selection Guideline

Fieldbus DART

Interfaces

Process

Accessories

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Technical data		-
Conformity		
Protection degree	EN 60529	- E
Impact resistance	EN 60079-0	
Ambient conditions		ŝ
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	<u>_</u>
Mechanical specifications		Fieldbus
Connection type	plug-in terminals	<u>e</u>
Core cross-section		
Bus	up to 2.5 mm ²	Z
Inputs	up to 2.5 mm ²	<u></u>
Cable diameter	sensors: 5 10 mm (cable glands plastic/nickel plasted brass), 5 9 mm (cable glands stainless steel) fieldbus: 5 13 mm (cable glands plastic), 7 12 mm (cable glands nickel plated brass/stainless steel)	FOUNDATION
Cable gland	sensor inputs M16, fieldbus M20	
Housing material	ALSI12 (Cu) DIN1725 (Si 1.2 %), anodized	
Protection degree		
Mass	1800 g	
Mounting	panel mounting	on De
Data for application in connection with Ex- areas		Selection Guideline
EC-Type Examination Certificate	PTB 03 ATEX 2237	G G C
Group, category, type of protection, temperature class	(☑) II 2(1G/D) G Ex ia IIC T4, ☑ II (1)GD [Ex ia] IIC	
Bus	FISCO see EC-Type Examination Certificate	C d
Statement of conformity	PTB 03 ATEX 2238 X	sti
Group, category, type of protection, temperature class	ⓒ II 3G Ex nA II T4, ⓒ II 3G Ex nL IIC T4, ⓒ II (3)G [Ex nL] IIC	Advanced Diagnostics
Electrical isolation		Ad
Bus	see Statement of Conformity	
Input	see EC-Type Examination Certificate	
Directive conformity		S
Directive 94/9/EC	EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2005, EN 60079-27:2006	ver olies

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Assembly

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics

Power Supplies

Field Distribution

DART Fieldbus

Process Interfaces

Accessories

Advanced

- 8-channel universal temperature interface
- Glass fiber reinforced polyester, impact resistant, IP66
- Configurable cable entries for bus lines and field signal lines
- International approvals
- Installation in Zone 1 and Zone 2

Function

This Fieldbus Junction Box holds a Temperature Multi-Input Device for transferring signals from resistance temperature measuring sensors and thermocouples, as well as resistance and millivolt signals via FOUNDATION Fieldbus H1. The fieldbus junction box with eight inputs can be installed in Zone 1 with sensors located in Zone 0.

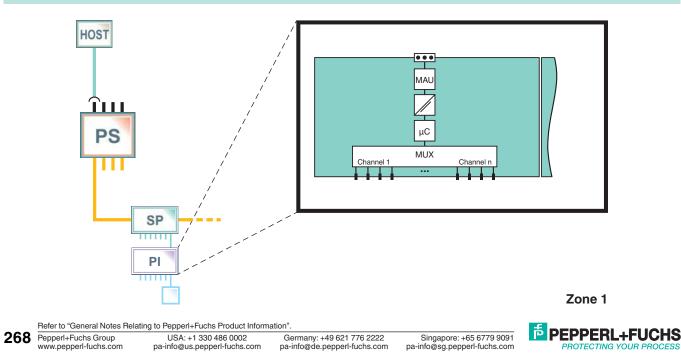
Glass fiber reinforced polyester provides corrosion resistance and is light weight. The surface resistance avoids electrostatic charge.

Bus and field signal line entries can be chosen individually from a range of cable glands and stopping plugs. A breather is included by default. Tag plate and grounding bar are available as options.

This junction box is available pre-wired, with all accessories, for fast ordering, delivery, site installation, and commissioning.



Connection



Technical data		
General specifications		
Installed components	Fieldbus Temperature Interface RD0-TI-Ex8.FF.ST For technical data on installed electronic component see data sheet.	H
Conformity		FOUNDATION Fieldbus
Protection degree	EN 60529	q
Impact resistance	EN 60079-0	р
Mechanical specifications		<u>e</u>
Enclosure cover	detachable cover with retaining screws	<u>ц</u>
Protection degree	IP66	Z
Material		<u>o</u>
Housing	polyester, impact resistant, glass fiber reinforced	E
Surface	black molded finish (RAL 9005)	A
Surface resistance	< 10 ⁹ Ω	¥
Water absorption	<6%	5
Seal	silicon, one piece	ō
Grounding plate	brass	Ш.
Material thickness	grounding plate: 3 mm	
Dimensions	(W x H x D) 271 x 271 x 136 mm (1 x RD0-TI-Ex8.FF.ST)	Selection Guideline
Mounting	thru-holes Ø6.5 mm	act del
Grounding	grounding bolt M6, Stainless steel	ele uic
Data for application in connection with Exareas		ũ ũ
EC-Type Examination Certificate	PTB 07 ATEX 1061 (assembled Junction Box), for additional certificates see www.pepperl-fuchs.com	
Group, category, type of protection	⟨₺⟩ II 2(1)G Ex ia IIC T4 (F.TI0.S12.A08.F.0.***.***.**00)	ic s
Statement of conformity	PF 08 CERT 1278 (assembled Junction Box), for additional certificates see www.pepperl-fuchs.com	sti
Group, category, type of protection	🐼 II 3G Ex nL IIC T4 (F.TI0.S12.B08.F.0.***.***.**00)	Advanced
Directive conformity		Advanced Diagnostics
Directive 94/9/EC	EN 60079-0:2006, EN 600079-14:2003, EN 60079-15:2005	Ρä
International approvals		·
IECEx approval	IECEx PTB 07.0036, zone 1, suitable Junction Box on request	
	IECEx PTB 09.0016, Zone 2, suitable Junction Box on request	۲ S
INMETRO	2008EC02CP015, suitable Junction Box on request	Power Supplies

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Distribution Field

DART Fieldbus

Process Interfaces

Accessories

Assembly

Features

- 8-channel universal temperature interface
- Stainless steel, electropolished, IP66
- Configurable cable entries for bus lines and field signal lines
- International approvals
- Installation in Zone 1 and Zone 2

Function

This Fieldbus Junction Box holds a Temperature Multi-Input Device for transferring signals from resistance temperature measuring sensors and thermocouples, as well as resistance and millivolt signals via FOUNDATION Fieldbus H1. The fieldbus junction box with eight inputs can be installed in Zone 1 with sensors located in Zone 0.

Electropolished stainless steel 316L provides high corrosion and impact resistance at a very wide temperature range. Bus and field signal line entries can be chosen individually from a range of cable glands and stopping plugs. A breather is included by default. Tag plate and grounding bar are available as options.

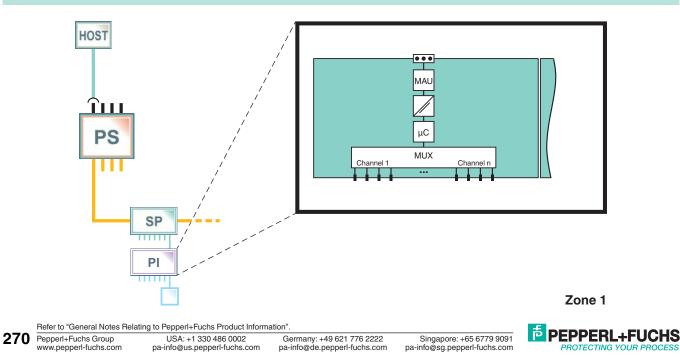
This junction box is available pre-wired, with all accessories, for fast ordering, delivery, site installation, and commissioning.



912868 (US) / 220231 (EU)05/2013

Edition

Connection



F

Selection Guideline

Technical data		
General specifications		
Installed components	Fieldbus Temperature Interface RD0-TI-Ex8.FF.ST For technical data on installed electronic component see data sheet.	H
Conformity		ns
Protection degree	EN 60529	ā
Impact resistance	EN 60079-0	p
Mechanical specifications		
Enclosure cover	detachable hinged door with captive retaining screws	ш
Protection degree	IP66	Z
Material		<u>o</u>
Housing	Stainless steel 1.4404/AISI 316L	
Surface	electropolished	
Seal	Neoprene, fire-resistant, one piece	Ż
Material thickness	enclosure body, enclosure cover, mounting plate: 1.5 mm gland plate: 3.0 mm	FOUNDATION Fieldbus
Dimensions	(W x H x D) 300 x 200 x 120 mm (1 x RD0-TI-Ex8.FF.ST)	Ŭ.
Mounting	thru-holes Ø10 mm	– 0
Grounding	grounding bolt M10, brass	ine
Data for application in connection with Ex- areas		Selection Guideline
EC-Type Examination Certificate	PTB 07 ATEX 1061 (assembled Junction Box), for additional certificates see www.pepperl-fuchs.com	ยี เ
Group, category, type of protection	⟨₺⟩ II 2(1)G Ex ia IIC T4 (F.TI0.S12.A08.F.0.***.***.**00)	
Statement of conformity	PF 08 CERT 1278 (assembled Junction Box), for additional certificates see www.pepperl-fuchs.com	
Group, category, type of protection	⟨₺⟩ II 3G Ex nL IIC T4 (F.TI0.S12.B08.F.0.***.***.**00)	Advanced Diagnostics
Directive conformity		sti
Directive 94/9/EC	EN 60079-0:2006, EN 600079-14:2003, EN 60079-15:2005	an
International approvals		Advanced Jiagnostics
IECEx approval	IECEx PTB 07.0036, zone 1, suitable Junction Box on request IECEx PTB 09.0016, Zone 2, suitable Junction Box on request	Dia
INMETRO	2008EC02CP015, suitable Junction Box on request	
		Power Supplies

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Distribution Field

912868 (US) / 220231 (EU)05/2013

Edition

Features

- For four intrinsically safe valves with position sensors
- Installation in Zone 1 and Zone 2
- Valves in Zone 0
- Connection to fieldbus acc. to FISCO or Entity
- DCS integration via device description and function blocks
- Monitors lead breakage and short circuits
- Valve monitoring and diagnostics integrated
- Conducts partial stroke testing

Function

The valve coupler (VC) for FOUNDATION fieldbus H1 connects up to four intrinsically safe low-power valves to the DCS via fieldbus. It is installed pre-wired in a field enclosure or directly outside close to the valves in the hazardous area. The VC drives four low-power auxiliary valves and gathers positioning information via pairs of inductive proximity switches.

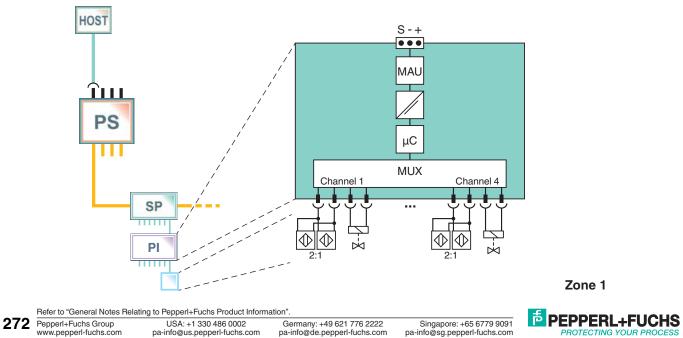
The VC communicates all data, configuration, and alarms via one fieldbus address to the DCS. It supports function blocks via device description. Fieldbus powers the actors, sensors and the valve coupler itself, additional power or wiring is not required.

The VC supports summary diagnostics according to NAMUR recommendations. It detects lead breakage and short circuit conditions. It monitors and reports runtime and breakaway time during each operation and can conduct partial stroke tests.

Assembly



Connection



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Accessories

Technical data		
Fieldbus interface		
FOUNDATION Fieldbus		Ŧ
Connection	Connection +, -	
Rated voltage	9 32 V	FOUNDATION Fieldbus
Rated current	max. 23 mA	q
Baud rate	31.25 kBit/s	
Protocol	IEC 61158-2	<u>e</u>
Field circuit		<u> </u>
Inputs		Z
Sensor supply voltage	5 V	2
Sensor supply current	5 mA	
Max. cycle time	≤ 160 ms	
Outputs		Z
Output voltage	6.4 7.9 V	
Output rated operating current	1.5 mA	Ö
Holding current	1 mA	
Directive conformity		
Electromagnetic compatibility		ne
Directive 2004/108/EC	EN 61326-1:2006	Selection Guideline
Standard conformity		ide
Electrical isolation	EN 60079-11	Selection Guideline
Electromagnetic compatibility	NE 21:2006	0,0
Protection degree	IEC/EN 60529	
Ambient conditions		S T
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	Advanced Diagnostic
Mechanical specifications		
Core cross-section	Bus cable: Ø 5 mm 10 mm	dva Igr
	cable sensors/valve: Ø 4 mm 8 mm	Advanced Diagnostics
Housing	187 mm x 129 mm x 46 mm	
Protection degree	IP65	_
Installation position	Cable glands downwards	S S
Mass	approx. 290 g	Power Supplies
Mounting Data for application in connection with Ex-	panel mounting	Power
areas		Su P
EC-Type Examination Certificate	PTB 98 ATEX 2210	
Group, category, type of protection,	🐼 II 2G (1) Ex ia [ia Ga] IIC T4 Gb,	
temperature class	😥 II (1D) [Ex ia Da] IIIC.	tion
	🐼 II 3G Ex ic IIC T4 Gc,	E T
	🐼 II (3D) [Ex ic Dc] IIIC	Field tribut
Field-side		Field Distribu
Voltage U _o	9 V	Dis
Current I _o	44 mA	
Power P _o	99 mW	
FOUNDATION Fieldbus		S
Voltage U _i	24 V	p T ng
Current I _i	380 mA	DART Fieldbus
Power P _i	5.32 W	<u> </u>
Rated voltage	9 32 V	
Rated current	23 mA	_
FDE (Fault Disconnect Equipment)	6.7 mA	S
Directive conformity	EN 00070 0.0000	C S S
Directive 94/9/EC	EN 60079-0:2009,	ta ce
International approvals	EN 60079-11:2012	Process Interfaces
IECEx approval	IECEx TUN 04.0002	<u>₽</u>
Approved for	Ex ia [ia Ga] IIC T4 Gb,	
	[Ex ia Da] IIIC,	(0
	Ex ic IIC T4 Gc,	ie
	[Ex ic Dc] IIIC	Accessories
		SS
		ce
		Ac

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Selection Guideline

Diagnostics Advanced

Power Supplies

Field

Features

- · 4 valve control and 8 position feedback signals
- · Glass fiber reinforced polyester, impact resistant, IP66
- · Configurable cable entries for bus lines and field signal lines
- · International approvals
- Installation in Zone 1

Function

This Fieldbus Junction Box holds valve couplers for connection to low-power solenoid valves. The fieldbus junction box can be installed in Zone 1, sensors in Zone 0. Four valves including two end position sensors can be connected.

Glass fiber reinforced polyester provides corrosion resistance and is light weight. The surface resistance avoids electrostatic charge.

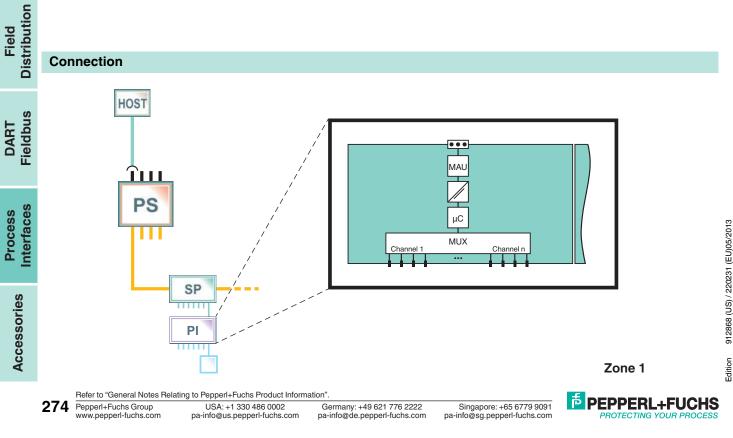
Bus and field signal line entries can be chosen individually from a range of cable glands and stopping plugs. A breather is included by default. A tag plate is available as option.

This junction box is available pre-wired, with all accessories, for fast ordering, delivery, site installation, and commissioning.

Assembly



Connection



F.VC0.P21.A04.*.*.***.**000

Technical data		
General specifications		
Installed components	Valve Coupler FD0-VC-Ex4.** For technical data on installed electronic component see data sheet.	Ŧ
Conformity		Fieldbus
Protection degree	EN 60529	Ā
Impact resistance	EN 60079-0	0
Mechanical specifications		<u>e</u>
Enclosure cover	detachable cover with retaining screws	
Protection degree	IP66	Z
Material		<u>o</u>
Housing	polyester, impact resistant, glass fiber reinforced	FOUNDATION
Surface	black molded finish (RAL 9005)	ð
Surface resistance	< 10 ⁹ Ω	Ī
Water absorption	<6%	5
Seal	silicon, one piece	0
Grounding plate	brass	- LL
Material thickness	grounding plate: 3 mm	
Dimensions	(W x H x D) 271 x 544 x 136 mm (1 x FD0-VC-Ex4.**)	Selection Guideline
Mounting	thru-holes Ø6.5 mm	ect de
Grounding	grounding bolt M6, Stainless steel	ui
Data for application in connection with Exarcas		ი ი
EC-Type Examination Certificate	PTB 07 ATEX 1061 (assembled Junction Box), for additional certificates see www.pepperl-fuchs.com	(0
Group, category, type of protection	🐼 II 2(1)G Ex ia IIC T4	ic sq
Directive conformity		nce ost
Directive 94/9/EC	EN 60079-0:2006, EN 600079-14:2003	/ar
International approvals		Advanced Diagnostics
IECEx approval	IECEx PTB 07.0036, suitable Junction Box on request	DiA
INMETRO	2008EC02CP015, suitable Junction Box on request	

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DART Fieldbus

Power Supplies

Distribution Field

Assembly

Features

F

FOUNDATION Fieldbus H1

- · 4 valve control and 8 position feedback signals
- · Stainless steel, electropolished, IP66
- · Configurable cable entries for bus lines and field signal lines
- International approvals
- Installation in Zone 1

Function

This Fieldbus Junction Box holds valve couplers for connection to low-power solenoid valves. The fieldbus junction box can be installed in Zone 1, sensors in Zone 0. Four valves including two end position sensors can be connected.

Electropolished stainless steel 316L provides high corrosion and impact resistance at a very wide temperature range. The integrated rain channel prevents standing water from damaging the one-piece seal.

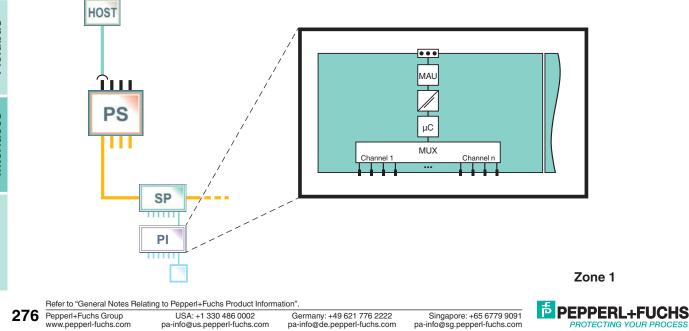
Bus and field signal line entries can be chosen individually from a range of cable glands and stopping plugs. A breather is included by default. A tag plate is available as option. This junction box is available pre-wired, with all accessories, for fast ordering, delivery, site installation, and commissioning.



912868 (US) / 220231 (EU)05/2013

Edition

Connection



Technical data		
General specifications		
Installed components	Valve Coupler FD0-VC-Ex4.** For technical data on installed electronic component see data sheet.	Ħ
Conformity		Fieldbus
Protection degree	EN 60529	ā
Impact resistance	EN 60079-0	p
Mechanical specifications		<u>e</u>
Enclosure cover	detachable hinged door with captive retaining screws	
Protection degree	IP66	Z
Material		<u>o</u>
Housing	Stainless steel 1.4404/AISI 316L	F
Surface	electropolished	
Seal	Neoprene, fire-resistant, one piece	Ż
Material thickness	enclosure body, enclosure cover, mounting plate: 1.5 mm gland plate: 3.0 mm	FOUNDATION
Dimensions	(W x H x D) 380 x 380 x 175 mm (1 x FD0-VC-Ex4.**)	Ŭ
Mounting	thru-holes Ø10 mm	- 0
Grounding	grounding bolt M10, brass	in in
Data for application in connection with Exareas		Selection Guideline
EC-Type Examination Certificate	PTB 07 ATEX 1061 (assembled Junction Box), for additional certificates see www.pepperl-fuchs.com	ີ ເຈັ
Group, category, type of protection	🐼 II 2(1)G Ex ia IIC T4	
Directive conformity		
Directive 94/9/EC	EN 60079-0:2006, EN 600079-14:2003	с d
International approvals		Advanced Diagnostics
IECEx approval	IECEx PTB 07.0036, suitable Junction Box on request	Advanced
INMETRO	2008EC02CP015, suitable Junction Box on request	

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Power Supplies

Distribution Field

DART Fieldbus

Process Interfaces

Accessories

F*-FT-Ex1.D.IEC

Selection Guideline

Diagnostics

Power Supplies

Field

Process

Advanced

_

Features

- · Terminator in stainless steel housing
- · Flameproof enclosure (Ex d) protection
- · Installation on open cable gland
- · Choice of threads 20 mm, Pg 13.5 mm or 1/2" NPT

Function

F*-FT-Ex1.D.IEC are terminators for fieldbus and provide capacitance and resistance to terminate a fieldbus segment according to IEC 61158-2. Explosion protection is flameproof 'Ex d' for installation in Zone 1...2. A solid metal housing enables installation in rough environments. Housings are selectable with 20 mm ISO, PG 13.5 mm or 1/2" NPT connecting threads for easy installation on outdoor junction boxes or field instruments.

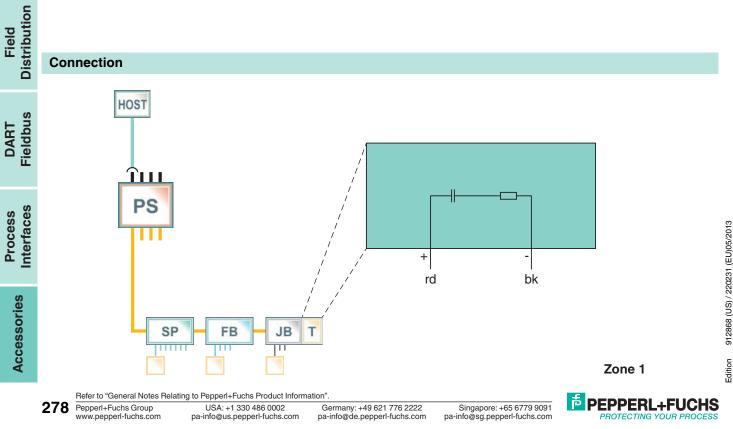
For increased availability the terminator features four capacitors in a network. If one capacitor should fail the basic functionality remains intact. This is detectable with the FieldConnex[®] Advanced Diagnostic Module allowing timely maintenance.

Fieldbus terminators are required at each end of the trunk line. They eliminate signal reflections at the end of the cable and convert the fieldbus signal transmitted as a current into a voltage, which is detectable by all devices.

Assembly

PEPPERL+FUCHS FP-FT-Ex1.D.IEC Part No. 114452

Connection



F*-FT-Ex1.D.IEC

Technical data		_
Directive conformity		
Electromagnetic compatibility		<u> </u>
Directive 2004/108/EC	EN 61326-1:2006	Ť
Standard conformity		S
Electromagnetic compatibility	NE 21:2006	ā
Protection degree	IEC/EN 60529	P
Ambient conditions		<u>e</u> .
Ambient temperature	-50 85 °C (-58 185 °F)	ш
Storage temperature	-50 85 °C (-58 185 °F)	Z
Mechanical specifications		<u>o</u>
Core cross-section	0.75 mm ²	E
Housing	77 mm x 22 mm	
Protection degree	IP67	¥
Mass	100 g	5
Mounting	20 mm ISO thread PG13.5 thread 1/2 NPT thread	FOUNDATION Fieldbus
Data for application in connection with E areas	ix-	ne
EC-Type Examination Certificate	DMT 01 ATEX 104 X	eli
Group, category, type of protection, temperature class	🐼 II 2G EEx d IIC T6	Selection Guideline
Temperature class	T6 for ambient temperature $\leq 60 \text{ °C}$ T5 for ambient temperature $\leq 75 \text{ °C}$ T4 for ambient temperature $\leq 85 \text{ °C}$	
Maximum values		Advanced Diagnostics
Rated voltage	< 253 V AC/125 V DC	nc
Operating values		ya
Rated voltage	\leq 32 V	Ad iaç
Directive conformity		
Directive 94/9/EC	EN 60079-0:2006, EN 60079-1:2007, EN 60079-26:2007	
International approvals		(0
IECEx approval	IECEx BVS 10.0022X	ie
Approved for	Ex d IIC T6 Gb	Power upplie
		Power Supplies

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Distribution Field

DART Fieldbus

Process Interfaces

Accessories

Fieldbus Terminator, Field Installation, Ex d

Assembly

F*-FT-Ex1.I.IEC

Features

- Terminator in stainless steel housing
- Intrinsically safe, FISCO or Entity
- Installation on open cable gland
- Choice of threads 20 mm, Pg 13.5 mm or 1/2" NPT

Function

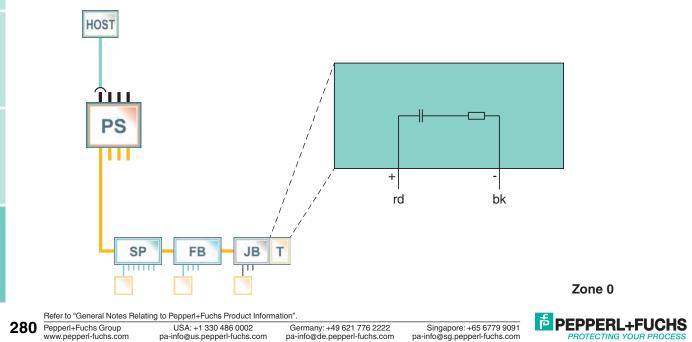
F*-FT-Ex1.I.IEC are terminators and provide capacitance and resistance to terminate a fieldbus segment according to IEC 61158-2. Explosion protection is intrinsically safe 'Ex ia' for installation in Zone 0...2. A solid metal housing enables installation in rough environments. Housings are selectable with 20 mm ISO, PG 13.5 mm or ½" NPT connecting threads for easy installation on outdoor junction boxes or field instruments.

For increased availability the terminator features four capacitors in a network. If one capacitor should fail the basic functionality remains intact. This is detectable with the FieldConnex[®] Advanced Diagnostic Module allowing timely maintenance.

Fieldbus terminators are required at each end of the trunk line. They eliminate signal reflections at the end of the cable and convert the fieldbus signal transmitted as a current into a voltage, which is detectable by all devices.

FP-FT-Ex1.I.IEC Part No. 105658

Connection



DART Fieldbus

F*-FT-Ex1.I.IEC

Technical data		
Directive conformity		
Electromagnetic compatibility		Ŧ
Directive 2004/108/EC	EN 61326-1:2006	
Standard conformity		C S
Electromagnetic compatibility	NE 21:2006	ā
Protection degree	IEC/EN 60529	P
Ambient conditions		<u>0</u>
Ambient temperature	-50 85 °C (-58 185 °F)	ш
Storage temperature	-50 85 °C (-58 185 °F)	Z
Mechanical specifications		<u>o</u>
Core cross-section	0.75 mm ²	F
Housing	77 mm x 22 mm	
Protection degree	IP67	Ż
Mass	100 g	5
Mounting	20 mm ISO thread PG13.5 thread 1/2 NPT thread	FOUNDATION Fieldbus
Data for application in connection with Exareas		on ne
EC-Type Examination Certificate	DMT 01 ATEX 104 X	cti eli
Group, category, type of protection, temperature class	🐼 II 1G EEx ia IIC T6	Selection Guideline
Temperature class	T6 for ambient temperature \leq 60 °C T5 for ambient temperature \leq 75 °C T4 for ambient temperature \leq 85 °C	
Maximum values		Advanced Diagnostics
Voltage U _i	≤ 30 V	nc ost
Operating values		yal
Rated voltage	≤ 30 V	Ad iaç
Directive conformity		
Directive 94/9/EC	EN 60079-0:2006, EN 60079-11:2007, EN 60079-26:2007, IEC 60079-27:2008	
International approvals		(0
IECEx approval	IECEx BVS 10.0022X	r je
Approved for	Ex ia IIC T6 Ga	Power upplie
		Power Supplies

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Distribution Field

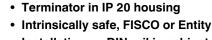
KMD0-FT-Ex

Features F

Assembly

FOUNDATION Fieldbus H1

Selection Guideline



· Installation on DIN rail in cabinet or field junction box

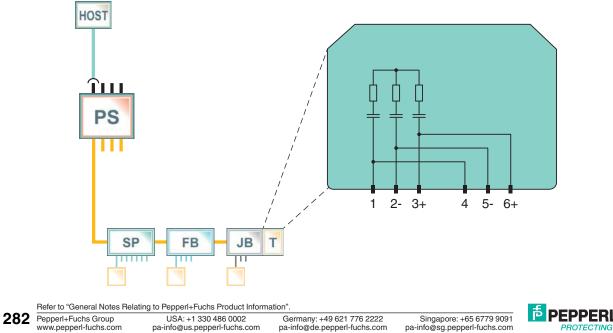
Function

The KMD0-FT-Ex is a terminator for fieldbus and provides capacitance and resistance to terminate a fieldbus segment according to IEC 61158-2. Explosion protection is intrinsically safe 'Ex ia' for installation in Zone 0...2. The housing is IP 20 for simple installation on the DIN rail for easy installation in control room cabinets or inside outdoor junction boxes. For increased availability the terminator features four capacitors in a network. If one capacitor should fail the basic functionality remains intact. This is detectable with the FieldConnex[®] Advanced Diagnostic Module allowing timely maintenance.

Fieldbus terminators are required at each end of the trunk line. They eliminate signal reflections at the end of the cable and convert the fieldbus signal transmitted as a current into a voltage, which is detectable by all devices.



Connection





912868 (US) / 220231 (EU)05/2013

Edition

KMD0-FT-Ex

Technical data		
Directive conformity		
Electromagnetic compatibility		Ŧ
Directive 2004/108/EC	EN 61326-1:2006	
Standard conformity		Fieldbus
Electromagnetic compatibility	NE 21:2006	Q
Ambient conditions		<u>D</u>
Ambient temperature	-20 60 °C (-4 140 °F)	<u>e</u> .
Storage temperature	-40 85 °C (-40 185 °F)	
Relative humidity	75 %	Z
Mechanical specifications		<u>O</u>
Core cross-section	2.5 mm ²	E
Housing width	20 mm	AC
Protection degree	IP20	1
Mass	approx. 60 g	5
Data for application in connection wit areas	ו Ex-	FOUNDATION
EC-Type Examination Certificate	PTB 98 ATEX 2157	
Group, category, type of protection, temperature class	 ⟨ E > II 2G EEx ia IIC T4 	Selection Guideline
Voltage U _i	24 V	le ct
Current I _i	280 mA	ele
Power P _i	1.93 W	រ ប
Directive conformity		
Directive 94/9/EC	EN 50014:1997 EN 50020:1994	cs a
		Advanced Diagnostics

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information"

Power Supplies

Field Distribution

DART Fieldbus

Process Interfaces

Accessories



KLD0-SAA

Features F FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Power Supplies

Distribution Field

DART Fieldbus

Assembly

- · Series voltage reducing module
- · Removable terminals
- · Polarity reversal protected · Installation in cabinet on DIN mounting rail

Function

Pepperl+Fuchs Segment Protectors feature a safety switch off for explosion protection at typically 31.5 V.

In rare cases the tolerances in other manufacturers' power modules in combination with very short cable lengths with little or no voltage drop lead to a switch off of the Segment Protector.

The KLD0-SAA is used to limit the voltage to uncritical values.

The KLD0-SAA is installed in close proximity to the power supply within the control cabinet.



Connection

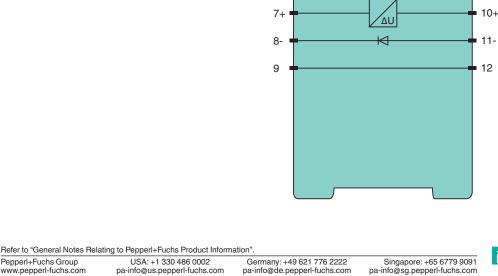
284

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Interfaces

Process



KLD0-SAA

PEPPERL+FUCHS

912868 (US) / 220231 (EU)05/2013

Edition

Selection Guideline

Diagnostics Advanced

Power Supplies

Distribution Field

Fieldbus DART

Process Interfaces

Accessories

Technical data		
Directive conformity		
Electromagnetic compatibility		Ŧ
Directive 2004/108/EC	EN 61326-1:2006	—
Ambient conditions		ns
Ambient temperature	-20 60 °C (-4 140 °F)	Ā
Storage temperature	-40 85 °C (-40 185 °F)	p
Relative humidity	<75 %	<u>e</u>
Mechanical specifications		L.
Connection type	Terminals	Z
Core cross-section	up to 2.5 mm ²	<u> </u>
Housing	20 mm x 115 mm x 107 mm	AT
Protection degree	IP20	
Mass	approx. 100 g	Ž
Mounting	DIN rail mounting	5
		P

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F*-LBF-D1.32

Features

- · Surge Protector in stainless steel housing
- · Flameproof enclosure (Ex d) protection
- · Surge protection for '+' and '-' fieldbus lead
- Choice of threads 20 mm or 1/2" NPT

Function

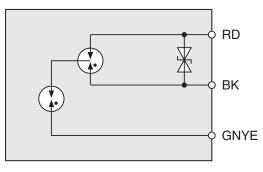
F*-LBF-D1.32 are surge protection devices for fieldbus installations. They direct power surges to earth via gas discharge tubes protecting field devices and control units from voltage surges and lightning strikes. They are in accordance with the fieldbus standard IEC 61158-2 and certified Ex d (flameproof enclosure) for Zone 1.

FieldConnex[®] surge protectors for field installation allow the coordinated use in a lightning protection zone concept in accordance with IEC 61312-1. Housings are selectable with 20 mm ISO or 1/2" NPT connecting threads for easy installation on outdoor junction boxes.

Assembly



Connection



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F

Interfaces Process

Accessories

Electrical specifications			
Rated voltage	32 V		Ξ
Surge Current (8/20) I _n			Т
per line	10 kA		FOUNDATION Fieldbus
total	10 kA		p
Max. surge current (8/20) I _{max}	10 kA		D
Voltage Protection Level at max. rated current			<u>e</u>
Line/Line	58 V		ίΠ,
Line/Earth	1700 V		Ζ
Voltage Protection Level at 1 kV/µsec			0
Line/Line	50 V		E
Line/Earth	1.2 kV		A
Reaction time t _A			L,
Line/Line	≤ 1 ns		5
Line/Earth	≤ 100 ns		ō
Capacitance			Ľ
Line/Line	25 pF		
Line/Earth	15 pF		ر م
Directive conformity			io i
Electromagnetic compatibility			Selection Guideline
Directive 2004/108/EC	EN 61326-1:2006		ele uic
Standard conformity			νΩ Ω
Electromagnetic compatibility	NE 21:2006		
Protection degree	IEC/EN 60529		(0
Surge protection	IEC 61643-21		Advanced Diagnostics
Ambient conditions			Advanced Diagnostic:
Ambient temperature	-50 80 °C (-58 176 °F)		ar
Storage temperature	-50 85 °C (-58 185 °F)		
Mechanical specifications			A ij
Core cross-section	1.3 mm ²	-	
Housing material	Stainless steel 1.4401 (AISI 316)		
3 1 1	surface all over polished		r es
Protection degree	IP00/IP67 if correctly installed		Power Supplies
Mass	160 g		o d
Mounting	screw mounting		ل ع
Data for application in connection with Ex- areas			
EC-Type Examination Certificate	KEMA 04 ATEX 2318 X		L L
Group, category, type of protection, temperature class	 ₩ II 2G Ex d IIC T5/T6 	:	eld bution
Temperature class	T6 for ambient temperature ≤ 70 °C T5 for ambient temperature ≤ 80 °C	i	Fiel Distribu
Maximum values			
Rated voltage	32 V		
Directive conformity			(0
Directive 94/9/EC	EN 60079-0:2006, EN 60079-1:2007		E n
International approvals		1	DART
IECEx approval	IECEX KEM 09.0067X	1	D
Approved for	Ex d IIC T5/T6 Gb		Щ

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F*-LBF-I1.32

Features

F

FOUNDATION Fieldbus H1

Selection Guideline

Advanced Diagnostics

Power Supplies

Field Distribution

DART Fieldbus

- Surge Protector in stainless steel housing
- Intrinsically safe, FISCO or Entity
- Surge protection for '+' and '-' fieldbus lead
- Choice of threads 20 mm or 1/2" NPT

Function

F*-LBF-I1.32 are surge protection devices for fieldbus installations. They direct power surges to earth via gas discharge tubes protecting field devices and control units from voltage surges and lightning strikes. They are in accordance with the fieldbus standard IEC 61158-2 and certified intrinsically safe Ex ia for Zone 1, FISCO and Entity. FieldConnex[®] surge protectors for field installation allow the coordinated use in a lightning protection zone concept in accordance with IEC 61312-1. Housings are selectable with 20 mm ISO or $\frac{1}{2}$ " NPT connecting threads for easy installation on outdoor junction boxes.

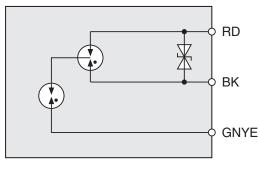
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Assembly



Connection



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Process Interfaces

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Technical data		
Electrical specifications		
Rated voltage	32 V	- E
Rated current	550 mA	
Surge Current (8/20) I _n		FOUNDATION Fieldbus
per line	10 kA	<u>a</u>
total	10 kA	
Max. surge current (8/20) I _{max}	10 kA	e
Voltage Protection Level at max. rated curre	nt	<u> </u>
Line/Line	58 V	Z
Line/Earth	1700 V	0
Voltage Protection Level at 1 kV/µsec		
Line/Line	50 V	6
Line/Earth	1.2 kV	z
Reaction time t _A		5
Line/Line	\leq 1 ns	0
Line/Earth	≤ 100 ns	LL
Capacitance		
Line/Line	25 pF	c e
Line/Earth	15 pF	Selection Guideline
Directive conformity		de c
Electromagnetic compatibility		ele
Directive 2004/108/EC	EN 61326-1:2006	ი ი
Standard conformity		
Electromagnetic compatibility	NE 21:2006	S
Protection degree	IEC/EN 60529	ed
Surge protection	IEC 61643-21	DS1 DS1
Ambient conditions		Advanced Diagnostics
Ambient temperature	-50 80 °C (-58 176 °F)	Adriag
Storage temperature	-50 85 °C (-58 185 °F)	
Mechanical specifications		
Core cross-section	1.3 mm ²	
Housing material	Stainless steel 1.4401 (AISI 316) surface all over polished	Power Supplies
Protection degree	IP00/IP67 if correctly installed	ldr
Mass	160 g	L S
Mounting	screw mounting	
Data for application in connection with E areas	Ē x-	Ę
EC-Type Examination Certificate	KEMA 04 ATEX 1317 X	ld ution
Group, category, type of protection, temperature class	 ⟨↔⟩ II 2(1)G Ex ia IIC T5/T6 	Field
Temperature class	T6 for ambient temperature \le 70 °C T5 for ambient temperature \le 80 °C	Dis
Voltage U _i	Entity 30 V, FISCO 17.5 V	
Current I _i	Entity 550 mA, FISCO 380 mA	(0
Power P _i	Entity 3 W, FISCO 5.32 W	DART Fieldbus
Internal capacitance C _i	negligible 0 nF	DART
Internal inductance Li	negligible 0 μH	D
Directive conformity		Щ
Directive 94/9/EC	EN 60079-0:2006, EN 60079-11:2007, EN 60079-26:2007, EN 60079-27:2008	
International approvals		
IECEx approval	IECEx KEM 09.0081X	ocess rfaces
Approved for	Ex ia [ia Ga] IIC T5/T6 Gb	0 Ū

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PEPPERL+FUCHS 289

DP-LBF-I1.36.*

· Compact and space-saving design

• Intrinsically safe (Ex ia), FISCO, Entity, DART Fieldbus,

· Protection module replaceable, interrupting or non-

· Grounding of shield direct or via gas-discharge tube

· Installation on DIN rail in cabinet or field junction box

The modular surge protector for fieldbus consists of a base (DB ...), and plug-in module (DP-LBF-I1.36*) and is in acc. with IEC 61158-2. It directs power surges to earth via gas discharge tubes protecting field devices. It is certified intrinsically safe for circuits in hazardous area

Zone 0 ... 2/Div. 1 ... 2 and DART Fieldbus. The surge protector is installed in Zone 1 ... 2 or Div. 1 ... 2.

The plug-in module can be exchanged without tools. They support coordinated use in a lightning protection zone concept in acc. with IEC 61312-1. Installation in cabinet or

junction box requires a minimum amount of wiring.

Choices support all concepts: interrupting/non-interrupting module exchange and direct/indirect grounding of the shield.

Features Modular: protection module easy to replace

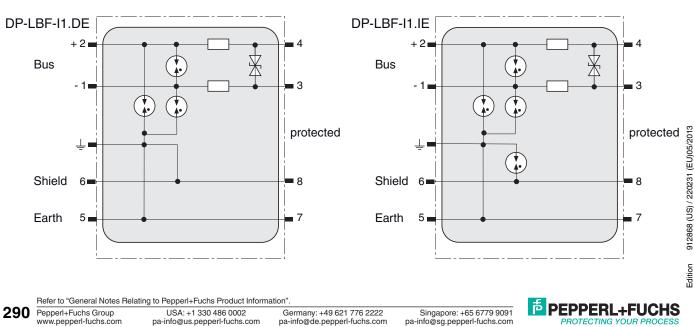
Assembly

FOUNDATION Fieldbus H1

Selection Guideline

Connection









interrupting

Function

or general-purpose

Technical data		F
Electrical specifications		
Rated voltage	33 V	Ξ
Rated current	500 mA	
Voltage Protection Level Up		ä
Line/Line	 ≤ 58 V category C1/C2 8/20µsec, ≤ 50 V category C3 1kV/µsec ≤ 51 V category B2 10/700µsec, ≤ 55 V category D1 10/350µsec 	ldb
Line/Earth	≤ 1400 V category C1/C2 8/20µsec, ≤ 1100 V category C1/C2 1kV/µsec ≤ 1000 V category B2 10/700µsec, ≤ 1300 V category D1 10/350µsec	Fieldbus
Screen/Shield directly grounded	≤ 25 V category C1/C2 8/20μsec ≤ 20 V category D1 10/350μsec	
Screen/Shield indirectly grounded (via GDT)	 ≤ 700 V category C1/C2 8/20µsec, ≤ 600 V category C3 1kV/µsec ≤ 500 V category B2 10/700µsec, ≤ 600 V category D1 10/350µsec 	FOUNDATION
Reaction time t _A		
Line/Line	≤ 1 ns	Ζ
Line/Earth	≤ 100 ns	N
Screen/Shield-Earth	≤ 100 ns	O U
Overstressed fault mode	acc. IEC 61643-21 line inoperable mode 3 lines 1 and 2 at 15,5kA (8/20µsec) lines 3 and 4 at 30kA (8/20µsec)	
Series resistance in line	1 Ω +/- 5 %	L e
Impulse durability		itio
Per line	1 kA category D1 10/350µsec, 5 kA category C1/C2 8/20µsec	Selection Guideline
Screen/Shield directly grounded	5 kA category D1 10/350µsec	Sel
Screen/Shield indirectly grounded (via GDT)	4 kA category D1 10/350µsec, 10 kA category C1/C2 8/20µsec	0.0
AC durability	1 A, 50 Hz, 1 s category A2	
Capacitance		
Line/Line	800 pF	itic Sec
Line/Earth	16 pF	Advanced Diagnostics
Standard conformity		an an
Protection degree	IEC 60529	Ac
Climatic conditions	IEC 60721	
Shock resistance	EN 60068-2-27	
Vibration resistance	EN 60068-2-6	y.
Surge protection	IEC 61643-21	Power
Ambient conditions		Power Supplies
Ambient temperature	-50 80 °C (-58 176 °F)	
Storage temperature	-50 85 °C (-58 185 °F)	
Relative humidity	≤ 95 % non-condensing	
Shock resistance	15 g 11 ms	5
Vibration resistance	1 g, 10 150 Hz	ld ution
Data for application in connection with Ex- areas		Field
EC-Type Examination Certificate	KEMA 09 ATEX 0191 X	ist –
Group, category, type of protection, temperature class	(II 2(1)G Ex ia IIC T4/T5/T6	
Voltage U _i	30 V	
Current I _i	500 mA	
Internal capacitance C _i	negligible 0 nF	DART
Internal inductance L _i	negligible 0 μH	
Statement of conformity	KEMA 09 ATEX 0190 X	Ξü
Group, category, type of protection, temperature class	 ⟨𝔅⟩ 3G Ex ic C T4/T5/T6, ⟨𝔅⟩ 3G Ex nA T4/T5/T6 	
Voltage U _i	33 V	, u
Current I _i	500 mA	SSS
Internal capacitance C _i	negligible 0 nF	– S f
Ambient conditions		Process
Ambient temperature	-50 80 °C (-58 176 °F) T4, -50 75 °C (-58 167 °F) T5, -50 50 °C (-58 122 °F) T6	<u> </u>
Directive conformity		
Directive 94/9/EC	EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2005, EN 60079-26:2007, EN 60079-27:2008	S
International approvals		rie
CSA approval	CSA 2437472	SO
Control drawing	116-0361	Accessories
IECEx approval		Ö
Approved for	Ex ia [ia Ga] IIC T4/T5/T6 Gb, Ex ic IIC T4/T5/T6 Gc, Ex nA IIC T4/T5/T6 Gc	Ā

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TPH-LBF-IA1.36.DE*

Features

- Pluggable, mounts between Power Hub and trunk • cable
- Intrinsically safe (Ex ia), FISCO, Entity, DART Fieldbus, or general-purpose
- Optional diagnostics for wear
- · Grounding of shield direct
- Indication via LED and Advanced Diagnostics

Function

This fieldbus surge protector is in acc. with IEC 61158-2 and mounts on the trunk connector of FieldConnex[®] High-Density and Compact Power Hubs protecting them. It directs power surges to earth via gas discharge tubes. It is certified intrinsically safe for circuits in hazardous areas up to Zone 0/Div. 1 and DART Fieldbus. The surge protector is installed in Zone 1 ... 2 or Div. 1 ... 2.

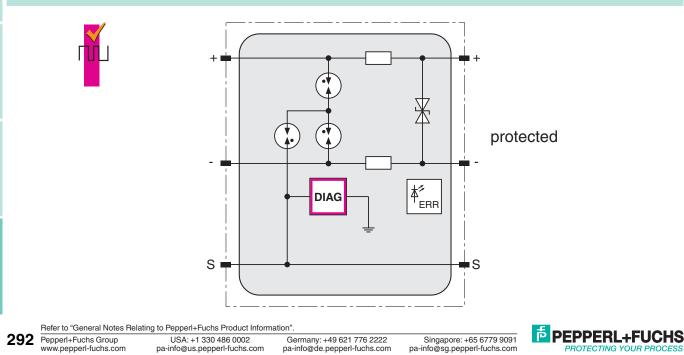
Self-diagnostics (option) continuously monitor wear caused by surges. The end of the useful life is indicated via LED and in the control room via FieldConnex[®] Advanced Diagnostics for exchange.

Installation on the trunk connector is without additional wiring even as retrofit. A single grounding bar connects surge protectors mounted side by side to a common grounding point.

55	ei	m	J	y



Connection



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Electrical specifications		
Rated voltage	36 V	
Rated current	600 mA	Ŧ
Voltage Protection Level U _n		<u>S</u>
Line/Line	 ≤ 50 V category B2 10/700μsec, 25 A ≤ 52 V category C1 8/20μsec, 300 A ≤ 55 V category C2 8/20μsec, 5 kA ≤ 46 V category C3 1kV/μsec, 10 A 	Fieldbus
Line/Earth	 ≤ 1060 V category B2 10/700µsec, 50 A per line ≤ 800 V category C1 8/20µsec, 300 A per line ≤ 1450 V category C2 8/20µsec, 5 kA per line ≤ 1300 V category C3 1kV/µsec, 50 A per line ≤ 1080 V category D1 10/350µsec, 500 A per line 	FOUNDATION
Reaction time t _A		
Line/Line	≤ 1 ns	5
Line/Earth	≤ 100 ns	ō
Overstressed fault mode	acc. IEC 61643-21 line inoperable mode 3	Ŭ.
Series resistance in line	2 Ω +/- 5 %	
Impulse durability		c (
Per line	5 kA category C2 8/20µsec	Selection
Directive conformity		
Electromagnetic compatibility		ele
Directive 2004/108/EC	EN 61326-1:2006	Ű,
Standard conformity		
Electromagnetic compatibility	NAMUR NE 21	(
Protection degree	IEC 60529	Advanced
Climatic conditions	IEC 60721	Advanced
Shock resistance	EN 60068-2-27	val
Vibration resistance	EN 60068-2-6	p
Surge protection	IEC 61643-21	
Ambient conditions		
Ambient temperature	-40 70 °C (-40 158 °F)	
Storage temperature	-40 85 °C (-40 185 °F)	
Relative humidity	\leq 95 % non-condensing	Power
Shock resistance	15 g 11 ms	Po
Vibration resistance	1 g, 10 150 Hz	ú
Data for application in connection with Exareas		
EC-Type Examination Certificate	SIRA 12 ATEX 2128X	2
Group, category, type of protection, temperature class	⟨Ex) II 1G Ex ia IIC T4	Field
Voltage U _i	24 V	Field
Current I _i	500 mA	
Internal capacitance C	2 nF	L
Internal inductance Li	0.1 μH	
Statement of conformity	SIRA 12 ATEX 4176X	
Group, category, type of protection, temperature class	🐼 II 3G Ex nAc IIC T4, 🐼 II 3G Ex ic IIC T4	DART
Voltage U _i	33 V	
Current I _i	600 mA	L
Internal capacitance C _i	2 nF	
Directive conformity		
Directive 94/9/EC	EN 60079-0:2012, EN 60079-11:2012, EN 60079-15:2010, EN 60079-26:2007	S
International approvals		es
IECEx approval	IECEx SIR 12.0051X	Process
Approved for	Ex ia IIC T4	<u>ب</u>

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Accessories

TCP-LBF-IA1.36.IE*

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Supplies Power

Field

Process

Accessories

F

Features

- · Pluggable, mounts between device coupler and trunk cable
- Intrinsically safe (Ex ia), FISCO, Entity, DART Fieldbus, or general-purpose
- · Optional diagnostics for wear
- · Grounding of shield via gas-discharge tube
- Indication via LED and Advanced Diagnostics

Function

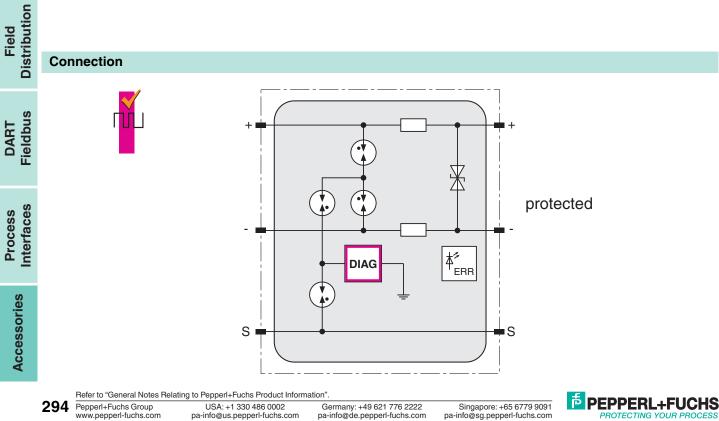
This fieldbus surge protector is in acc. with IEC 61158-2 and mounts on the trunk connector of FieldConnex® device couplers protecting them. It directs power surges to earth via gas discharge tubes. It is certified intrinsically safe for circuits in hazardous areas up to Zone 0/Div. 1 and DART Fieldbus. The surge protector is installed in Zone 1 ... 2 or Div. 1 ... 2. Self-diagnostics (option) continuously monitor wear caused by surges. The end of the useful life is indicated via LED and in the control room via FieldConnex[®] Advanced Diagnostics for exchange.

Installation on the trunk connector is without additional wiring even as retrofit.





Connection



912868 (US) / 220231 (EU)05/2013 Edition

Electrical specifications		
Rated voltage	36 V	
Rated current	600 mA	I
	000 MA	S
Voltage Protection Level U _p Line/Line	≤ 50 V category B2 10/700μsec, 25 A ≤ 50 V category C1 8/20μsec, 300 A	Idbu
Line / Feath	≤ 55 V category C2 8/20µsec, 5 kA ≤ 46 V category C3 1kV/µsec, 10 A	Fie
Line/Earth Screen/Shield indirectly grounded (via GDT)	 ≤ 1060 V category B2 10/700μsec, 50 A per line ≤ 800 V category C1 8/20μsec, 300 A per line ≤ 1.5 kV category C2 8/20μsec, 5 kA per line ≤ 1.3 kV category C3 1kV/μsec, 50 A per line ≤ 1080 V category D1 10/350μsec, 500 A per line ≤ 500 V category B2 10/700μsec, 100 A ≤ 600 V category C1 8/20μsec, 500 A 	FOUNDATION Fieldbus
	 < 720 V category C2 8/20μsec, 10 kA < 550 V category C3 1kV/μsec, 100 A < 570 V category D1 10/350μsec, 1 kA 	B
Reaction time t₄		
Line/Line	\leq 1 ns	
Line/Earth	≤ 100 ns	Selection
Screen/Shield-Earth	≤ 100 ns	ec
Overstressed fault mode	acc. IEC 61643-21 line inoperable mode 3	e
Series resistance in line	$2\Omega + -5\%$	S C
	2 52 +/- 5 %	
Impulse durability Per line		6
	5 kA category C2 8/20µsec	e c
Screen/Shield indirectly grounded (via GDT)	1 kA category D1 10/350µsec 10 kA category C2 8/20µsec	Advanced
Directive conformity		
Electromagnetic compatibility		<u>ح</u> ک
Directive 2004/108/EC	EN 61326-1:2006	
Standard conformity		
Electromagnetic compatibility	NAMUR NE 21	
Protection degree	IEC 60529	Power
Climatic conditions	IEC 60721	
Shock resistance	EN 60068-2-27	L .
Vibration resistance	EN 60068-2-6	
Surge protection	IEC 61643-21	
Ambient conditions		2
Ambient temperature	-40 70 °C (-40 158 °F)	- ÷
Storage temperature	-40 85 °C (-40 185 °F)	Field
Relative humidity	≤ 95 % non-condensing	ii ii
Shock resistance	15 g 11 ms	Field
Vibration resistance	1 g, 10 150 Hz	C
Data for application in connection with Ex- areas		
EC-Type Examination Certificate	SIRA 12 ATEX 2128X	
Group, category, type of protection, temperature class	(Ex) II 1G Ex ia IIC T4	DART
Voltage U _i	24 V	ü
Current I _i	500 mA	
Internal capacitance C _i	2 nF	
Internal inductance L _i	0.1 μΗ	(D)
Statement of conformity	SIRA 12 ATEX 4176X	ŝ
Group, category, type of protection, temperature class	🐼 II 3G Ex nAc IIC T4, 🐼 II 3G Ex ic IIC T4	Process
Voltage U _i	33 V	<u>ц</u>
Current I _i	600 mA	
Internal capacitance C _i	2 nF	10
Directive conformity		jes
Directive 94/9/EC	EN 60079-0:2012, EN 60079-11:2012, EN 60079-15:2010, EN 60079-26:2007	Accessories
International approvals		S
••	IECEx SIR 12.0051X	Ő
IECEx approval		

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SCP-LBF-IA1.36.IE*

FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics

Supplies Power

Field

DART

Process

Accessories

Advanced

_

Function

•

Features

cable

or general-purpose

Optional diagnostics for wear

This fieldbus surge protector is in acc. with IEC 61158-2 and mounts on the spur connector of FieldConnex® device couplers protecting them. It directs power surges to earth via gas discharge tubes. It is certified intrinsically safe for circuits in hazardous areas up to Zone 0/Div. 1 and DART Fieldbus. The surge protector is installed in Zone 1 ... 2 or Div. 1 ... 2. Self-diagnostics (option) continuously monitor wear caused by surges. The end of the useful life is indicated via LED and in the control room via FieldConnex[®] Advanced Diagnostics for exchange.

Pluggable, mounts between device coupler and spur

• Intrinsically safe (Ex ia), FISCO, Entity, DART Fieldbus,

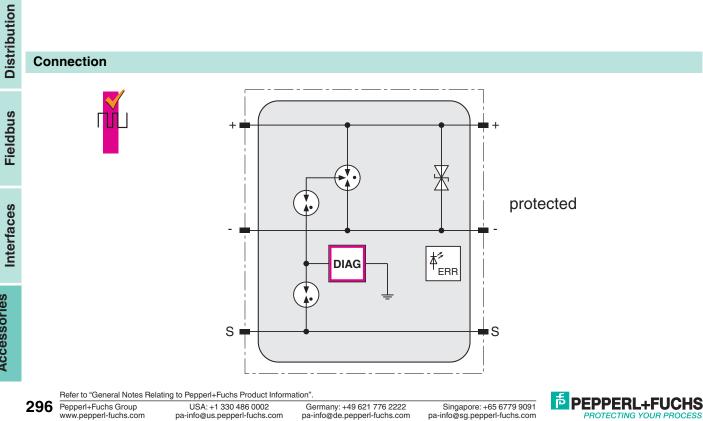
· Grounding of shield via gas-discharge tube Indication via LED and Advanced Diagnostics

Installation on the spur connector is without additional wiring even as retrofit. A single grounding bar connects surge protectors mounted side by side to a common grounding point.

Assembly



Connection



Electrical specifications		
•	00.1/	
Rated voltage	36 V	Ť.
Rated current	250 mA	S
Voltage Protection Level U _p Line/Line	≤ 50 V category B2 10/700usec, 25 A	D
	$\leq 53 \text{ V category D2 10/700 psec, 25 A}$ $\leq 53 \text{ V category C1 8/20 \mu sec, 150 A}$ $\leq 55 \text{ V category C2 8/20 \mu sec, 150 A}$ $\leq 46 \text{ V category C3 1 kV/\mu sec, 10 A}$	-ieldk
Line/Earth	 980 V category B2 10/700μsec, 50 A per line 800 V category C1 8/20μsec, 50 A per line 1450 V category C2 8/20μsec, 5 kA per line 1200 V category C3 1kV/μsec, 50 A per line 980 V category D1 10/350μsec, 500 A per line 	FOUNDATION Fieldbus
Screen/Shield indirectly grounded (via GDT)	 500 V category B2 10/700μsec, 100 A 600 V category C1 8/20μsec, 500 A 700 V category C2 8/20μsec, 10 kA 550 V category C3 1kV/μsec, 100 A 570 V category D1 10/350μsec, 1 kA 	FOUN
Reaction time t _A		_
Line/Line	≤ 1 ns	uo
Line/Earth	≤ 100 ns	cti
Screen/Shield-Earth	\leq 100 ns	
Overstressed fault mode	acc. IEC 61643-21 line inoperable mode 2	Selection
Impulse durability		
Per line	5 kA category C2 8/20µsec	
Screen/Shield indirectly grounded (via GDT)	1 kA category D1 10/350µsec	Advanced
Diversitive conformity	10 kA category C2 8/20µsec	Advanced
Directive conformity		/ar
Electromagnetic compatibility Directive 2004/108/EC	EN 61326-1:2006	- P C
Standard conformity	EN 01320-1.2000	٩ ٣
Electromagnetic compatibility	NAMUR NE 21	
Protection degree	IEC 60529	
Climatic conditions	IEC 60721	7
Shock resistance	EN 60068-2-27	Power
Vibration resistance	EN 60068-2-6	Po
Surge protection	IEC 61643-21	Ú
Ambient conditions		
Ambient temperature	-40 70 °C (-40 158 °F)	
Storage temperature	-40 85 °C (-40 185 °F)	
Relative humidity	≤ 95 % non-condensing	þ
Shock resistance	15 g 11 ms	Field
Vibration resistance	1 g, 10 150 Hz	Field
Data for application in connection with Exareas		C
EC-Type Examination Certificate	SIRA 12 ATEX 2128X	
Group, category, type of protection, temperature class	⟨ Ex II 1G Ex ia IIC T4	DART
Voltage U _i	24 V	DAD
Current I _i	500 mA	Ü
Internal capacitance C _i	2 nF	
Internal inductance L _i	0.1 μΗ	
Statement of conformity	SIRA 12 ATEX 4176X	s a
Group, category, type of protection, temperature class	⟨ II 3G Ex nAc IIC T4,	Process
Voltage U _i	33 V	Pro
Current l _i	600 mA	<u> </u>
Internal capacitance Ci	2 nF	
Directive conformity		S
Directive 94/9/EC	EN 60079-0:2012, EN 60079-11:2012, EN 60079-15:2010, EN 60079-26:2007	rie
International approvals		Accessories
IECEx approval	IECEx SIR 12.0051X	es
Approved for	Ex ia IIC T4	Ŭ

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PEPPERL+FUCHS 297 PROTECTING YOUR PR

ELS-1

Features F FOUNDATION Fieldbus H1

Selection Guideline

Diagnostics Advanced

Power Supplies

Field

Process

Accessories

- · Indication via LED and Advanced Diagnostics · Intrinsically safe, FISCO or Entity
- For instrument or device coupler
- · Fits inside terminal compartment

Function

The enclosure leakage sensor senses water ingress in field device housings or junction boxes. It fits into the enclosure and sends alarms via the fieldbus network. It is certified intrinsically safe Ex ia for installation in Zone 0.

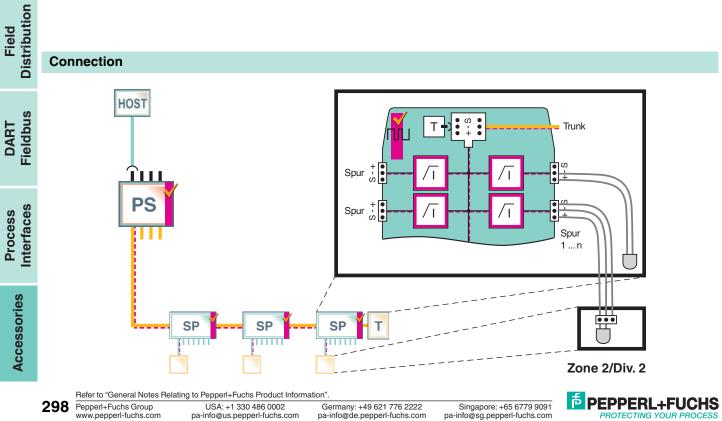
The alarm is indicated via LED and in the control room via FieldConnex[®] Advanced Diagnostics. Corrective actions can thus prevent effects from becoming irreversible or avoid conditions adverse to plant performance.

The ELS-1 connects in parallel to field instruments, trunk or spur connectors of compatible device coupler.



Assembly

Connection



	ELS-1	
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Technical data		
Directive conformity		
Electromagnetic compatibility		<u> </u>
Directive 2004/108/EC	EN 61326-1:2006	I
Standard conformity		FOUNDATION Fieldbus
Electromagnetic compatibility	NE 21:2006	ā
Protection degree	IEC 60529	<u>D</u>
Climatic conditions	IEC 60721	O
Shock resistance	EN 60068-2-27	L I
Vibration resistance	EN 60068-2-6	Z
Ambient conditions		0
Ambient temperature	-40 80 °C (-40 176 °F)	E
Storage temperature	-40 85 °C (-40 185 °F)	A
Relative humidity	100 %	
Shock resistance	15 g 11 ms	5
Vibration resistance	1 g, 10 150 Hz	ō
Mechanical specifications		Ľ.
Connection type	two strands, length 180 mm with cable ferrules, PVC insulation	
Core cross-section	0.25 mm ²	C (1)
Housing material	Polycarbonate	in or
Protection degree	Electronic component IP67	lel
Ŭ	connection IP00	Selection Guideline
Mass	10 g	ũ ũ
Data for application in connection with Ex-		
areas		(0)
EC-Type Examination Certificate	SIRA 12 ATEX 2129X	ics
Group, category, type of protection, temperature class	⟨ⓑ⟩ II 1G Ex ia IIC T4	Advanced Diagnostics
Voltage U _i	24 V	dv agr
Internal capacitance Ci	negligible 0 nF	⊃is ⊃is
Internal inductance L _i	negligible 0 μH	
Statement of conformity	SIRA 12 ATEX 4154X	
Group, category, type of protection, temperature class	🐵 II 3G Ex nAc IIC T4, 🐵 II 3G Ex ic IIC T4	Power Supplies
Voltage U _i	33 V	N C
Internal capacitance Ci	negligible 0 nF	Pc
Directive conformity		0)
Directive 94/9/EC	IEC 60079-0:2011, EN 60079-11:2012, EN 60079-15:2010, EN 60079-26:2007	
International approvals		c
IECEx approval	IECEx SIR 12.0052X	Ō
Approved for	Ex ia IIC T4, Ex ic IIC T4, Ex nAc IIC T4	pri
		Field Distribution

Refer to "General Notes Relating to Pepperl+Fuchs Product Information" Pepperl+Fuchs Group www.pepperl-fuchs.com

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DART Fieldbus

Process Interfaces

Accessories