



# Signal Conditioners



908837 (US) / 208599 (EU) 11/2010  
Edition

564

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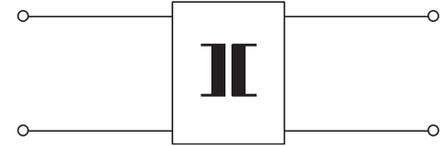
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PROTECTING YOUR PROCESS



With the variety of process control systems available, it is often necessary to convert an input signal into a format that the system will accept. Signal conditioners take signals from an assortment of field instruments such as thermocouples and RTDs, and convert those signals into any of several standard instrument signals (1 V to 5 V, 4 mA to 20 mA, etc.). Signal conditioners are also beneficial to the accurate transfer of these signals, isolation, and the elimination of ground loops.

## Operating principle

The key to process control is accuracy both in measurement and in signal conditioning. The biggest and most overlooked threat to effective process control is the presence of ground loops. Whenever analog data is transferred through long cable runs, there is a high probability that ground loop problems will occur. A ground loop exists when multiple earth ground connections are made in a system. A difference in potential between the grounds generates an extraneous current flow in the signal conductor.



The result is commonly known as noise. In its mildest form, noise in the signal line causes measurement offsets, incorrect sensor readings, and general signal corruption. In its most severe form, however, noise contamination can deteriorate communication to a point where control of the process is lost. Isolation between the ground circuits is essential to the prevention of ground loop currents and, therefore, the elimination of noise. Signal conditioners provide the necessary isolation as well as amplification, filtering, and linearity corrections.

## K-System

566



- Broad product range
- 3-port galvanically isolated barriers
- SIL rated for safety instrumented systems
- Limit detection
- Logic functions: pushbutton programmable
- Fault detection and alarming
- Loop-powered and analog isolators



K-System

Digital Inputs

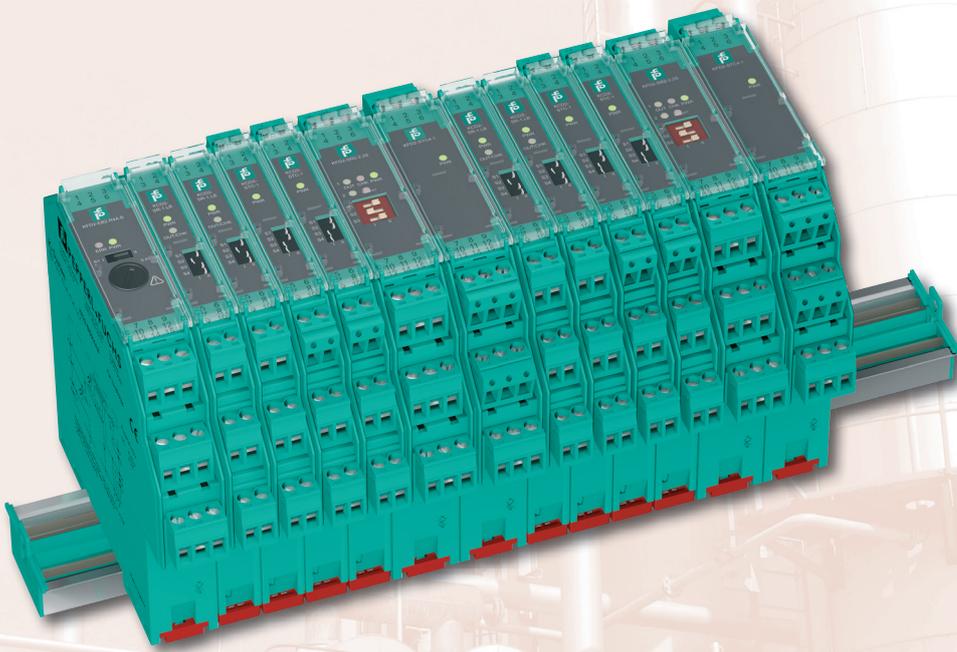
Digital Outputs

Analog Inputs

Analog Outputs

Accessories

# K-System



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K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

## Introduction

The K-System consists of wide range of signal conditioners suitable for mounting on 35 mm DIN rail. K-System is easy to specify, integrate and expand and has become synonymous with safety and reliability. Our extensive line of signal conditioner for safety location applications contains over 60 different models, each containing industry leading features and benefits.

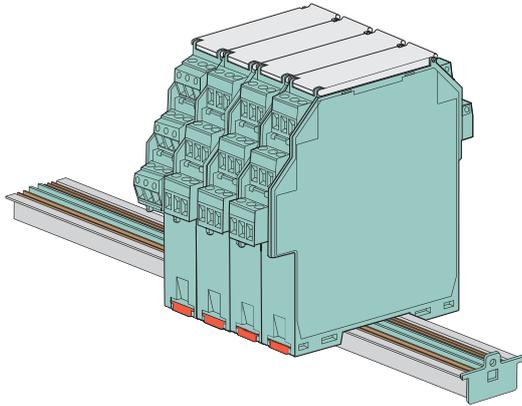


Figure 1 K-System on Power Rail

## Housing types

Depending on the functionality and application, K-System has different housing widths. Whether it is the 12.5 mm KC modules or the well-proven 20 mm KF modules, the electrical and mechanical characteristics of the K-System are maintained. This collection of modules provides a wide range of interface barriers that can be combined on Power Rail.

### KC module housing

Used for high signal integrity

- Compact housing, only 12.5 mm wide
- Single loop integrity
- Power loss only 0.8 W per device



Figure 2 12.5 mm housing (KC module)

### KF module housings

Used for high channel density

- 20 mm housing
- Highest packing density on the market
- As low as 5 mm per channel



Figure 3 20 mm housing (KF module)

Used for applications with high functionality

- Logic controls determine and monitor speed, direction of rotation, slip, flow rates and time
- Analog controls monitor transmitter signals, strain gauges, temperature and load cells
- Configured using **PACTware™** or by push button
- Universal power supply

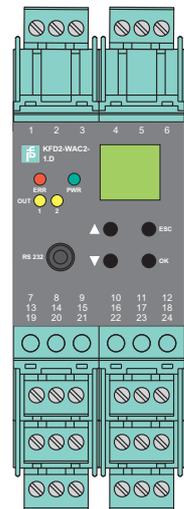


Figure 4 40 mm housing (KF module)

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

## Supply voltage

K-System signal conditioners are available with different supply voltages. The most widely used rating is 24 V DC; however, 115 V AC and 230 V AC are also available for applications when DC power is not available.

The universal supply units carry the complete range from 20 V DC to 90 V DC and 48 V AC to 230 V AC on the same input terminals. The supported supply voltage for each barrier is identified on the side plate.

## Mounting

The K-System is mounted on a 35 mm DIN rail acc. to EN 60715. To reduce wiring and installation costs, Power Rail is the optimum solution.

Low heat dissipation allows vertical or horizontal mounting.

## Power Rail

The Power Rail is a plastic insert into a standard DIN rail and contains two leads that deliver power to the modules. Power is sent through the rail by a power feed module that delivers 24 V DC at 4 A. The module uses a 5 A fuse to protect the barriers. The Power Rail virtually eliminates the risk of wiring faults and facilitates easy expansion. Power Rail is available in two versions:

- UPR-03: 3-lead version supplies two leads for power and one lead for error signal
- UPR-05: 5-lead version supplies two leads for power, one lead for error signal and two leads for serial data exchange.

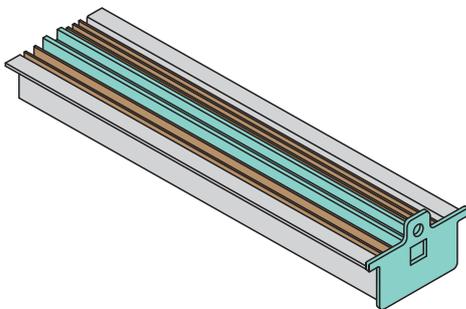


Figure 5 Universal Power Rail UPR-05

## Mounting on Power Rail

As shown in the figure, the isolation modules are snapped onto the Universal Power Rail in a vertical downward movement.

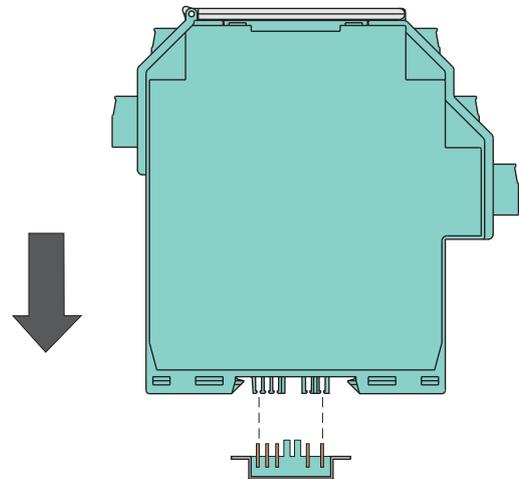


Figure 6 Proper K-System mounting

**CORRECT: Device snapped on vertically.**

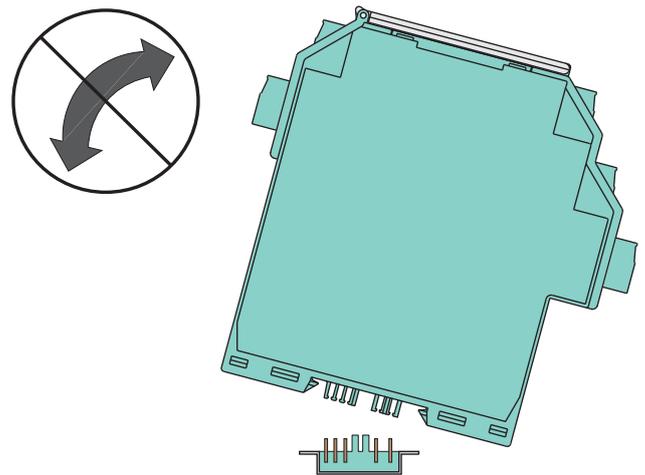


Figure 7 Improper K-System mounting

**INCORRECT: Device snapped on from the side.**



K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

Power connection to K-System

Conventional power supply without Power Rail

Conventional power supplies create complicated and expensive wiring systems. After all signal conditioners are connected, there is a significant amount of wiring and more wiring must be added for features such as lead breakage and short-circuit monitoring.

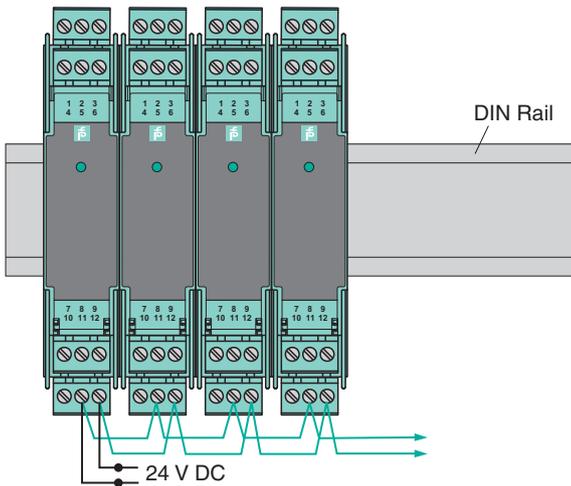


Figure 8 Conventional installation

Power supply with Power Rail

Supply with Power Feed Modules

The Pepperl+Fuchs Power Rail eliminates wiring hassles and reduces expense. The power feed module mounts on the Power Rail for easy and reliable distribution of power to all connected signal conditioners. This method eliminates all of the parallel power wiring necessary on a conventional installation without Power Rail.

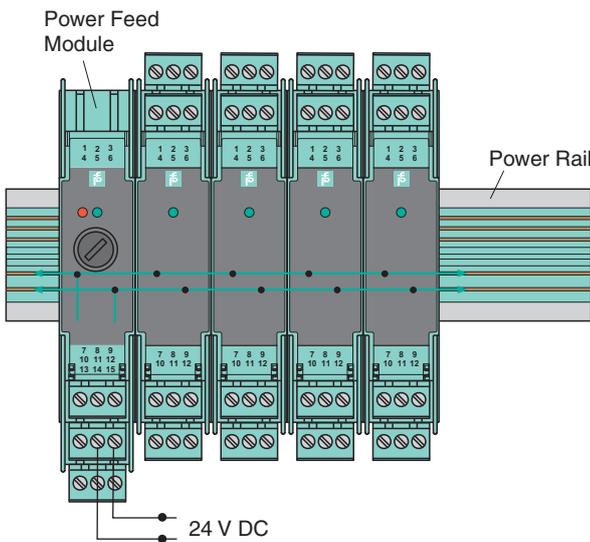


Figure 9 Power Rail installation

Redundant Supply with Power Feed Modules

Two power supplies or a redundant power supply with two power feed modules offers a high degree of safety and reliability. If a power supply is damaged or a fuse opens in a power feed module, the redundant power supply continues to energize the isolator modules through their Power Rail connection.

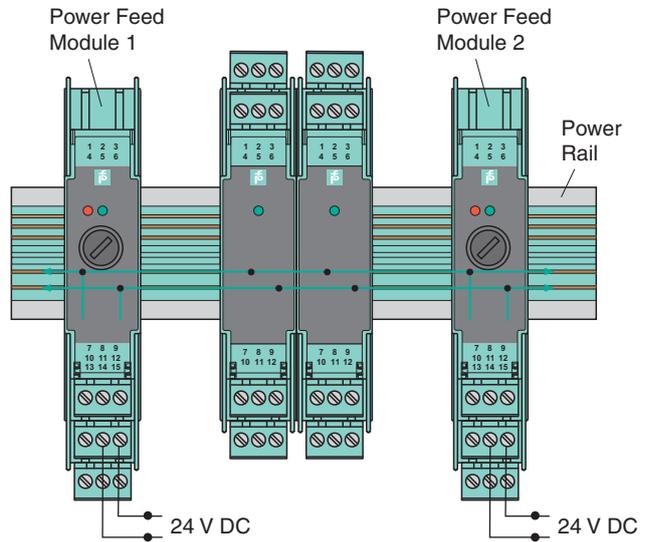


Figure 10 Redundant power connections

Direct Supply with Power Supplies

A complete power solution for a K-System installation is possible by using a 115/230 V AC to 24 V DC/4 A power supply with the KFA6-STR-1.24.4 or by using the KFA6-STR-1.24.500 that provides 24 V DC/500 mA. The power supplies snap-on to the Power Rail to easily and efficiently distribute power to the signal conditioners.

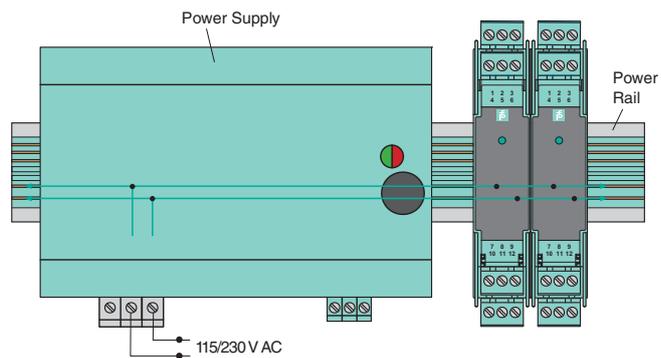


Figure 11 Integrated power supply (4 A)

K-System

Digital Inputs

Digital Outputs

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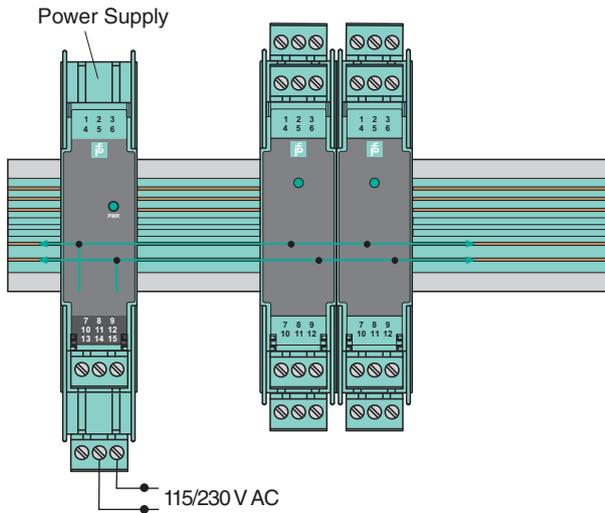


Figure 12 Integrated power supply (500 mA)

### Collective error messaging

Collective error messaging enables lead breakage and short-circuit monitoring for isolator modules without additional wiring expenses. During a fault condition of the field circuit, an interrupt signal from an isolator module is transferred to the Power Rail. The power feed module evaluates the signal and transfers the interrupt signal to the control system via a relay contact.

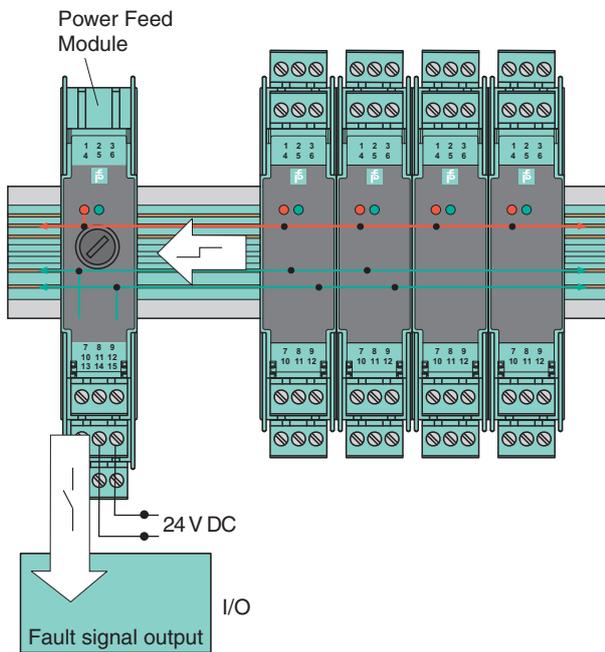


Figure 13 Collective error message via power feed module

### Terminal blocks

#### Removable terminal blocks

The removable terminal blocks simplify control cabinet construction and allow the units to be replaced while they are energized. These screw-secured, cage clamp terminals allow space for the connection of leads with core cross-sections of up to 2.5 mm<sup>2</sup> (14 AWG). The connectors are coded with red pins so misconnection of a terminal block is eliminated. With the KF-CP coding pins (available separately), additional terminal block styles with test sockets or cage spring release can be easily coded and inserted into a signal conditioner.



Figure 14 K-System removable terminal blocks

#### Terminal designation

Please reference appropriate model for terminal designation.

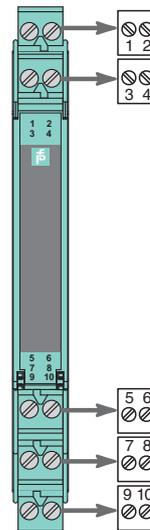


Figure 15 12.5 mm housing (KC module)

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K-System

Digital Inputs

Digital Outputs

Analog Inputs

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K-System  
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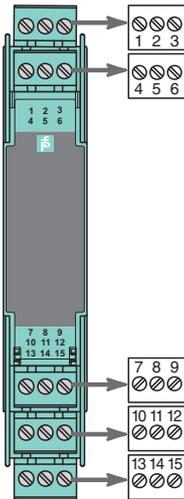


Figure 16 20 mm housing (KF module)

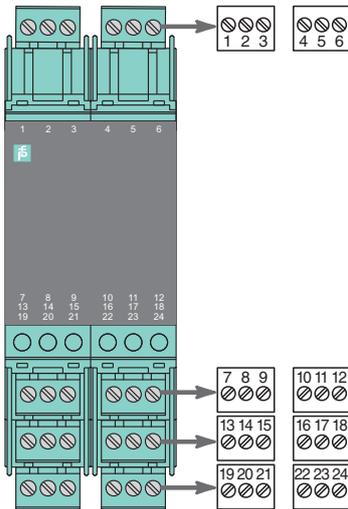


Figure 17 40 mm housing (KF module)

**Color identification**

The color identification of the devices has the following meaning:

- green indicates devices with DC power supply
- black indicates devices with AC power supply
- grey indicates devices with universal power supply of 20 V DC to 90 V DC or 48 V AC to 253 V AC

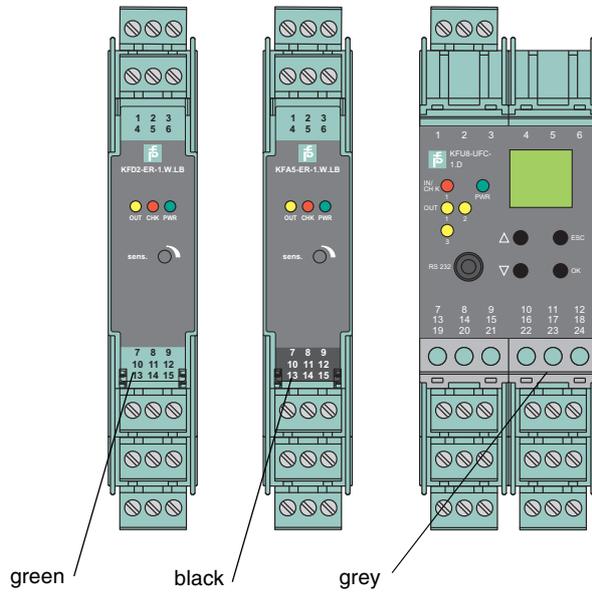


Figure 18 Color identification of devices



## Safety information

The corresponding data sheets, the Declaration of Conformity, the EC-Type Examination Certificate and applicable certificates (see data sheet) are an integral part of this document.

### Intended use

Laws and regulations applicable to the usage or planned purpose of usage must be observed. Devices are only approved for proper usage in accordance with intended use. Improper handling will result in voiding of any warrantee or manufacturer's responsibility.

These devices are used in C&I technology for the galvanic isolation of C&I signals, such as 20 mA and 10 V unit signals, and also for the adaptation and/or standardization of signals.

The devices are not suitable for the isolation of signals in power engineering, unless this is specifically referred to in the respective data sheet.

Protection of operating personnel and the system is not ensured if the product is not used in accordance with its intended use.

### Installation and commissioning

Commissioning and installation must be carried out by specially trained and qualified personnel only.

### Installation of the interface devices in the safe area

The devices are constructed to satisfy the IP20 protection classification and must be protected from adverse environmental conditions such as water spray or dirt exceeding the pollution degree 2.

The devices must be installed outside the hazardous area!

### Installation and commissioning of the interface devices within Zone 2/Div. 2 of the hazardous area

Only devices with the corresponding manufacturer's Declaration of Conformity or separate certificate of conformity can be installed in Zone 2/Div. 2.

The individual data sheets indicate whether these conditions are met.

For US and Canada installations, in Zone 2/Div. 2 follow the NEC and CEC wiring methods. The enclosure must be able to accept Zone 2/Div. 2 wiring methods. The referenced product certification control drawing must be observed.

For all other applications, the devices should be installed in a switch or junction box that:

- meets at least IP54 in accordance to EN 60529.
- meets to the requirements of resistance to light and resistance to impact according to EN 60079-0/ IEC 60079-0.
- meets to the requirements of thermal endurance according to EN 60079-15/IEC 60079-15.
- must not cause ignition danger by electrostatic charge during intended use, maintenance and cleaning.

The EC-Type Examination Certificates, standard certificates/approvals or the manufacturer's Declaration of Conformity should be observed. It is especially important to observe the "special conditions" if these are included in the certificates.

### Repair and maintenance

The transfer characteristics of the devices remain stable over long periods of time. This eliminates the need for regular adjustment. Maintenance is not required.

### Fault elimination

No changes can be made to devices that are operated in hazardous areas. Repairs on the device are not allowed.

### Isolation coordinates for installations for galvanic isolation according to EN 50178 and EN 61140

The devices of the K-System are electronic equipment for use in secluded electrical operating sites where only skilled personnel or electrically instructed personnel will have admission or access.

The devices are assessed for pollution degree 2 and overvoltage category II according to EN 50178.

Connect only power supplies to power feed modules, which provide protection against direct contact (e. g. SELV or PELV).

For additional details, see data sheets.

## Technical data

### Electrical data

#### Control circuit signals

- 0/4 mA to 20 mA signal level acc. to NE43
- Current output HART compatible
- Current input HART compatible
- Digital output: active or, passive electronic output 100 mA/30 V, short circuit protected
- Relay output 2 A, minimum load 1 mA/24 V
- Logic level 24 V acc. to IEC 60946
- Functional isolation or safe isolation acc. to EN 50178 and NAMUR NE23

For additional details, see data sheets.

#### Field circuit signals

- Transmitter power supply up to 17 V DC
- Current input HART compatible
- Pt100, in 2-, 3-, (4-)wire technology
- Resistor 0 Ω to 400 Ω with freely definable characteristic
- Potentiometer
- Thermocouples of all types, internal cold junction, external reference
- Current output HART compatible
- Digital input NAMUR EN 60947-5-6

For additional details, see data sheets.

### Mechanical data

#### Mounting

- Snap-on 35 mm standard DIN rail acc. to EN 60715. Can be mounted horizontally or vertically, side by side.
- Panel mount: The lugs on the base of the modules must be extended and used for mounting purposes with 3 mm screws.
- K-MS mounting base for screw attachment

#### Housing material

Polycarbonate (PC)

#### Dimensions

Housing drawings please refer to [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

#### Protection degree

IP20 acc. to EN 60529

### Connection

- KH\*-modules:  
self-opening connection terminals for max. core diameter of 1 x 2.5 mm<sup>2</sup> (14 AWG)
- KF\*-and KC\*-modules:  
removable connector with integrated self opening device terminals for leads of up to a max. of 1 x 2.5 mm<sup>2</sup> (14 AWG)

### Fire protection class

Housing: V2 according to UL 94 standard. (Unless stated otherwise all details relate to the reference conditions.)

### Labeling

place for labeling on the front side, label:

- KC-modules (12.5 mm): 22 mm x 9 mm
- KF-modules (20 mm): 22 mm x 16.5mm
- KF-modules (40 mm): 18 mm x 8 mm

### Ambient conditions

#### Ambient temperature

-20 °C to 60 °C (-4 °F to 140 °F)

Exceptions see data sheets.

#### Storage temperature

-40 °C to 90 °C (-40 °F to 194 °F)

#### Reference conditions for adjustment

20 °C (68 °F)

#### Relative humidity

max. 95 % without moisture condensation

#### Vibration resistance

acc. to EN 60068-2-6, 10 Hz to 150 Hz, 1 g, high crossover frequency

#### Shock resistance

acc. to EN 60068-2-27, 15 g, 11 ms, half-sine



K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

## Conformity with standards and directives

### General

- EMC acc. to NAMUR NE21 and EN 61326
- LEDs acc. to NAMUR NE44
- Software acc. to NAMUR NE53
- Switch-on pulse suppression
- Devices K\*D2:
  - Supply voltage 20 V DC to 30 V DC via Power Rail or supply terminals
  - Fault signals via Power Rail
- Devices K\*A and K\*U:
  - Supply voltage 115 V/230 V AC  $\pm 10\%$
- Safety devices acc. to VDE 0660 T.209, AK acc. to DIN 19250

## Digital inputs/outputs in accordance with NAMUR

The standards references for this interface have changed many times:

German standard (old): **DIN 19234**: Electrical distance sensors – DC interface for distance sensors and switch amplifiers; 1990-06

European standard (old): **EN 50227**: Low voltage switch gear and control gear – control devices and switching elements – proximity switches, DC interface for proximity sensors and switch amplifiers (NAMUR), 1996-10

German version (old): **DIN EN 50227**: Low voltage switch gear – control devices and switching elements – proximity switches, DC interface for proximity sensors and switch amplifiers (NAMUR), 1997, German nomenclature VDE 0660, part 212

**Current designation: DIN EN 60947-5-6**: Low voltage switch gear – control devices and switching elements – proximity switches, DC interface for proximity sensors and switch amplifiers (NAMUR), 2000, German nomenclature. VDE 0660 part 212

**Current IEC designation: IEC 60947-5-6**: Low voltage switch gear and control gear – part 5-6: Control circuit devices and switching elements – DC interface for proximity sensors and switching amplifiers (NAMUR), 1999.

## Switch Amplifiers

Model Number	Channels	Function Timer	Input (Field)			Output (Control System)		Supply			Page
			NAMUR Sensor/ Dry Contact	3-wire Sensor	Line Fault Detection	Relay	Error Message Output	24 V DC	115 V AC/ 230 V AC	SIL	
KCD2-SR-1.LB	1		■		■	2	■	■		2	579
KCD2-SR-2	2		■		■	2	■	■		2	580
KFD2-SR2-2.2S	2		■		■	2x2	■	■		2	581
KFU8-SR-1.3L.V	1	■		■		2	■	■	■		582
KFA6-SR-2.3L	2			■		2		■	■		583

## Frequency Converters

Model Number	Functions			Input (Field)		Output (Control System)				Supply			Page
	Speed Monitor	Frequency Conversion	Special Functions	NAMUR Sensor/ Dry Contact	Line Fault Detection	Relay	Transistor (Passive)	Error Message Output	0/4 mA ... 20 mA	24 V DC	115 V AC/ 230 V AC	SIL	
KFD2-SR2-2.W.SM	■		■	■	■	2				■		2	584
KFD2-DWB-1.D	■			■	■	2		■		■		2	585
KFU8-DWB-1.D	■			■	■	2		■		■	■	2	586
KFD2-UFC-1.D	■	■	■	■	■	2	1	■	1	■		2	587
KFU8-UFC-1.D	■	■	■	■	■	2	1	■	1	■	■	2	588
KFD2-UFT-2.D	■	■	■	■	■	2	2	■	1	■			589
KFU8-UFT-2.D	■	■	■	■	■	2	2	■	1	■	■		590



K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories



Conductivity Switch Amplifiers

Model Number	Channels	Function Measurement of Conductivity	Input (Field)		Output (Control System)		Supply			Page
			Line Fault Detection	Resistance	Relay	Error Message Output	24 V DC	115 V AC/ 230 V AC	SIL	
KFD2-ER-1.5	1	■			1		■			591
KFD2-ER-1.6	1	■			1		■			592
KFA5-ER-1.5	1	■			1			■		593
KFA5-ER-1.6	1	■			1			■		594
KFA6-ER-1.5	1	■			1			■		595
KFA6-ER-1.6	1	■			1			■		596
KFD2-ER-1.W.LB	1	■	■	■	2	■	■			597
KFD2-ER-2.W.LB	2	■	■	■	2	■	■			598
KFA5-ER-1.W.LB	1	■	■	■	2	■		■		599
KFA5-ER-2.W.LB	2	■	■	■	2	■		■		600
KFA6-ER-1.W.LB	1	■	■	■	2	■		■		601
KFA6-ER-2.W.LB	2	■	■	■	2	■		■		602

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Technical data	
<b>Supply</b>	
Rated voltage	19 ... 30 V DC
Power consumption	≤ 500 mW
<b>Input</b>	
Rated values	acc. to EN 60947-5-6 (NAMUR)
Open circuit voltage/short-circuit current	approx. 10 V DC/approx. 8 mA
Switching point/switching hysteresis	1.2 ... 2.1 mA/approx. 0.2 mA
Line fault detection	breakage I ≤ 0.1 mA, short-circuit I ≥ 6.5 mA
Pulse/Pause ratio	≥ 20 ms/≥ 20 ms
<b>Output</b>	
Output I	signal; relay
Output II	signal or error message; relay
Contact loading	253 V AC/2 A/cos Φ > 0.7; 126.5 V AC/4 A/cos Φ > 0.7; 30 V DC/2 A resistive load
Minimum switch current	2 mA/24 V DC
Energized/De-energized delay	≤ 20 ms/≤ 20 ms
Mechanical life	10 <sup>7</sup> switching cycles
<b>Transfer characteristics</b>	
Switching frequency	≤ 10 Hz
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	12.5 x 114 x 119 mm (0.5 x 4.5 x 4.7 in), housing type A2

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Relay contact output
- Fault relay contact output
- Line fault detection (LFD)
- Housing width 12.5 mm
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner transfers digital signals (NAMUR sensors/mechanical contacts) from the field to the control system.

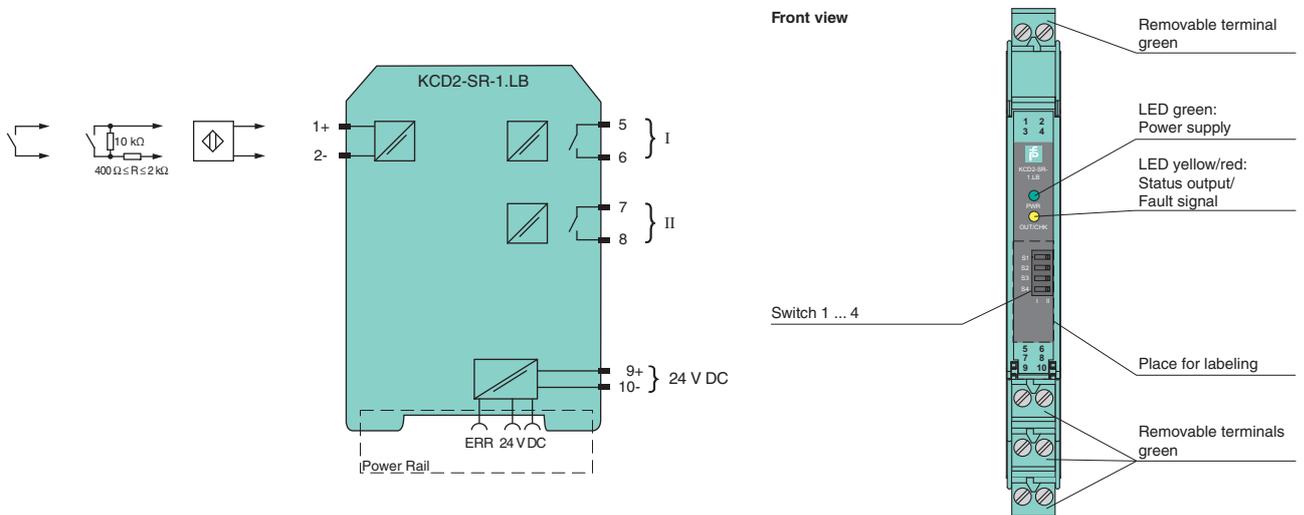
The proximity sensor or switch controls a form A normally open relay contact for the load. The normal output state is reversed using switch S1. Switch S2 allows output II to be switched between a signal output and an error message output. Switch S3 enables or disables line fault detection of the field circuit.

During an error condition, relays revert to their de-energized state and LEDs indicate the fault according to NAMUR NE44.

A unique collective error messaging feature is available when used with the Power Rail system.

Due to its compact housing design and low heat dissipation, this device is useful for detecting positions, end stops, and switching states in space-critical applications.

**Diagrams**



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**PEPPERL+FUCHS 579**  
PROTECTING YOUR PROCESS

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 2-channel signal conditioner
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Relay contact output
- Line fault detection (LFD)
- Housing width 12.5 mm
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner transfers digital signals (NAMUR sensors/mechanical contacts) from the field to the control system.

The proximity sensor or switch controls a form A normally open relay contact for the load. The normal output state can be reversed using switches S1 and S2. Switch S3 is used to enable or disable line fault detection of the field circuit.

During an error condition, relays revert to their de-energized state and LEDs indicate the fault according to NAMUR NE44.

A unique collective error messaging feature is available when used with the Power Rail system.

Due to its compact housing design and low heat dissipation, this device is useful for detecting positions, end stops, and switching states in space-critical applications.

**Technical data**

**Supply**

Rated voltage	19 ... 30 V DC
Power consumption	≤ 600 mW

**Input**

Rated values	acc. to EN 60947-5-6 (NAMUR)
Open circuit voltage/short-circuit current	approx. 10 V DC/approx. 8 mA
Switching point/switching hysteresis	1.2 ... 2.1 mA/approx. 0.2 mA
Line fault detection	breakage I ≤ 0.1 mA, short-circuit I ≥ 6.5 mA
Pulse/Pause ratio	≥ 20 ms/≥ 20 ms

**Output**

Output I	signal; relay
Output II	signal; relay
Contact loading	253 V AC/2 A/cos Φ > 0.7; 126.5 V AC/4 A/cos Φ > 0.7; 30 V DC/2 A resistive load

Minimum switch current	2 mA/24 V DC
Energized/De-energized delay	≤ 20 ms/≤ 20 ms
Mechanical life	10 <sup>7</sup> switching cycles

**Transfer characteristics**

Switching frequency	≤ 10 Hz
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**Ambient conditions**

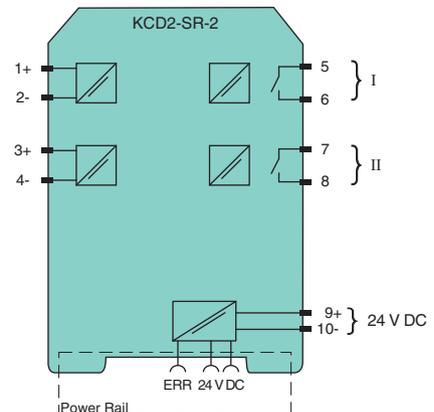
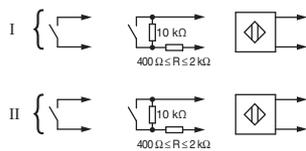
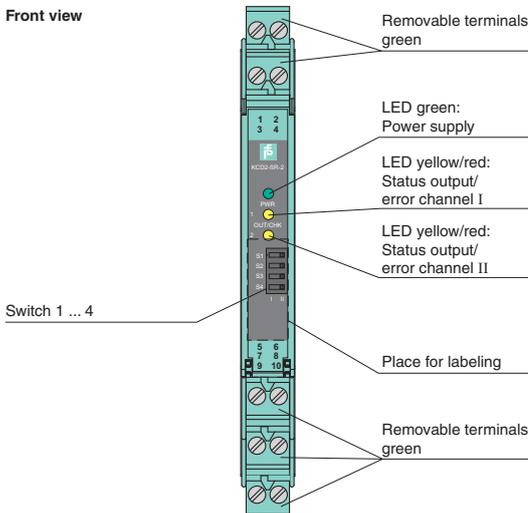
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
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**Mechanical specifications**

Protection degree	IP20
Mass	approx. 100 g
Dimensions	12.5 x 114 x 119 mm (0.5 x 4.5 x 4.7 in), housing type A2

**Diagrams**

Front view



Edition 908837 (US) / 208599 (EU) 11/2010



Technical data	
<b>Supply</b>	
Rated voltage	20 ... 30 V DC
Power consumption	< 1.3 W
<b>Input</b>	
Rated values	acc. to EN 60947-5-6 (NAMUR)
Open circuit voltage/short-circuit current	approx. 8 V DC/approx. 8 mA
Switching point/switching hysteresis	1.2 ... 2.1 mA/approx. 0.2 mA
Line fault detection	breakage $I \leq 0.1$ mA, short-circuit $I > 6$ mA
Pulse/Pause ratio	$\geq 20$ ms/ $\geq 20$ ms
<b>Output</b>	
Collective error message	Power Rail
Output I, II, III, IV	channel 1, 2; relay
Contact loading	50 V AC/1 A/cos $\Phi > 0.7$ ; 40 V DC/1 A resistive load
Minimum switch current	1 mA/24 V DC
Energized/De-energized delay	approx. 20 ms/approx. 20 ms
Mechanical life	$10^8$ switching cycles
<b>Transfer characteristics</b>	
Switching frequency	$\leq 10$ Hz
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Features**

- 2-channel signal conditioner
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- 2 x 2 relay contact outputs with AND logic
- Line fault detection (LFD)
- Reversible mode of operation
- Up to SIL2 acc. to IEC 61508

**Function**

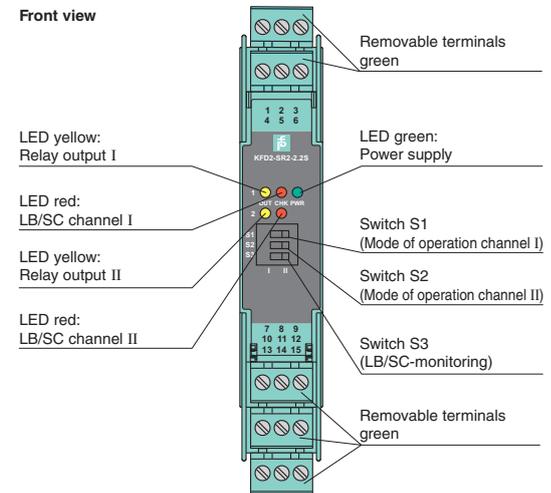
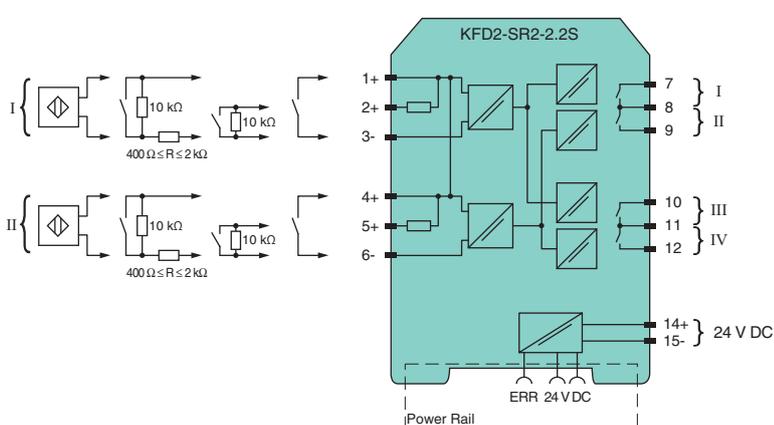
This signal conditioner transfers digital signals (NAMUR sensors/mechanical contacts).

Each sensor or switch controls two form A normally open relay contacts. The normal output state can be reversed using switches S1 and S2. Switch S3 is used to enable or disable line fault detection of the field circuit.

During an error condition, the relays revert to their de-energized state and the LEDs indicate the fault according to NAMUR NE44.

A unique collective error messaging feature is available when used with the Power Rail system.

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 1-channel signal conditioner
- AC/DC wide range supply
- 3-wire PNP/NPN sensor or push-pull input
- 2 relay contact outputs
- Adjustable energized/de-energized delay

**Function**

This signal conditioner converts the state of 3-wire sensors (PNP or NPN) or sensors with push-pull output stages into two relay outputs.

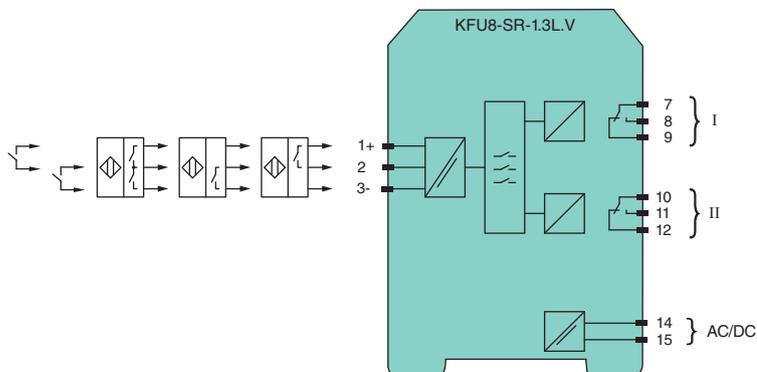
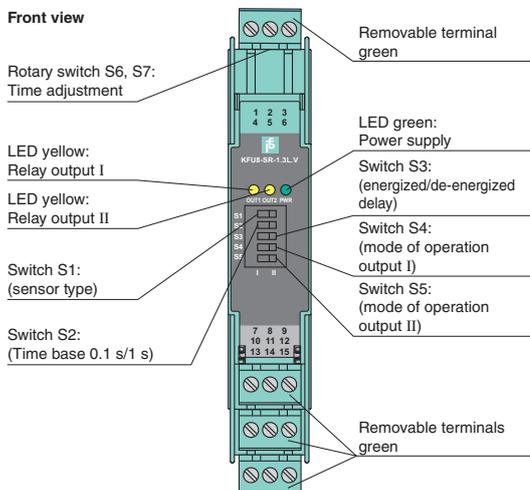
It has one input and two form C changeover relay outputs.

The switch amplifier has an adjustable energized/de-energized delay for the relay outputs.

**Technical data**

<b>Supply</b>	
Rated voltage	20 ... 48 V DC or 90 ... 253 V AC, 45 ... 65 Hz
Power consumption	≤ 4.5 W
<b>Input</b>	
Rated values	22 ... 24 V DC/100 mA
Short-circuit current	≤ 125 mA
Switching point	PNP: 0-signal: < 12.5 V, 1-signal: > 13.5 V NPN and push-pull output: 0-signal: < 4.5 V, 1-signal: > 5.5 V
<b>Output</b>	
Output I, II	signal; relay
Contact loading	250 V AC/2 A/cos Φ ≥ 0.7; 125 V AC/4 A/cos Φ > 0.7; 40 V DC/2 A
Mechanical life	20 x 10 <sup>6</sup> switching cycles
Electrical life	0.2 x 10 <sup>6</sup> switching cycles (40 V DC, 2 A, ohmic) 0.4 x 10 <sup>6</sup> switching cycles (253 V AC, 2 A, cos Φ = 1) 0.25 x 10 <sup>6</sup> switching cycles (253 V AC, 2 A, cos Φ = 0.7)
Minimum load	50 mW, 5 V DC
Energized/De-energized delay	≤ 90 ms/≤ 90 ms
<b>Transfer characteristics</b>	
Switching frequency	≤ 5 Hz for delay 0 s adjustable energized/de-energized delay: 0 ... 79 s
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 166 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Diagrams**



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Technical data	
<b>Supply</b>	
Rated voltage	90 ... 253 V AC, 45 ... 65 Hz
Power consumption	≤ 7 W
<b>Input</b>	
Rated values	22 ... 24 V DC/100 mA
Short-circuit current	110 mA
Switching point	0-signal: < 5 V 1-signal: > 13 V
<b>Output</b>	
Output I, II	
Contact loading	250 V AC/4 A/cos Φ > 0.7; 40 V DC/2 A resistive load
Energized/De-energized delay	max. 6 ms
Mechanical life	10 <sup>7</sup> switching cycles
<b>Transfer characteristics</b>	
Switching frequency	≤ 10 Hz
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Features**

- 2-channel signal conditioner
- 230 V AC supply
- 3-wire PNP/NPN sensor or push-pull input
- Relay contact output
- DIP switch selectable functions
- Minimum/maximum control

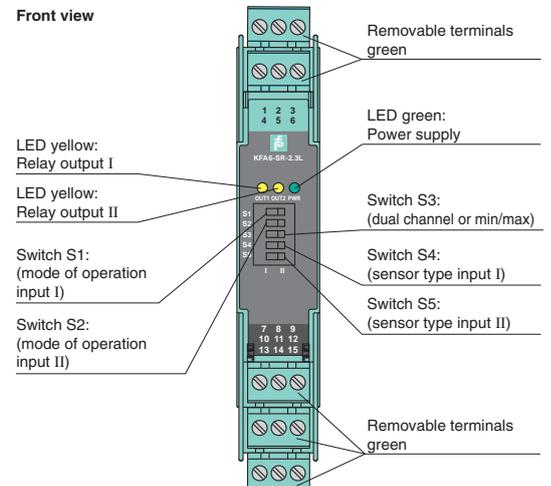
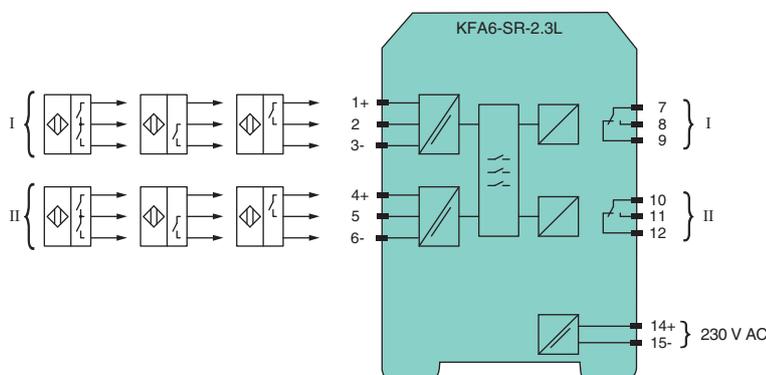
**Function**

This signal conditioner converts the state of 3-wire sensors (PNP or NPN) or sensors with push-pull output stages into a relay output.

It has two inputs and two form C changeover relay outputs.

The device can be used either as dual channel signal conditioner or as a two-point level controller.

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010

Subject to modifications without notice

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**PEPPERL+FUCHS 583**  
PROTECTING YOUR PROCESS

**Features**

- 1-channel signal conditioner
- 24 V DC supply
- PNP/push-pull, dry contacts or NAMUR inputs
- Selectable frequency trip values
- 2 relay contact outputs
- Start-up override
- Selectable mode of operation
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner is a zero speed/standstill monitor that accepts input frequency pulses and triggers an output when the frequency drops below a selected value.

Two startup override values are available. This unit can also be used to determine rotation direction.

During an error condition, relays revert to their de-energized state and LEDs indicate the fault according to NAMUR NE44.

The available diagnostic LEDs show rotation detection, limit trip indicator, power on, and hardware error indication.

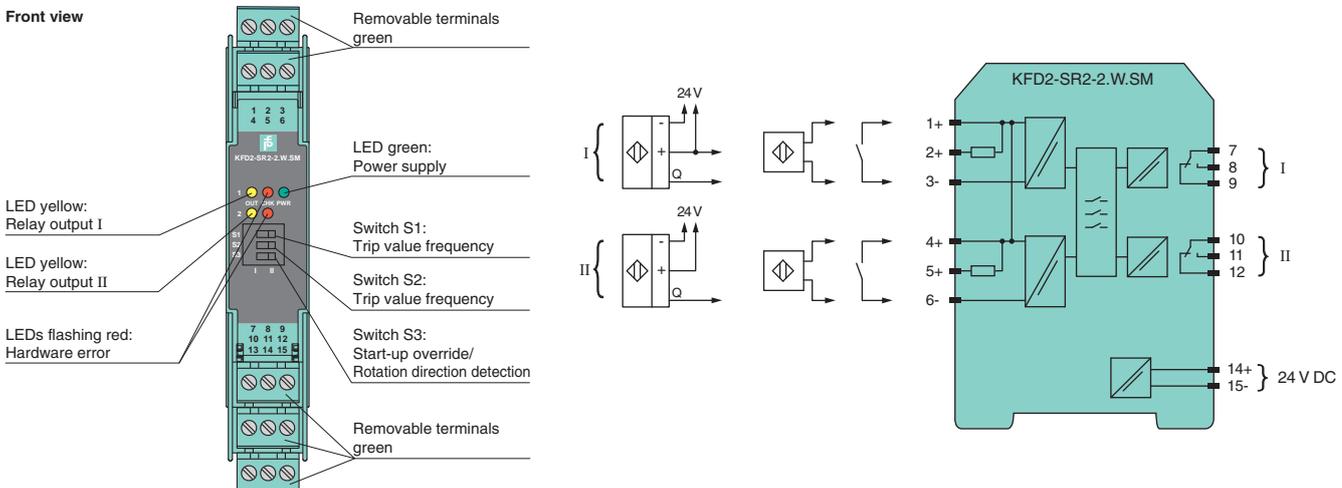
The unit is easily programmed via switches mounted on the front of the unit.

For additional information, refer to [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Technical data**

<b>Supply</b>	
Rated voltage	20 ... 30 V DC
Power consumption	≤ 1.5 W
<b>Input</b>	
Rated values	acc. to EN 60947-5-6 (NAMUR)
Switching point/switching hysteresis	$x \leq 1.2 \text{ mA}$ or $x \geq 2.1 \text{ mA}$ /approx. 0.9 mA
Control input	sensor power supply approx. 8.2 V, impedance 1.2 kΩ
Lead monitoring	not available
Pulse duration	> 200 μs for standstill monitoring, > 250 μs for rotation direction detection
<b>Output</b>	
Relay	2 changeover contacts
Contact loading	253 V AC/2 A/cos Φ > 0.7; 40 V DC/2 A resistive load
Energized/De-energized delay	approx. 20 ms/approx. 20 ms
Mechanical life	5 x 10 <sup>6</sup> switching cycles
Trip value f <sub>max</sub>	for standstill monitoring: 0.1 Hz; 0.5 Hz; 2 Hz; 10 Hz adjustable via DIP switch (S1 and S2)
<b>Transfer characteristics</b>	
Accuracy	± 5 %
Start-up override	5 seconds or 20 seconds, programmable
Frequency range	≤ 2 kHz
Rotation direction detection	90° phase difference between pulse input signal 1 and 2, overlapping ≥ 125 μs
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Connection	plug-in terminals
Mass	approx. 150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Diagrams**





Technical data	
<b>Supply</b>	
Rated voltage	20 ... 30 V DC
Power loss/power consumption	≤ 1.8 W/1.8 W
<b>Input</b>	
Input I	sensor acc. to EN 60947-5-6 (NAMUR) or mechanical contact
Open circuit voltage/short-circuit current	22 V/40 mA
Input resistance	4.7 kΩ
Switching point/switching hysteresis	logic 1: > 2.5 mA; logic 0: < 1.9 mA
Pulse duration	> 50 μs
Input frequency	0.001 ... 12000 Hz
Lead monitoring	breakage I ≤ 0.15 mA; short-circuit I > 4 mA
Input II	startup override: 1 ... 1000 s, adjustable in steps of 1 s
Active/Passive	I > 4 mA (for min. 100 ms)/I < 1.5 mA
Open circuit voltage/short-circuit current	18 V/5 mA
<b>Output</b>	
Collective error message	Power Rail
Output I, II	signal; relay
Contact loading	250 V AC/2 A/cos φ ≥ 0.7; 40 V DC/2 A
Mechanical life	5 x 10 <sup>7</sup> switching cycles
Energized/De-energized delay	approx. 20 ms/approx. 20 ms
<b>Transfer characteristics</b>	
Input I	
Measurement range	0.001 ... 12000 Hz
Output I, II	
Response delay	≤ 200 ms
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	300 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in), housing type C3
<b>Data for application in connection with Ex-areas</b>	
Statement of conformity	Pepperl+Fuchs
Group, category, type of protection, temperature classification	Ex II 3G Ex nA nC IIC T4

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Input frequency 1 mHz ... 12 kHz
- 2 relay contact outputs
- Start-up override
- Configurable by keypad
- Line fault detection (LFD)
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner monitors for an overspeed or underspeed condition of a digital signal (NAMUR sensor/mechanical contact) by comparing the input frequency to the user programmed reference frequency.

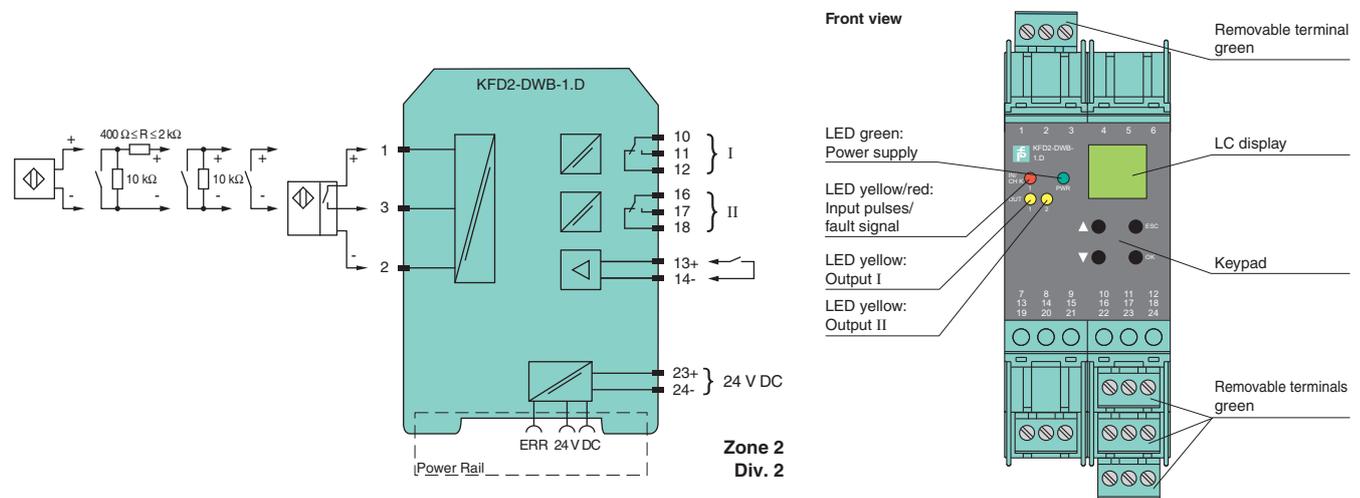
An overspeed or underspeed condition is signaled via the relay outputs. Line fault detection of the field circuit is indicated by a red LED, Power Rail and/or relay. The startup override feature sets relay outputs to default conditions programmed by the user for up to 1,000 seconds.

The unit is easily programmed by the use of a keypad located on the front of the unit.

A unique collective error messaging feature is available when used with the Power Rail system.

For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 1-channel signal conditioner
- AC/DC wide range supply
- Dry contact or NAMUR inputs
- Input frequency 1 mHz ... 12 kHz
- 2 relay contact outputs
- Start-up override
- Configurable by keypad
- Line fault detection (LFD)
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner monitors an overspeed or underspeed condition of a digital signal (NAMUR sensor/mechanical contact) by comparing the input frequency to the user programmed reference frequency.

An overspeed or underspeed condition is signaled via the relay outputs. Line fault detection of the field circuit is indicated by a red LED and/or relay. The startup override feature sets relay outputs to default conditions programmed by the user for up to 1,000 seconds.

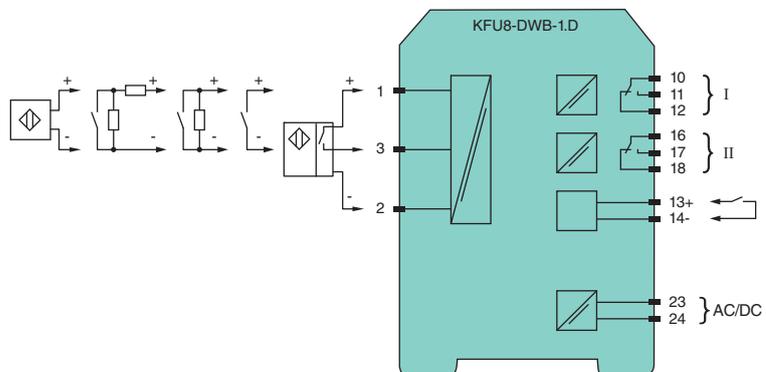
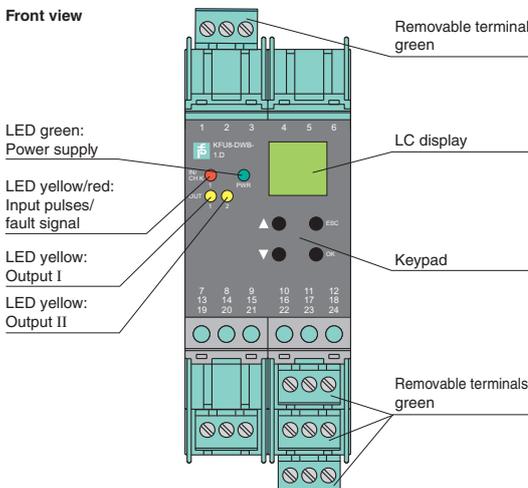
The unit is easily programmed by the use of a keypad located on the front of the unit.

For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Technical data**

<b>Supply</b>	
Rated voltage	20 ... 90 V DC/48 ... 253 V AC 50 ... 60 Hz
Power loss/power consumption	≤ 1.8 W; 2 VA/1.8 W; 2 VA
<b>Input</b>	
Lead monitoring	breakage I ≤ 0.15 mA; short-circuit I > 6.5 mA
Input I	sensor acc. to EN 60947-5-6 (NAMUR) or mechanical contact
Open circuit voltage/short-circuit current	22 V/40 mA
Input resistance	4.7 kΩ
Switching point/switching hysteresis	logic 1: > 2.5 mA; logic 0: < 1.9 mA
Pulse duration	> 50 μs
Input frequency	0.001 ... 12000 Hz
Lead monitoring	breakage I ≤ 0.15 mA; short-circuit I > 4 mA
Input II	startup override: 1 ... 1000 s, adjustable in steps of 1 s
Active/Passive	I > 4 mA (for min. 100 ms)/I < 1.5 mA
Open circuit voltage/short-circuit current	18 V/5 mA
<b>Output</b>	
Output I, II	signal; relay
Contact loading	250 V AC/2 A/cos Φ ≥ 0.7; 40 V DC/2 A
Mechanical life	5 x 10 <sup>7</sup> switching cycles
Energized/De-energized delay	approx. 20 ms/approx. 20 ms
<b>Transfer characteristics</b>	
Input I	
Measurement range	0.001 ... 12000 Hz
Output I, II	
Response delay	≤ 200 ms
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	300 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in), housing type C3

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data	
<b>Supply</b>	
Rated voltage	20 ... 30 V DC
Power loss/power consumption	≤ 2 W/2.2 W
<b>Input</b>	
Input I	sensor acc. to EN 60947-5-6 (NAMUR) or mechanical contact
Pulse duration	> 50 μs
Input frequency	0.001 ... 12000 Hz
Lead monitoring	breakage I ≤ 0.15 mA; short-circuit I > 4 mA
Input II	startup override: 1 ... 1000 s, adjustable in steps of 1 s
Active/Passive	I > 4 mA (for min. 100 ms)/I < 1.5 mA
<b>Output</b>	
Collective error message	Power Rail
Output I, II	signal; relay
Contact loading	250 V AC/2 A/cos φ ≥ 0.7; 40 V DC/2 A
Energized/De-energized delay	approx. 20 ms/approx. 20 ms
Output III	electronic output, passive
Contact loading	40 V DC
Signal level	1-signal: (L+) -2.5 V (50 mA, short-circuit/overload proof) 0-signal: blocked output (off-state current ≤ 10 μA)
Output IV	analog
Current range	0 ... 20 mA or 4 ... 20 mA
Open loop voltage	≤ 24 V DC
Load	≤ 650 Ω
Fault signal	downscale I ≤ 3.6 mA, upscale ≥ 21.5 mA (acc. NAMUR NE43)
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	300 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in), housing type C3
<b>Data for application in connection with Ex-areas</b>	
Statement of conformity	Pepperl+Fuchs
Group, category, type of protection, temperature classification	⊕ II 3G Ex nA nC IIC T4

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Input frequency 1 mHz ... 12 kHz
- Current output 0/4 mA ... 20 mA
- Relay and transistor output
- Start-up override
- Line fault detection (LFD)
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner is an universal frequency converter that changes a digital input (NAMUR sensor/mechanical contact) into a proportional free adjustable 0/4 mA ... 20 mA analog output and functions as a switch amplifier and a trip alarm.

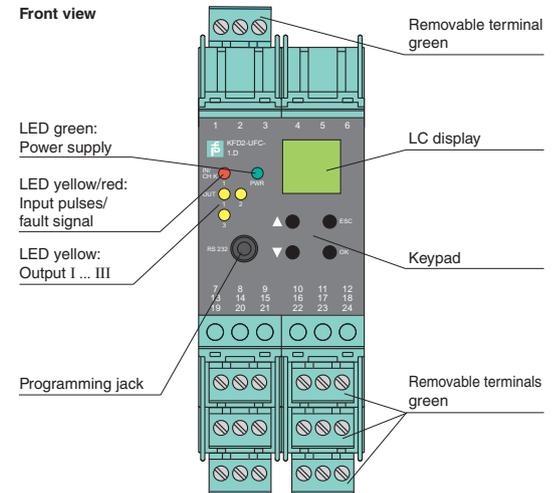
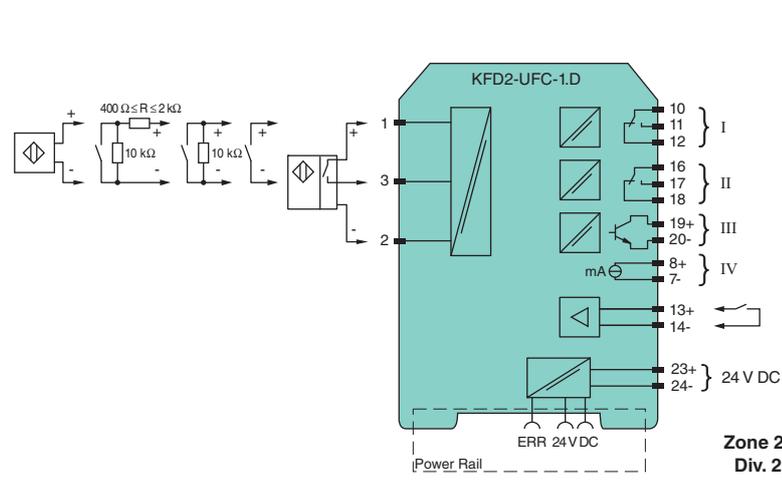
Also the functions of the switch outputs (2 relay outputs and 1 potential free transistor output) are easily adjustable [trip value display (min/max alarm), serially switched output, pulse divider output, error signal output].

The unit is easily programmed by the use of a keypad located on the front of the unit or with the **PACT<sup>ware</sup>**™ configuration software.

Line fault detection of the field circuit is indicated by a red LED and through the collective error output via Power Rail.

For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Diagrams**



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**PEPPERL+FUCHS 587**  
PROTECTING YOUR PROCESS

K-System  
Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 1-channel signal conditioner
- AC/DC wide range supply
- Dry contact or NAMUR inputs
- Input frequency 1 mHz ... 12 kHz
- Current output 0/4 mA ... 20 mA
- Relay and transistor output
- Start-up override
- Line fault detection (LFD)
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner is an universal frequency converter that changes a digital input (NAMUR sensor/mechanical contact) into a proportional free adjustable 0/4 mA ... 20 mA analog output and functions as a switch amplifier and a trip alarm.

Also the functions of the switch outputs (2 relay outputs and 1 potential free transistor output) are easily adjustable [trip value display (min/max alarm), serially switched output, pulse divider output, error signal output].

The unit is easily programmed by the use of a keypad located on the front of the unit or with the **PACT<sup>ware</sup>**™ configuration software.

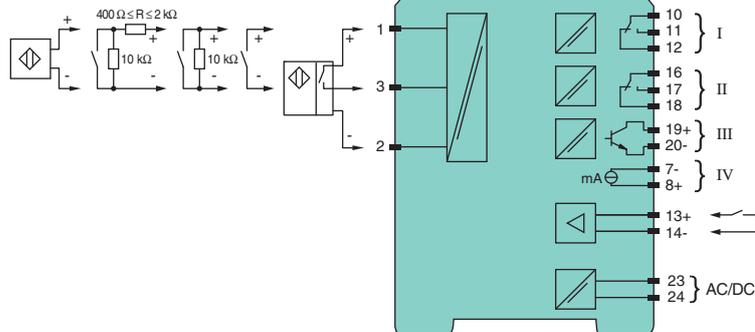
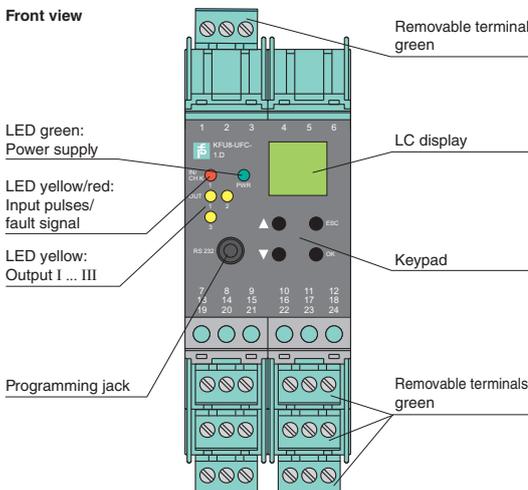
Line fault detection of the field circuit is indicated by a red LED.

For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Technical data**

<b>Supply</b>	
Rated voltage	20 ... 90 V DC/48 ... 253 V AC 50 ... 60 Hz
Power loss/power consumption	≤ 2 W; 2.5 VA/2.2 W; 3 VA
<b>Input</b>	
Input I	sensor acc. to EN 60947-5-6 (NAMUR) or mechanical contact
Pulse duration	> 50 μs
Input frequency	0.001 ... 12000 Hz
Lead monitoring	breakage I ≤ 0.15 mA; short-circuit I > 4 mA
Input II	startup override: 1 ... 1000 s, adjustable in steps of 1 s
Active/Passive	I > 4 mA (for min. 100 ms)/I < 1.5 mA
<b>Output</b>	
Output I, II	signal; relay
Contact loading	250 V AC/2 A/cos Φ ≥ 0.7; 40 V DC/2 A
Mechanical life	5 x 10 <sup>7</sup> switching cycles
Energized/De-energized delay	approx. 20 ms/approx. 20 ms
Output III	electronic output, passive
Contact loading	40 V DC
Signal level	1-signal: (L+) -2.5 V (50 mA, short-circuit/overload proof) 0-signal: blocked output (off-state current ≤ 10 μA)
Output IV	analog
Current range	0 ... 20 mA or 4 ... 20 mA
Open loop voltage	≤ 24 V DC
Load	≤ 650 Ω
Fault signal	downscale I ≤ 3.6 mA, upscale ≥ 21.5 mA (acc. NAMUR NE43)
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	300 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in), housing type C3

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data	
<b>Supply</b>	
Rated voltage	20 ... 30 V DC
Power consumption	2.5 W
<b>Input</b>	
Input I, II	sensor acc. to EN 60947-5-6 (NAMUR) or mechanical contact
Open circuit voltage/short-circuit current	8.2 V/10 mA
Switching point/switching hysteresis	logic 1: > 2.5 mA; logic 0: < 1.9 mA
Pulse duration	≥ 250 μs, overlap on direction of rotation signal: ≥ 125 μs
Input frequency	rotation direction monitoring 0.001 ... 1000 Hz slip monitoring 10 ... 1000 Hz
Lead monitoring	breakage I ≤ 0.15 mA; short-circuit I > 4 mA
Input III, IV	
Active/Passive	I > 4 mA (for min. 100 ms)/I < 1.5 mA
Open circuit voltage/short-circuit current	18 V/5 mA
<b>Output</b>	
Collective error message	Power Rail
Output I, II	signal; relay
Contact loading	250 V AC/2 A/cos Φ ≥ 0.7; 40 DC/2 A
Energized/De-energized delay	approx. 20 ms/approx. 20 ms
Output III and IV	signal; electronic output, passive
Contact loading	40 V DC
Output V	analog
Current range	0 ... 20 mA or 4 ... 20 mA
Open loop voltage	max. 24 V DC
Load	max. 650 Ω
Fault signal	downscale I ≤ 3.6 mA, upscale I ≥ 21.5 mA (acc. NAMUR NE43)
Programming interface	
Interface	RS 232
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	300 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in), housing type C3

**Features**

- 2-channel signal conditioner
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Input frequency 1 mHz ... 1 kHz
- Current output 0/4 mA ... 20 mA
- Relay and transistor output
- Start-up override
- Line fault detection (LFD)

**Function**

This signal conditioner analyzes 2 digital signals (NAMUR sensor/mechanical contact) and functions as a rotation direction indicator, slip monitor, frequency monitor or synchronization monitor.

Each proximity sensor or switch controls a passive transistor output. The 2 relay outputs indicate if the input signal is above or below the trip value or the rotational direction.

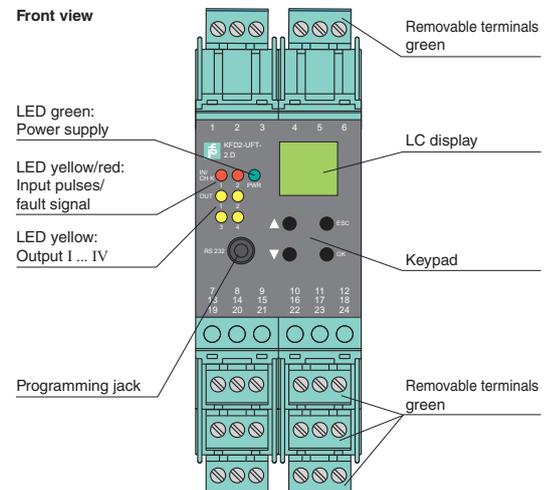
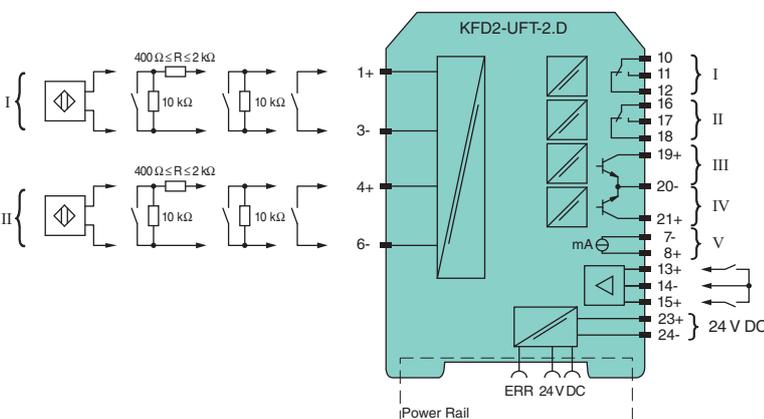
The analog output can be programmed to be proportional to the input frequency or slip differential.

The unit is easily programmed by the use of a keypad located on the front of the unit or with the **PACTware™** configuration software.

Line fault detection of the field current is indicated by a red LED and through the collective error output via Power Rail.

For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Diagrams**



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K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

K-System  
Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

**Features**

- 2-channel signal conditioner
- AC/DC wide range supply
- Dry contact or NAMUR inputs
- Input frequency 1 mHz ... 1 kHz
- Current output 0/4 mA ... 20 mA
- Relay and transistor output
- Start-up override
- Line fault detection (LFD)

**Function**

This signal conditioner analyzes 2 digital signals (NAMUR sensor/mechanical contact) and functions as a rotation direction indicator, slip monitor, frequency monitor or synchronization monitor.

Each proximity sensor or switch controls a passive transistor output. The 2 relay outputs indicate if the input signal is above or below the trip value or the rotational direction.

The analog output can be programmed to be proportional to the input frequency or slip differential.

The unit is easily programmed by the use of a keypad located on the front of the unit or with the **PACT<sup>ware</sup>**™ configuration software.

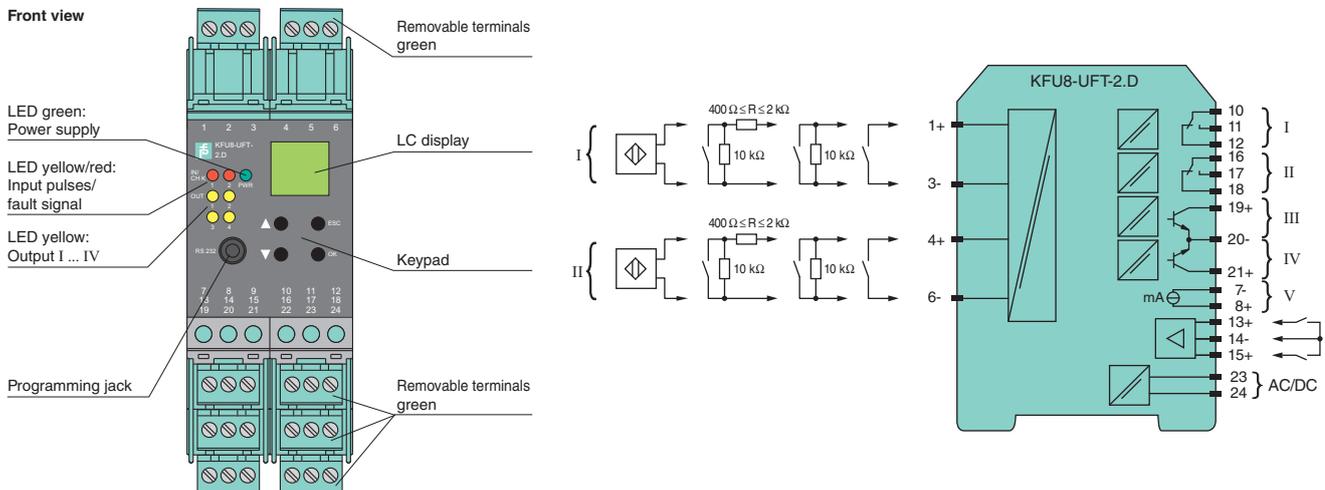
Line fault detection of the field current is indicated by a red LED.

For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Technical data**

<b>Supply</b>	
Rated voltage	20 ... 90 V DC/48 ... 253 V AC 50 ... 60 Hz
Power consumption	2.5 W/4 VA
<b>Input</b>	
Input I, II	sensor acc. to EN 60947-5-6 (NAMUR) or mechanical contact
Open circuit voltage/short-circuit current	8.2 V/10 mA
Switching point/switching hysteresis	logic 1: > 2.5 mA; logic 0: < 1.9 mA
Pulse duration	≥ 250 μs, overlap on direction of rotation signal: ≥ 125 μs
Input frequency	rotation direction monitoring 0.001 ... 1000 Hz slip monitoring 10 ... 1000 Hz
Lead monitoring	breakage I ≤ 0.15 mA; short-circuit I > 4 mA
Input III, IV	
Active/Passive	I > 4 mA (for min. 100 ms)/I < 1.5 mA
Open circuit voltage/short-circuit current	18 V/5 mA
<b>Output</b>	
Output I, II	signal; relay
Contact loading	250 V AC/2 A/cos Φ ≥ 0.7; 40 DC/2 A
Energized/De-energized delay	approx. 20 ms/approx. 20 ms
Output III and IV	signal; electronic output, passive
Contact loading	40 V DC
Output V	analog
Current range	0 ... 20 mA or 4 ... 20 mA
Open loop voltage	max. 24 V DC
Load	max. 650 Ω
Fault signal	downscale I ≤ 3.6 mA, upscale I ≥ 21.5 mA (acc. NAMUR NE43)
Programming interface	
Interface	RS 232
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	300 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in), housing type C3

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data	
<b>Supply</b>	
Rated voltage	20 ... 30 V DC
<b>Input</b>	
Open circuit voltage/short-circuit current	approx. 10 V AC (approx. 1 Hz)/approx. 5 mA
Control input	min./max. control system: terminals 1, 2, 3 on/off control system: terminals 1, 3
Response sensitivity	1 ... 30 kΩ, adjustable via potentiometer (20 turns)
<b>Output</b>	
Output	1 changeover contact
Contact loading	253 V AC/2 A/cos Φ > 0.7; 40 V DC/2 A resistive load
Energized/De-energized delay	approx. 1 s/approx. 1 s
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 110 g
Dimensions	20 x 107 x 115 mm (0.8 x 4.2 x 4.5 in), housing type B1

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Level sensing input
- Adjustable range 1 kΩ ... 30 kΩ
- Latching relay output
- Minimum/maximum control

**Function**

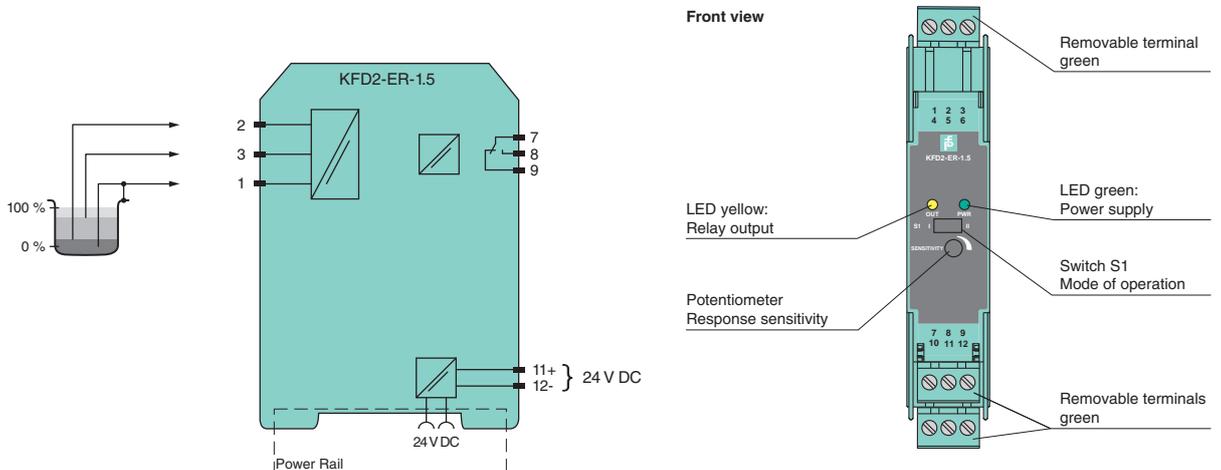
This signal conditioner provides the AC measuring voltage for the level-sensing electrodes.

Once the measured medium reaches the electrodes, the unit reacts by energizing a form C changeover relay contact.

The module is voltage and temperature stabilized and guarantees defined switching characteristics. An electronic holding circuit is used that allows minimum/maximum control. Since the conductance of the media may vary, the relay response sensitivity is adjustable.

The normal output state can be reversed through the mode of operation switch S1.

**Diagrams**



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K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Level sensing input
- Adjustable range 5 kΩ ... 150 kΩ
- Latching relay output
- Minimum/maximum control

**Function**

This signal conditioner provides the AC measuring voltage for the level-sensing electrodes.

Once the measured medium reaches the electrodes, the unit reacts by energizing a form C changeover relay contact.

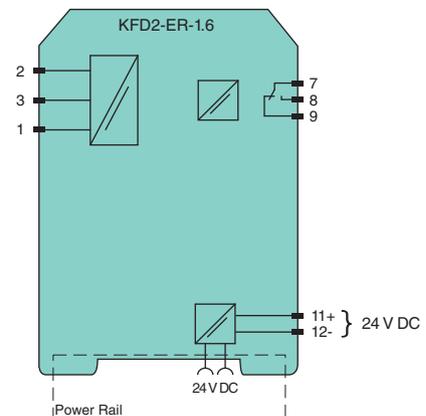
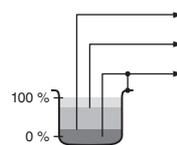
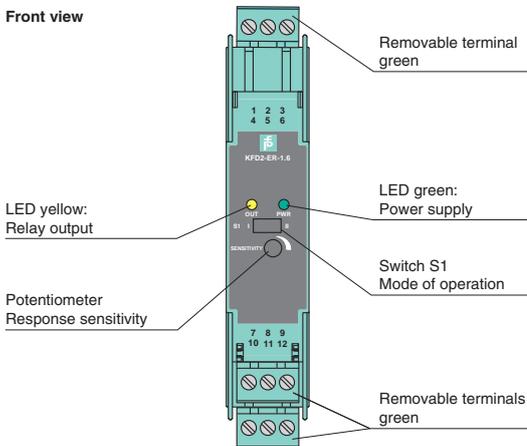
The module is voltage and temperature stabilized and guarantees defined switching characteristics. An electronic holding circuit is used that allows minimum/maximum control. Since the conductance of the media may vary, the relay response sensitivity is adjustable.

The normal output state can be reversed through the mode of operation switch S1.

**Technical data**

<b>Supply</b>	
Rated voltage	20 ... 30 V DC
<b>Input</b>	
Open circuit voltage/short-circuit current	approx. 10 V AC (approx. 1 Hz)/approx. 5 mA
Control input	min./max. control system: terminals 1, 2, 3 on/off control system: terminals 1, 3
Response sensitivity	5 ... 150 kΩ, adjustable via potentiometer (20 turns)
<b>Output</b>	
Output	1 changeover contact
Contact loading	253 V AC/2 A/cos Φ > 0.7; 40 V DC/2 A resistive load
Energized/De-energized delay	approx. 1 s/approx. 1 s
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 110 g
Dimensions	20 x 107 x 115 mm (0.8 x 4.2 x 4.5 in), housing type B1

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010



**Technical data**

<b>Supply</b>	
Rated voltage	103.5 ... 126 V AC, 45 ... 65 Hz
Power consumption	approx. 0.8 W
<b>Input</b>	
Open circuit voltage/short-circuit current	approx. 10 V AC (approx. 1 Hz)/approx. 5 mA
Control input	min./max. control system: terminals 1, 2, 3 on/off control system: terminals 1, 3
Response sensitivity	1 ... 30 kΩ, adjustable via potentiometer (20 turns)
<b>Output</b>	
Output	1 changeover contact
Contact loading	253 V AC/2 A/cos Φ > 0.7; 40 V DC/2 A resistive load
Energized/De-energized delay	approx. 1 s/approx. 1 s
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 110 g
Dimensions	20 x 107 x 115 mm (0.8 x 4.2 x 4.5 in), housing type B1

**Features**

- 1-channel signal conditioner
- 115 V AC supply
- Level sensing input
- Adjustable range 1 kΩ ... 30 kΩ
- Latching relay output
- Minimum/maximum control

**Function**

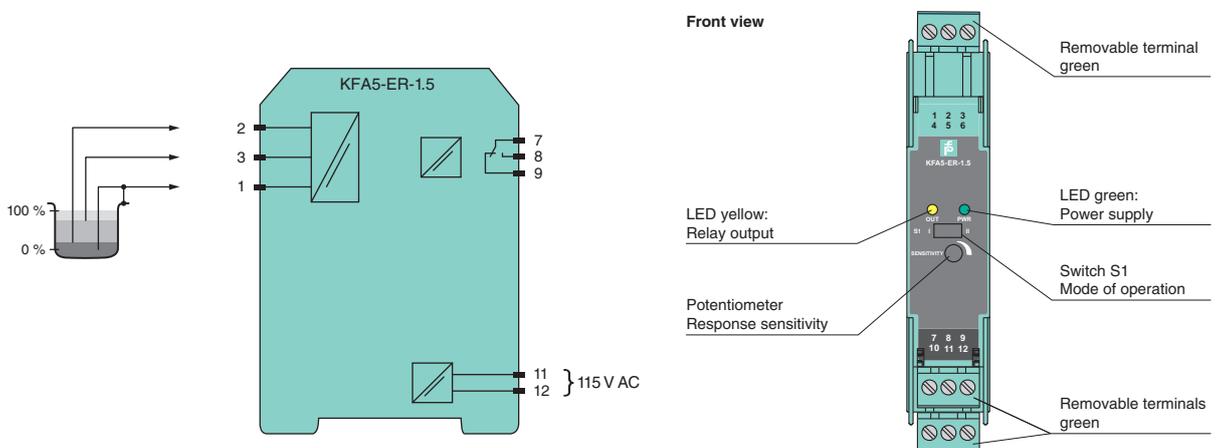
This signal conditioner provides the AC measuring voltage for the level-sensing electrodes.

Once the measured medium reaches the electrodes, the unit reacts by energizing a form C changeover relay contact.

The module is voltage and temperature stabilized and guarantees defined switching characteristics. An electronic holding circuit is used that allows minimum/maximum control. Since the conductance of the media may vary, the relay response sensitivity is adjustable.

The normal output state can be reversed through the mode of operation switch S1.

**Diagrams**



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K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 1-channel signal conditioner
- 115 V AC supply
- Level sensing input
- Adjustable range 5 kΩ ... 150 kΩ
- Latching relay output
- Minimum/maximum control

**Function**

This signal conditioner provides the AC measuring voltage for the level-sensing electrodes.

Once the measured medium reaches the electrodes, the unit reacts by energizing a form C changeover relay contact.

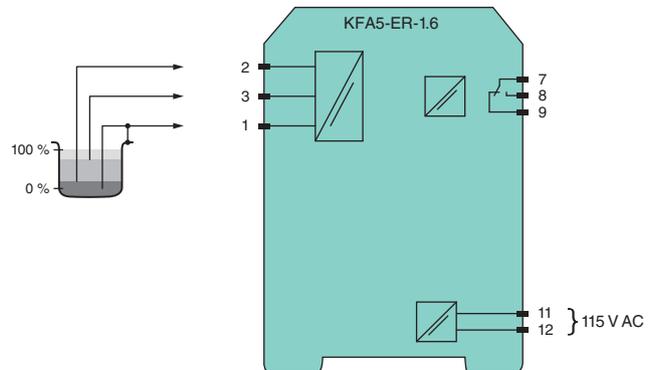
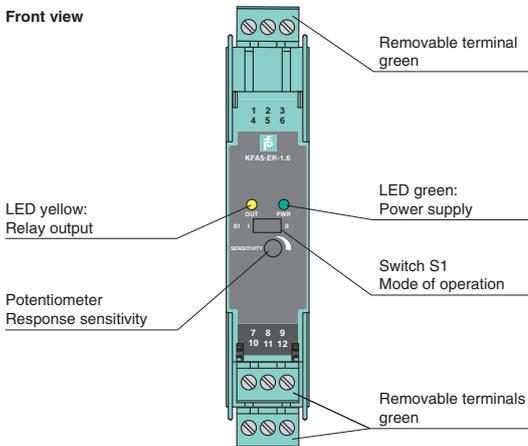
The module is voltage and temperature stabilized and guarantees defined switching characteristics. An electronic holding circuit is used that allows minimum/maximum control. Since the conductance of the media may vary, the relay response sensitivity is adjustable.

The normal output state can be reversed through the mode of operation switch S1.

**Technical data**

<b>Supply</b>	
Rated voltage	103.5 ... 126 V AC, 45 ... 65 Hz
Power consumption	approx. 0.8 W
<b>Input</b>	
Open circuit voltage/short-circuit current	approx. 10 V AC (approx. 1 Hz)/approx. 5 mA
Control input	min./max. control system: terminals 1, 2, 3 on/off control system: terminals 1, 3
Response sensitivity	5 ... 150 kΩ, adjustable via potentiometer (20 turns)
<b>Output</b>	
Output	1 changeover contact
Contact loading	253 V AC/2 A/cos Φ > 0.7; 40 V DC/2 A resistive load
Energized/De-energized delay	approx. 1 s/approx. 1 s
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 110 g
Dimensions	20 x 107 x 115 mm (0.8 x 4.2 x 4.5 in), housing type B1

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010



Technical data	
<b>Supply</b>	
Rated voltage	207 ... 253 V AC, 45 ... 65 Hz
Power consumption	approx. 0.8 W
<b>Input</b>	
Open circuit voltage/short-circuit current	approx. 10 V AC (approx. 1 Hz)/approx. 5 mA
Control input	min./max. control system: terminals 1, 2, 3 on/off control system: terminals 1, 3
Response sensitivity	1 ... 30 kΩ, adjustable via potentiometer (20 turns)
<b>Output</b>	
Output	1 changeover contact
Contact loading	253 V AC/2 A/cos Φ > 0.7; 40 V DC/2 A resistive load
Energized/De-energized delay	approx. 1 s/approx. 1 s
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 110 g
Dimensions	20 x 107 x 115 mm (0.8 x 4.2 x 4.5 in), housing type B1

**Features**

- 1-channel signal conditioner
- 230 V AC supply
- Level sensing input
- Adjustable range 1 kΩ ... 30 kΩ
- Latching relay output
- Minimum/maximum control

**Function**

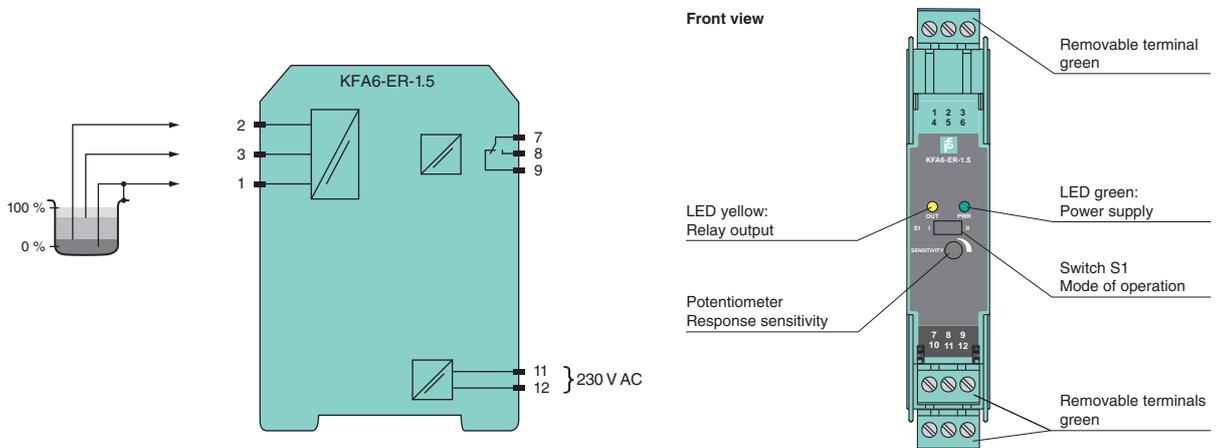
This signal conditioner provides the AC measuring voltage for the level-sensing electrodes.

Once the measured medium reaches the electrodes, the unit reacts by energizing a form C changeover relay contact.

The module is voltage and temperature stabilized and guarantees defined switching characteristics. An electronic holding circuit is used that allows minimum/maximum control. Since the conductance of the media may vary, the relay response sensitivity is adjustable.

The normal output state can be reversed through the mode of operation switch S1.

**Diagrams**



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K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 1-channel signal conditioner
- 230 V AC supply
- Level sensing input
- Adjustable range 5 kΩ ... 150 kΩ
- Latching relay output
- Minimum/maximum control

**Function**

This signal conditioner provides the AC measuring voltage for the level-sensing electrodes.

Once the measured medium reaches the electrodes, the unit reacts by energizing a form C changeover relay contact.

The module is voltage and temperature stabilized and guarantees defined switching characteristics. An electronic holding circuit is used that allows minimum/maximum control. Since the conductance of the media may vary, the relay response sensitivity is adjustable.

The normal output state can be reversed through the mode of operation switch S1.

**Technical data**

**Supply**

Rated voltage	207 ... 253 V AC, 45 ... 65 Hz
Power consumption	approx. 0.8 W

**Input**

Open circuit voltage/short-circuit current	approx. 10 V AC (approx. 1 Hz)/approx. 5 mA
--	---

**Control input**

min./max. control system: terminals 1, 2, 3
on/off control system: terminals 1, 3

**Response sensitivity**

5 ... 150 kΩ, adjustable via potentiometer (20 turns)
---

**Output**

Output	1 changeover contact
--------	----------------------

**Contact loading**

253 V AC/2 A/cos Φ > 0.7; 40 V DC/2 A resistive load
--

**Energized/De-energized delay**

approx. 1 s/approx. 1 s
-------------------------

**Ambient conditions**

Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
---------------------	-------------------------------

**Mechanical specifications**

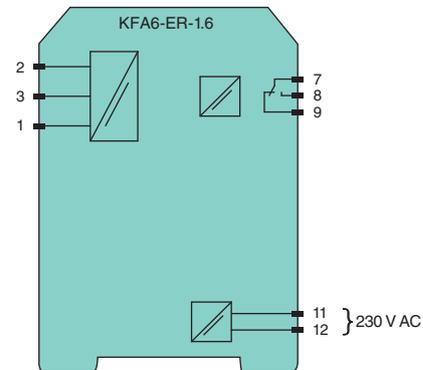
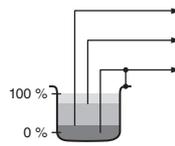
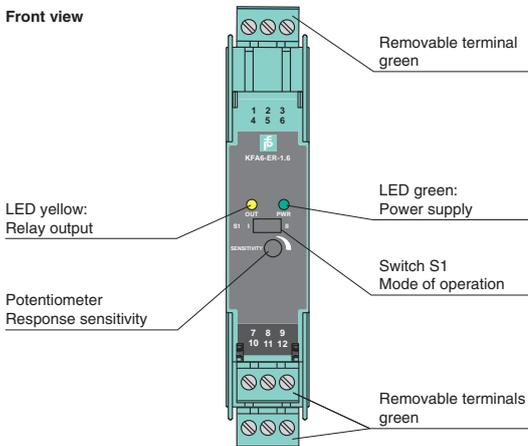
Protection degree	IP20
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Mass	approx. 110 g
------	---------------

Dimensions	20 x 107 x 115 mm (0.8 x 4.2 x 4.5 in), housing type B1
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**Diagrams**

Front view



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data	
<b>Supply</b>	
Rated voltage	20 ... 30 V DC
<b>Input</b>	
Control input	min./max. control system: terminals 1, 2, 3 on/off control system: terminals 1, 3
Response sensitivity	1 ... 150 kΩ, adjustable via potentiometer
<b>Output</b>	
Switch power	max. 192 W, 2000 VA
Output	relay
Contact loading	253 V AC/2 A/cos Φ > 0.7; 40 V DC/2 A resistive load
Time constant for signal damping	0.5 s, 2 s, 5 s, 10 s
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Level sensing input
- Adjustable range 1 kΩ ... 150 kΩ
- Latching relay output
- Adjustable time delay up to 10 s
- Minimum/maximum control
- Line fault detection (LFD)

**Function**

This signal conditioner provides the AC measuring voltage for the level sensing electrodes.

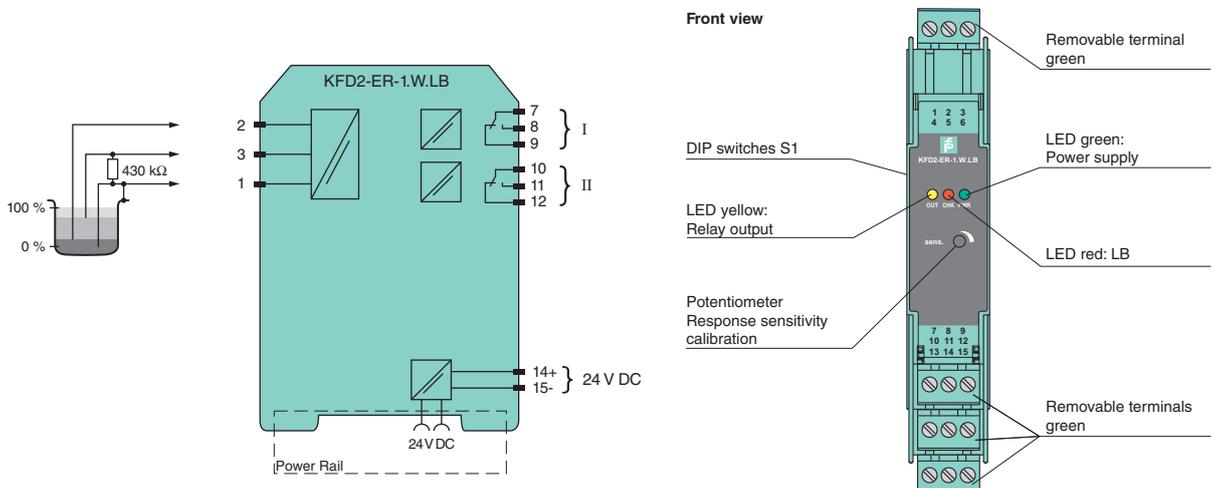
Once the measured medium reaches the electrodes, the unit reacts by energizing a form C changeover relay contact.

The module is voltage and temperature stabilized and guarantees a defined switching characteristic.

It can be used for on/off control or minimum/maximum control. A signal delay feature is available and is adjustable between 0.5 s and 10 s.

This module can also monitor the field circuit for lead breakage (LB). LB is indicated by a red LED. If LB monitoring is selected, output II serves as the fault signal output; otherwise, it will follow the function of output I.

**Diagrams**



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K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 2-channel signal conditioner
- 24 V DC supply (Power Rail)
- Level sensing input
- Adjustable range 1 kΩ ... 150 kΩ
- Latching relay output
- Adjustable time delay up to 10 s
- Minimum/maximum control
- Line fault detection (LFD)

**Function**

This signal conditioner provides the AC measuring voltage for the level sensing electrodes.

Once the measured medium reaches the electrodes, the unit reacts by energizing a form C changeover relay contact.

The module is voltage and temperature stabilized and guarantees a defined switching characteristic.

It can be used for on/off control or minimum/maximum control. A signal delay feature is available and is adjustable between 0.5 s and 10 s.

This module can also monitor the field circuit for lead breakage (LB). LB is indicated by a red LED. This function can be deactivated with DIP switches.

**Technical data**

**Supply**

Rated voltage 20 ... 30 V DC

**Input**

Control input min./max. control system: terminals 1, 2, 3; 4, 5, 6  
on/off control system: terminals 1, 3; 4, 6

Response sensitivity 1 ... 150 kΩ, adjustable via potentiometer

**Output**

Switch power max. 192 W, 2000 VA

Output relay

Contact loading 253 V AC/2 A/cos Φ > 0.7; 40 V DC/2 A resistive load

Time constant for signal damping 0.5 s, 2 s, 5 s, 10 s

**Ambient conditions**

Ambient temperature -20 ... 60 °C (-4 ... 140 °F)

**Mechanical specifications**

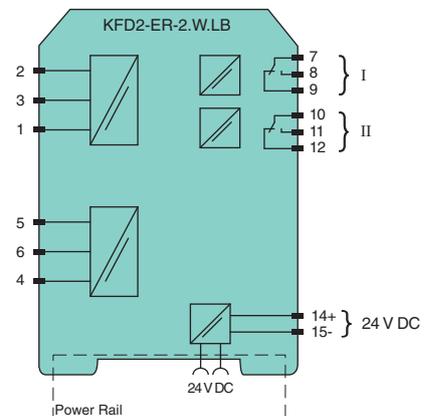
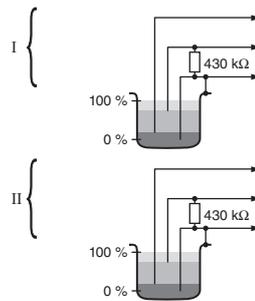
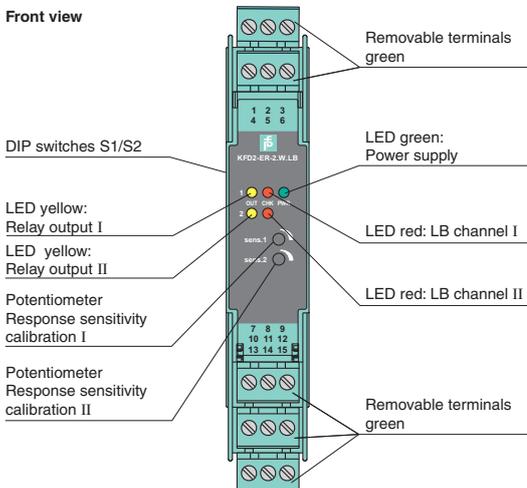
Protection degree IP20

Mass approx. 150 g

Dimensions 20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Diagrams**

Front view



Edition 908837 (US) / 208599 (EU) 11/2010



Technical data	
<b>Supply</b>	
Rated voltage	103.5 ... 126 V AC, 45 ... 65 Hz
Power consumption	< 1.2 W
<b>Input</b>	
Control input	min./max. control system: terminals 1, 2, 3 on/off control system: terminals 1, 3
Response sensitivity	1 ... 150 kΩ, adjustable via potentiometer
<b>Output</b>	
Switch power	max. 192 W, 2000 VA
Output	relay
Contact loading	253 V AC/2 A/cos Φ > 0.7; 40 V DC/2 A resistive load
Time constant for signal damping	0.5 s, 2 s, 5 s, 10 s
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Features**

- 1-channel signal conditioner
- 115 V AC supply
- Level sensing input
- Adjustable range 1 kΩ ... 150 kΩ
- Latching relay output
- Adjustable time delay up to 10 s
- Minimum/maximum control
- Line fault detection (LFD)

**Function**

This signal conditioner provides the AC measuring voltage for the level sensing electrodes.

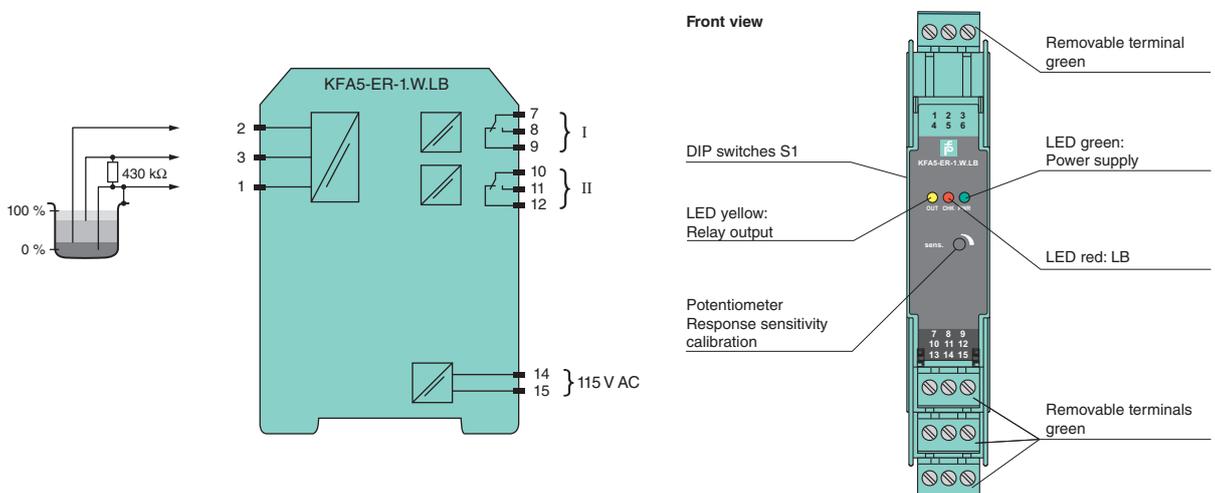
Once the measured medium reaches the electrodes, the unit reacts by energizing a form C changeover relay contact.

The module is voltage and temperature stabilized and guarantees a defined switching characteristic.

It can be used for on/off control or minimum/maximum control. A signal delay feature is available and is adjustable between 0.5 s and 10 s.

This module can also monitor the field circuit for lead breakage (LB). LB is indicated by a red LED. If LB monitoring is selected, output II serves as the fault signal output; otherwise, it will follow the function of output I.

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010

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**PEPPERL+FUCHS 599**  
PROTECTING YOUR PROCESS

K-System  
Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

**Features**

- 2-channel signal conditioner
- 115 V AC supply
- Level sensing input
- Adjustable range 1 kΩ ... 150 kΩ
- Latching relay output
- Adjustable time delay up to 10 s
- Minimum/maximum control
- Line fault detection (LFD)

**Function**

This signal conditioner provides the AC measuring voltage for the level sensing electrodes.

Once the measured medium reaches the electrodes, the unit reacts by energizing a form C changeover relay contact.

The module is voltage and temperature stabilized and guarantees a defined switching characteristic.

It can be used for on/off control or minimum/maximum control. A signal delay feature is available and is adjustable between 0.5 s and 10 s.

This module can also monitor the field circuit for lead breakage (LB). LB is indicated by a red LED. This function can be deactivated with DIP switches.

**Technical data**

**Supply**

Rated voltage	103.5 ... 126 V AC, 45 ... 65 Hz
Power consumption	< 1.2 W

**Input**

Control input	min./max. control system: terminals 1, 2, 3; 4, 5, 6 on/off control system: terminals 1, 3; 4, 6
---------------	---

Response sensitivity	1 ... 150 kΩ, adjustable via potentiometer
----------------------	--

**Output**

Switch power	max. 192 W, 2000 VA
Output	relay
Contact loading	253 V AC/2 A/cos Φ > 0.7; 40 V DC/2 A resistive load
Time constant for signal damping	0.5 s, 2 s, 5 s, 10 s

**Ambient conditions**

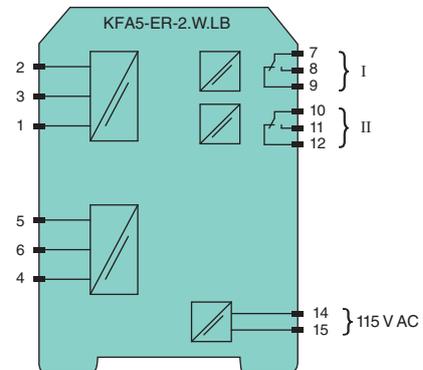
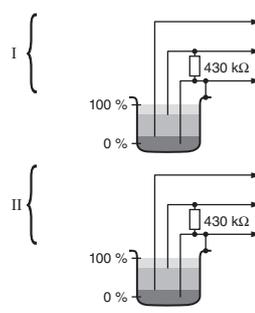
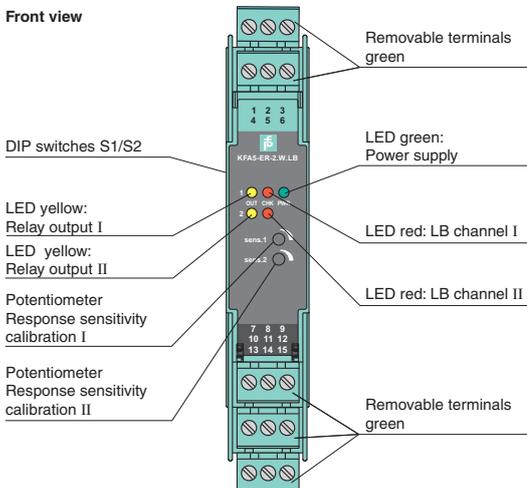
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
---------------------	-------------------------------

**Mechanical specifications**

Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Diagrams**

Front view



Edition 908837 (US) / 208599 (EU) 11/2010



Technical data	
<b>Supply</b>	
Rated voltage	207 ... 253 V AC, 45 ... 65 Hz
Power consumption	< 1.2 W
<b>Input</b>	
Control input	min./max. control system: terminals 1, 2, 3 on/off control system: terminals 1, 3
Response sensitivity	1 ... 150 kΩ, adjustable via potentiometer
<b>Output</b>	
Switch power	max. 192 W, 2000 VA
Output	relay
Contact loading	253 V AC/2 A/cos Φ > 0.7; 40 V DC/2 A resistive load
Time constant for signal damping	0.5 s, 2 s, 5 s, 10 s
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Features**

- 1-channel signal conditioner
- 230 V AC supply
- Level sensing input
- Adjustable range 1 kΩ ... 150 kΩ
- Latching relay output
- Adjustable time delay up to 10 s
- Minimum/maximum control
- Line fault detection (LFD)

**Function**

This signal conditioner provides the AC measuring voltage for the level sensing electrodes.

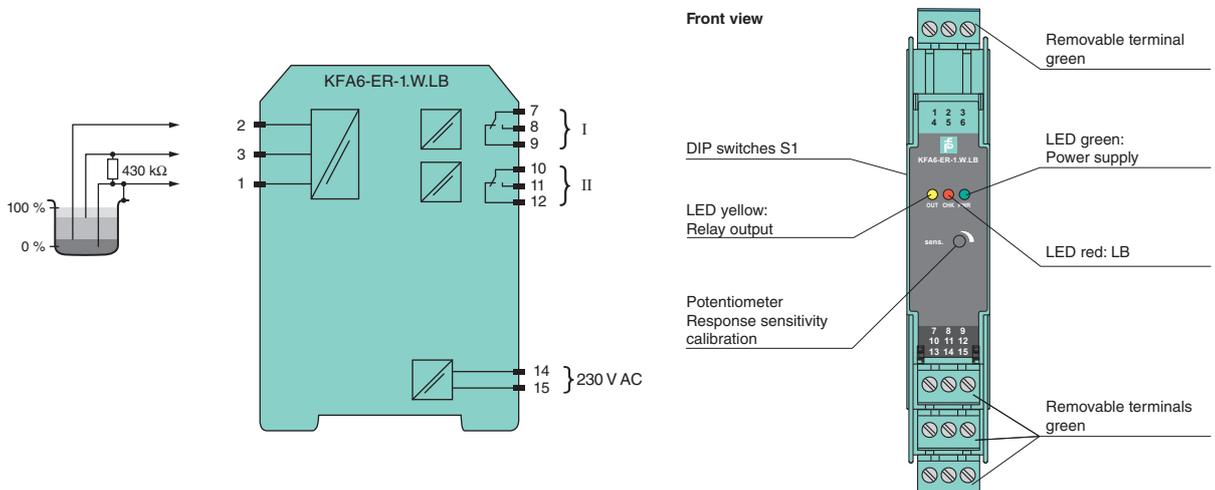
Once the measured medium reaches the electrodes, the unit reacts by energizing a form C changeover relay contact.

The module is voltage and temperature stabilized and guarantees a defined switching characteristic.

It can be used for on/off control or minimum/maximum control. A signal delay feature is available and is adjustable between 0.5 s and 10 s.

This module can also monitor the field circuit for lead breakage (LB). LB is indicated by a red LED. If LB monitoring is selected, output II serves as the fault signal output; otherwise, it will follow the function of output I.

**Diagrams**



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**PEPPERL+FUCHS 601**  
PROTECTING YOUR PROCESS

K-System  
Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

**Features**

- 2-channel signal conditioner
- 230 V AC supply
- Level sensing input
- Adjustable range 1 kΩ ... 150 kΩ
- Latching relay output
- Adjustable time delay up to 10 s
- Minimum/maximum control
- Line fault detection (LFD)

**Function**

This signal conditioner provides the AC measuring voltage for the level sensing electrodes.

Once the measured medium reaches the electrodes, the unit reacts by energizing a form C changeover relay contact.

The module is voltage and temperature stabilized and guarantees a defined switching characteristic.

It can be used for on/off control or minimum/maximum control. A signal delay feature is available and is adjustable between 0.5 s and 10 s.

This module can also monitor the field circuit for lead breakage (LB). LB is indicated by a red LED. This function can be deactivated with DIP switches.

**Technical data**

**Supply**

Rated voltage	207 ... 253 V AC, 45 ... 65 Hz
Power consumption	< 1.2 W

**Input**

Control input	min./max. control system: terminals 1, 2, 3; 4, 5, 6 on/off control system: terminals 1, 3; 4, 6
---------------	---

Response sensitivity	1 ... 150 kΩ, adjustable via potentiometer
----------------------	--

**Output**

Switch power	max. 192 W, 2000 VA
Output	relay
Contact loading	253 V AC/2 A/cos Φ > 0.7; 40 V DC/2 A resistive load
Time constant for signal damping	0.5 s, 2 s, 5 s, 10 s

**Ambient conditions**

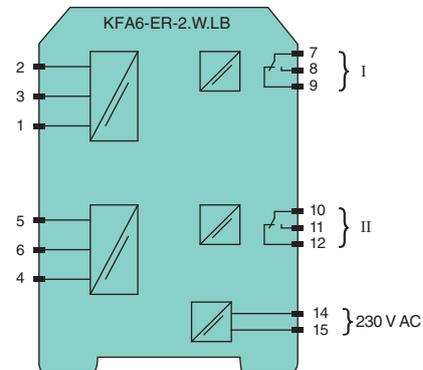
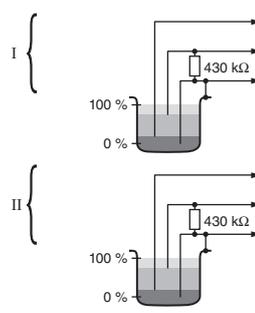
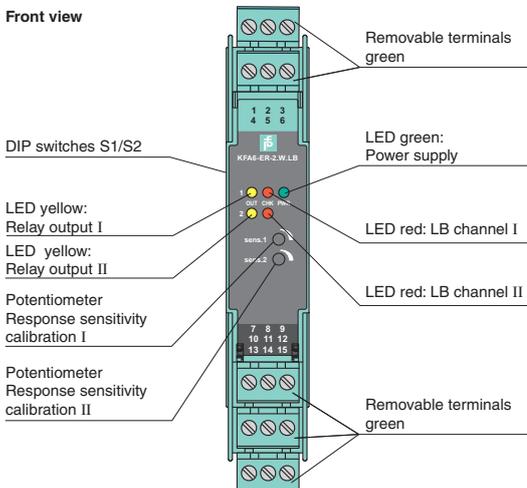
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
---------------------	-------------------------------

**Mechanical specifications**

Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Diagrams**

Front view



Edition 908837 (US) / 208599 (EU) 11/2010

## Solenoid Drivers

Model Number	Channels	Input (Control System)		Output (Field)		Supply 24 V DC	SIL	Page
		Loop Powered	Logic Input	Voltage (V)	Max. Current (mA)			
KFD2-SL-4	4		■	24	600	■	2	604

## Relay Outputs

Model Number	Channels	Input (Control System)			Output (Field)				Supply		SIL	Page
		Loop Powered	Logic Input	Immune to DCS Test Pulses	Relay	ETS (Energized to Safe)	DTS (De-energized to Safe)	DPS (Dual Pole Switching)	24 V DC	Loop Powered		
KFD0-RSH-1	1	■	■		1		■			■	3	605
KFD0-RSH-1.4S.PS2	1	■	■	Yokogawa	2	■	■	■		■	3	606
KFD0-RSH-1-Y2	1	■	■	Triconex	1		■			■	3	607

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

K-System  
Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

**Features**

- 4-channel signal conditioner
- 24 V DC supply (Power Rail)
- Output 600 mA per channel
- Logic inputs
- Common disable input
- Line fault detection (LFD)
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner is a 4-channel barrier with outputs that switch 600 mA to high-power solenoids. It is also used as power amplifier up to a switching frequency of 1 kHz.

Two channels per module can be paralleled. The output current of a parallel combination is 1.2 A. If the supply voltage falls below 18 V, the outputs will be switched off.

The outputs are sustained short-circuit proofed and overload-proofed.

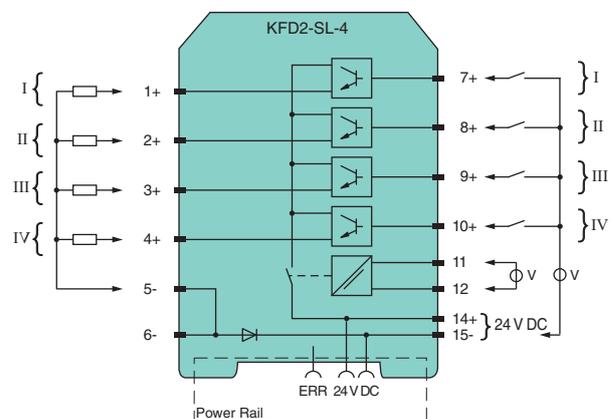
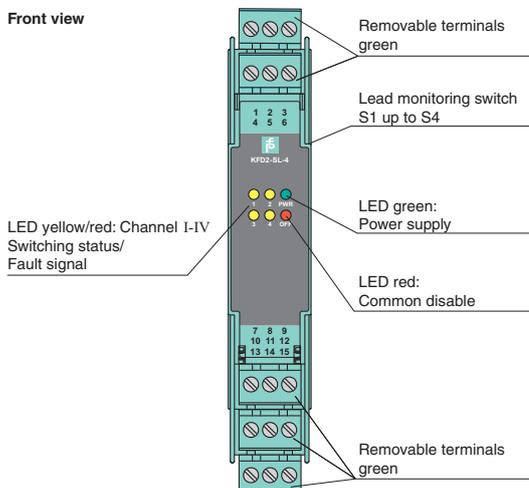
Lead breakage and short circuit, which is selected via DIP switch, is indicated by a red LED and through the collective error output via Power Rail.

With the common disable input (terminals 11 and 12), the auxiliary power for all 4 channels can be switched off simultaneously. This central switch-off is also indicated by a red LED and reported as an error signal to the Power Rail.

**Technical data**

<b>Supply</b>	
Rated voltage	20 ... 30 V DC
<b>Input</b>	
Input current	approx. 2 mA at 24 V DC
Signal level	0-signal: 0 ... 5 V DC 1-signal: 16 ... 30 V
<b>Comon disable</b>	
Input current	≤ 50 mA at 24 V, depolarized currentless state: downscale of the outputs
Switch on	≥ 15 V
Switch off	≤ 5 V
<b>Output</b>	
Open loop voltage	24 V DC
Switching frequency f	1 kHz
Output rated operating current	600 mA, sustained short-circuit proof and overload-proof
Off-state current I <sub>r</sub>	< 1 mA at 24 V DC
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Diagrams**



908837 (US) / 208599 (EU) 11/2010  
Edition

Technical data	
<b>Supply</b>	
Power loss	< 1.5 W
Power consumption	< 1.5 W
<b>Input</b>	
Pulse/Pause ratio	≥ 20 ms/≥ 20 ms
Signal level	0-signal: 0 ... 5 V DC 1-signal: 16 ... 30 V
Rated current I <sub>i</sub>	approx. 50 mA
<b>Output</b>	
Contact loading	230 V AC/2 A/cos Φ0.7; 40 V DC/2 A resistive load
Minimum switch current	2 mA/24 V DC
Energized/De-energized delay	approx. 10 ms/approx. 5 ms
Mechanical life	5 x 10 <sup>6</sup> switching cycles
<b>Transfer characteristics</b>	
Switching frequency	< 10 Hz
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Features**

- 1-channel signal conditioner
- 24 V DC supply (loop powered)
- Fail-safe relay contact output
- Logic input 16 V DC ... 30 V DC, non-polarized
- Up to SIL3 acc. to IEC 61508

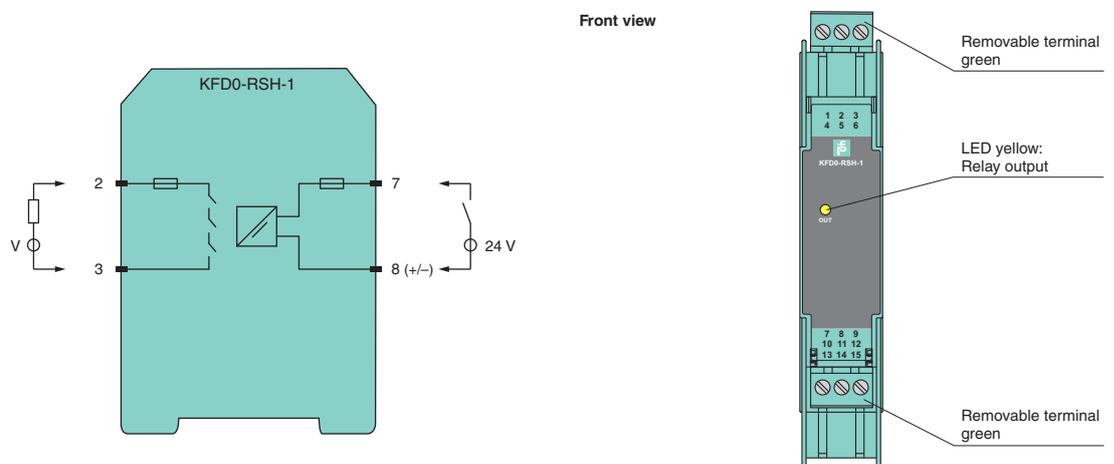
**Function**

This signal conditioner is a relay module that is suitable for safely switching applications of a load circuit. The device isolates load circuits up to 230 V and the 24 V control interface.

The output is galvanically isolated from the input and is protected against contact welding by a fuse.

The three relays are of diverse design, but have a common effect on the switch output.

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010

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**PEPPERL+FUCHS 605**  
PROTECTING YOUR PROCESS

**Features**

- 1-channel signal conditioner
- 24 V DC supply (loop powered)
- Fail-safe relay contact output for de-energized and energized to safe function
- Logic input 20 V DC ... 26.5 V DC, non-polarized
- Immune to DCS test pulses (Yokogawa)
- Up to SIL3 acc. to IEC 61508

**Function**

This signal conditioner is a relay module that is suitable for safely switching applications of a load circuit. The device isolates load circuits up to 230 V and the 24 V control interface.

The energized to safe (ETS) function is permitted for SIL3 applications with output I. The de-energized to safe (DTS) function is permitted for SIL3 applications with output II. Additionally a dual pole switching (DPS) is possible by combination of output I and II.

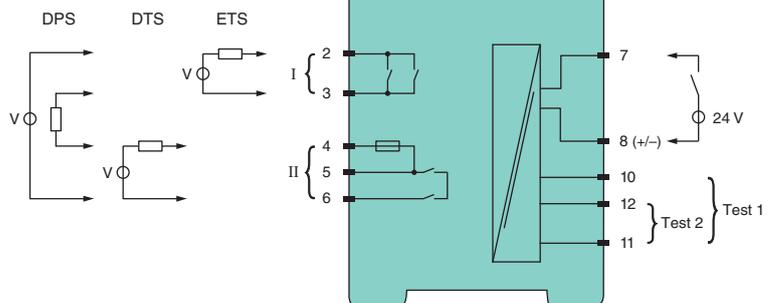
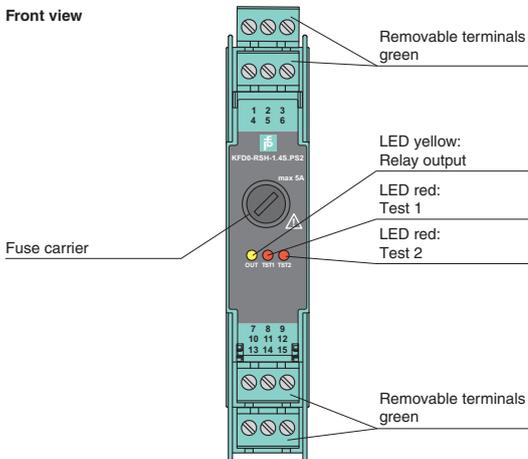
The relays are of diverse design, but have a common effect on the individual switch output. For checking of these relays, terminals 10, 11 and 12 can be used. The test mode will be indicated by LEDs according to NAMUR NE44.

The outputs are galvanically isolated from the input. Output II is protected against contact welding by a fuse depending on the used terminal.

**Technical data**

<b>Supply</b>	
Power loss	< 1.5 W
Power consumption	< 1.5 W
<b>Input</b>	
Pulse/Pause ratio	≥ 20 ms/≥ 20 ms
Test input	see Safety Manual
Signal level	0-signal: -3 ... 3 V DC 1-signal: 20 ... 26.5 V
Rated current I <sub>i</sub>	45 ... 50 mA
<b>Output</b>	
Contact loading	230 V AC/5 A/cos Φ0.7; 24 V DC/5 A resistive load
Minimum switch current	2 mA/24 V DC
Energized/De-energized delay	approx. 10 ms/approx. 5 ms
Mechanical life	5 x 10 <sup>6</sup> switching cycles
Electrical life	2.5 x 10 <sup>5</sup> switching cycles at 2 A 1 x 10 <sup>4</sup> switching cycles at 5 A
Fuse rating	2.5 A (max. 5 A) recommended maximum utilization of the fuse: 80 %
<b>Transfer characteristics</b>	
Switching frequency	< 10 Hz
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010



Technical data	
<b>Supply</b>	
Power loss	< 1.5 W
Power consumption	< 1.5 W
<b>Input</b>	
Pulse/Pause ratio	≥ 35 ms/≥ 35 ms
Pulse/Pause ratio test pulse	< 10 %
Test pulse length	max. 2 ms
Signal level	0-signal: 0 ... 5 V DC 1-signal: 20 ... 30 V
Rated current I <sub>i</sub>	approx. 58 mA
<b>Output</b>	
Contact loading	230 V AC/2 A/cos Φ0.7; 40 V DC/2 A resistive load
Minimum switch current	2 mA/24 V DC
Energized/De-energized delay	5 ... 15 ms/5 ... 10 ms
Mechanical life	5 x 10 <sup>6</sup> switching cycles
Electrical life	2.5 x 10 <sup>5</sup> switching cycles, at maximum load
<b>Transfer characteristics</b>	
Switching frequency	< 10 Hz
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Features**

- 1-channel signal conditioner
- 24 V DC supply (loop powered)
- Fail-safe relay contact output
- Logic input 20 V DC ... 30 V DC, non-polarized
- Immune to DCS test pulses (Triconex)
- Up to SIL3 acc. to IEC 61508

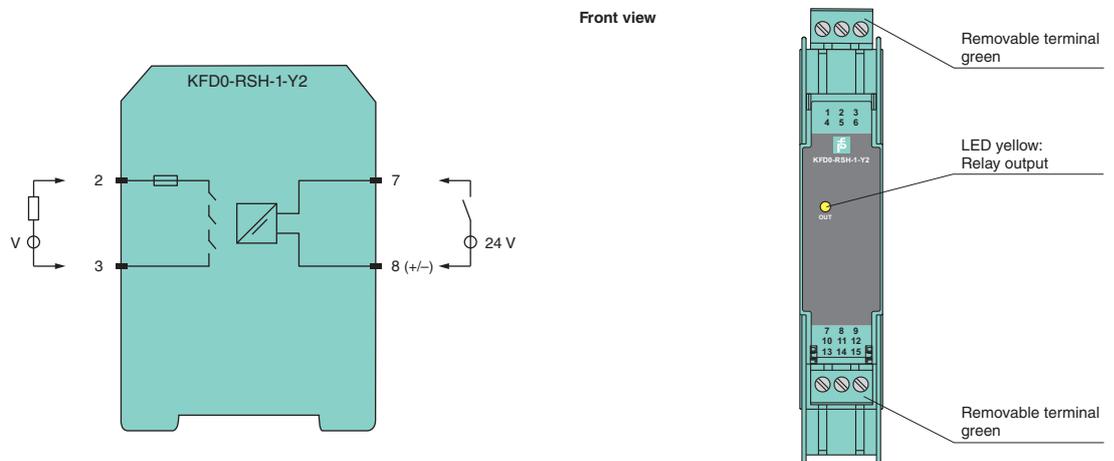
**Function**

This signal conditioner is a relay module that is suitable for safely switching applications of a load circuit. The device isolates load circuits up to 230 V and the 24 V control interface.

The output is galvanically isolated from the input and is protected against contact welding by a fuse.

The three relays are of diverse design, but have a common effect on the switch output.

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010

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**PEPPERL+FUCHS 607**  
PROTECTING YOUR PROCESS



## Transmitter Power Supplies

Model Number	Channels	Input (Field)				Output (Control System)				Specials		Supply			Page
		2-wire Transmitter	3-wire Transmitter	Current Source	0/2 V ... 10 V	0/4 mA ... 20 mA (Source)	0/4 mA ... 20 mA (Sink)	1 V ... 5 V	0/2 V ... 10 V	SMART	Signal Splitting (1 Input – 2 Outputs)	24 V DC	115 V AC/ 230 V AC	SIL	
KCD2-STC-1	1	■		■		■	■	1		■		■		2	612
KFD2-STC4-1	1	■	■	■		1				■		■		2	613
KFD2-STC4-1-3	1	■	■	■			1			■		■		2	614
KFD2-STV4-1-1	1	■	■	■				1		■		■		2	615
KFD2-CR4-1	1	■	■	■		1						■		2	616
KFD2-STC4-1.20	1	■	■	■		2				■	■	■		3	617
KFD2-STC4-1.20-3	1	■	■	■			2			■	■	■		3	618
KFD2-CR4-1.20	1	■	■	■		2					■	■		3	619
KFU8-VCR-1	1	■	■	■	■	■	■		■		■	■			620
KFD2-STC4-2	2	■				2				■		■		2	621
KFD2-STC4-2-3	2	■					2			■		■		2	622
KFD2-STV4-2-1	2	■						2		■		■		2	623
KFD2-CR4-2	2	■				2						■		2	624

## Transmitter Power Supplies with Trip Values

Model Number	Channels	Input (Field)			Output (Control System)			Supply			Page
		2-wire Transmitter	3-wire Transmitter	Current Source	0/4 mA ... 20 mA (Source)	Relay	SMART	24 V DC	115 V AC/ 230 V AC	SIL	
KFD2-CRG2-1.D	1	■	■	■	1	2		■		2	625
KFU8-CRG2-1.D	1	■	■	■	1	2		■	■	2	626



Current Repeaters

Model Number	Channels	Input (Field)				Output (Control System)			Supply Loop Powered	SIL	Page
		0 mA ... 40 mA	1 mA ... 20 mA	4 mA ... 20 mA	Fire Alarm	0 mA ... 40 mA	4 mA ... 20 mA	SMART			
KFD0-SCS-1.55	1			■			1	■	■	2	627
KFD0-CS-1.50	1			■	■		1		■	2	628
KFD0-CS-2.50	2			■	■		2		■	2	629
KFD0-CS-2.51P	2	■			■		2		■	2	630

Current and Voltage Converters

Model Number	Channels	Input (Field)					Output (Control System)			Supply			SIL	Page
		mV	-10 V ... 10 V	0/2 V ... 10 V	0/4 mA ... 20 mA	Strain Gauge	0/4 mA ... 20 mA	0/1 V ... 5 V 0/2 V ... 10 V	Relay	Loop Powered	24 V DC	115 V AC/ 230 V AC		
KFD0-CC-1	1			■	■		1			■				631
KFD2-USC-1.D	1	■		■	■		1	■	1		■			632
KFU8-USC-1.D	1	■		■	■		1	■	1		■	■		633
KFD2-GS-1.2W	1			■	■		2		2		■			634
KFD2-WAC2-1.D	1	■				■	1		2		■			635
KFD0-VC-1.10	1		■				1			■				636

Temperature Converters and Repeaters

Model Number	Channels	Input (Field)				Output (Control System)			Supply		SIL	Page
		RTD	TC	Potentiometer	V	0/4 mA ... 20 mA	0/1 V ... 5 V	Resistance	24 V DC	Loop Powered		
KFD2-UT2-1	1	■	■	■	■	1			■		2	637
KFD2-UT2-1-1	1	■	■	■	■		1		■		2	638
KFD2-UT2-2	2	■	■	■	■	2			■		2	639
KFD2-UT2-2-1	2	■	■	■	■		2		■		2	640
KFD0-TR-1	1	■				1				■		641
KFD0-TT-1	1		■			1				■		642

## Temperature Converters with Trip Values

Model Number	Channels	Input (Field)					Output (Control System)		Supply			Page
		RTD	TC	Potentiometer	V	mA	4 mA ... 20 mA	Relay	24 V DC	115 V AC/ 230 V AC	SIL	
KFD2-GU-1	1	■	■		■	■		2	■			643
KFD2-GUT-1.D	1	■	■	■	■		1	2	■		2	644
KFU8-GUT-1.D	1	■	■	■	■		1	2	■	■	2	645

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Input 2-wire SMART transmitters and 2-wire SMART current sources
- Output 4 mA ... 20 mA or 1 V ... 5 V
- Sink or source mode
- Housing width 12.5 mm
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner provides the isolation for non-intrinsically safe applications.

The device supplies 2-wire SMART transmitters, and can also be used with 2-wire SMART current sources.

It transfers the analog input signal as an isolated current value.

Digital signals may be superimposed on the input signal and are transferred bi-directionally.

Selectable output of current source, sink mode, or voltage output is available via DIP switches.

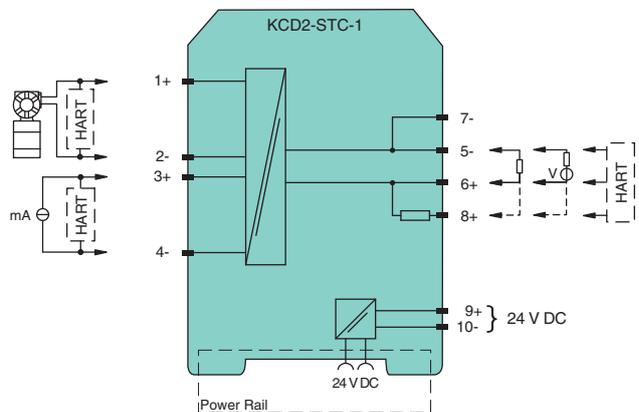
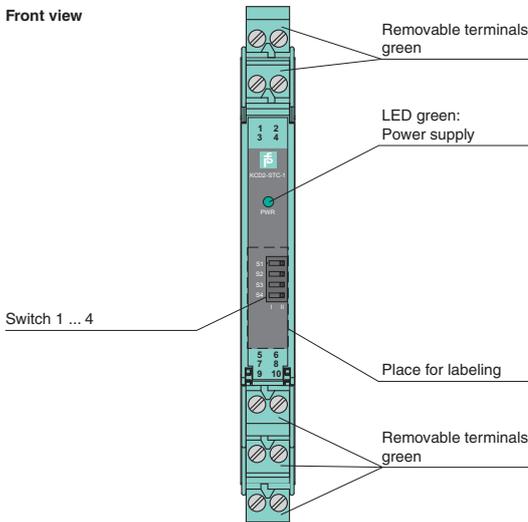
If the HART communication resistance in the loop is too low, the internal resistance of 250 Ω between terminals 6 and 8 can be used.

Test sockets for the connection of HART communicators are integrated into the terminals of the device.

**Technical data**

<b>Supply</b>	
Rated voltage	19 ... 30 V DC
Power consumption	≤ 1.1 W
<b>Input</b>	
Input signal	4 ... 20 mA limited to approx. 30 mA
Voltage drop $U_d$	approx. 5 V on terminals 3+, 4-
Available voltage	≥ 15 V at 20 mA terminals 1+, 2-
<b>Output</b>	
Load	0 ... 300 Ω (source mode)
Output signal	4 ... 20 mA or 1 ... 5 V (on 250 Ω, 0.1 % internal shunt) 4 ... 20 mA (sink mode), operating voltage 15.5 ... 26 V
Ripple	20 mV <sub>rms</sub>
<b>Transfer characteristics</b>	
Deviation	at 20 °C (68 °F) ≤ ± 0.1 % incl. non-linearity and hysteresis (source mode 4 ... 20 mA) ≤ ± 0.2 % incl. non-linearity and hysteresis (sink mode 4 ... 20 mA) ≤ ± 0.2 % incl. non-linearity and hysteresis (source mode 1 ... 5 V)
Influence of ambient temperature	< 2 μA/K (0 ... 60 °C (32 ... 140 °F)); < 4 μA/K (-20 ... 0 °C (-4 ... 32 °F)) (source mode and sink mode 4 ... 20 mA) < 0.5 mV/K (0 ... +60 °C (32 ... 140 °F)); < 1 mV/K (-20 ... 0 °C (-4 ... 32 °F)) (source mode 1 ... 5 V)
Frequency range	bandwidth at 0.5 V <sub>pp</sub> signal 0 ... 3 kHz (-3 dB)
Rise time	10 to 90 % ≤ 20 ms
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	12.5 x 114 x 124 mm (0.5 x 4.5 x 4.9 in), housing type A2

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data	
<b>Supply</b>	
Rated voltage	20 ... 35 V DC
Power consumption	1.9 W
<b>Input</b>	
Input signal	0/4 ... 20 mA
Voltage drop $U_d$	$\leq 2.4$ V at 20 mA (terminals 5, 6)
Input resistance	$\leq 64 \Omega$ terminals 2-, 3; $\leq 500 \Omega$ terminals 1+, 3 (250 $\Omega$ load)
Available voltage	$\geq 16$ V at 20 mA, terminals 1+, 3
<b>Output</b>	
Load	0 ... 800 $\Omega$
Output signal	4 ... 20 mA (overload > 25 mA)
Ripple	$\leq 50 \mu A_{rms}$
<b>Transfer characteristics</b>	
Deviation	at 20 °C (68 °F), 0/4 ... 20 mA $\leq 10 \mu A$ incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature	$\leq 20$ ppm/K
Frequency range	input to output: bandwidth with 0.5 $V_{pp}$ signal 0 ... 7.5 kHz (-3 dB) output to input: bandwidth with 0.5 $V_{pp}$ signal 0.3 ... 7.5 kHz (-3 dB)
Start-up time	200 $\mu s$
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 200 g
Dimensions	20 x 124 x 115 mm (0.8 x 4.9 x 4.5 in), housing type B2

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Input 2-wire and 3-wire SMART transmitters and 2-wire SMART current sources
- Output 0/4 mA ... 20 mA
- Terminals with test points
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner provides the isolation for non-intrinsically safe applications.

The device supplies 2-wire and 3-wire SMART transmitters, and can also be used with 2-wire SMART current sources.

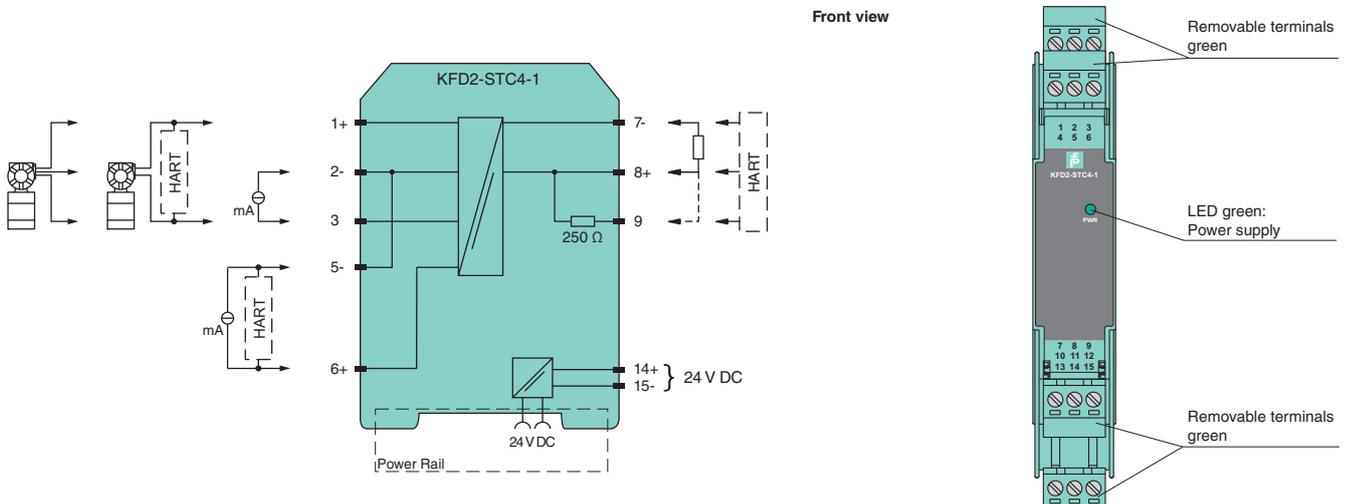
It transfers the analog input signal as an isolated current value.

Digital signals may be superimposed on the input signal and are transferred bi-directionally.

If the HART communication resistance in the loop is too low, the internal resistance of 250  $\Omega$  between terminals 8 and 9 can be used.

Test sockets for the connection of HART communicators are integrated into the terminals of the device.

**Diagrams**



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K-System  
Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Input 2-wire and 3-wire SMART transmitters and 2-wire SMART current sources
- 0/4 mA ... 20 mA current sink output
- Terminals with test points
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner provides the isolation for non-intrinsically safe applications.

The device supplies 2-wire and 3-wire SMART transmitters, and can also be used with 2-wire SMART current sources.

It transfers the analog input signal as an isolated current value.

Digital signals may be superimposed on the input or output signal and are transferred bi-directionally.

It is designed to provide a sink mode output.

If the HART communication resistance in the loop is too low, the internal resistance of 250 Ω between terminals 8 and 9 can be used.

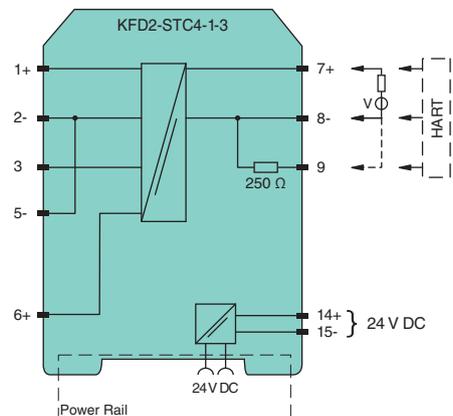
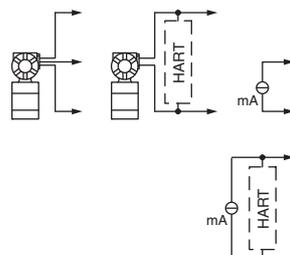
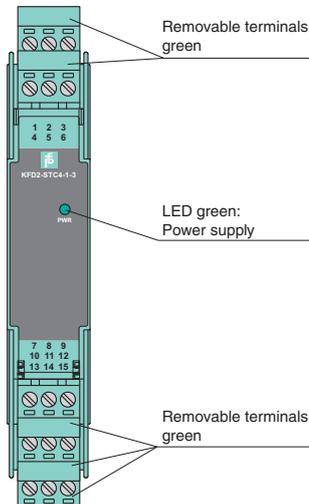
Test sockets for the connection of HART communicators are integrated into the terminals of the device.

**Technical data**

<b>Supply</b>	
Rated voltage	20 ... 35 V DC
Power consumption	2.5 W
<b>Input</b>	
Input signal	0/4 ... 20 mA
Voltage drop $U_d$	≤ 2.4 V at 20 mA (terminals 5, 6)
Input resistance	≤ 64 Ω terminals 2-, 3; ≤ 500 Ω terminals 1+, 3 (250 Ω load)
Available voltage	≥ 16 V at 20 mA terminals 1+, 3
<b>Output</b>	
Output signal	0/4 ... 20 mA (overload > 25 mA)
Ripple	≤ 50 $\mu A_{rms}$
External supply (loop)	11 ... 30 V DC
<b>Transfer characteristics</b>	
Deviation	at 20 °C (68 °F), 0/4 ... 20 mA ≤ 10 $\mu A$ incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature	0.25 $\mu A/K$
Frequency range	input to output: bandwidth with 0.5 $V_{pp}$ signal 0 ... 7.5 kHz (-3 dB) output to input: bandwidth with 0.5 $V_{pp}$ signal 0.3 ... 7.5 kHz (-3 dB)
Rise time	20 $\mu s$
Start-up time	200 $\mu s$
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 200 g
Dimensions	20 x 124 x 115 mm (0.8 x 4.9 x 4.5 in), housing type B2

**Diagrams**

Front view



Edition 908637 (US) / 208599 (EU) 11/2010



Technical data	
<b>Supply</b>	
Rated voltage	20 ... 35 V DC
Power consumption	1.9 W
<b>Input</b>	
Input signal	0/4 ... 20 mA
Voltage drop $U_d$	$\leq 2.4$ V at 20 mA (terminals 5, 6)
Input resistance	$\leq 64 \Omega$ terminals 2-, 3; $\leq 500 \Omega$ terminals 1+, 3 (250 $\Omega$ load)
Available voltage	$\geq 16$ V at 20 mA terminals 1+, 3
<b>Output</b>	
Load	output resistance: 250 $\Omega$
Output signal	0/1 ... 5 V
Ripple	$\leq 12.5$ mV
<b>Transfer characteristics</b>	
Deviation	at 20 °C (68 °F), 0/1 ... 5 V $\leq 5$ mV incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature	$\leq 20$ ppm/K
Frequency range	hazardous area into the safe area: bandwidth with 0.5 $V_{pp}$ 0 ... 7.5 kHz (-3 dB) safe area into the hazardous area: bandwidth with 0.5 $V_{pp}$ 0.3 ... 7.5 kHz (-3 dB)
Rise time	20 $\mu$ s
Start-up time	200 $\mu$ s
De-energized delay	20 $\mu$ s
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 200 g
Dimensions	20 x 124 x 115 mm (0.8 x 4.9 x 4.5 in), housing type B2

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Input 2-wire and 3-wire SMART transmitters and 2-wire SMART current sources
- Output 0/1 V ... 5 V
- Terminals with test points
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner provides the isolation for non-intrinsically safe applications.

The device supplies 2-wire and 3-wire SMART transmitters, and can also be used with 2-wire SMART current sources.

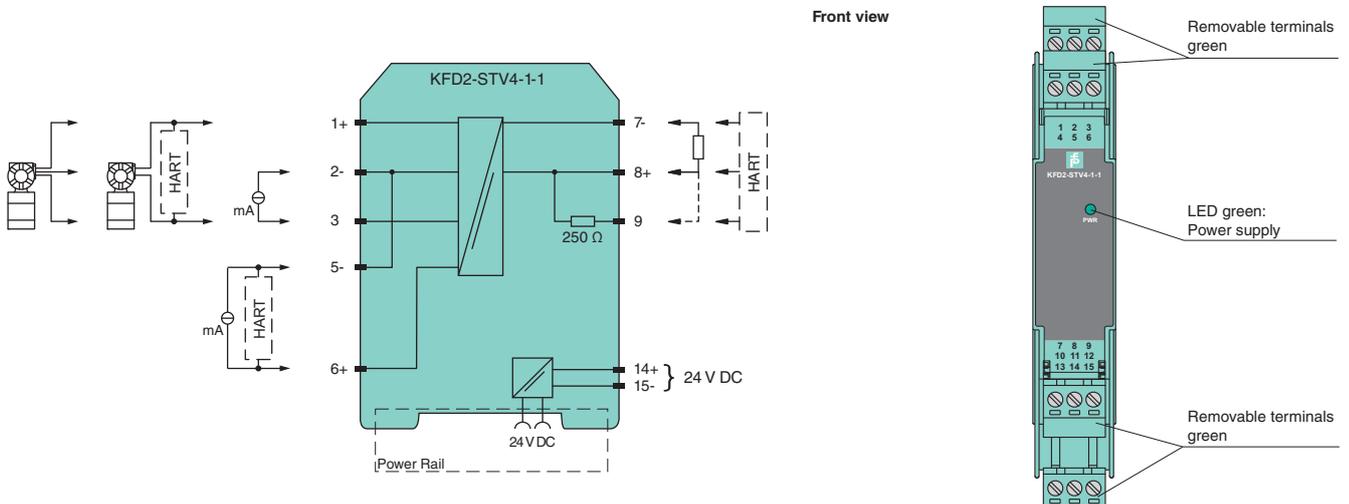
It transfers the analog input signal as an isolated voltage value.

Digital signals may be superimposed on the input signal and are transferred bi-directionally.

If the HART communication resistance in the loop is too low, the internal resistance of 250  $\Omega$  between terminals 8 and 9 can be used.

Test sockets for the connection of HART communicators are integrated into the terminals of the device.

**Diagrams**



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K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Input 2-wire and 3-wire transmitters and 2-wire current sources
- Output 0/4 mA ... 20 mA
- Accuracy 0.1 %
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner provides the isolation for non-intrinsically safe applications.

The device supplies 2-wire and 3-wire transmitters, and can also be used with 2-wire current sources.

It transfers the analog input signal as an isolated current value.

The output provides a 0/4 mA ... 20 mA current corresponding to the input signal. The minimum available field voltage is 16 V at 20 mA.

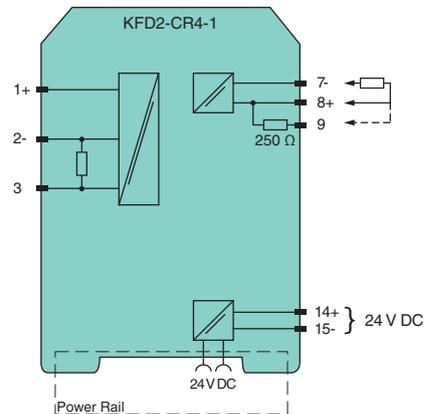
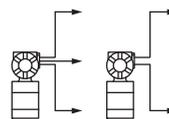
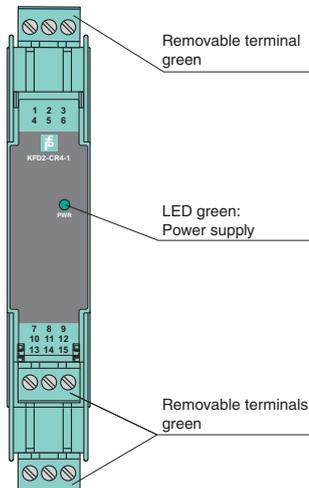
If necessary, the internal resistance of 250 Ω between terminals 8, 9 can be used for conversion into a 0 V ... 5 V voltage signal.

**Technical data**

<b>Supply</b>	
Rated voltage	20 ... 35 V DC
Power consumption	1.6 W
<b>Input</b>	
Input signal	0/4 ... 20 mA
Input resistance	≤ 64 Ω terminals 2-, 3; ≤ 500 Ω terminals 1+, 3 (250 Ω load)
Available voltage	≥ 15.7 V at 20 mA terminals 1+, 3
Ripple	50 mV <sub>pp</sub> at 20 mA
<b>Output</b>	
Load	0 ... 800 Ω
Output signal	0/4 ... 20 mA
Ripple	≤ 50 μA <sub>rms</sub>
<b>Transfer characteristics</b>	
Deviation	at 20 °C (68 °F), 0/4 ... 20 mA ≤ 10 μA incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature	0.25 μA/K
Rise time	20 μs
Start-up time	200 μs
De-energized delay	20 μs
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Diagrams**

Front view



Edition 908837 (US) / 208599 (EU) 11/2010



Technical data	
<b>Supply</b>	
Rated voltage	20 ... 35 V DC
Power consumption	2.5 W
<b>Input</b>	
Input signal	0/4 ... 20 mA
Voltage drop $U_d$	$\leq 2.4$ V at 20 mA (terminals 5, 6)
Input resistance	$\leq 76 \Omega$ terminals 2-, 3; $\leq 500 \Omega$ terminals 1+, 3 (250 $\Omega$ load)
Available voltage	$\geq 16$ V at 20 mA, terminals 1+, 3
Ripple	0
<b>Output</b>	
Load	0 ... 550 $\Omega$
Output signal	0/4 ... 20 mA (overload > 25 mA)
Ripple	$\leq 50 \mu A_{rms}$
<b>Transfer characteristics</b>	
Deviation	at 20 °C (68 °F), 0/4 ... 20 mA $\leq \pm 10 \mu A$ incl. calibration, linearity, hysteresis, loads and supply voltage fluctuations
Influence of ambient temperature	$\leq 20$ ppm/K
Frequency range	Input in output: bandwidth with 1 mA <sub>pp</sub> signal 0 ... 7.5 kHz (-3 dB) output in input: band width with 1 V <sub>pp</sub> signal 0.3 ... 7.5 kHz (-3 dB)
Rise time	20 $\mu s$
Start-up time	200 $\mu s$
De-energized delay	20 $\mu s$
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 200 g
Dimensions	20 x 124 x 115 mm (0.8 x 4.9 x 4.5 in), housing type B2

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Input 2-wire and 3-wire SMART transmitters and 2-wire SMART current sources
- Dual output 0/4 mA ... 20 mA
- Terminals with test points
- Up to SIL3 acc. to IEC 61508

**Function**

This signal conditioner provides the isolation for non-intrinsically safe applications.

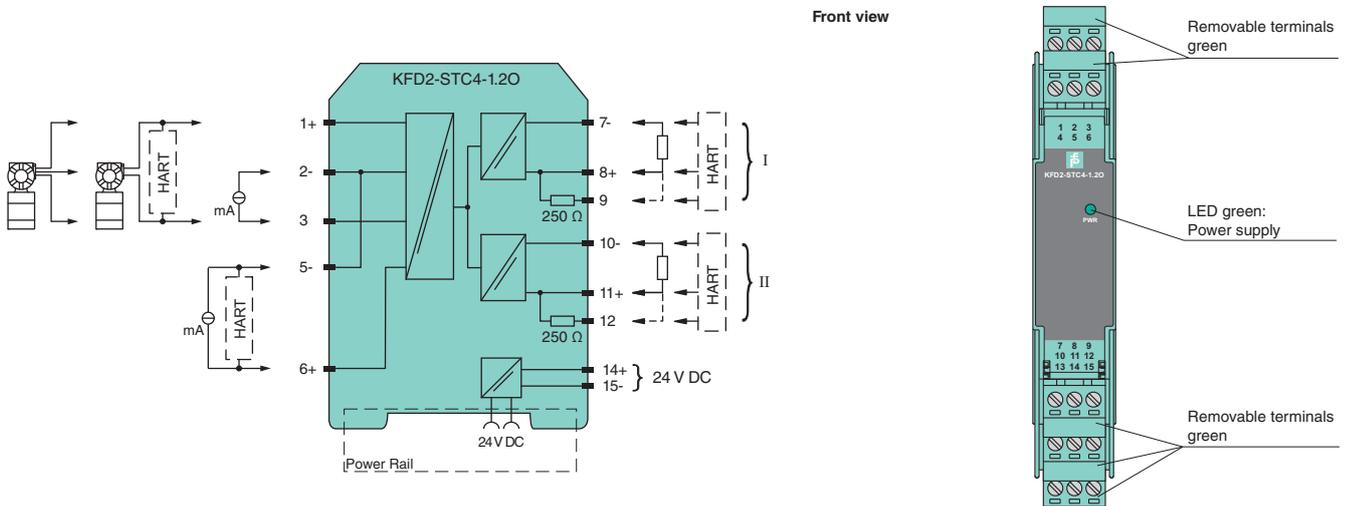
The device supplies 2-wire and 3-wire SMART transmitters, and can also be used with 2-wire SMART current sources.

It transfers the analog input signal to the safe area as two isolated current values. Digital signals may be superimposed on the input signal and are transferred bi-directionally.

If the HART communication resistance in the loop is too low, the internal resistance of 250  $\Omega$  between terminals 8, 9 and 11, 12 can be used.

Test sockets for the connection of HART communicators are integrated into the terminals of the device.

**Diagrams**



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Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Input 2-wire and 3-wire SMART transmitters and 2-wire SMART current sources
- Dual output 0/4 mA ... 20 mA
- Terminals with test points
- Up to SIL3 acc. to IEC 61508

**Function**

This signal conditioner provides the isolation for non-intrinsically safe applications.

The device supplies 2-wire and 3-wire SMART transmitters, and can also be used with 2-wire SMART current sources.

It transfers the analog input signal as two isolated current values.

Digital signals may be superimposed on the input or the output signals and are transferred bi-directionally.

It is designed to provide sink mode outputs.

If the HART communication resistance in the loop is too low, the internal resistance of 250 Ω between terminals 8, 9 and 11, 12 can be used.

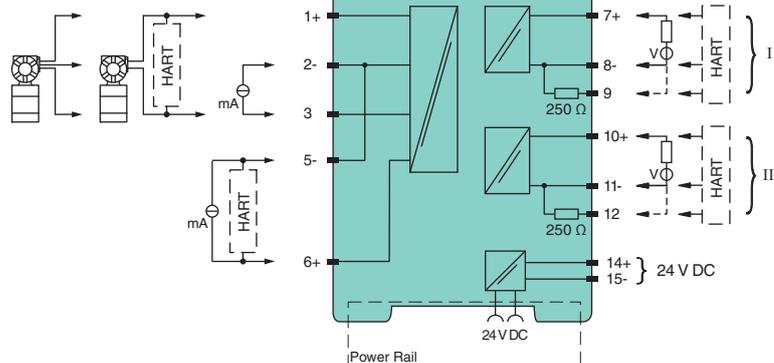
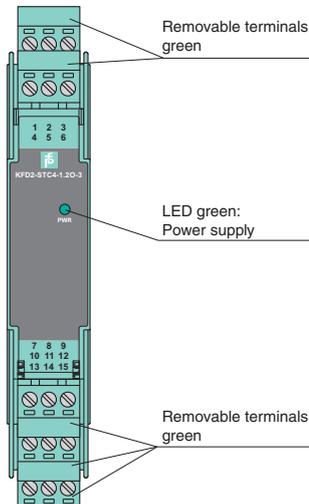
Test sockets for the connection of HART communicators are integrated into the terminals of the device.

**Technical data**

<b>Supply</b>	
Rated voltage	20 ... 35 V DC
Power consumption	2.5 W
<b>Input</b>	
Input signal	0/4 ... 20 mA
Voltage drop $U_d$	≤ 2.4 V at 20 mA (terminals 5, 6)
Input resistance	≤ 76 Ω terminals 2-, 3; ≤ 500 Ω terminals 1+, 3 (250 Ω load)
Available voltage	≥ 16 V at 20 mA terminals 1+, 3
<b>Output</b>	
Output signal	0/4 ... 20 mA (overload > 25 mA)
Ripple	≤ 50 $\mu A_{rms}$
External supply (loop)	11 ... 30 V DC
<b>Transfer characteristics</b>	
Deviation	at 20 °C (68 °F), 0/4 ... 20 mA ≤ 10 $\mu A$ incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature	0.25 $\mu A/K$
Frequency range	input to output: bandwidth with 0.5 $V_{pp}$ signal 0 ... 7.5 kHz (-3 dB) output to input: bandwidth with 0.5 $V_{pp}$ signal 0.3 ... 7.5 kHz (-3 dB)
Rise time	20 $\mu s$
Start-up time	200 $\mu s$
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 200 g
Dimensions	20 x 124 x 115 mm (0.8 x 4.9 x 4.5 in), housing type B2

**Diagrams**

Front view



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data	
<b>Supply</b>	
Rated voltage	20 ... 32 V DC
Power consumption	approx. 2.5 W
<b>Input</b>	
Input signal	0/4 ... 20 mA
Input resistance	≤ 85 Ω terminals 2-, 3
Available voltage	≥ 16 V at 20 mA terminals 1+, 3
Ripple	50 mV <sub>pp</sub> at 20 mA
<b>Output</b>	
Load	0 ... 550 Ω
Output signal	0/4 ... 20 mA
Ripple	≤ 50 μA <sub>rms</sub>
<b>Transfer characteristics</b>	
Deviation	at 20 °C (68 °F), 0/4 ... 20 mA ≤ 10 μA incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature	0.25 μA/K
Rise time	20 μs
Start-up time	200 μs
De-energized delay	20 μs
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Input 2-wire and 3-wire transmitters and 2-wire current sources
- Dual output 0/4 mA ... 20 mA
- Accuracy 0.1 %
- Up to SIL3 acc. to IEC 61508

**Function**

This signal conditioner provides the isolation for non-intrinsically safe applications.

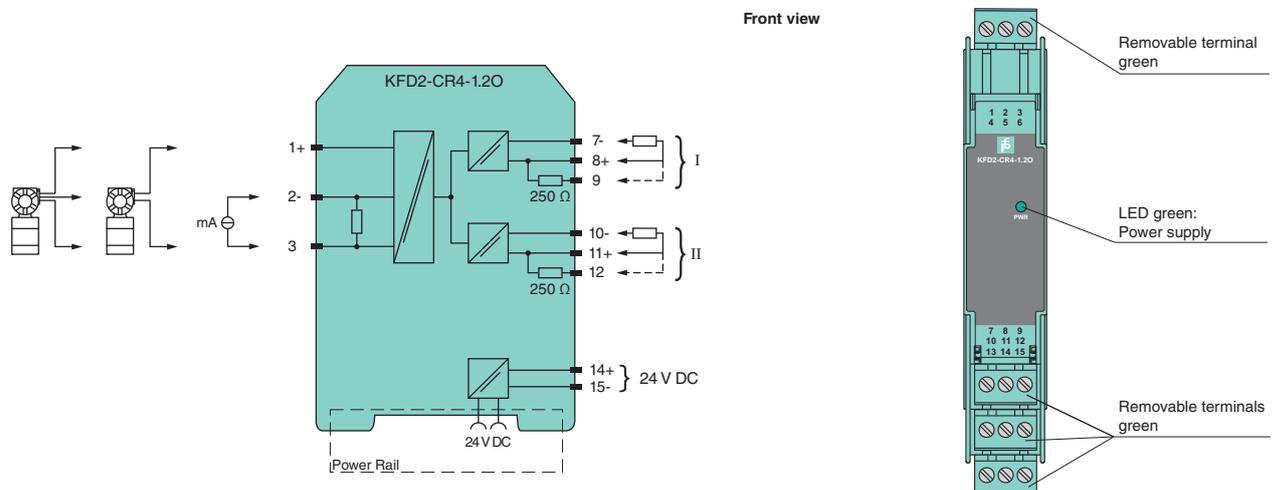
The device supplies 2-wire and 3-wire transmitters, and can also be used with 2-wire current sources.

It transfers the analog input signal as two isolated current values.

Both outputs provide a 0/4 mA ... 20 mA current corresponding to the input signal. The minimum available field voltage is 16 V at 20 mA.

If necessary, the internal resistance of 250 Ω between terminals 8, 9 and 11, 12 can be used for conversion into a 0 V ... 5 V voltage signal.

**Diagrams**



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Analog Inputs  
Analog Outputs  
Accessories

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Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

**Features**

- 1-channel signal conditioner
- AC/DC wide range supply
- Current and voltage inputs
- Current or voltage output
- Switch selectable ranges

**Function**

This isolated signal conditioner is a signal converter that is suitable for the connection of current and voltage signals and provides isolation for non-intrinsically safe applications.

The input ranges include 0/4 mA ... 20 mA or 0/2 V ... 10 V.

The output measuring signals are 0/4 mA ... 20 mA or 0/2 V ... 10 V.

The measuring range is easily selected by switches located on the front of device.

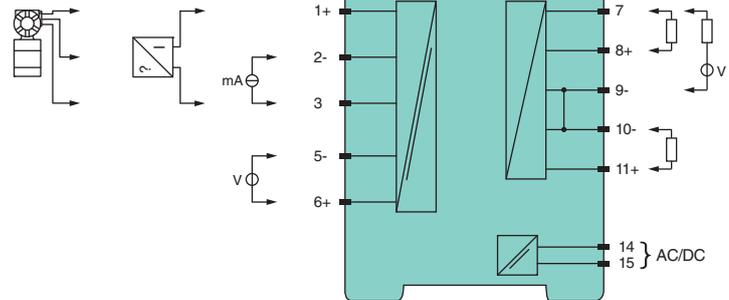
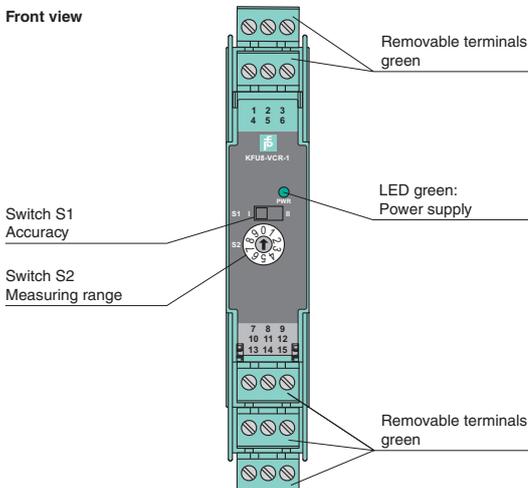
For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Technical data**

<b>Supply</b>	
Rated voltage	20 ... 90 V DC/48 ... 253 V AC
Power consumption	≤ 2.1 W/≤ 4 VA
<b>Input</b>	
Input I	
Input signal	0/4 ... 20 mA
Available voltage	> 15 V at 20 mA terminals 1+, 3-
Open circuit voltage/short-circuit current	21 V/26 mA
Input resistance	< 55 Ω terminals 2-, 3+
Input II	
Input signal	0/2 ... 10 V
Input resistance	> 1 MΩ
<b>Output</b>	
Output I	
Output signal	0/4 ... 20 mA
Source	load 0 ... 750 Ω open circuit voltage > 21 V
Sink	voltage across terminals 5 ... 30 V. If the current is supplied from a source > 16.5 V, series resistance of $\geq (V - 16.5)/0.0215 \Omega$ is needed, where V is the source voltage.
Output II	
Output signal	0/2 ... 10 V
Load	≥ 2 kΩ
<b>Transfer characteristics</b>	
Deviation	0.1 % of output signal range
Resolution/accuracy	current: 7 μA/20 μA voltage: 3.5 mV/10 mV
Influence of ambient temperature	0.01 %/K of output signal range
Reaction time	150 ms
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Diagrams**

Front view



Edition 908837 (US) / 208599 (EU) 11/2010



Technical data	
<b>Supply</b>	
Rated voltage	20 ... 35 V DC
Power consumption	≤2.8 W
<b>Input</b>	
Input signal	0/4 ... 20 mA
Available voltage	≥ 16 V at 20 mA, terminals 1+, 3
<b>Output</b>	
Load	0 ... 550 Ω
Output signal	4 ... 20 mA (overload > 25 mA)
Ripple	≤50 μA <sub>rms</sub>
<b>Transfer characteristics</b>	
Deviation	at 20 °C (68 °F), 0/4 ... 20 mA ≤10 μA incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature	0.25 μA/K
Frequency range	input to output: bandwidth with 1 V <sub>pp</sub> signal 0 ... 7.5 kHz (-3 dB) output to input: bandwidth with 1 V <sub>pp</sub> signal 0.3 ... 7.5 kHz (-3 dB)
Rise time	20 μs
Start-up time	200 μs
De-energized delay	20 μs
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 124 x 115 mm (0.8 x 4.9 x 4.5 in), housing type B2

**Features**

- 2-channel signal conditioner
- 24 V DC supply (Power Rail)
- Input 2-wire SMART transmitters
- Output 0/4 mA ... 20 mA
- Terminals with test points
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner provides the isolation for non-intrinsically safe applications.

The device supplies 2-wire SMART transmitters.

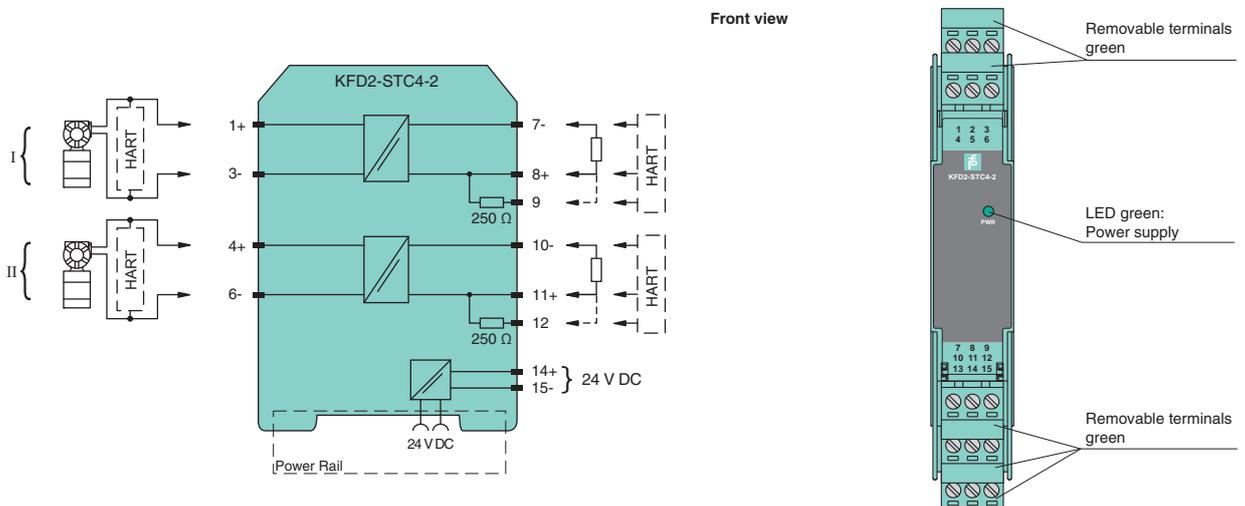
It transfers the analog input signal as an isolated current value.

Digital signals may be superimposed on the input signal and are transferred bi-directionally.

If the HART communication resistance in the loop is too low, the internal resistance of 250 Ω between terminals 8, 9 and 11, 12 can be used.

Test sockets for the connection of HART communicators are integrated into the terminals of the device.

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010

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**PEPPERL+FUCHS 621**  
PROTECTING YOUR PROCESS

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 2-channel signal conditioner
- 24 V DC supply (Power Rail)
- Input 2-wire SMART transmitters
- 0/4 mA ... 20 mA current sink output
- Terminals with test points
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner provides the isolation for non-intrinsically safe applications.

The device supplies 2-wire SMART transmitters.

It transfers the analog input signal as an isolated current value.

Digital signals may be superimposed on the input or output signals and transferred bi-directionally.

It is designed to provide sink mode outputs.

If the HART communication resistance in the loop is too low, the internal resistance of 250 Ω between terminals 8, 9 and 11, 12 can be used.

Test sockets for the connection of HART communicators are integrated into the terminals of the device.

**Technical data**

**Supply**

Rated voltage	20 ... 35 V DC
Power consumption	≤ 2.8 W

**Input**

Input signal	0/4 ... 20 mA
Available voltage	≥ 16 V at 20 mA, terminals 1+, 3

**Output**

Output signal	0/4 ... 20 mA (overload > 25 mA)
Ripple	≤ 50 μA <sub>rms</sub>
External supply (loop)	11 ... 30 V DC

**Transfer characteristics**

Deviation	at 20 °C (68 °F), 0/4 ... 20 mA ≤ 10 μA incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
-----------	---

Influence of ambient temperature	0.25 μA/K
----------------------------------	-----------

Frequency range	input to output: bandwidth with 0.5 V <sub>pp</sub> signal 0 ... 7.5 kHz (-3 dB) output to input: bandwidth with 0.5 V <sub>pp</sub> signal 0.3 ... 7.5 kHz (-3 dB)
-----------------	--

Rise time	20 μs
-----------	-------

Start-up time	200 μs
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**Ambient conditions**

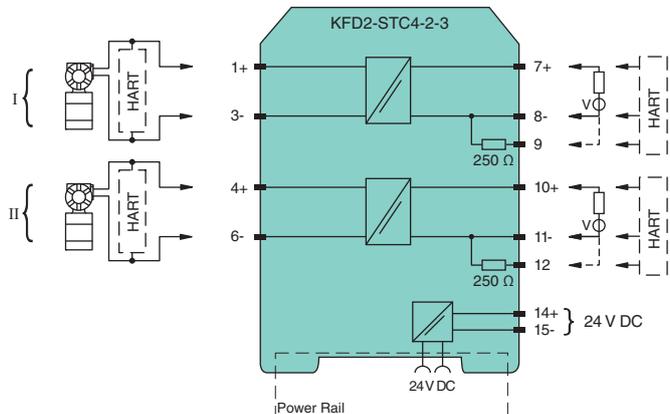
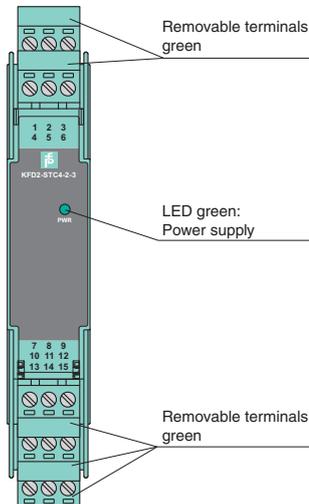
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
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**Mechanical specifications**

Protection degree	IP20
Mass	approx. 200 g
Dimensions	20 x 124 x 115 mm (0.8 x 4.9 x 4.5 in), housing type B2

**Diagrams**

Front view



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data	
<b>Supply</b>	
Rated voltage	20 ... 35 V DC
Power consumption	≤2.5 W
<b>Input</b>	
Input signal	0/4 ... 20 mA
Available voltage	≥ 16 V at 20 mA
<b>Output</b>	
Load	output resistance: 250 Ω
Output signal	0/1 ... 5 V
Ripple	≤12.5 mV
<b>Transfer characteristics</b>	
Deviation	at 20 °C (68 °F), 0/1 ... 5 V ≤5 mV incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature	≤20 ppm/K
Frequency range	hazardous area into the safe area: bandwidth with 0.5 V <sub>pp</sub> 0 ... 7.5 kHz (-3 dB) safe area into the hazardous area: bandwidth with 0.5 V <sub>pp</sub> 0.3 ... 7.5 kHz (-3 dB)
Rise time	20 μs
Start-up time	200 μs
De-energized delay	20 μs
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	20 x 124 x 115 mm (0.8 x 4.9 x 4.5 in), housing type B2

**Features**

- 2-channel signal conditioner
- 24 V DC supply (Power Rail)
- Input 2-wire SMART transmitters
- Output 0/1 V ... 5 V
- Terminals with test points
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner provides the isolation for non-intrinsically safe applications.

The device supplies 2-wire SMART transmitters.

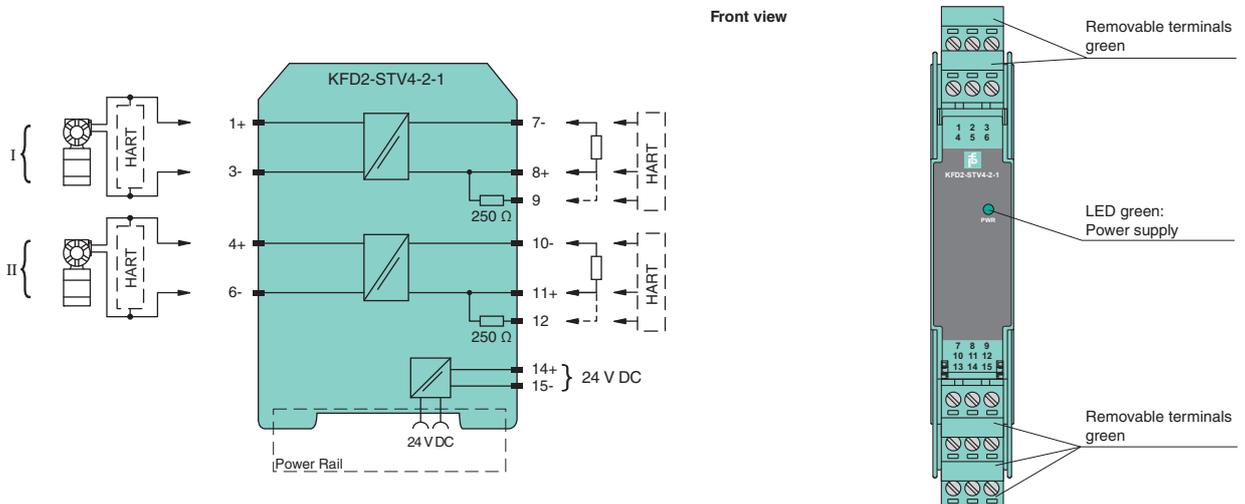
It transfers the analog input signal as an isolated voltage value.

Digital signals may be superimposed on the input signal and are transferred bi-directionally.

If the HART communication resistance in the loop is too low, the internal resistance of 250 Ω between terminals 8, 9 and 11, 12 can be used.

Test sockets for the connection of HART communicators are integrated into the terminals of the device.

**Diagrams**



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**PEPPERL+FUCHS 623**  
PROTECTING YOUR PROCESS

K-System  
Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

K-System  
Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

**Features**

- 2-channel signal conditioner
- 24 V DC supply (Power Rail)
- Input 2-wire transmitters
- Output 0/4 mA ... 20 mA
- Accuracy 0.1 %
- Up to SIL2 acc. to IEC 61508

**Function**

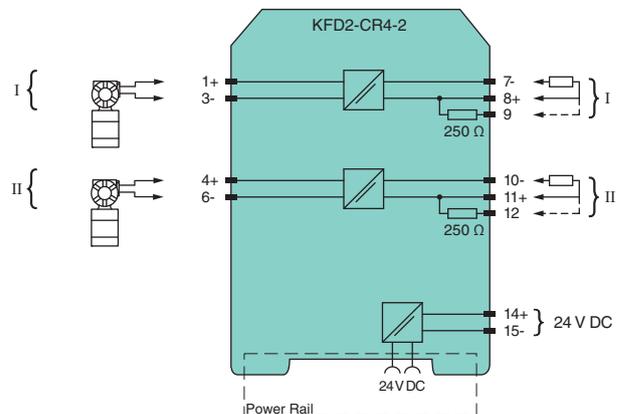
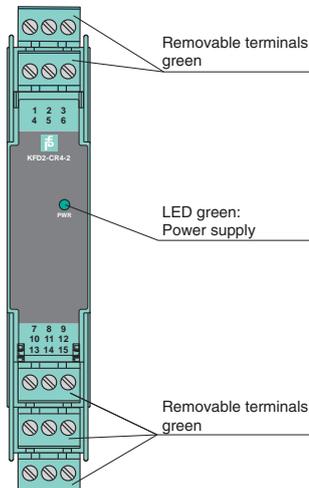
This signal conditioner provides the isolation for non-intrinsically safe applications. The device supplies 2-wire transmitters. It transfers the analog input signal as an isolated current value. The output provides a 0/4 mA ... 20 mA current corresponding to the input signal. The minimum available field voltage is 16 V at 20 mA. If necessary, the internal resistance of 250 Ω between terminals 8, 9 and 11, 12 can be used for conversion into a 0 V ... 5 V voltage signal.

**Technical data**

<b>Supply</b>	
Rated voltage	20 ... 35 V DC
Power consumption	≤ 2.8 W
<b>Input</b>	
Input signal	0/4 ... 20 mA
Input resistance	≤ 500 Ω terminals 1+, 3- (250 Ω load)
Available voltage	≥ 15.7 V at 20 mA terminals 1+, 3
Ripple	50 mV <sub>pp</sub> at 20 mA
<b>Output</b>	
Load	0 ... 550 Ω
Output signal	0/4 ... 20 mA
Ripple	≤ 50 μA <sub>rms</sub>
<b>Transfer characteristics</b>	
Deviation	at 20 °C (68 °F), 0/4 ... 20 mA ≤ 10 μA incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature	0.25 μA/K
Rise time	20 μs
Start-up time	200 μs
De-energized delay	20 μs
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Diagrams**

Front view



Edition 908837 (US) / 208599 (EU) 11/2010



Technical data	
<b>Supply</b>	
Rated voltage	20 ... 30 V DC
Power consumption	2.5 W
<b>Input</b>	
Input I	
Input signal	0/4 ... 20 mA
Available voltage	≥ 15 V at 20 mA
Open circuit voltage/short-circuit current	24 V/33 mA
Input resistance	45 Ω (terminals 2, 3)
Lead monitoring	breakage I < 0.2 mA; short-circuit I > 22 mA acc. to NAMUR NE43
<b>Output</b>	
Output signal	
Output I, II	0 ... 20 mA or 4 ... 20 mA
Contact loading	250 V AC/2 A/cos Φ ≥ 0.7; 40 V DC/2 A
Mechanical life	5 x 10 <sup>7</sup> switching cycles
Energized/De-energized delay	approx. 20 ms/approx. 20 ms
Output III	
Current range	0 ... 20 mA or 4 ... 20 mA
Open loop voltage	≤ 24 V DC
Load	≤ 650 Ω
Fault signal	downscale I ≤ 3.6 mA, upscale I ≥ 21.5 mA (acc. NAMUR NE43)
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	300 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in), housing type C3

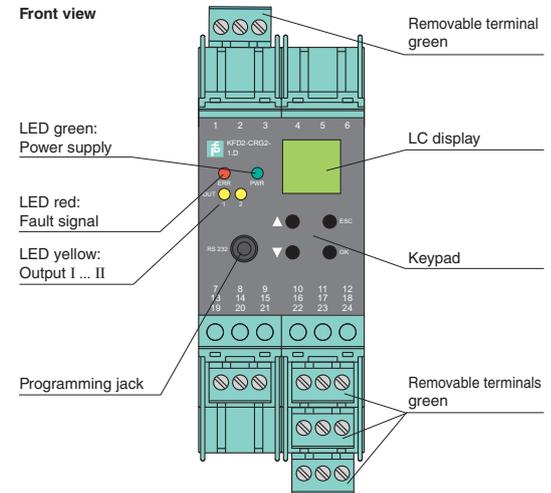
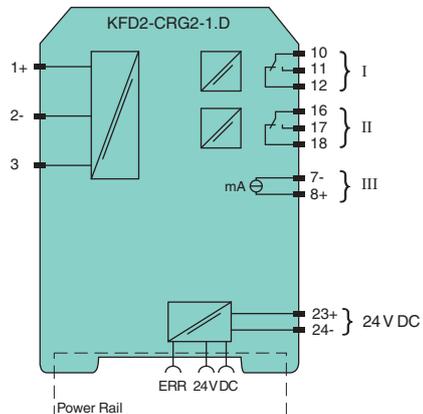
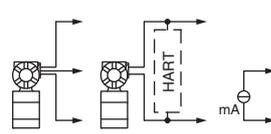
**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Input 2-wire and 3-wire transmitters and 2-wire current sources
- Output 0/4 mA ... 20 mA
- 2 relay contact outputs
- Programmable high/low alarm
- Linearization function (max 20 points)
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner provides the isolation for non-intrinsically safe applications. The device supplies 2-wire and 3-wire transmitters, and can also be used with active current sources. Two relays and an active 0/4 mA ... 20 mA current source are available as outputs. The relay contacts and the current output can be integrated in security-relevant circuits. The current output is easily scaled. On the display the measured value can be indicated in various physical units. The unit is easily programmed by the use of a keypad located on the front of the unit or with the **PACT<sup>ware</sup>**™ configuration software. The input has a line fault detection. A unique collective error messaging feature is available when used with the Power Rail system. For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010

K-System  
Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

**Features**

- 1-channel signal conditioner
- AC/DC wide range supply
- Input 2-wire and 3-wire transmitters and 2-wire current sources
- Output 0/4 mA ... 20 mA
- 2 relay contact outputs
- Programmable high/low alarm
- Linearization function (max 20 points)
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner provides the isolation for non-intrinsically safe applications.

The device supplies 2-wire and 3-wire transmitters, and can also be used with active current sources.

Two relays and an active 0/4 mA ... 20 mA current source are available as outputs.

The relay contacts and the current output can be integrated in security-relevant circuits. The current output is easily scaled.

On the display the measured value can be indicated in various physical units.

The unit is easily programmed by the use of a keypad located on the front of the unit or with the **PACT<sup>ware</sup>**™ configuration software.

The input has a line fault detection.

For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Technical data**

**Supply**

Rated voltage	20 ... 90 V DC or 48 ... 253 V AC
Power consumption	2.2 W/4 VA

**Input**

Input I	
Input signal	0/4 ... 20 mA
Available voltage	> 15 V at 20 mA
Open circuit voltage/short-circuit current	24 V/33 mA
Input resistance	45 Ω (terminals 2, 3)
Lead monitoring	breakage I < 0.2 mA; short-circuit I > 22 mA acc. to NAMUR NE43

**Output**

Output signal	0 ... 20 mA or 4 ... 20 mA
Output I, II	signal, relay
Contact loading	250 V AC/2 A/cos Φ ≥ 0.7; 40 V DC/2 A
Mechanical life	5 x 10 <sup>7</sup> switching cycles
Energized/De-energized delay	approx. 20 ms/approx. 20 ms
Output III	Signal, analog
Current range	0 ... 20 mA or 4 ... 20 mA
Open loop voltage	≤ 24 V DC
Load	≤ 650 Ω
Fault signal	downscale I ≤ 3.6 mA, upscale I ≥ 21.5 mA (acc. NAMUR NE43)

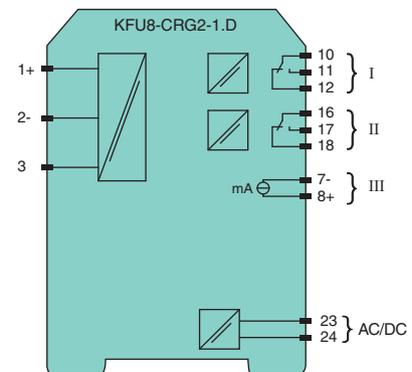
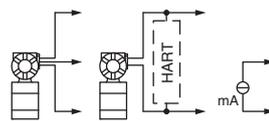
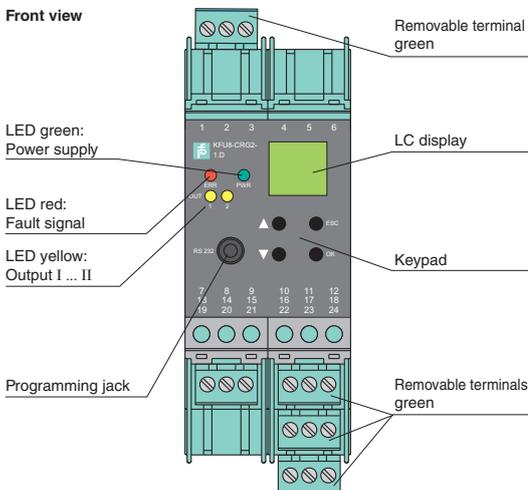
**Ambient conditions**

Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
---------------------	-------------------------------

**Mechanical specifications**

Protection degree	IP20
Mass	300 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in), housing type C3

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data	
<b>Supply</b>	
Rated voltage	loop powered
<b>Field circuit</b>	
Available voltage	≥ 16 V for supply voltage > 21 V
Current	4 ... 20 mA (linear transmission 1 ... 22 mA)
Load	≤ 800 Ω (at 20 mA)
<b>Supply circuit</b>	
Voltage	max. 30 V DC
Current	4 ... 20 mA (quiescent current < 0.5 mA)
Power loss	150 mW at 20 mA and $U_E < 24 V$
<b>Transfer characteristics</b>	
Deviation	
After calibration	≤ ± 80 μA linearity, load and voltage dependence at 20 °C (68 °F)
Influence of ambient temperature	< 0.5 μA/K
Damping	approx. 3 dB
Rise time	≤ 20 μs at 0 Ω, ≤ 600 μs with 800 Ω load
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 120 g
Dimensions	20 x 124 x 115 mm (0.8 x 4.9 x 4.5 in), housing type B2

**Features**

- 1-channel signal conditioner
- 24 V DC supply (loop powered)
- Current input/output 4 mA ... 20 mA
- HART I/P or transmitter power supply
- Low voltage drop
- Line fault detection (LFD)
- Up to SIL2 acc. to IEC 61508

**Function**

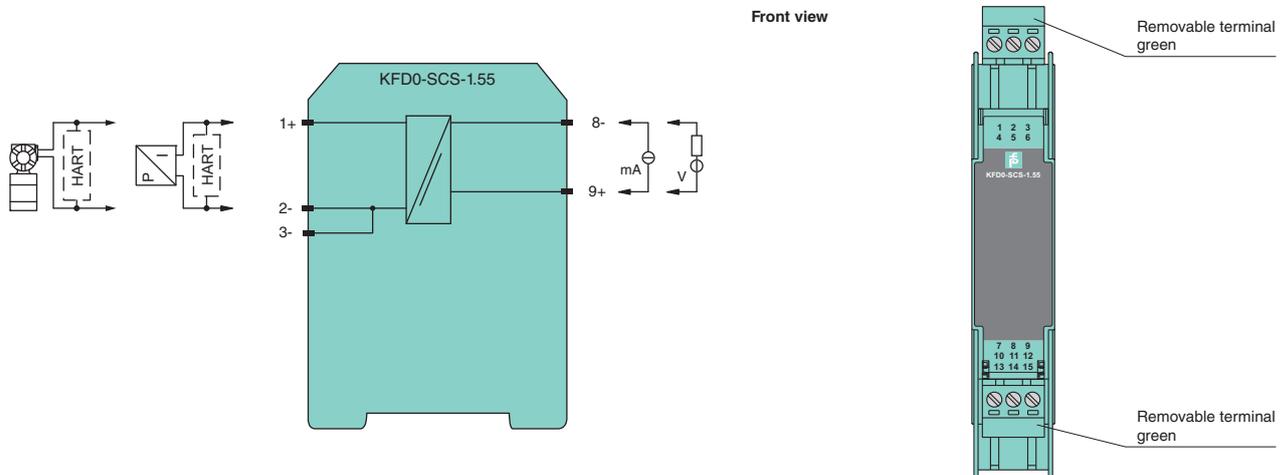
This signal conditioner is loop powered and isolates a 4 mA ... 20 mA signal for transmitters and positioners and is HART compatible.

The low voltage drop of 5 V in comparison to active signal conditioners also allows transmitter applications with unstable power sources between 20 V DC ... 30 V DC.

Line fault detection of the field circuit is possible if the control loop in the safe area is monitored for overscale or underscale conditions of the 4 mA ... 20 mA range.

The module can also be used for controlling solenoid valves and discrete outputs, such as LEDs. In this case, terminals 8- and 9+ are driven with a 24 V signal.

**Diagrams**



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**PEPPERL+FUCHS 627**  
PROTECTING YOUR PROCESS

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 1-channel signal conditioner
- 24 V DC supply (loop powered)
- Current input/output 4 mA ... 20 mA
- I/P or transmitter power supply
- Accuracy 0.1 %
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner transfers DC signals from fire alarms, smoke alarms, and temperature sensors and provides isolation for non-intrinsically safe applications. It can also be used to control I/P converters, power solenoids, LEDs, and audible alarms.

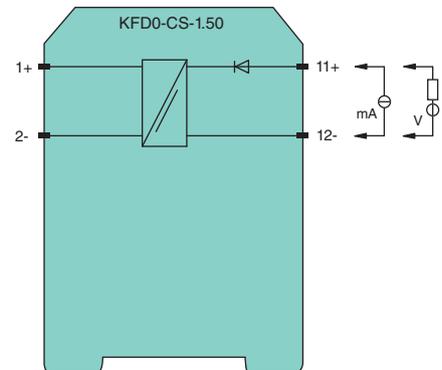
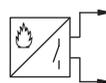
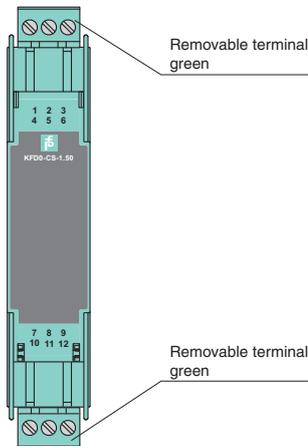
Since this isolator is loop powered, use the technical data to verify that proper voltage is available to the field devices.

**Technical data**

<b>Supply</b>	
Rated voltage	loop powered
<b>Input</b>	
Rated voltage $U_i$	10 ... 35 V
Rated current $I_i$	4 ... 20 mA
Power loss	< 150 mW per channel at 25 mA and $U < 26.1$ V < 400 mW per channel at 25 mA and $U > 26.1$ V
<b>Output</b>	
Voltage	$\geq 0.9 \times U_{in} - (0.23 \times \text{current in mA}) - 0.7$ for $10 \text{ V} < U_{in} < 26.1 \text{ V}$ $\geq 23 \text{ V} - (0.23 \times \text{current in mA})$ for $U_{in} > 26.1 \text{ V}$
Short-circuit current	$\leq 100 \text{ mA}$
Transfer current	$\leq 25 \text{ mA}$
<b>Transfer characteristics</b>	
<b>Deviation</b>	
After calibration	$U_{in} \geq 5 \text{ V} \pm 20 \mu\text{A} / U_{in} \leq 5 \text{ V} \pm 50 \mu\text{A}$ incl. calibration, linearity, hysteresis and output load fluctuations at 20 °C (68 °F)
Influence of ambient temperature	$\leq 2 \mu\text{A/K}$ (0 ... 50 °C (32 ... 122 °F)); $\leq 5 \mu\text{A/K}$ (-20 ... 60 °C (-4 ... 140 °F))
Rise time	$\leq 5 \text{ ms}$ at 4 ... 20 mA and $U_{in} = \text{input voltage} < 26 \text{ V}$
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	20 x 107 x 115 mm (0.8 x 4.2 x 4.5 in), housing type B1

**Diagrams**

Front view



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data	
<b>Supply</b>	
Rated voltage	loop powered
<b>Input</b>	
Rated voltage $U_i$	10 ... 35 V
Rated current $I_i$	4 ... 20 mA
Power loss	< 150 mW per channel at 25 mA and $U < 26.1$ V < 400 mW per channel at 25 mA and $U > 26.1$ V
<b>Output</b>	
Voltage	$\geq 0.9 \times U_{in} - (0.23 \times \text{current in mA}) - 0.7$ for $10 \text{ V} < U_{in} < 26.1 \text{ V}$ $\geq 23 \text{ V} - (0.23 \times \text{current in mA})$ for $U_{in} > 26.1 \text{ V}$
Short-circuit current	$\leq 100 \text{ mA}$
Transfer current	$\leq 25 \text{ mA}$
<b>Transfer characteristics</b>	
Deviation	
After calibration	$U_{in} \geq 5 \text{ V} \pm 20 \mu\text{A} / U_{in} \leq 5 \text{ V} \pm 50 \mu\text{A}$ incl. calibration, linearity, hysteresis and output load fluctuations at $20 \text{ }^\circ\text{C}$ ( $68 \text{ }^\circ\text{F}$ )
Influence of ambient temperature	$\leq 2 \mu\text{A/K}$ ( $0 \dots 50 \text{ }^\circ\text{C}$ ( $32 \dots 122 \text{ }^\circ\text{F}$ )); $\leq 5 \mu\text{A/K}$ ( $-20 \dots 60 \text{ }^\circ\text{C}$ ( $-4 \dots 140 \text{ }^\circ\text{F}$ ))
Rise time	$\leq 5 \text{ ms}$ at $4 \dots 20 \text{ mA}$ and $U_{in} = \text{input voltage} < 26 \text{ V}$
<b>Ambient conditions</b>	
Ambient temperature	$-20 \dots 60 \text{ }^\circ\text{C}$ ( $-4 \dots 140 \text{ }^\circ\text{F}$ )
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	$20 \times 107 \times 115 \text{ mm}$ ( $0.8 \times 4.2 \times 4.5 \text{ in}$ ), housing type B1

Features

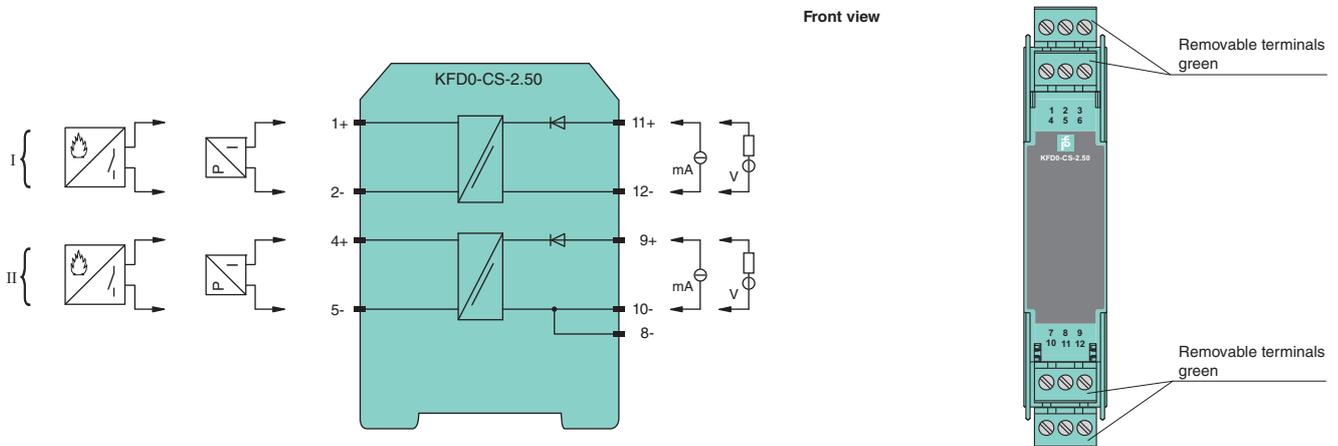
- 2-channel signal conditioner
- 24 V DC supply (loop powered)
- Current input/output 4 mA ... 20 mA
- I/P or transmitter power supply
- Accuracy 0.1 %
- Up to SIL2 acc. to IEC 61508

Function

This signal conditioner transfers DC signals from fire alarms, smoke alarms, and temperature sensors and provides isolation for non-intrinsically safe applications. It can also be used to control I/P converters, power solenoids, LEDs, and audible alarms.

Since this isolator is loop powered, use the technical data to verify that proper voltage is available to the field devices.

Diagrams



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**PEPPERL+FUCHS 629**  
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K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 2-channel signal conditioner
- 24 V DC supply (loop powered)
- Current input/output 0 mA ... 40 mA
- I/P or transmitter power supply
- Accuracy 1 %
- Reverse polarity protection
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner transfers DC signals from fire alarms, smoke alarms, and temperature sensors to the control and provides isolation for non-intrinsically safe applications. It can also be used to control I/P converters, power solenoids, LEDs, and audible alarms.

Reverse polarity protection prevents damage to the isolator caused by faulty wiring.

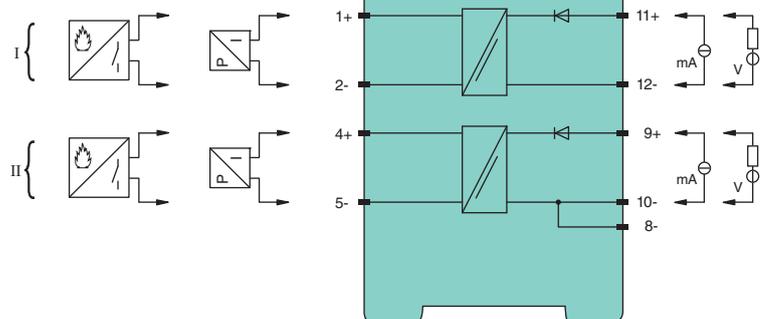
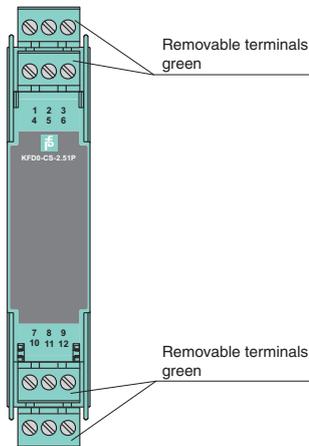
Since this isolator is loop powered, use the technical data to verify that proper voltage is available to the field devices.

**Technical data**

<b>Supply</b>	
Rated voltage	loop powered
<b>Input</b>	
Rated voltage $U_i$	4 ... 35 V
Rated current $I_i$	0 ... 40 mA
Power loss	at 40 mA and $U_{in} < 22 V$ : 700 mW per channel at 40 mA and $U_{in} > 22 V$ : 1.2 W per channel
<b>Output</b>	
Voltage	for $4 V < U_{in} < 24 V$ : $\geq 0.9 \times U_{in} - (0.37 \times \text{current in mA}) - 1.0$ for $U_{in} > 24 V$ : $\geq 21 V - (0.36 \times \text{current in mA})$
Short-circuit current	at $U_{in} > 24 V$ : $\leq 65 \text{ mA}$
Transfer current	$\leq 40 \text{ mA}$
<b>Transfer characteristics</b>	
<b>Deviation</b>	
After calibration	$\leq \pm 200 \mu\text{A}$ ; incl. calibration, linearity, hysteresis and load fluctuations at the output up to a load of 1 k $\Omega$ and current $\leq 20 \text{ mA}$ at 20 °C (68 °F)
Influence of ambient temperature	$\leq \pm 2 \mu\text{A/K}$ at $U_{in} \leq 20 V$ ; $\leq \pm 5 \mu\text{A/K}$ at $U_{in} > 20 V$
Rise time	$\leq 5 \text{ ms}$ at 4 ... 20 mA step and $U_{in} < 24 V$
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	20 x 107 x 115 mm (0.8 x 4.2 x 4.5 in), housing type B1

**Diagrams**

Front view



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data	
<b>Supply</b>	
Rated voltage	12 ... 35 V DC loop powered
<b>Input</b>	
Current range	0 ... 20 mA, load $\leq 50 \Omega$
Voltage range	0 ... 10 V, load $\geq 100 \text{ k}\Omega$
<b>Output</b>	
Load	(U -12 V)/0.02 A
Current output	4 ... 20 mA, limited to $\leq 35 \text{ mA}$
Fault signal	downscaling $\leq 3 \text{ mA}$
<b>Transfer characteristics</b>	
Deviation	
After calibration	0.1 % of full-scale value
Temperature effect	span: 0.050 % of span/K; zero point: 0.060 % of span/K
Linearization	
Influence of supply voltage	$\leq 0.04 \%$ of full-scale value
Rise time	250 ms
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Features**

- 1-channel signal conditioner
- 24 V DC supply (loop powered)
- Current or voltage input
- Output: 4 ... 20 mA
- Potentiometer or DIP switch selectable ranges
- Line fault detection (LFD)

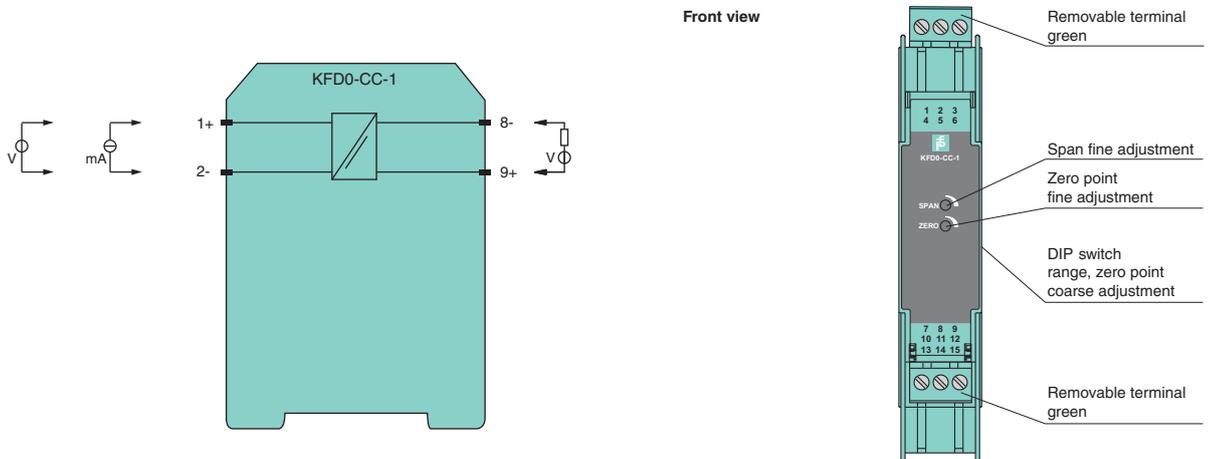
**Function**

This signal conditioner converts a 2-wire voltage or current to a 4 mA ... 20 mA signal and provides isolation for non-intrinsically safe applications.

The device can be used to double signals in 20 mA measurement circuits due to the limited current signal input load of 50  $\Omega$ . DIP switches and potentiometers make field calibration easy.

Since this isolator is loop-powered, use the technical data to verify that the proper voltage is available to the field devices.

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010

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**PEPPERL+FUCHS 631**  
PROTECTING YOUR PROCESS

K-System  
Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Scaleable current or voltage input
- Current or voltage output
- Relay contact output
- Configurable by keypad
- Line fault detection (LFD)

**Function**

This signal conditioner is suitable for the connection of current and voltage signals and provides isolation for non-intrinsically safe applications.

The input ranges include 0 mA ... 20 mA, 0 V ... 10 V or 0 mV ... 60 mV. Subranges from the input ranges are selectable.

The output measuring signals are 0/4 mA ... 20 mA, 0/2 V ... 10 V or 0/1 V ... 5 V.

The output relay serves as trip value contact.

On the display the measured value can be indicated in various physical units.

The unit is easily programmed by the use of a keypad located on the front of the unit.

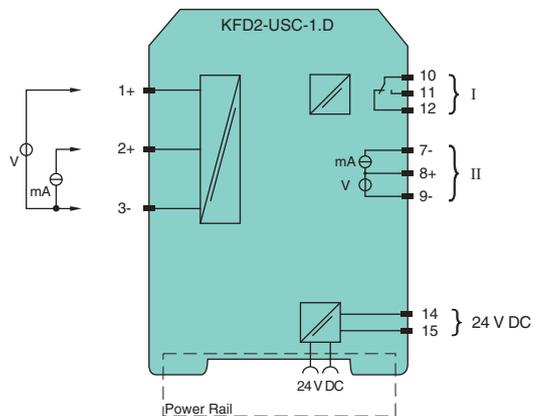
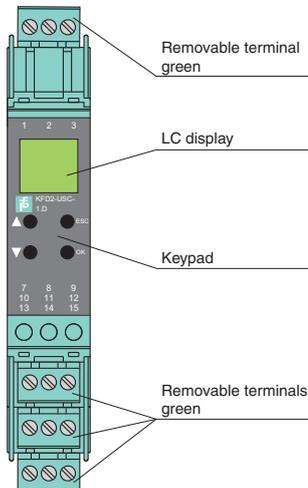
For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Technical data**

<b>Supply</b>	
Rated voltage	20 ... 30 V DC
Power consumption	≤ 1.6 W
<b>Input</b>	
Input resistance	voltage: 1 MΩ current: ≤ 100 Ω
Limit	30 V
Current	0 ... 20 mA
Voltage	0 ... 10 V/0 ... 60 mV
Resolution	15 Bit
<b>Output</b>	
Output I	signal, relay
Contact loading	250 V AC/2 A/cos Φ 0.7; 40 V DC/2 A
Mechanical life	2 x 10 <sup>7</sup> switching cycles
Energized/De-energized delay	approx. 10 ms/approx. 10 ms
Output II	analog
Load	current: ≤ 550 Ω voltage: ≥ 1 kΩ
Analog voltage output	0/1 ... 5 V, 0/2 ... 10 V
Analog current output	0/4 ... 20 mA
<b>Transfer characteristics</b>	
Deviation	0.1 % of full-scale value
Resolution/accuracy	current: 1 μA/20 μA voltage: 0.5 mV/10 mV mV: 3 μV/60 μV
Influence of ambient temperature	0.003 %/K (30 ppm)
Reaction time	≥ 150 ms/≤ 300 ms
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B3

**Diagrams**

Front view



Edition 908837 (US) / 208599 (EU) 11/2010

**Technical data**

<b>Supply</b>	
Rated voltage	20 ... 90 V DC/48 ... 253 V AC
Power consumption	≤ 1.6 W/≤ 2.6 VA
<b>Input</b>	
Input resistance	voltage: 1 MΩ, current: ≤ 100 Ω
Limit	30 V
Current	0 ... 20 mA
Voltage	0 ... 10 V/0 ... 60 mV
Resolution	15 Bit
<b>Output</b>	
Output I	signal, relay
Contact loading	250 V AC/2 A/cos Φ0.7; 40 V DC/2 A
Mechanical life	2 x 10 <sup>7</sup> switching cycles
Energized/De-energized delay	approx. 10 ms/approx. 10 ms
Output II	analog
Load	current: ≤ 550 Ω, voltage: ≥ 1 kΩ
Analog voltage output	0/1 ... 5 V, 0/2 ... 10 V
Analog current output	0/4 ... 20 mA
<b>Transfer characteristics</b>	
Deviation	0.1 % of full-scale value
Resolution/accuracy	current: 1 μA/20 μA voltage: 0.5 mV/10 mV mV: 3 μV/60 μV
Influence of ambient temperature	0.003 %/K (30 ppm)
Reaction time	≥ 150 ms/≤ 300 ms
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B3

**Features**

- 1-channel signal conditioner
- AC/DC wide range supply
- Scaleable current or voltage input
- Current or voltage output
- Relay contact output
- Configurable by keypad
- Line fault detection (LFD)

**Function**

This signal conditioner is suitable for the connection of current and voltage signals and provides isolation for non-intrinsically safe applications.

The input ranges include 0 mA ... 20 mA, 0 V ... 10 V or 0 mV ... 60 mV. Subranges from the input ranges are selectable.

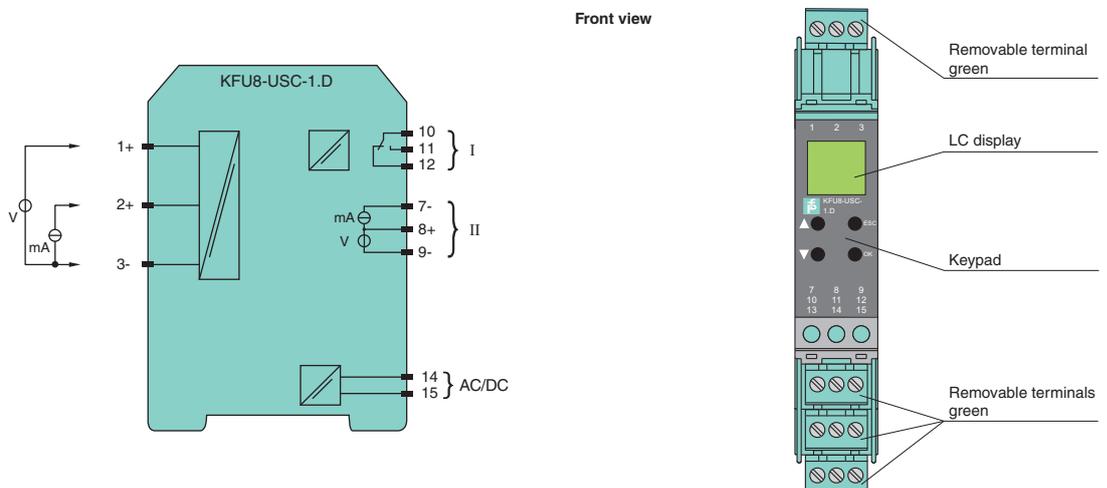
The output measuring signals are 0/4 mA ... 20 mA, 0/2 V ... 10 V or 0/1 V ... 5 V.

The output relay serves as trip value contact.

On the display the measured value can be indicated in various physical units.

The unit is easily programmed by the use of a keypad located on the front of the unit.

For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Diagrams**

K-System  
Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Current and voltage inputs
- 2 relay contact outputs
- Programmable high/low alarm
- DIP switch programmable
- Terminals with test points

**Function**

This signal conditioner is a trip alarm with two independently adjustable trip points that provides isolation for non-intrinsically safe applications.

The unit actuates a relay output when it reaches a user-programmed input level.

DIP switches are used to program voltage input low alarms and high alarms.

The hysteresis, the operating mode of the relay outputs, and the type of alarm are selectable for each trip point.

For additional information, refer to [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Technical data**

**Supply**

Rated voltage	20 ... 30 V DC
Power consumption	2.25 W (typ. 1.68 W)

**Input**

Measurement range	terminals 1+, 3-; voltage: 0/1 ... 5 V; 50 kΩ or 0/2 ... 10 V; 100 kΩ terminals 2+, 3-; current: 0/4 ... 20 mA; 50 Ω
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**Output**

Output I	trip value: terminals 7, 8, 9
Output II	trip value: terminals 10, 11, 12
Contact loading	250 V AC/5 A/1250 VA; 125 V DC/5 A/150 W

**Transfer characteristics**

Deviation	≤ 0.5 %
Influence of ambient temperature	0.01 %/K of adjusted trip value
Input delay	100 ms

**Ambient conditions**

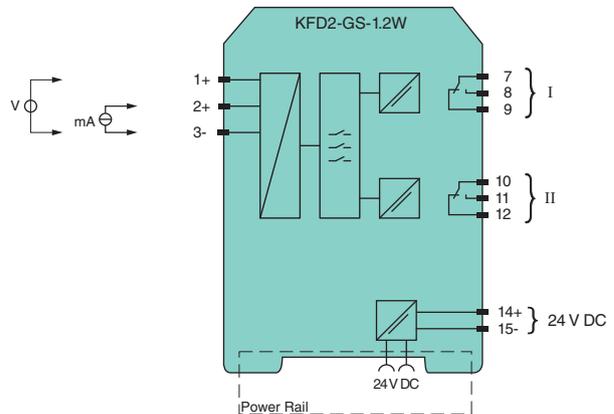
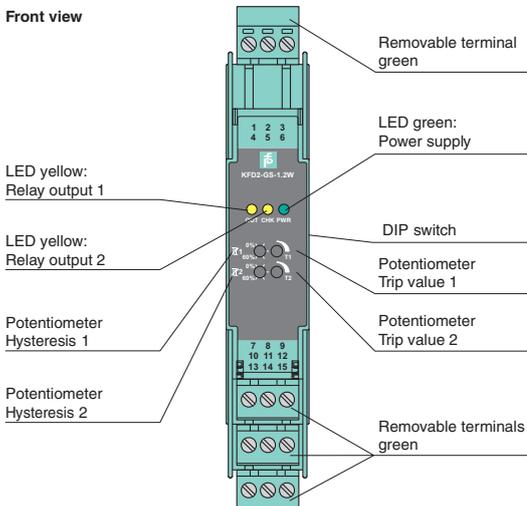
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
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**Mechanical specifications**

Protection degree	IP20
Mass	approx. 120 g
Dimensions	20 x 124 x 115 mm (0.8 x 4.9 x 4.5 in), housing type B2

**Diagrams**

Front view



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data	
<b>Supply</b>	
Rated voltage	20 ... 35 V DC
Power consumption	≤ 3 W
<b>Interface</b>	
Connection	Power Rail or terminals 19+, 20 GND, 21-
Type	RS 485
Programming interface	RS 232 programming jack
<b>Field circuit</b>	
Lead resistance	≤ 25 Ω per lead
<b>Input I</b>	
Connection	terminals 1+, 2-
Sensor supply	1 ... 5 V
Connection	terminals 3+, 4-, 5+, 6-
Short-circuit current	50 mA
Load	≥ 116 Ω up to 5V, ≥ 85 Ω up to 4V
<b>Input</b>	
Programmable Tare	0 ... 500 % of span
<b>Input I</b>	
Input signal	-100 ... 100 mV
Input resistance	> 1 MΩ for voltage measurement
<b>Input II, III</b>	
Active/Passive	I > 4 mA / I < 1.5 mA
<b>Output</b>	
<b>Output I, II</b>	
Output type	relay output
Mechanical life	2 x 10 <sup>7</sup> switching cycles
<b>Output III</b>	
Output type	Analog output
Current range	-20 ... 20 mA
Load	≤ 550 Ω
Line fault detection	downscale -21.5 mA (-10.75 V) or 2 mA (1 V), upscale 21.5 mA (10.75 V)
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 250 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in), housing type C3

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Strain gauge input
- Output 0 mA ... ± 20 mA or 0 V ... ± 10 V
- Relay contact output
- Programmable high/low alarm
- RS 485 interface
- Line fault detection (LFD)

**Function**

This signal conditioner is used with strain gauges, load cells and resistance measuring bridges and provides isolation for non-intrinsically safe applications.

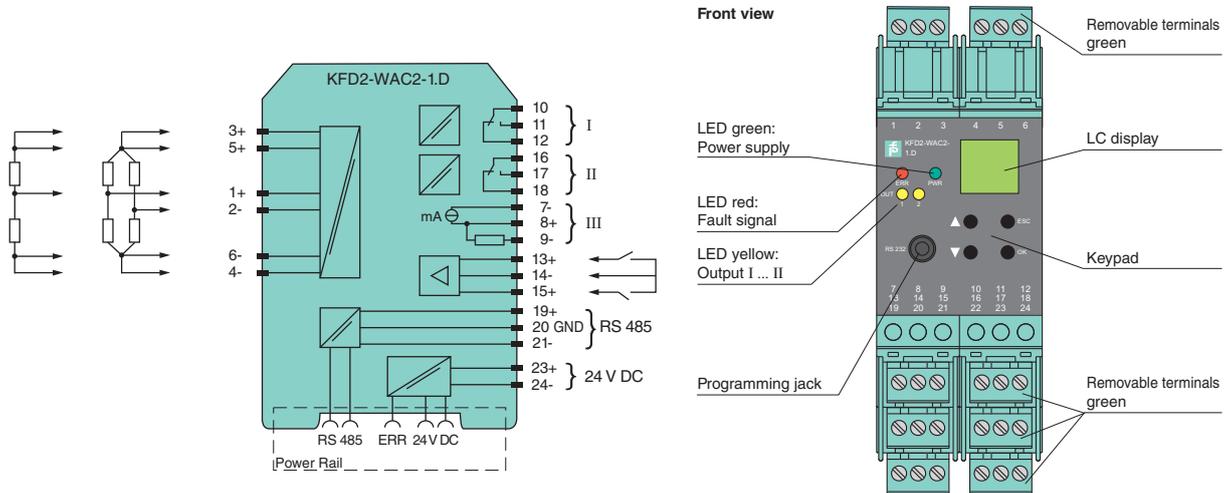
Designed to provide 5 V excitation voltage, this barrier's high quality A/D converter allows it to be used with those devices requiring 10 V.

The unit is easily programmed by the use of a keypad located on the front of the unit or with the **PACTware™** configuration software. The actual measurement for tare, zero point, and final value can be entered in this manner.

A unique collective error messaging feature is available when used with the Power Rail system.

For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Diagrams**



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**PEPPERL+FUCHS 635**  
PROTECTING YOUR PROCESS

**Features**

- 1-channel signal conditioner
- 24 V DC supply (loop powered)
- Voltage input -10 V ... 10 V
- Output 4 mA ... 20 mA
- Span and zero point adjustment

**Function**

This signal conditioner receives a -10 V ... 10 V voltage input, produces a 4 mA ... 20 mA signal output. It also provides isolation for non-intrinsically safe applications.

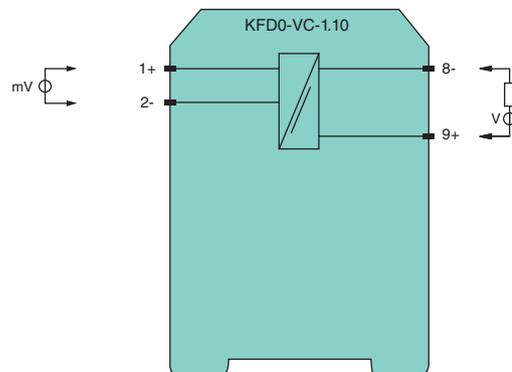
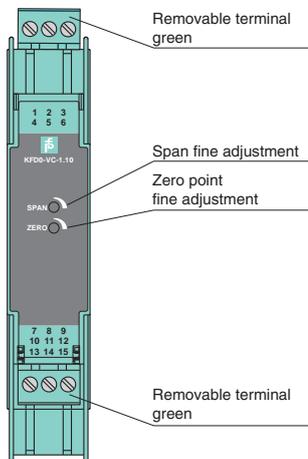
Fine adjustment for zero and span are performed with the potentiometers on top of the unit.

**Technical data**

<b>Supply</b>	
Rated voltage	12 ... 35 V DC loop powered
<b>Input</b>	
Voltage range	-10 ... 10 V (factory adjustment)
<b>Output</b>	
Load	≤ (supply voltage -12 V)/0.02 A
Current output	4 ... 20 mA, limited to ≤35 mA
<b>Transfer characteristics</b>	
Measurement range $f_n$	-10 ... +10 V, zero point ± 1 % of full-scale value, span ± 1.5 % of full-scale value
<b>Deviation</b>	
After calibration	0.1 % of full-scale value
Temperature effect	span: 0.050 % of span/K zero point: 0.060 % of span/K
Linearization	≤ 0.04 % of full-scale value
Influence of supply voltage	6.5 ppm/V
Rise time	250 ms
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Diagrams**

Front view



Technical data	
<b>Supply</b>	
Rated voltage	20 ... 30 V DC
Power loss/power consumption	≤ 0.95 W/0.95 W
<b>Input</b>	
RTD	type Pt10, Pt50, Pt100, Pt500, Pt1000 (EN 60751: 1995) type Pt10GOST, Pt50GOST, Pt100GOST, Pt500GOST, Pt1000GOST (6651-94) type Cu10, Cu50, Cu100 (P50353-92) type Ni100 (DIN 43760)
Measuring current	approx. 200 µA with RTD
Types of measuring	2-, 3-, 4-wire connection
Lead resistance	≤ 50 Ω per lead
Measuring circuit monitoring	sensor burnout, sensor short-circuit
Thermocouples	type B, E, J, K, N, R, S, T (IEC 584-1: 1995) type L (DIN 43710: 1985) type TXK, TXKH, TXA (P8.585-2001)
Cold junction compensation	external and internal
Measuring circuit monitoring	sensor burnout
Voltage	selectable within the range -100 ... 100 mV
Potentiometer	0 ... 20 kΩ (2-wire connection), 0.8 ... 20 kΩ (3-wire connection)
Input resistance	≥ 1 MΩ (-100 ... 100 mV)
<b>Output</b>	
Output	analog current output
Current range	0 ... 20 mA or 4 ... 20 mA
Fault signal	downscale 0 or 2 mA, upscale 21.5 mA (acc. NAMUR NE43)
Source	load 0 ... 550 Ω open-circuit voltage ≤ 18 V
Sink	voltage across terminals 5 ... 30 V. If the current is supplied from a source > 16.5 V, series resistance of ≥ (V - 16.5)/0.0215 Ω is needed, where V is the source voltage. The maximum value of the resistance is (V - 5)/0.0215 Ω
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 130 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

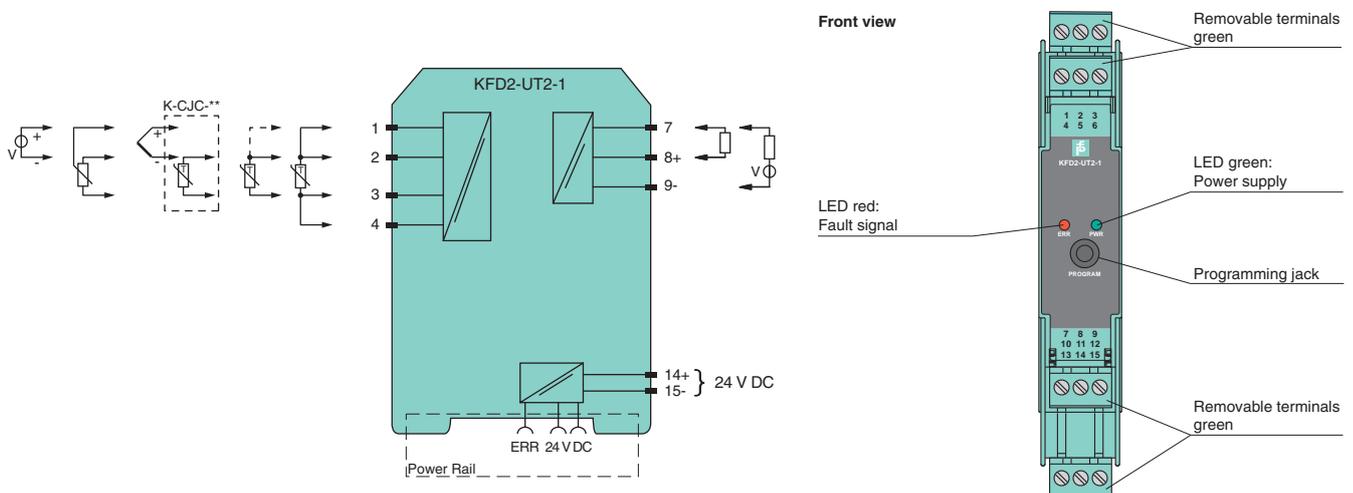
**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- TC, RTD, potentiometer or voltage input
- Current output 0/4 mA ... 20 mA
- Sink or source mode
- Line fault (LFD) and sensor burnout detection
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner is designed to connect RTDs, thermocouples, or potentiometers, and provide a proportional 0/4 mA ... 20 mA signal. The barrier offers 3-port isolation between input, output, and power supply. A removable terminal block K-CJC-\*\* is available for thermocouples when internal cold junction compensation is desired. A fault is indicated by a red flashing LED per NAMUR NE44 and user-configured fault outputs. The unit is easily programmed with the **PACTware™** configuration software. A unique collective error messaging feature is available when used with the Power Rail system. For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Diagrams**



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**PEPPERL+FUCHS 637**  
PROTECTING YOUR PROCESS



K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories



K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- TC, RTD, potentiometer or voltage input
- Voltage output 0/1 V ... 5 V
- Line fault (LFD) and sensor burnout detection
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner is designed to connect RTDs, thermocouples, or potentiometers, and provide a proportional 0/1 V ... 5 V signal.

The barrier offers 3-port isolation between input, output, and power supply.

A removable terminal block K-CJC-\*\* is available for thermocouples when internal cold junction compensation is desired.

A fault is indicated by a red flashing LED per NAMUR NE44 and user-configured fault outputs.

The unit is easily programmed with the **PACTware™** configuration software.

A unique collective error messaging feature is available when used with the Power Rail system.

For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Technical data**

**Supply**

Rated voltage	20 ... 30 V DC
Power loss/power consumption	≤ 0.64 W/0.64 W

**Input**

RTD	type Pt10, Pt50, Pt100, Pt500, Pt1000 (EN 60751: 1995) type Pt10GOST, Pt50GOST, Pt100GOST, Pt500GOST, Pt1000GOST (6651-94) type Cu10, Cu50, Cu100 (P50353-92) type Ni100 (DIN 43760)
-----	---

Measuring current	approx. 200 µA with RTD
-------------------	-------------------------

Types of measuring	2-, 3-, 4-wire connection
--------------------	---------------------------

Lead resistance	≤ 50 Ω per lead
-----------------	-----------------

Measuring circuit monitoring	sensor burnout, sensor short-circuit
------------------------------	--------------------------------------

Thermocouples	type B, E, J, K, N, R, S, T (IEC 584-1: 1995) type L (DIN 43710: 1985) type TXK, TXKH, TXA (P8.585-2001)
---------------	--

Cold junction compensation	external and internal
----------------------------	-----------------------

Measuring circuit monitoring	sensor burnout
------------------------------	----------------

Voltage	selectable within the range -100 ... 100 mV
---------	---

Potentiometer	0 ... 20 kΩ (2-wire connection), 0.8 ... 20 kΩ (3-wire connection)
---------------	--

Input resistance	≥ 1 MΩ (-100 ... 100 mV)
------------------	--------------------------

**Output**

Voltage output	0 ... 5 V or 1 ... 5 V; output resistance: ≤ 5 Ω load: ≥ 10 kΩ
----------------	---

Fault signal	downscale 0 V or 0.5 V, upscale 5.375 V
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**Ambient conditions**

Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
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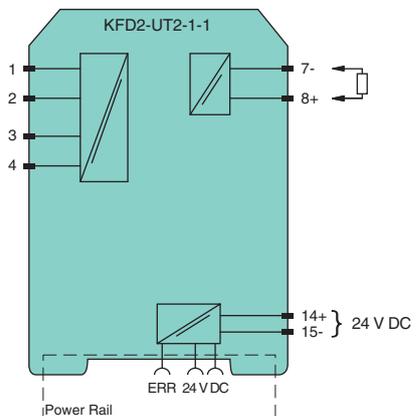
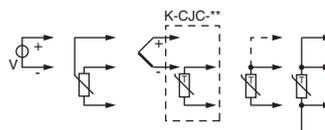
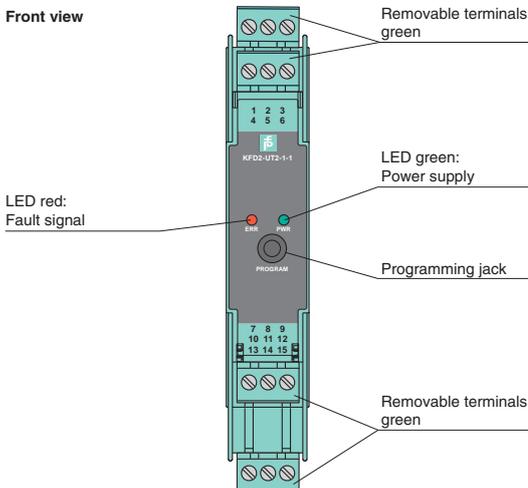
**Mechanical specifications**

Protection degree	IP20
-------------------	------

Mass	approx. 130 g
------	---------------

Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2
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**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data	
<b>Supply</b>	
Rated voltage	20 ... 30 V DC
Power loss/power consumption	≤ 1.5 W/1.5 W
<b>Input</b>	
RTD	type Cu10, Cu50, Cu100, Pt10, Pt50, Pt100, Pt500, Pt1000, Ni100 (EN 60751: 1995) type Pt10GOST, Pt50GOST, Pt100GOST, Pt500GOST, Pt1000GOST (P50353-92)
Measuring current	approx. 200 µA with RTD
Types of measuring	2-, 3-wire connection
Lead resistance	≤ 50 Ω per lead
Measuring circuit monitoring	sensor burnout, sensor short-circuit
Thermocouples	type B, E, J, K, N, R, S, T (IEC 584-1: 1995) type L (DIN 43710: 1985) type TXK, TXKH, TXA (P8.585-2001)
Cold junction compensation	external and internal
Measuring circuit monitoring	sensor burnout
Voltage	selectable within the range -100 ... 100 mV
Potentiometer	0 ... 20 kΩ (2-wire connection), 0.8 ... 20 kΩ (3-wire connection)
Input resistance	≥ 1 MΩ (-100 ... 100 mV)
<b>Output</b>	
Output I, II	analog current output
Current range	0 ... 20 mA or 4 ... 20 mA
Fault signal	downscale 0 or 2 mA, upscale 21.5 mA (acc. NAMUR NE43)
Source	load 0 ... 550 Ω open-circuit voltage ≤ 18 V
Sink	voltage across terminals 5 ... 30 V. If the current is supplied from a source > 16.5 V, series resistance of $\geq (V - 16.5)/0.0215 \Omega$ is needed, where V is the source voltage. The maximum value of the resistance is $(V - 5)/0.0215 \Omega$ .
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 130 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

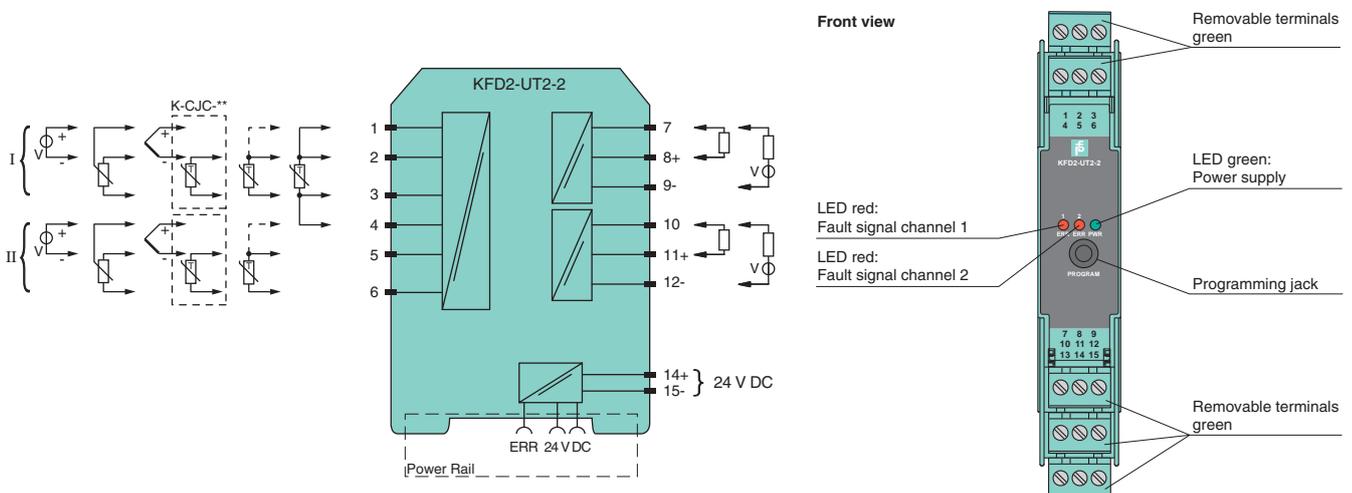
Features

- 2-channel signal conditioner
- 24 V DC supply (Power Rail)
- TC, RTD, potentiometer or voltage input
- Current output 0/4 mA ... 20 mA
- Sink or source mode
- Line fault (LFD) and sensor burnout detection
- Up to SIL2 acc. to IEC 61508

Function

This signal conditioner is designed to connect RTDs, thermocouples, or potentiometers, and provide a proportional 0/4 mA ... 20 mA signal. The barrier offers 3-port isolation between input, output, and power supply. A removable terminal block K-CJC-\*\* is available for thermocouples when internal cold junction compensation is desired. A fault is indicated by a red flashing LED per NAMUR NE44 and user-configured fault outputs. The unit is easily programmed with the **PACTware™** configuration software. A unique collective error messaging feature is available when used with the Power Rail system. For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

Diagrams



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Analog Inputs  
Analog Outputs  
Accessories

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 2-channel signal conditioner
- 24 V DC supply (Power Rail)
- TC, RTD, potentiometer or voltage input
- Voltage output 0/1 V ... 5 V
- Line fault (LFD) and sensor burnout detection
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner is designed to connect RTDs, thermocouples, or potentiometers, and provide a proportional 0/1 V ... 5 V signal.

The barrier offers 3-port isolation between input, output, and power supply.

A removable terminal block K-CJC-\*\* is available for thermocouples when internal cold junction compensation is desired.

A fault is indicated by a red flashing LED per NAMUR NE44 and user-configured fault outputs.

The unit is easily programmed with the **PACTware™** configuration software.

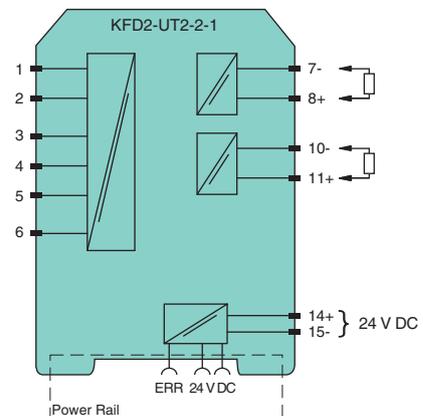
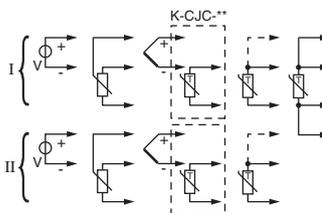
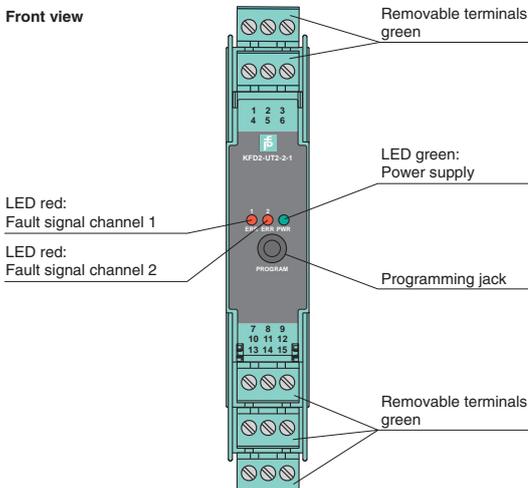
A unique collective error messaging feature is available when used with the Power Rail system.

For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Technical data**

<b>Supply</b>	
Rated voltage	20 ... 30 V DC
Power loss/power consumption	≤ 0.8 W/0.8 W
<b>Input</b>	
RTD	type Pt10, Pt50, Pt100, Pt500, Pt1000 (EN 60751: 1995) type Pt10GOST, Pt50GOST, Pt100GOST, Pt500GOST, Pt1000GOST (6651-94) type Cu10, Cu50, Cu100 (P50353-92) type Ni100 (DIN 43760)
Measuring current	approx. 200 µA with RTD
Types of measuring	2-, 3-wire connection
Lead resistance	≤ 50 Ω per lead
Measuring circuit monitoring	sensor burnout, sensor short-circuit
Thermocouples	type B, E, J, K, N, R, S, T (IEC 584-1: 1995) type L (DIN 43710: 1985) type TXK, TXKH, TXA (P8.585-2001)
Cold junction compensation	external and internal
Measuring circuit monitoring	sensor burnout
Voltage	selectable within the range -100 ... 100 mV
Potentiometer	0 ... 20 kΩ (2-wire connection), 0.8 ... 20 kΩ (3-wire connection)
Input resistance	≥ 1 MΩ (-100 ... 100 mV)
<b>Output</b>	
Voltage output	0 ... 5 V or 1 ... 5 V; output resistance: ≤ 5 Ω load: ≥ 10 kΩ
Fault signal	downscale 0 V or 0.5 V, upscale 5.375 V
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 130 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Diagrams**



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Technical data	
<b>Supply</b>	
Rated voltage	12 ... 35 V DC loop powered
<b>Input</b>	
Lead resistance	≤ 100 Ω per lead
Measuring current	approx. 1 mA
<b>Output</b>	
Load	(U - 12 V)/0.02 A
Current output	4 ... 20 mA, limited to ≤ 35 mA
Fault signal	Sensor burnout: upscaling ≥ 22 mA, limited to ≤ 35 mA
<b>Transfer characteristics</b>	
Measurement range $f_n$	span without linearization 25 ... 800 °C (77 ... 1472 °F)/ with linearisation 25 ... 375 °C (77 ... 707 °F) zero point without linearization -200 ... 400 °C (-328 ... 752 °F)/ with linearisation -30 ... 375 °C (-22 ... 707 °F) span and zero point adjustable
<b>Deviation</b>	
After calibration	0.1 % of full-scale value
Influence of ambient temperature	span and zero point 0.015 %/K or ± 10 mΩ/K
Influence of supply voltage	6.5 ppm/V
Rise time	250 ms
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Features**

- 1-channel signal conditioner
- 24 V DC supply (loop powered)
- 2- or 3-wire Pt100 RTD input
- Output 4 mA ... 20 mA, temperature linearization selectable
- DIP switch selectable ranges
- Sensor breakage detection

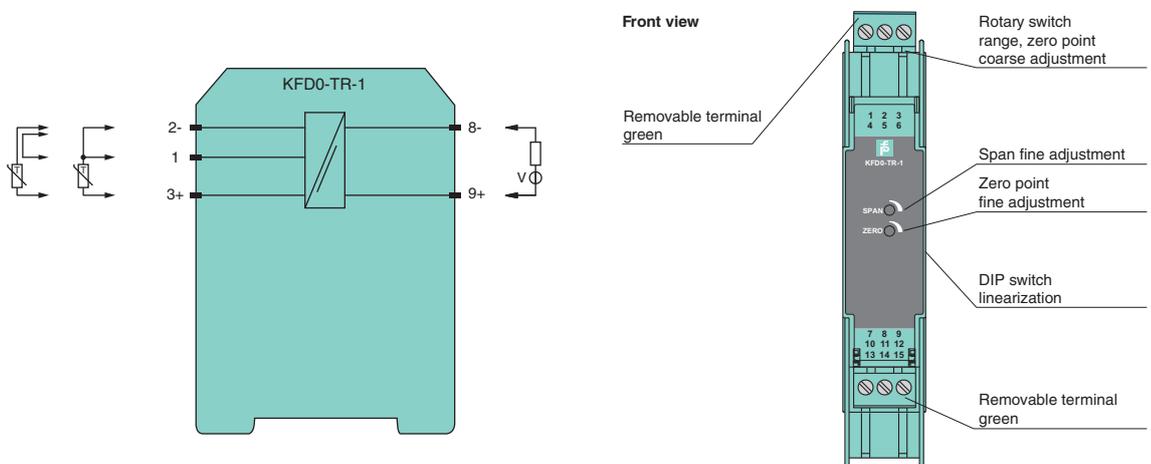
**Function**

This isolated signal conditioner is a loop-powered isolator that converts the resistance from a 3-wire RTD to a 4 mA ... 20 mA signal and provides isolation for non-intrinsically safe applications.

A selectable analog linearization ensures a temperature linear 4 mA ... 20 mA output between 25 °C ... 375 °C.

It also features conveniently located DIP switches and potentiometers to make field calibration easy.

**Diagrams**



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Accessories

**Features**

- 1-channel signal conditioner
- 24 V DC supply (loop powered)
- Thermocouple input
- Output 4 mA ... 20 mA
- Internal cold junction compensation
- Sensor breakage detection
- DIP switch selectable ranges

**Function**

This isolated signal conditioner is a loop-powered isolator that converts thermocouple inputs to a 4 mA ... 20 mA signal and provides isolation for non-intrinsically safe applications.

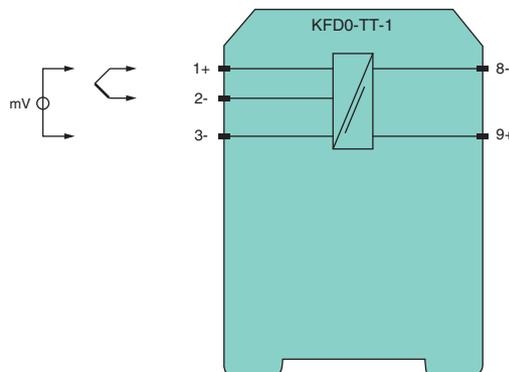
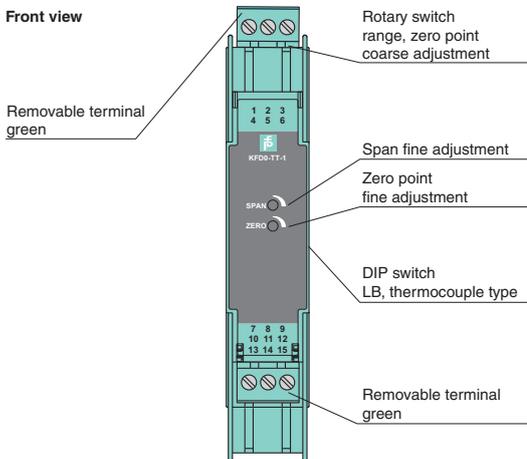
The internal cold junction compensation can be bypassed by using terminals 1 and 3.

The output current is linear to input voltage, not proportional to temperature. Zero, span, and burnout detection are field-configurable.

**Technical data**

<b>Supply</b>	
Rated voltage	12 ... 35 V DC loop powered
<b>Input</b>	
Lead resistance	≤ 100 Ω per lead
Current	lead monitoring ON: ≤ 15 nA; OFF: ≤ 1 nA
<b>Output</b>	
Load	(U - 12 V)/0.02 A
Current output	4 ... 20 mA, limited to ≤ 35 mA
Fault signal	downscaling ≤ 3 mA, upscaling ≥ 22 mA
<b>Transfer characteristics</b>	
Measurement range $f_n$	span 4 ... 100 mV, zero point -12 ... 60 mV, both adjustable
<b>Deviation</b>	
After calibration	0.1 % of full-scale value ± 1 K for the cold junction
Temperature effect	temperature deviation 0.015 % of the span/K or 1.5 μV/K cold junction ± 2 K (calibrated at $T_{amb} = 20\text{ °C}$ (68 °F))
Influence of supply voltage	6.5 ppm/V
Characteristic curve	the output voltage is linearly proportionate to the input voltage (not to temperature)
Rise time	250 ms
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Diagrams**



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Technical data	
<b>Supply</b>	
Rated voltage	19 ... 35 V DC
Power consumption	0.8 W
<b>Input</b>	
RTD or resistance	type Pt100 (EN 60751: 1995) type Ni100 (DIN 43760) 0 ... 500 Ω (including lead resistance)
Measuring current	approx. 400 μA with RTD
Lead resistance	≤ 50 Ω per lead
Thermocouples	type B, E, J, K, N, R, S, T (IEC 584-1: 1995) type L (DIN 43710: 1985)
Load	20 Ω for 20 mA; 200 kΩ for 10 V
<b>Output</b>	
Output I, II	
Contact loading	253 V AC/2 A/500 VA/cos Φ min. 0.7; 40 V DC/2 A resistive load
Mechanical life	2 x 10 <sup>7</sup> switching cycles
<b>Transfer characteristics</b>	
Deviation	
Voltage input	± 0.02 % of 10 V measuring range
Resistance input	± 0.025 % of measuring range (4-wire connection)
Current input	± 0.02 % of 20 mA measuring range
<u>Pt100</u>	± 0.01 % of abs. temperature value of switching point in K + 0.2 K (4-wire connection)
<u>Thermocouple</u>	± 0.05 % of abs. temperature value of switching point in K + 1.1 K (1.2 K for thermocouple types R and S) this includes ± 0.8 K error of the cold junction compensation (+0.9 K for thermocouple types R and S).
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Thermocouple, RTD, voltage or current input
- 2 relay contact outputs
- Programmable high/low alarm
- Sensor breakage detection

**Function**

This signal conditioner accepts a variety of inputs including RTDs or thermocouples and provides a relay trip whenever it reaches a user-programmed set point. It also provides isolation for non-intrinsically safe applications.

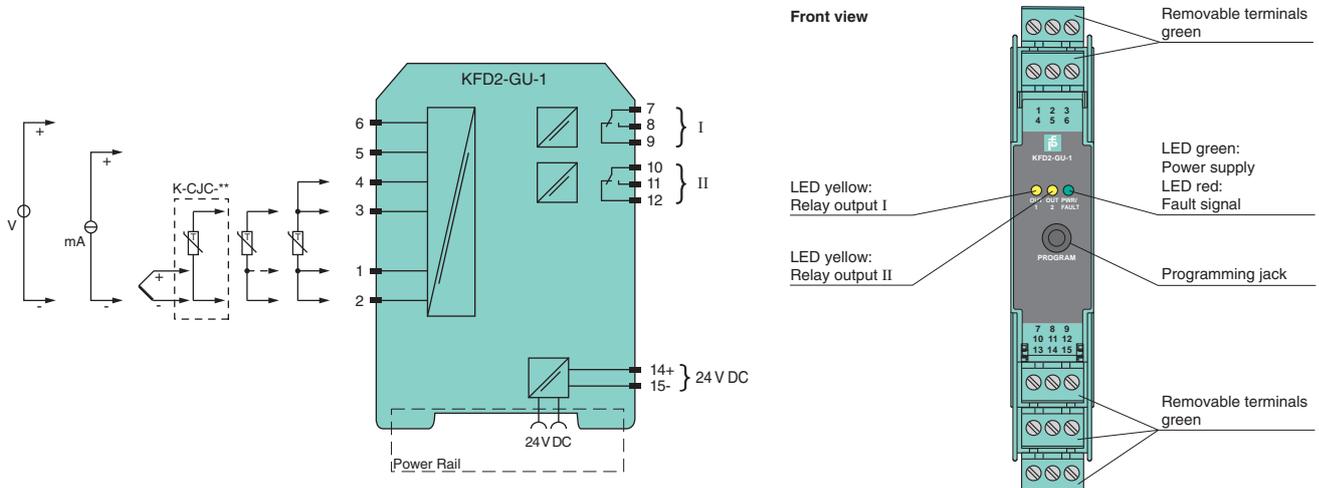
A removable terminal block K-CJC-\*\* is available for thermocouples when internal cold junction compensation is desired.

A fault is indicated by a red flashing LED per NAMUR NE44 and user-configured fault outputs.

The unit is easily programmed with the **PACT<sup>ware</sup>™** configuration software.

For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Diagrams**



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Analog Inputs

Analog Outputs

Accessories

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Analog Outputs  
Analog Inputs  
Accessories

## Features

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- TC, RTD, potentiometer or voltage input
- Redundant TC input
- Current output 0/4 mA ... 20 mA
- 2 relay contact outputs
- Line fault (LFD) and sensor burnout detection
- Up to SIL2 acc. to IEC 61508

## Function

This signal conditioner is a universal input trip alarm that converts the signal of an RTD, thermocouple, potentiometer, or voltage source to a proportional output current. It also provides a relay trip value and isolation for non-intrinsically safe applications.

A removable terminal block K-CJC-\*\* is available for thermocouples when internal cold junction compensation is desired.

The unit is easily programmed by the use of a keypad located on the front of the unit or with the **PACT<sup>ware</sup>**™ configuration software.

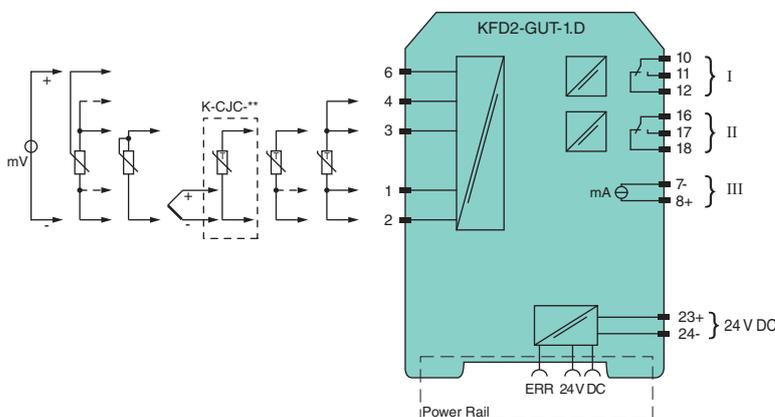
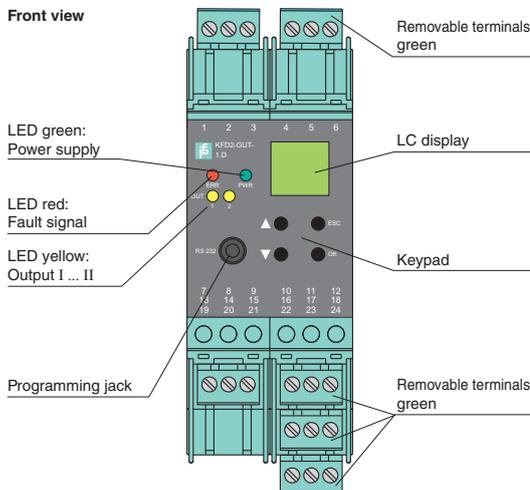
A unique collective error messaging feature is available when used with the Power Rail system.

For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

## Technical data

<b>Supply</b>	
Rated voltage	20 ... 30 V DC
Power loss/power consumption	≤ 2 W/2.2 W
<b>Input</b>	
RTD	Pt100, Pt500, Pt1000, Ni100, Ni1000
Types of measuring	2-, 3-, 4-wire technology
Lead resistance	≤ 50 Ω
Measuring circuit monitoring	sensor burnout, sensor short-circuit
Thermocouples	type B, E, J, K, L, N, R, S, T
Cold junction compensation	external and internal
Measuring circuit monitoring	sensor burnout
Voltage	0 ... 10 V, 2 ... 10 V, 0 ... 1 V, -100 ... 100 mV
Potentiometer	0.8 ... 20 kΩ
Types of measuring	2-, 3-, 5-wire technology
Input resistance	≥ 250 kΩ (0 ... 10 V) ≥ 1 MΩ (0 ... 1 V, -100 ... 100 mV)
Measuring current	approx. 400 μA with resistance measuring sensor
<b>Output</b>	
Output I, II	
Output type	relay
Contact loading	250 V AC/2 A/cos Φ ≥ 0.7; 40 DC/2 A
Mechanical life	5 x 10 <sup>7</sup> switching cycles
Energized/De-energized delay	approx. 20 ms/approx. 20 ms
Output III	
Output type	analog current output
Current range	0 ... 20 mA or 4 ... 20 mA
Open loop voltage	≤ 24 V DC
Load	≤ 650 Ω
Fault signal	downscale I ≤ 3.6 mA, upscale I ≥ 21 mA (acc. NAMUR NE43)
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	300 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in), housing type C3

## Diagrams



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Technical data	
<b>Supply</b>	
Rated voltage	20 ... 90 V DC/48 ... 253 V AC
Power loss/power consumption	≤2 W; 2.5 VA/2.2 W; 3 VA
<b>Input</b>	
RTD	Pt100, Pt500, Pt1000, Ni100, Ni1000
Types of measuring	2-, 3-, 4-wire technology
Lead resistance	≤50 Ω
Measuring circuit monitoring	sensor burnout, sensor short-circuit
Thermocouples	type B, E, J, K, L, N, R, S, T
Cold junction compensation	external and internal
Measuring circuit monitoring	sensor burnout
Voltage	0 ... 10 V, 2 ... 10 V, 0 ... 1 V, -100 ... 100 mV
Potentiometer	0.8 ... 20 kΩ
Types of measuring	2-, 3-, 5-wire technology
Input resistance	≥ 250 kΩ (0 ... 10 V) ≥ 1 MΩ (0 ... 1 V, -100 ... 100 mV)
Measuring current	approx. 400 μA with resistance measuring sensor
<b>Output</b>	
Output I, II relay	
Contact loading	250 V AC/2 A/cos Φ ≥ 0.7; 40 DC/2 A
Mechanical life	5 x 10 <sup>7</sup> switching cycles
Energized/De-energized delay	approx. 20 ms/approx. 20 ms
Output III analog current output	
Current range	0 ... 20 mA or 4 ... 20 mA
Open loop voltage	≤24 V DC
Load	≤650 Ω
Fault signal	downscale I ≤ 3.6 mA, upscale I ≥ 21 mA (acc. NAMUR NE43)
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	300 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in), housing type C3

**Features**

- 1-channel signal conditioner
- AC/DC wide range supply
- TC, RTD, potentiometer or voltage input
- Redundant TC input
- Current output 0/4 mA ... 20 mA
- 2 relay contact outputs
- Line fault (LFD) and sensor burnout detection
- Up to SIL2 acc. to IEC 61508

**Function**

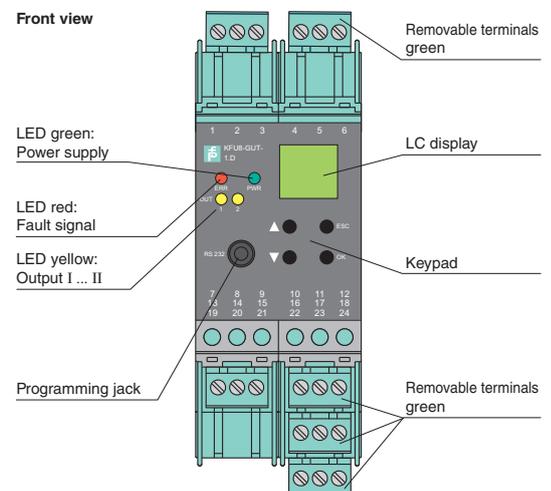
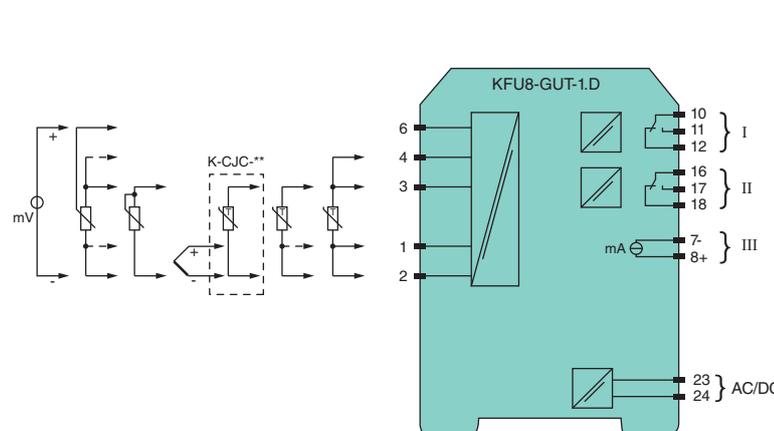
This signal conditioner is a universal input trip alarm that converts the signal of an RTD, thermocouple, potentiometer, or voltage source to a proportional output current. It also provides a relay trip value and isolation for non-intrinsically safe applications.

A removable terminal block K-CJC-\*\* is available for thermocouples when internal cold junction compensation is desired.

The unit is easily programmed by the use of a keypad located on the front of the unit or with the **PACT<sup>ware</sup>**™ configuration software.

For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Diagrams**



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Accessories



## Current Drivers

Model Number	Channels	Input (Control System)		Output (Field)				Supply			Page
		0 mA ... 40 mA	4 mA ... 20 mA	mA	Fire Alarm	Line Fault Detection	SMART	24 V DC	Loop Powered	SIL	
KCD2-SCD-1	1		■	■			■	■		2	648
KFD2-SCD2-1.LK	1		■	■		■	■	■		2	649
KFD2-SCD2-2.LK	2		■	■		■	■	■		2	650
KFD0-SCS-1.55	1		■	■		■	■		■	2	651
KFD0-CS-1.50	1		■	■	■				■	2	652
KFD0-CS-2.50	2		■	■	■				■	2	653
KFD0-CS-2.51P	2	■		■	■				■	2	654



K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories



K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Current output up to 650 Ω load
- HART I/P and valve positioner
- Lead breakage monitoring
- Accuracy 0.1 %
- Housing width 12.5 mm
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner drives SMART I/P converters, electrical valves, and positioners and provides isolation for non-intrinsically safe applications.

Digital signals are superimposed on the analog values at the field or control side and are transferred bi-directionally.

Current transferred across the DC/DC converter is repeated at terminals 1 and 2.

An open field circuit presents a high input impedance to the control side to allow lead breakage monitoring by control system.

If the loop resistance for the digital communication is too low, an internal resistor of 250 Ω between terminals 6 and 8 is available, which may be used as the HART communication resistor.

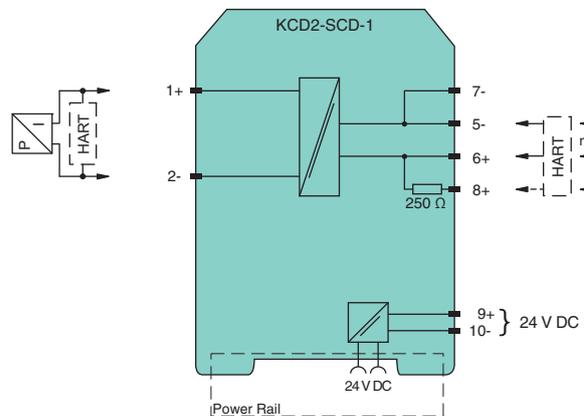
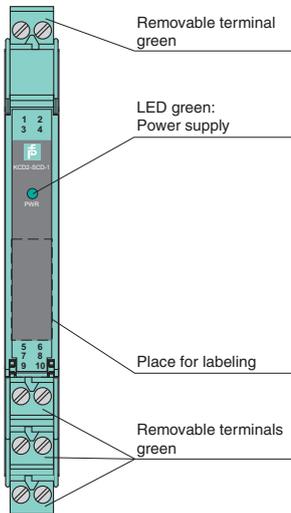
Sockets for the connection of a HART communicator are integrated into the terminals of the device.

**Technical data**

<b>Supply</b>	
Rated voltage	19 ... 30 V DC
Power consumption	≤ 700 mW
<b>Input</b>	
Input signal	4 ... 20 mA limited to approx. 30 mA
Voltage drop U <sub>d</sub>	approx. 6 V or internal resistance 300 Ω at 20 mA
Input resistance	> 100 kΩ at max. 23 V, with field wiring open
<b>Output</b>	
Current	4 ... 20 mA
Load	0 ... 650 Ω
Voltage	≥ 13 V at 20 mA
Ripple	20 mV <sub>rms</sub>
<b>Transfer characteristics</b>	
Deviation	at 20 °C (68 °F), 0/4 ... 20 mA ≤ ± 0.1 % incl. non-linearity and hysteresis
Influence of ambient temperature	< 2 μA/K (0 ... 60 °C (32 ... 140 °F)); < 4 μA/K (-20 ... 0 °C (-4 ... 32 °F))
Frequency range	bandwidth at 0.5 V <sub>pp</sub> signal 0 ... 3 kHz (-3 dB)
Rise time	10 to 90 % ≤ 100 ms
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	12.5 x 114 x 124 mm (0.5 x 4.5 x 4.9 in), housing type A2

**Diagrams**

Front view



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Technical data	
<b>Supply</b>	
Rated voltage	10 ... 35 V DC
Power consumption	1 W at 20 mA
<b>Input</b>	
Voltage drop $U_d$	approx. 4 V or internal resistance 200 $\Omega$ at 20 mA
Input resistance	> 100 k $\Omega$ , when wiring resistance in the field > 16 V (equivalent to 800 $\Omega$ at 20 mA)
Current	4 ... 20 mA limited to approx. 25 mA
<b>Output</b>	
Current	4 ... 20 mA
Load	100 ... 700 $\Omega$
Voltage	$\geq 14$ V at 20 mA
<b>Transfer characteristics</b>	
Deviation	
After calibration	at 20 °C (68 °F): 10 $\mu$ A incl. non-linearity, calibration, hysteresis, supply and load changes
Influence of ambient temperature	1 $\mu$ A/K
Rise time	< 100 $\mu$ s (bounce from 10 ... 90 %)
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 124 x 115 mm (0.8 x 4.9 x 4.5 in), housing type B2

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Current output up to 700  $\Omega$  load
- HART I/P and valve positioner
- Line fault detection (LFD)
- Accuracy 0.05 %
- Terminals with test points
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner drives SMART I/P converters, electrical valves, and positioners and provides isolation for non-intrinsically safe applications.

Digital signals are superimposed on the analog values at the field or control side and are transferred bi-directionally.

Current transferred across the DC/DC converter is repeated at terminals 1 and 2.

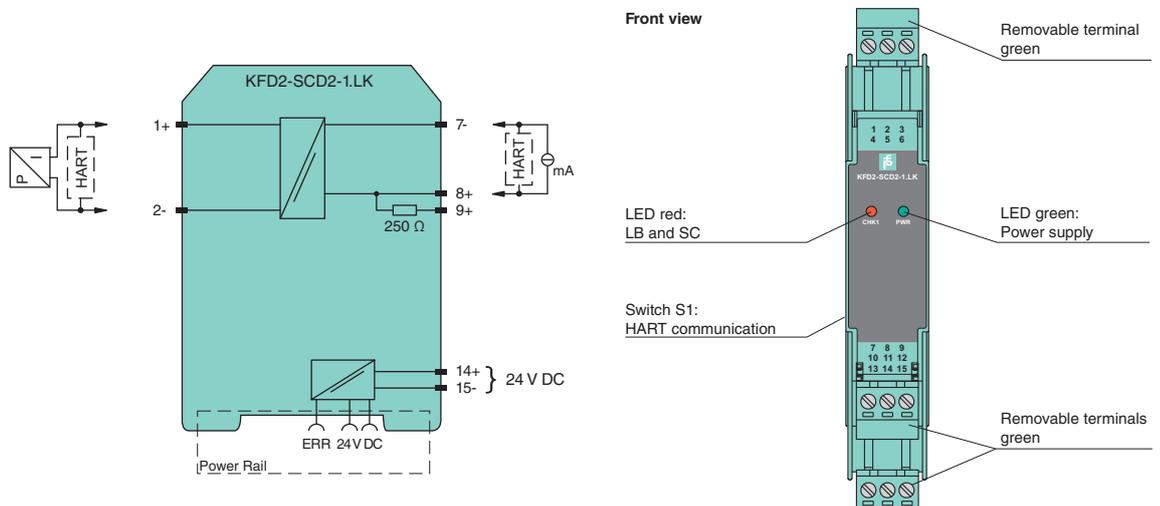
An open and shorted field circuit presents a high input impedance to the control side to allow line fault detection by control system.

If the loop resistance for digital communication is too low, an internal resistor of 250  $\Omega$  between terminals 8 and 9 is available, which may be used as the HART communication resistor.

Sockets for the connection of a HART communicator are integrated into the terminals of the device.

A unique collective error messaging feature is available when used with the Power Rail system.

**Diagrams**



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**PEPPERL+FUCHS 649**  
PROTECTING YOUR PROCESS



K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories



**Features**

- 2-channel signal conditioner
- 24 V DC supply (Power Rail)
- Current output up to 700 Ω load
- HART I/P and valve positioner
- Line fault detection (LFD)
- Accuracy 0.05 %
- Terminals with test points
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner drives SMART I/P converters, electrical valves, and positioners and provides isolation for non-intrinsically safe applications.

Digital signals are superimposed on the analog values at the field or control side and are transferred bi-directionally.

Current transferred across the DC/DC converter is repeated at terminals 1, 2 and 4, 5.

An open and shorted field circuit presents a high input impedance to the control side to allow line fault detection by control system.

If the loop resistance for digital communication is too low, an internal resistor of 250 Ω between terminals 8, 9 and 11, 12 is available, which may be used as the HART communication resistor.

Sockets for the connection of a HART communicator are integrated into the terminals of the device.

A unique collective error messaging feature is available when used with the Power Rail system.

**Technical data**

**Supply**

Rated voltage	10 ... 35 V DC
Power consumption	1.8 W at 20 mA

**Input**

Voltage drop $U_d$	approx. 4 V or internal resistance 200 Ω at 20 mA
Input resistance	> 100 kΩ, when wiring resistance in the field > 16 V (equivalent to 800 Ω at 20 mA)

Current	4 ... 20 mA limited to approx. 25 mA
---------	--------------------------------------

**Output**

Current	4 ... 20 mA
Load	100 ... 700 Ω
Voltage	≥ 14 V at 20 mA

**Transfer characteristics**

Deviation	
After calibration	at 20 °C (68 °F): 10 μA incl. non-linearity, calibration, hysteresis, supply and load changes
Influence of ambient temperature	1 μA/K
Rise time	< 100 μs (bounce from 10 ... 90 %)

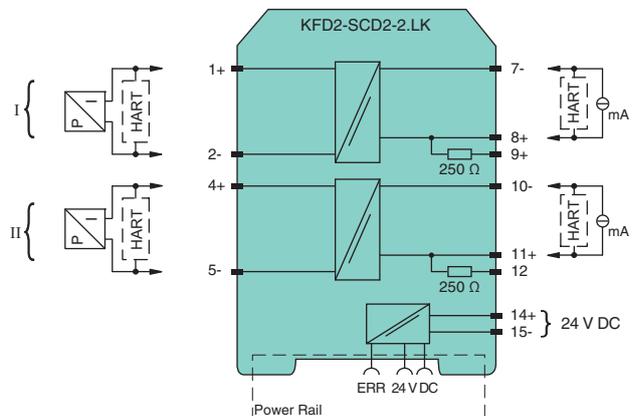
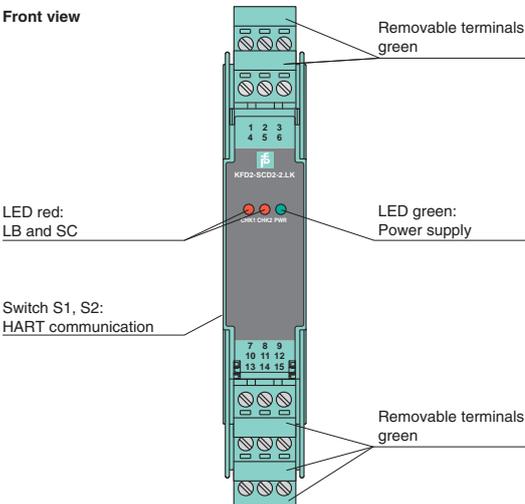
**Ambient conditions**

Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
---------------------	-------------------------------

**Mechanical specifications**

Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 124 x 115 mm (0.8 x 4.9 x 4.5 in), housing type B2

**Diagrams**



Edition 908837 (US) / 208599 (EU) 11/2010



Technical data	
<b>Supply</b>	
Rated voltage	loop powered
<b>Field circuit</b>	
Available voltage	≥ 16 V for supply voltage > 21 V
Current	4 ... 20 mA (linear transmission 1 ... 22 mA)
Load	≤ 800 Ω (at 20 mA)
<b>Supply circuit</b>	
Voltage	max. 30 V DC
Current	4 ... 20 mA (quiescent current < 0.5 mA)
Power loss	150 mW at 20 mA and $U_E < 24 V$
<b>Transfer characteristics</b>	
Deviation	
After calibration	≤ ± 80 μA linearity, load and voltage dependence at 20 °C (68 °F)
Influence of ambient temperature	< 0.5 μA/K
Damping	approx. 3 dB
Rise time	≤ 20 μs at 0 Ω, ≤ 600 μs with 800 Ω load
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 120 g
Dimensions	20 x 124 x 115 mm (0.8 x 4.9 x 4.5 in), housing type B2

**Features**

- 1-channel signal conditioner
- 24 V DC supply (loop powered)
- Current input/output 4 mA ... 20 mA
- HART I/P or transmitter power supply
- Low voltage drop
- Line fault detection (LFD)
- Up to SIL2 acc. to IEC 61508

**Function**

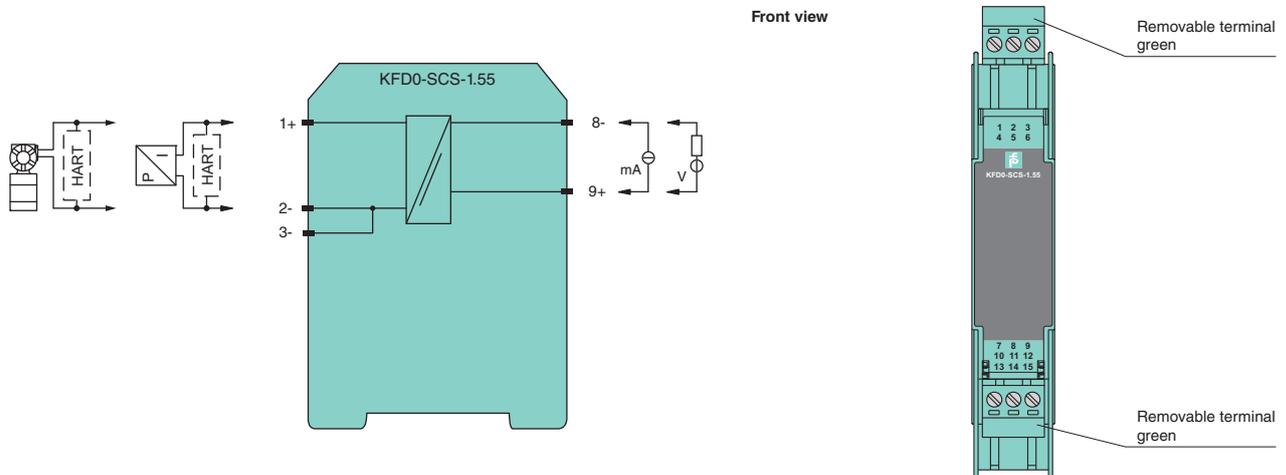
This signal conditioner is loop powered and isolates a 4 mA ... 20 mA signal for transmitters and positioners and is HART compatible.

The low voltage drop of 5 V in comparison to active signal conditioners also allows transmitter applications with unstable power sources between 20 V DC ... 30 V DC.

Line fault detection of the field circuit is possible if the control loop in the safe area is monitored for overscale or underscale conditions of the 4 mA ... 20 mA range.

The module can also be used for controlling solenoid valves and discrete outputs, such as LEDs. In this case, terminals 8- and 9+ are driven with a 24 V signal.

**Diagrams**



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**PEPPERL+FUCHS 651**  
PROTECTING YOUR PROCESS

K-System  
Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

**Features**

- 1-channel signal conditioner
- 24 V DC supply (loop powered)
- Current input/output 4 mA ... 20 mA
- I/P or transmitter power supply
- Accuracy 0.1 %
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner transfers DC signals from fire alarms, smoke alarms, and temperature sensors and provides isolation for non-intrinsically safe applications. It can also be used to control I/P converters, power solenoids, LEDs, and audible alarms.

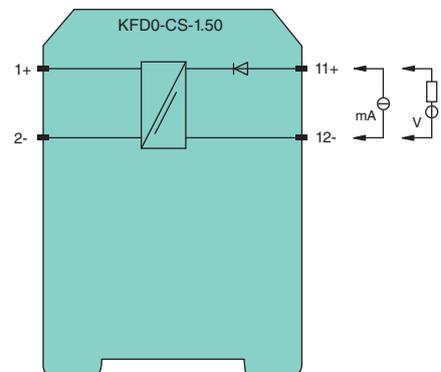
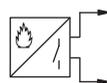
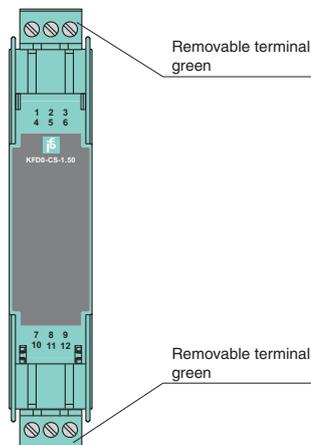
Since this isolator is loop powered, use the technical data to verify that proper voltage is available to the field devices.

**Technical data**

<b>Supply</b>	
Rated voltage	loop powered
<b>Input</b>	
Rated voltage $U_i$	10 ... 35 V
Rated current $I_i$	4 ... 20 mA
Power loss	< 150 mW per channel at 25 mA and $U < 26.1$ V < 400 mW per channel at 25 mA and $U > 26.1$ V
<b>Output</b>	
Voltage	$\geq 0.9 \times U_{in} - (0.23 \times \text{current in mA}) - 0.7$ for $10 \text{ V} < U_{in} < 26.1 \text{ V}$ $\geq 23 \text{ V} - (0.23 \times \text{current in mA})$ for $U_{in} > 26.1 \text{ V}$
Short-circuit current	$\leq 100 \text{ mA}$
Transfer current	$\leq 25 \text{ mA}$
<b>Transfer characteristics</b>	
<b>Deviation</b>	
After calibration	$U_{in} \geq 5 \text{ V} \pm 20 \mu\text{A} / U_{in} \leq 5 \text{ V} \pm 50 \mu\text{A}$ incl. calibration, linearity, hysteresis and output load fluctuations at 20 °C (68 °F)
Influence of ambient temperature	$\leq 2 \mu\text{A/K}$ (0 ... 50 °C (32 ... 122 °F)); $\leq 5 \mu\text{A/K}$ (-20 ... 60 °C (-4 ... 140 °F))
Rise time	$\leq 5 \text{ ms}$ at 4 ... 20 mA and $U_{in} = \text{input voltage} < 26 \text{ V}$
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	20 x 107 x 115 mm (0.8 x 4.2 x 4.5 in), housing type B1

**Diagrams**

Front view



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data	
<b>Supply</b>	
Rated voltage	loop powered
<b>Input</b>	
Rated voltage $U_i$	10 ... 35 V
Rated current $I_i$	4 ... 20 mA
Power loss	< 150 mW per channel at 25 mA and $U < 26.1$ V < 400 mW per channel at 25 mA and $U > 26.1$ V
<b>Output</b>	
Voltage	$\geq 0.9 \times U_{in} - (0.23 \times \text{current in mA}) - 0.7$ for $10 \text{ V} < U_{in} < 26.1 \text{ V}$ $\geq 23 \text{ V} - (0.23 \times \text{current in mA})$ for $U_{in} > 26.1 \text{ V}$
Short-circuit current	$\leq 100 \text{ mA}$
Transfer current	$\leq 25 \text{ mA}$
<b>Transfer characteristics</b>	
Deviation	
After calibration	$U_{in} \geq 5 \text{ V} \pm 20 \mu\text{A} / U_{in} \leq 5 \text{ V} \pm 50 \mu\text{A}$ incl. calibration, linearity, hysteresis and output load fluctuations at $20 \text{ }^\circ\text{C}$ ( $68 \text{ }^\circ\text{F}$ )
Influence of ambient temperature	$\leq 2 \mu\text{A/K}$ ( $0 \dots 50 \text{ }^\circ\text{C}$ ( $32 \dots 122 \text{ }^\circ\text{F}$ )); $\leq 5 \mu\text{A/K}$ ( $-20 \dots 60 \text{ }^\circ\text{C}$ ( $-4 \dots 140 \text{ }^\circ\text{F}$ ))
Rise time	$\leq 5 \text{ ms}$ at $4 \dots 20 \text{ mA}$ and $U_{in} = \text{input voltage} < 26 \text{ V}$
<b>Ambient conditions</b>	
Ambient temperature	$-20 \dots 60 \text{ }^\circ\text{C}$ ( $-4 \dots 140 \text{ }^\circ\text{F}$ )
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	$20 \times 107 \times 115 \text{ mm}$ ( $0.8 \times 4.2 \times 4.5 \text{ in}$ ), housing type B1

Features

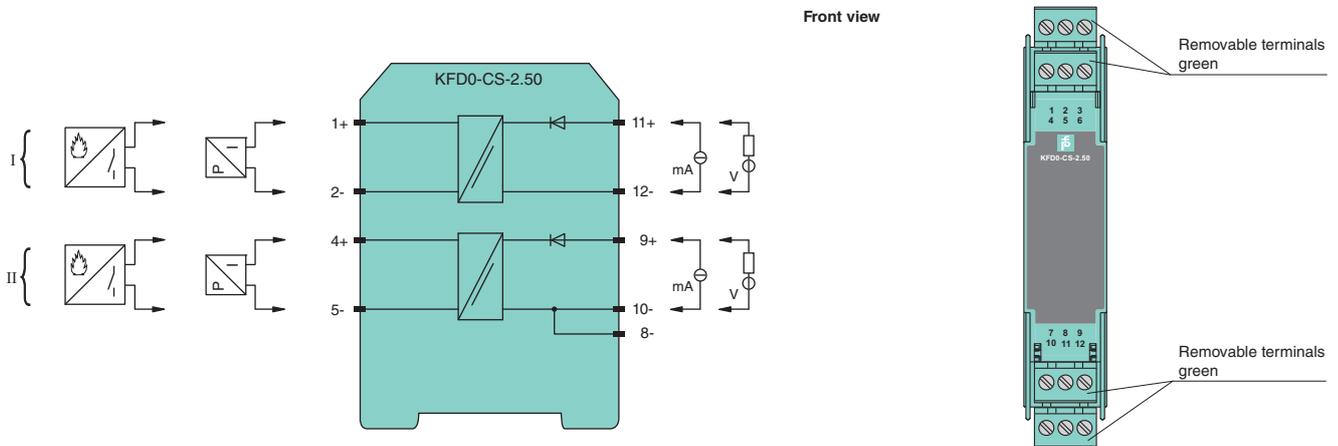
- 2-channel signal conditioner
- 24 V DC supply (loop powered)
- Current input/output 4 mA ... 20 mA
- I/P or transmitter power supply
- Accuracy 0.1 %
- Up to SIL2 acc. to IEC 61508

Function

This signal conditioner transfers DC signals from fire alarms, smoke alarms, and temperature sensors and provides isolation for non-intrinsically safe applications. It can also be used to control I/P converters, power solenoids, LEDs, and audible alarms.

Since this isolator is loop powered, use the technical data to verify that proper voltage is available to the field devices.

Diagrams



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K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- 2-channel signal conditioner
- 24 V DC supply (loop powered)
- Current input/output 0 mA ... 40 mA
- I/P or transmitter power supply
- Accuracy 1 %
- Reverse polarity protection
- Up to SIL2 acc. to IEC 61508

**Function**

This signal conditioner transfers DC signals from fire alarms, smoke alarms, and temperature sensors to the control and provides isolation for non-intrinsically safe applications. It can also be used to control I/P converters, power solenoids, LEDs, and audible alarms.

Reverse polarity protection prevents damage to the isolator caused by faulty wiring.

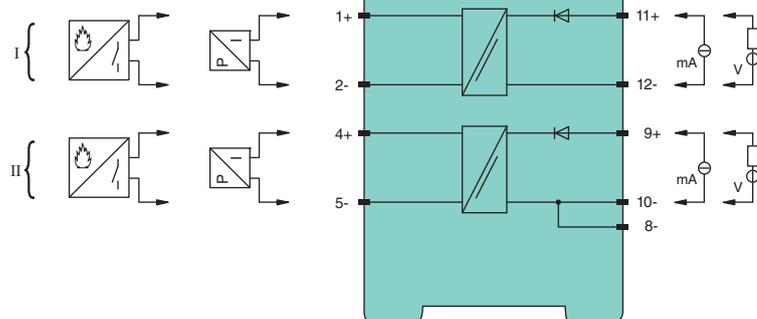
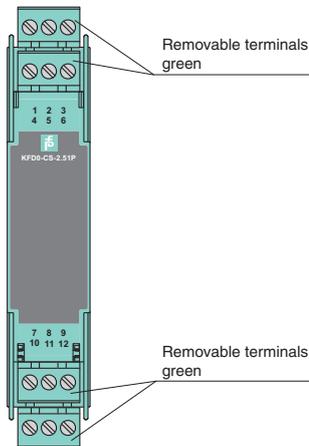
Since this isolator is loop powered, use the technical data to verify that proper voltage is available to the field devices.

**Technical data**

<b>Supply</b>	
Rated voltage	loop powered
<b>Input</b>	
Rated voltage $U_i$	4 ... 35 V
Rated current $I_i$	0 ... 40 mA
Power loss	at 40 mA and $U_{in} < 22$ V: 700 mW per channel at 40 mA and $U_{in} > 22$ V: 1.2 W per channel
<b>Output</b>	
Voltage	for $4 \text{ V} < U_{in} < 24 \text{ V}$ : $\geq 0.9 \times U_{in} - (0.37 \times \text{current in mA}) - 1.0$ for $U_{in} > 24 \text{ V}$ : $\geq 21 \text{ V} - (0.36 \times \text{current in mA})$
Short-circuit current	at $U_{in} > 24 \text{ V}$ : $\leq 65 \text{ mA}$
Transfer current	$\leq 40 \text{ mA}$
<b>Transfer characteristics</b>	
<b>Deviation</b>	
After calibration	$\leq \pm 200 \mu\text{A}$ ; incl. calibration, linearity, hysteresis and load fluctuations at the output up to a load of 1 k $\Omega$ and current $\leq 20 \text{ mA}$ at 20 °C (68 °F)
Influence of ambient temperature	$\leq \pm 2 \mu\text{A/K}$ at $U_{in} \leq 20 \text{ V}$ ; $\leq \pm 5 \mu\text{A/K}$ at $U_{in} > 20 \text{ V}$
Rise time	$\leq 5 \text{ ms}$ at 4 ... 20 mA step and $U_{in} < 24 \text{ V}$
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	20 x 107 x 115 mm (0.8 x 4.2 x 4.5 in), housing type B1

**Diagrams**

Front view



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## Supply and Installation

Model Number	Description	Page
KFA6-STR-1.24.500	Power Supply, 24 V, 500 mA	657
KFA6-STR-1.24.4	Power Supply, 24 V, 4 A	658
KFD2-EB2	Power Feed Module	659
KFD2-EB2.R4A.B	Redundant Power Feed Module	660
UPR-03-*	Universal Power Rail, insert for DIN rail, 3-lead	661
UPR-05-*	Universal Power Rail, insert for DIN rail, 5-lead	662
UPR-E	End Cap for Universal Power Rail UPR-**-*	661, 662
UPR-I	Insulation Spacer for Universal Power Rail UPR-**-*	665
K-DUCT-GY-UPR-03	Profile Rail with UPR-03-* insert, 3-lead, wiring comb field side grey	663
K-DUCT-GY-UPR-05	Profile Rail with UPR-05-* insert, 5-lead, wiring comb field side grey	664
E/AL-NS35	End Bracket	666
TS 35 Typ 12	End Bracket	666
K-MS	Mounting Socket	665

## Terminal Blocks

Model Number	Description	Type		Module		Number of Poles	Test Sockets	Cold Junction Compensation	Packaging Unit, Color			Page
		Screw Terminal	Cage Clamp Terminal	KC-Modules	KF-Modules				Green	Black	Red	
K-CJC-BK	Terminal Block	■			■	3		■		1		667
KC-ST-5GN	Terminal Block	■		■		2			5			667
KF-ST-5GN	Terminal Block	■			■	3			5			668
KC-STP-5GN	Terminal Block	■		■		2	■		5			668
KF-STP-5GN	Terminal Block	■			■	3	■		5			669
KC-CTT-5GN	Terminal Block		■	■		2	■		5			669
KF-CTT-5GN	Terminal Block		■		■	3	■		5			670
KF-CP	Coding Pins			■	■						20 x 6	670

## Commissioning

Model Number	Description	Page
PACT <sup>ware</sup> ™ 4.X	FDT-Framework	671
K-ADP-USB	Adapter with USB Interface	672
K-ADP1	Adapter with RS 232 Interface	673

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Further Accessories

Model Number	Description	Page
K-500R0%1	Measuring Resistor	674
KF-SEAL	Adhesive Sticker	674
KFD0-LGH-GN	Place Holder Barrier, KF Module	675
KFD0-LGH-Y34868	Place Holder Barrier, KF Module	676



K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

Edition 908837 (US) / 208599 (EU) 11/2010

Technical data	
<b>Supply</b>	
Rated voltage	90 ... 253 V AC, 48 ... 63 Hz
Power loss	2.5 W
<b>Output</b>	
Current	500 mA at 60 °C (140 °F), permanent short-circuit protection (electronic)
Voltage	24 V ± 0.5 V
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 140 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

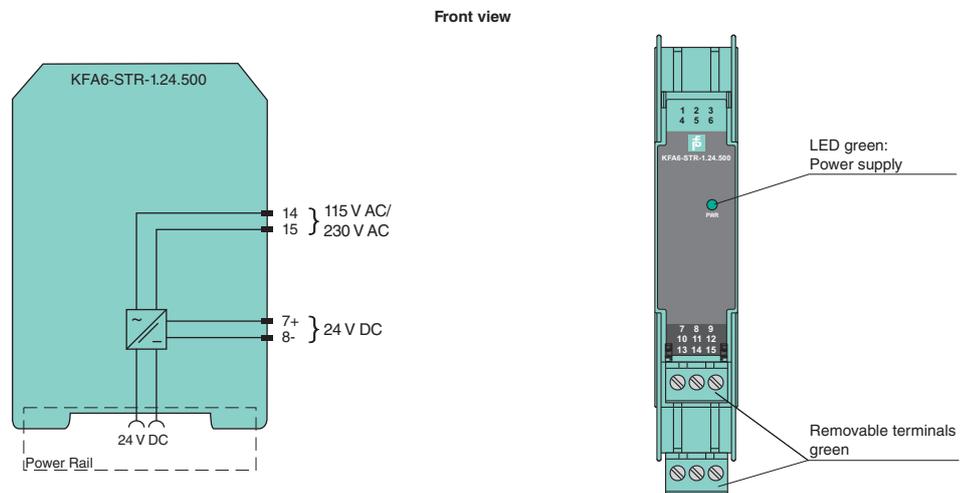
**Features**

- 115/230 V AC supply
- Output 24 V DC, 500 mA
- Electronic short circuit protection
- Power Rail connection

**Function**

This regulated power supply provides 24 V DC, at 500 mA. The KFA6-STR-1.24.500 features removable terminals and mounts directly on the Power Rail. This allows usage as Power Rail supply as well as stand alone power supply.

**Diagrams**



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**PEPPERL+FUCHS 657**  
PROTECTING YOUR PROCESS

K-System  
Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

**Features**

- 115/230 V AC supply
- Output 24 V DC, 4 A
- Fused output
- Power Rail connection

**Function**

This regulated power supply provides 24 V DC, at 4 A. It features removable terminals, LED fault indication, and mounts directly on the Power Rail.

Designed with a replaceable fuse and LED, it will provide a green visual indication for normal operation or a flashing red indication if a fault occurs.

**Attention:** Ignoring the safety instructions (i. e., touching hot sections when the device is open, handling malpractices) can be extremely dangerous.

When exceeding the values stated in the technical data, there is a danger of overheating. As a result, the operation of the power supply and its electrical safety may be impaired.

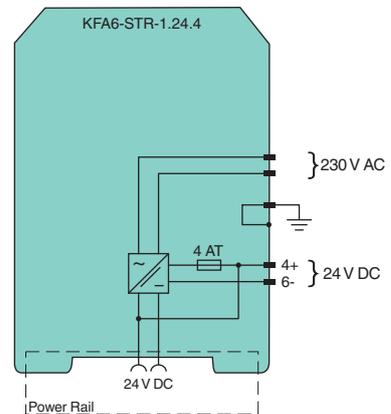
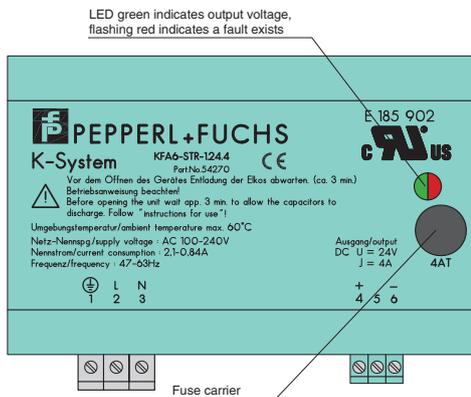
Before starting installation or service, switch mains off. Do not plug or unplug powered!

**Technical data**

<b>Supply</b>	
Rated voltage	92 ... 265 V AC, 47 ... 63 Hz
Rated current	2.1 ... 0.84 A
Failure override time	> 75 ms/230 V AC; 5 ms/115 V AC
<b>Output</b>	
Current	0 ... 4 A, Power Rail limiting by means of fuse 4 AT, electron. limitation typ. 4.6 A
Voltage	23.28 ... 24.72 V DC
Ripple	< 100 mV <sub>pp</sub>
Efficiency	typ. 87 %
Overvoltage protected	< 28 V DC
<b>Electromagnetic compatibility</b>	
<b>Safety</b>	
Radio-interference supression	acc. to VDE 0875 Part 11, EN 55011 class B
Electrostatic discharge	acc. to IEC 60801-2
Contact discharging	8 kV
Air discharging	15 kV
Electromagnetic fields	acc. to IEC 801-3, 10 V/m
Burst IEC 60801-4	Input: 4 kV; output/capacitively coupled: 2 kV
Surge IEC 60801-5	asymmetrical: L, N -> PE 4 kV; symmetrical: L -> N 2 kV
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 800 g
Dimensions	140 x 103.5 x 99 mm (5.5 x 4.1 x 3.9 in)
Mounting	mounting clips for snap-mounting on DIN rail as per DIN EN 60715
Connection possibilities	self-opening connection terminals, max. core cross-section 2 x 2.5 mm <sup>2</sup>
<b>Data for application in connection with Ex-areas</b>	
UL approval	UL recognized E185902

**Diagrams**

Front view



Edition 908837 (US) / 208599 (EU) 11/2010

**Technical data**

<b>Supply</b>	
Rated voltage	20 ... 30 V DC The maximum rated operational voltage of the devices plugged onto the Power Rail must not be exceeded.
Power loss	≤ 1 W
<b>Output</b>	
Power Rail feed	output current: ≤ 4 A
Fault signal	relay output: NO
Contact loading	40 V DC; 2 A
Energized/De-energized delay	approx. 20 ms/approx. 20 ms
Fusing	5 AT
<b>Ambient conditions</b>	
Ambient temperature	-25 ... 60 °C (-13 ... 140 °F)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2
<b>Data for application in connection with Ex-areas</b>	
Statement of conformity	TÜV 00 ATEX 1618 X
Group, category, type of protection, temperature classification	⊕ II 3G Ex nA nC IIC T4
FM approval	
Control drawing	116-0160
Approved for	Class I, Division 2, Groups A, B, C, D; Class I, Zone 2, IIC
CSA approval	
Control drawing	116-0160
Approved for	Class I, Division 2, Groups A, B, C, D; Class I, Zone 2, IIC

**Features**

- Interface for Power Rail
- Supply rating **4 A, external fused**
- Relay contact output, reversible
- LED status indication

**Function**

The power feed module interfaces 24 V DC power to the Power Rail at a maximum current of 4 A. The twin input terminals allow for daisy-chaining of supply (max. 10 A).

A green LED on the front of the unit indicates that power is on, and a red LED illuminates during error conditions.

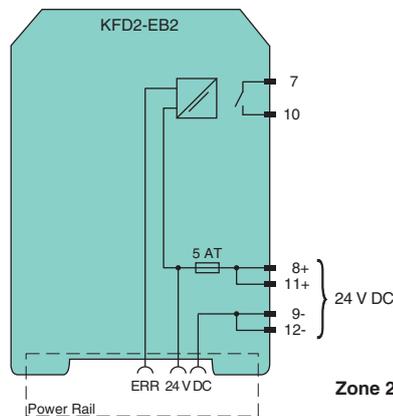
In the event of a field wiring or barrier fault from any barrier on the Power Rail, the integral collective error messaging relay alerts the controller via a single discrete I/O point.

This relay can be configured as normally open or normally closed.

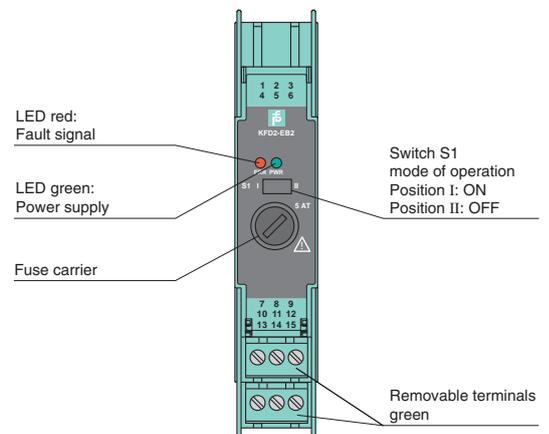
In the sense of functional safety (SIL) the device provides no dangerous failures. Thereby the safe condition of the supplied barrier must be defined as the powerless state. Thus the device will not influence the safety calculation or the SIL value.

This device is compatible with all versions of the Power Rail.

**Diagrams**



Front view



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Subject to modifications without notice

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**PEPPERL+FUCHS 659**  
PROTECTING YOUR PROCESS



K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

K-System  
Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

## Features

- Interface for Power Rail
- Used for redundant configuration
- Supply rating 4 A, external fused
- Relay contact output, reversible

## Function

The power feed module interfaces 24 V DC power to the Power Rail at a maximum current of 4 A and is designed for applications requiring redundant power. The twin input terminals allow for daisy-chaining of supply (max. 10 A).

A green LED on the front of the unit indicates that power is on, and a red LED illuminates during error conditions.

In the event of a field wiring or barrier fault from any barrier on the Power Rail, the integral collective error messaging relay alerts the controller via a single digital I/O point. This relay can be configured as normally open or normally closed.

Additionally, the bus implemented in the Power Rail is forwarded to the outside terminals 13 and 15 for usage with KFD2-WAC2-Ex1.D RS 485 connection. Terminal 14 is only for test purposes.

In the sense of functional safety (SIL) the device provides no dangerous failures. Thereby the safe condition of the supplied barrier must be defined as the powerless state. Thus the device will not influence the safety calculation or the SIL value.

This device is compatible with all versions of the Power Rail and provides group fusing.

**Note:** Redundant systems require two KFD2-EB.R4A.B modules.

## Technical data

### Supply

Rated voltage	20 ... 30 V DC
	The maximum rated operational voltage of the devices plugged onto the Power Rail must not be exceeded.

Power loss	≤ 2.4 W
------------	---------

### Output

Power Rail feed	output current: ≤ 4 A
Fault signal	relay output: NO
Contact loading	40 V DC; 2 A
Energized/De-energized delay	approx. 20 ms/approx. 20 ms
Fusing	5 AT

### Ambient conditions

Ambient temperature	-25 ... 60 °C (-13 ... 140 °F)
---------------------	--------------------------------

### Mechanical specifications

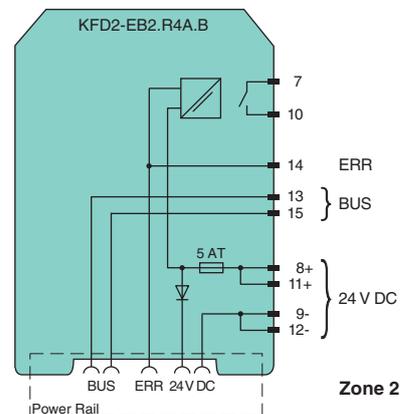
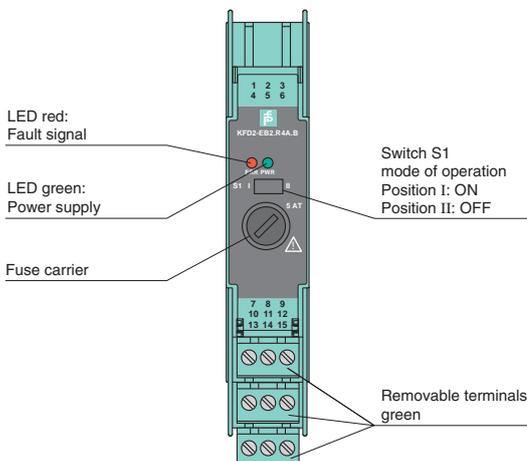
Protection degree	IP20
Mass	approx. 100 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in), housing type B2

### Data for application in connection with Ex-areas

Statement of conformity	TÜV 00 ATEX 1618 X
Group, category, type of protection, temperature classification	Ex II 3G Ex nA nC IIC T4
FM approval	
Control drawing	116-0160
Approved for	Class I, Division 2, Groups A, B, C, D; Class I, Zone 2, IIC
CSA approval	
Control drawing	116-0160
Approved for	Class I, Division 2, Groups A, B, C, D; Class I, Zone 2, IIC

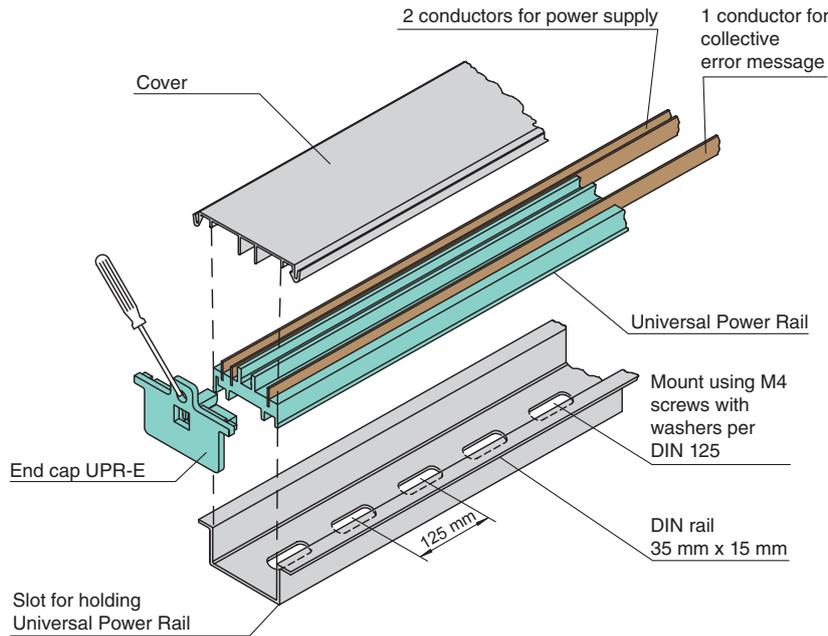
## Diagrams

Front view



Edition 908837 (US) / 208599 (EU) 11/2010

**Dimensions**



**Technical data**

<b>Electrical specifications</b>	
Rated voltage	24 V DC
Rated current	4 A
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Dimensions	UPR-03-S: 35 x 15 x 800 mm (1.4 x 0.6 x 31.5 in) UPR-03: 35 x 15 x 2000 mm (1.4 x 0.6 x 78.7 in)

**Features**

- Gold plated 3-conductor insert in 35 mm DIN rail acc. to EN 60715
- Provides DC supply voltage to all equipped K-System modules
- Standard length 0.8 m (2.6 ft) or 2 m (6 ft), simple to customize to application space
- Eliminates daisy-chains

**Function**

The universal Power Rail is a plastic insert with integral gold-plated conductors that fits into its own integral, 35 mm DIN rail and supplies components with power.

It has two conductors for power and one conductor for collective error messaging. It reduces wiring and maintenance costs because it eliminates the need to daisy-chain the wires. It also simplifies expansion – just snap in a new module when you're ready to expand a system. It comes in 2 m segments (UPR-03) or in 0.8 m segments (UPR-03-S) but can be cut to any size.

It is delivered with two UPR-E end caps. More end caps can be ordered separately.

In conjunction with K-System modules the universal Power Rail can be mounted in Zone 2.

**Accessories**

- UPR-E
- End cap for UPR-03-\* and UPR-05-\*



K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

Edition 908837 (US) / 208599 (EU) 11/2010

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**Features**

- Gold plated 5-conductor insert in 35 mm DIN rail acc. to EN 60715
- Provides DC supply voltage and the bus connection to all equipped K-System modules
- Standard length 0.8 m (2.6 ft) or 2 m (6 ft), simple to customize to application space
- Eliminates daisy-chains

**Function**

The universal Power Rail is a plastic insert with integral gold-plated conductors that fits into its own integral, 35 mm DIN rail and supplies components with power.

It has two conductors for power, one conductor for collective error messaging, and two conductors for bus connections.

It reduces wiring and maintenance costs because it eliminates the need to daisy-chain the wires. It also simplifies expansion – just snap in a new module when you’re ready to expand a system.

It comes in 2 m segments (UPR-05) or in 0.8 m segments (UPR-05-S) but can be cut to any size.

It is delivered with two UPR-E end caps. More end caps can be ordered separately.

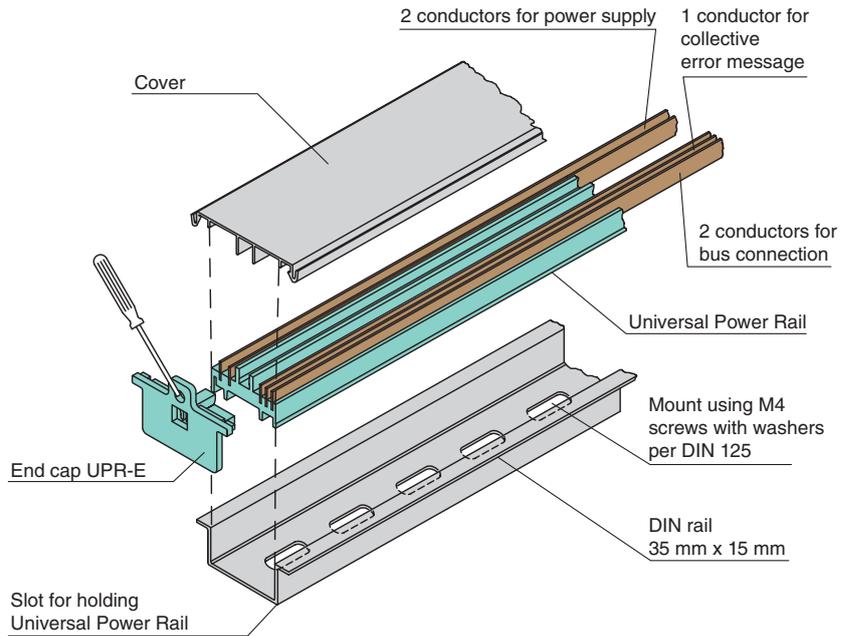
In conjunction with K-System modules the universal Power Rail can be mounted in Zone 2.

**Accessories**

UPR-E

End cap for UPR-03-\* and UPR-05-\*

**Dimensions**



**Technical data**

**Electrical specifications**

Rated voltage	24 V DC
Rated current	4 A

**Ambient conditions**

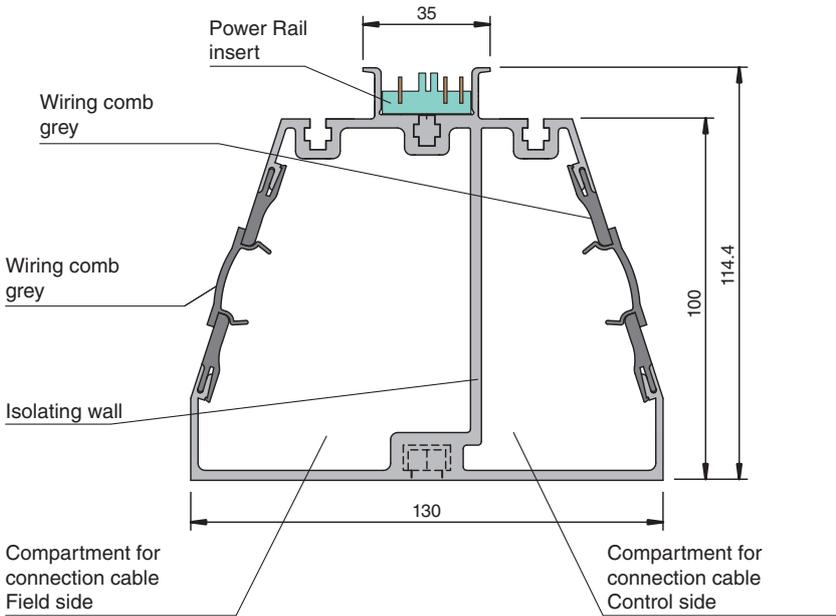
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
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**Mechanical specifications**

Dimensions	UPR-05-S: 35 x 15 x 800 mm (1.4 x 0.6 x 31.5 in) UPR-05: 35 x 15 x 2000 mm (1.4 x 0.6 x 78.7 in)
------------	---

Edition 908837 (US) / 208599 (EU) 11/2010

**Dimensions**



**Technical data**

**Mechanical specifications**

Dimensions	130 x 114.4 x 1800 mm (5 x 4.5 x 71 in)
------------	---

**Features**

- Cable trunking with integrated Power Rail UPR-03
- Safe spacious separation of field and control signals
- No additional cable guides necessary
- Provides DC supply voltage to all equipped K-System modules
- Standard length 1.8 m (5.8 ft), simple to customize to application space

**Function**

The profile rail can be used to provide space-saving mounting for interface modules and accommodate the associated wiring. The system and field cables are easily installed in the integral cable ducts of the profile rail. Thus no additional cable guides are necessary.

The power supply to the individual modules is preferably provided via the Power Rail UPR-03 that is integrated into the system. Additionally the Power Rail UPR-03 has one lead for collective error messaging.

The asymmetrical segmented connection compartment can be changed dependent on the required space by turning the profile rail. Please note that the Power Rail insert must be also rotated.

In conjunction with K-System modules the profile rail can be mounted in Zone 2.



K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

Edition 908837 (US) / 208599 (EU) 11/2010



**Features**

- Cable trunking with integrated Power Rail UPR-05
- Safe spacious separation of field and control signals
- No additional cable guides necessary
- Provides DC supply voltage and the bus connection to all equipped K-System modules
- Standard length 1.8 m (5.8 ft), simple to customize to application space

**Function**

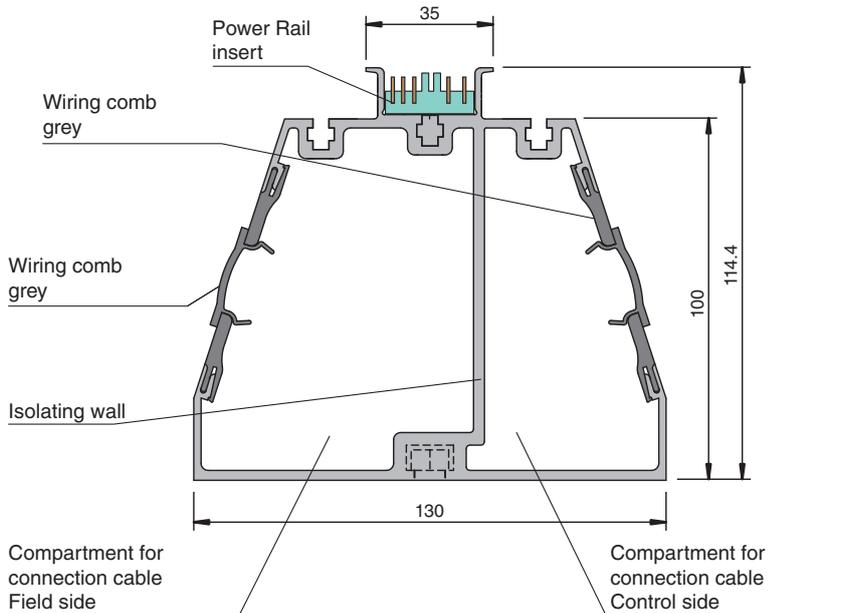
The profile rail can be used to provide space-saving mounting for interface modules and accommodate the associated wiring. The system and field cables are easily installed in the integral cable ducts of the profile rail. Thus no additional cable guides are necessary.

The power supply to the individual modules is preferably provided via the Power Rail UPR-05 that is integrated into the system. Additionally the Power Rail UPR-05 has one lead for collective error messaging and two leads for bus connections.

The asymmetrical segmented connection compartment can be changed dependent on the required space by turning the profile rail. Please note that the Power Rail insert must be also rotated.

In conjunction with K-System modules the profile rail can be mounted in Zone 2.

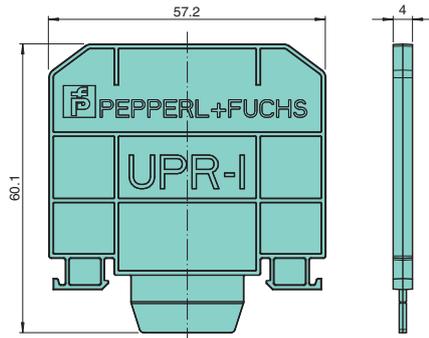
**Dimensions**



**Technical data**

**Mechanical specifications**

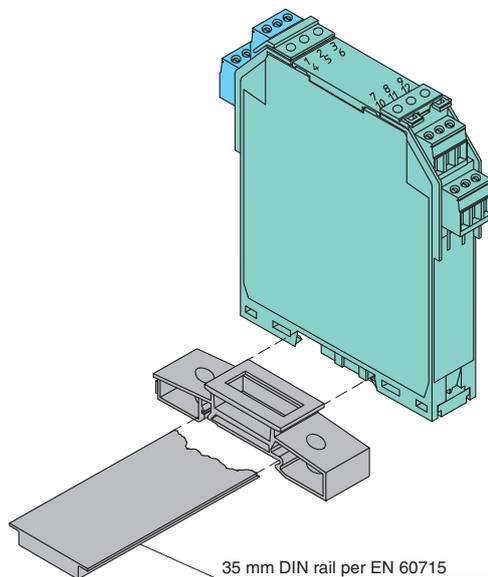
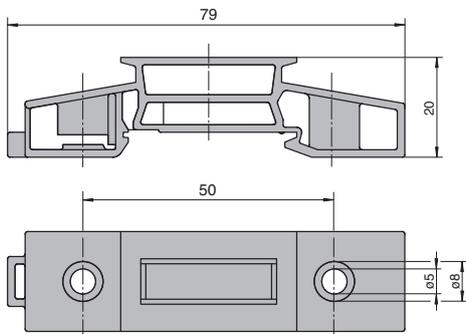
Dimensions	130 x 114.4 x 1800 mm (5 x 4.5 x 71 in)
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### Technical data

#### Mechanical specifications

Material	Polycarbonate
Mass	approx. 20 g
Dimensions	4 x 57 x 60 mm (0.16 x 2.24 x 2.36 in)
Mounting	mounting on 35 mm DIN rail acc. to DIN EN 60715



### Technical data

#### Mechanical specifications

Material	Polyamide PA 66
Mass	approx. 30 g
Dimensions	20 x 20 x 79 mm (0.8 x 0.8 x 3.1 in)
Mounting	mounting on 35 mm DIN rail acc. to DIN EN 60715

### Insulation Spacer for UPR-\*\*.\*

#### UPR-I

#### Features

- Electrical insulation of segmented Power Rail inserts

#### Function

The insulation spacer mounts onto a 35 mm DIN rail. It is used for electrical insulation of segmented Power Rail inserts.

### Mounting Socket K-MS

#### Features

- 1-channel
- KF module DIN rail isolation block
- Snaps on to 35 mm DIN rail acc. to EN 60715
- Easy panel mounting

#### Function

This mounting socket enables the "snap-on" mounting of K devices on a 35 mm DIN rail when there is not enough space to install the Power Rail device contacts.

Sockets can be mounted in rows, so mounting can be accomplished with a minimum loss of space. The socket may also be used to cover unused mounting positions on the Power Rail.

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

**End Bracket  
E/AL-NS35**

**Features**

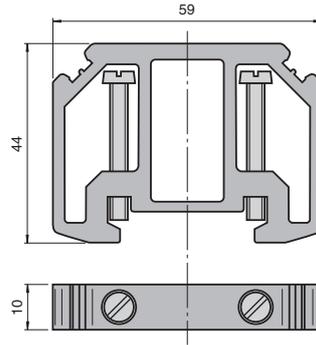
- For end support

**Function**

The end bracket is used for end support of devices on the 35 mm DIN rail. It is pushed onto DIN rail and fixed with two screws.

**Note:** This component is not supplied by Pepperl+Fuchs.

Supplier: Phoenix Contact



**Technical data**

**Mechanical specifications**

Material	aluminium
Mass	approx. 25 g
Dimensions	10 x 44 x 59 mm (0.4 x 1.7 x 2.3 in)
Mounting	mounting on 35 mm DIN rail acc. to DIN EN 60715

**End Bracket  
TS 35 Typ 12**

**Features**

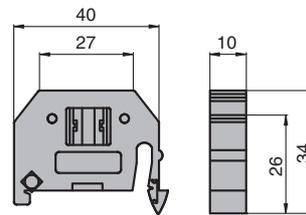
- End terminal as termination for DIN rail

**Function**

TS 35 Type 12 end brackets are used as terminations when K devices are mounted on the DIN rail.

**Note:** This component is not supplied by Pepperl+Fuchs.

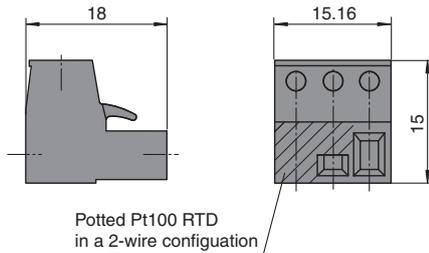
Supplier: Wago



**Technical data**

**Mechanical specifications**

Mass	approx. 10 g
Dimensions	10 x 34 x 40 mm (0.4 x 1.34 x 1.57 in)
Mounting	mounting on 35 mm DIN rail acc. to DIN EN 60715



Potted Pt100 RTD  
in a 2-wire configuration

### Technical data

Mechanical specifications	
Core cross-section	max. 2.5 mm <sup>2</sup>
Mass	approx. 5 g
Dimensions	15.2 x 15 x 18 mm (0.6 x 0.6 x 0.7 in)
Construction type	removable screw terminal with integrated cold junction compensation

### Terminal Block with Cold Junction Compensation K-CJC-BK

#### Features

- 3-pin screw terminal
- For KF modules
- Integrated Cold Junction Compensation
- Packaging unit: 1 piece, black

#### Function

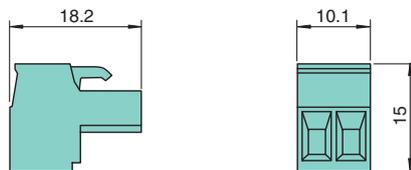
The terminal block is suitable for K-System applications.

The blue terminal block is used for connection of signals from or in the hazardous area.

The black terminal block is used for connection of field signals as well as the connection of control signals.

This terminal block has an integrated encapsulated Pt100 RTD for cold junction compensation.

The terminal block can be coded with the provided coding pins KF-CP.



### Technical data

Mechanical specifications	
Core cross-section	max. 2.5 mm <sup>2</sup>
Mass	approx. 4 g
Dimensions	10.1 x 15 x 18.2 mm (0.4 x 0.5 x 0.7 in)
Construction type	removable screw terminal

### Terminal Block KC-ST-5GN

#### Features

- 2-pin screw terminal
- For KC modules
- Packaging unit: 5 pieces green

#### Function

The terminal block is suitable for K-System applications.

The blue terminal block is used for connection of signals from or in the hazardous area.

The green terminal block is used for connection of field signals as well as the connection of control signals.

The terminal block can be coded with the provided coding pins KF-CP.

### Notes

The removable terminals guarantee protection from direct contact by means of a strengthened insulation. This applies to design insulation voltages with the occurrence of maximum overvoltages in accordance with overvoltage category III of EN 50178 (1500 V AC).

The voltage is to be switched off in the case of design insulation voltages greater than 50 V AC before connecting or disconnecting the device connectors.

K-System  
Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

**Terminal Block  
KF-ST-5GN**

**Features**

- 3-pin screw terminal
- For KF modules
- Packaging unit: 5 pieces green

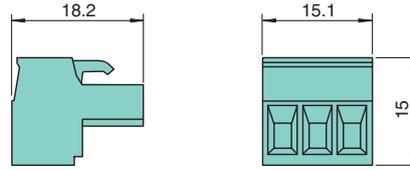
**Function**

The terminal block is suitable for K-System applications.

The blue terminal block is used for connection of signals from or in the hazardous area.

The green terminal block is used for connection of field signals as well as the connection of control signals.

The terminal block can be coded with the provided coding pins KF-CP.



**Technical data**

**Mechanical specifications**

Core cross-section	max. 2.5 mm <sup>2</sup>
Mass	approx. 5 g
Dimensions	15.1 x 15 x 18.2 mm (0.5 x 0.5 x 0.7 in)
Construction type	removable screw terminal

**Notes**

The removable terminals guarantee protection from direct contact by means of a strengthened insulation. This applies to design insulation voltages with the occurrence of maximum overvoltages in accordance with overvoltage category III of EN 50178 (1500 V AC).

The voltage is to be switched off in the case of design insulation voltages greater than 50 V AC before connecting or disconnecting the device connectors.

**Terminal Block with Test Points  
KC-STP-5GN**

**Features**

- 2-pin screw terminal
- For KC modules
- Integrated test points for connection of HART communicators
- Packaging unit: 5 pieces green

**Function**

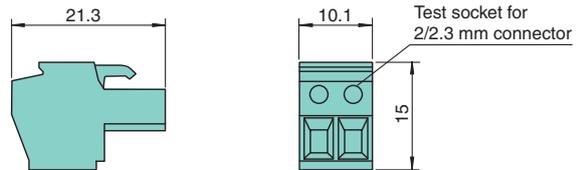
The terminal block is suitable for K-System applications.

The blue terminal block is used for connection of signals from or in the hazardous area.

The green terminal block is used for connection of field signals as well as the connection of control signals.

This terminal block has integrated test points for connection of HART communicators.

The terminal block can be coded with the provided coding pins KF-CP.



**Technical data**

**Mechanical specifications**

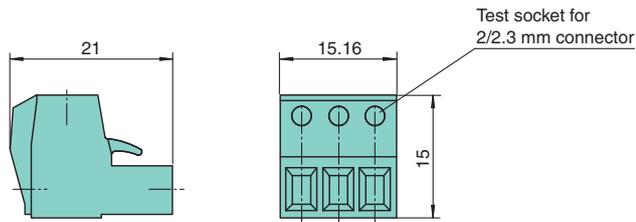
Core cross-section	max. 2.5 mm <sup>2</sup>
Mass	approx. 4 g
Dimensions	10.1 x 15 x 21.3 mm (0.4 x 0.5 x 0.84 in)
Construction type	removable screw terminal with integrated test points

**Notes**

The removable terminals guarantee protection from direct contact by means of a strengthened insulation. This applies to design insulation voltages with the occurrence of maximum overvoltages in accordance with overvoltage category III of EN 50178 (1500 V AC).

The voltage is to be switched off in the case of design insulation voltages greater than 50 V AC before connecting or disconnecting the device connectors.

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### Technical data

#### Mechanical specifications

Core cross-section	max. 2.5 mm <sup>2</sup>
Mass	approx. 5 g
Dimensions	15.2 x 15 x 21 mm (0.6 x 0.6 x 0.83 in)
Construction type	removable screw terminal with integrated test points

### Notes

The removable terminals guarantee protection from direct contact by means of a strengthened insulation. This applies to design insulation voltages with the occurrence of maximum overvoltages in accordance with overvoltage category III of EN 50178 (1500 V AC).

The voltage is to be switched off in the case of design insulation voltages greater than 50 V AC before connecting or disconnecting the device connectors.

## Terminal Block with Test Points KF-STP-5GN

### Features

- 3-pin screw terminal
- For KF modules
- Integrated test points for connection of HART communicators
- Packaging unit: 5 pieces green

### Function

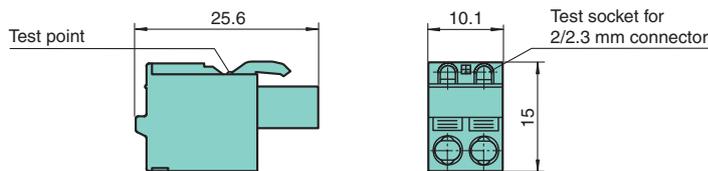
The terminal block is suitable for K-System applications.

The blue terminal block is used for connection of signals from or in the hazardous area.

The green terminal block is used for connection of field signals as well as the connection of control signals.

This terminal block has integrated test points for connection of HART communicators.

The terminal block can be coded with the provided coding pins KF-CP.



### Technical data

#### Mechanical specifications

Core cross-section	max. 2.5 mm <sup>2</sup>
Mass	approx. 4 g
Dimensions	10.1 x 15 x 25.6 mm (0.4 x 0.5 x 1 in)
Construction type	removable cage clamp terminal with integrated test points

### Notes

The removable terminals guarantee protection from direct contact by means of a strengthened insulation. This applies to design insulation voltages with the occurrence of maximum overvoltages in accordance with overvoltage category III of EN 50178 (1500 V AC).

The voltage is to be switched off in the case of design insulation voltages greater than 50 V AC before connecting or disconnecting the device connectors.

## Terminal Block with Test Points KC-CTT-5GN

### Features

- 2-pin cage clamp terminal
- For KC modules
- Integrated test points for connection of HART communicators
- Packaging unit: 5 pieces green

### Function

The terminal block is suitable for K-System applications.

The blue terminal block is used for connection of signals from or in the hazardous area.

The green terminal block is used for connection of field signals as well as the connection of control signals.

This terminal block has integrated test points for connection of HART communicators.

The terminal block can be coded with the provided coding pins KF-CP.

K-System  
Digital Inputs  
Digital Outputs  
Analog Inputs  
Analog Outputs  
Accessories

**Terminal Block with Test Points  
KF-CTT-5GN**

**Features**

- 3-pin cage clamp terminal
- For KF modules
- Integrated test points for connection of HART communicators
- Packaging unit: 5 pieces green

**Function**

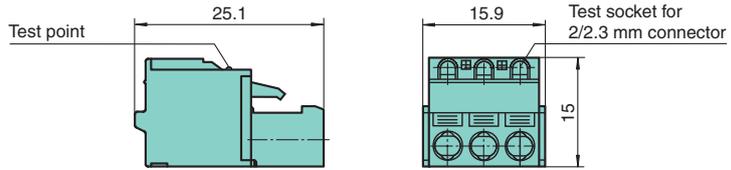
The terminal block is suitable for K-System applications.

The blue terminal block is used for connection of signals from or in the hazardous area.

The green terminal block is used for connection of field signals as well as the connection of control signals.

This terminal block has integrated test points for connection of HART communicators.

The terminal block can be coded with the provided coding pins KF-CP.



**Technical data**

**Mechanical specifications**

Core cross-section	max. 2.5 mm <sup>2</sup>
Mass	approx. 5 g
Dimensions	15.9 x 15 x 25.1 mm (0.63 x 0.6 x 1 in)
Construction type	removable cage clamp terminal with integrated test points

**Notes**

The removable terminals guarantee protection from direct contact by means of a strengthened insulation. This applies to design insulation voltages with the occurrence of maximum overvoltages in accordance with overvoltage category III of EN 50178 (1500 V AC).

The voltage is to be switched off in the case of design insulation voltages greater than 50 V AC before connecting or disconnecting the device connectors.

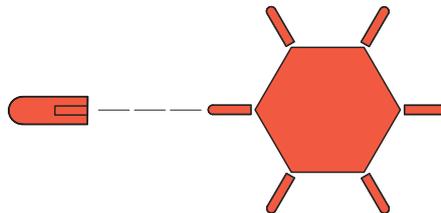
**Coding Pins  
KF-CP**

**Features**

- Coding of K-System terminal blocks
- Packaging unit: 20 x 6 coding pins

**Function**

The terminals can be coded with an coding pin by inserting the red tab into a particular slot of the terminal block.



**Technical data**

**Mechanical specifications**

Material	red insulating material
Mass	approx. 1 g per coding pin
Dimensions	0.5 x 2 x 8 mm (0.02 x 0.08 x 0.3 in)

Technical data	
<b>Interface</b>	
Connection	adapter with RS 232 interface K-ADP1 or USB interface K-ADP-USB (for K-System) adapter for gateways with RS 232 intrface K-ADP2 (for RPI-System) adapter for gateways with RS 485 interface K-ADP4 (for RPI-System) USB/RS 485 interface converter (for LB-System)
<b>Software</b>	
Hardware requirements	PACTware requires 50 MBytes hard drive memory and a minimum of 40 MBytes main memory. Depending on the complexity of the projects and the DTMs used, the main memory requirement can be greater. A computer with a Pentium IV 450 MHz processor or better is recommended, XGA graphics, and a Microsoft-compatible mouse or equivalent pointing device arealso required.
Software requirements	PACTware runs in operating systems Windows XP/Vista/7. The software .NET Framework 2.0 must be installed. For printing and online help, MS Internet Explorer 4.0 or higher is required
Languages	German, English, French, Spanish, Russian can be selected
Licensing	PACTware does not require licensing. Please take the license conditions of the DTMs out of the data sheets of the corresponding DTMs.
<b>Configuration</b>	
Representation of the system configuration	Graphic representation of all communication and device DTMs in the tree structure. In case of online operation colour code for identification of defective units and simulation operation. Multiple windows can be open simultaneously. It is therefore possible to view the set device parameters, to monitor the measurement value and to display the device diagnostic simultaneously.
System planning, application processing	Generation of a configuration by means of a graphical application processing menu. Editing of available projects. Selection switch markings for each channel. Offline configuration, saving of project data to hard disk or disk. Automatic comparison of the project plan to the actual available system when establishing connections on the device and parameter levels.
Associated products	CD-ROM with PACTware and complete DTM-Collection of all available DTMs of the Pepperl+Fuchs H-, K-, and E-System devices, HART Multiplexers, Remote I/O-Systems, FieldConnex devices, and level devices.

**Features**

- Universal DTM host platform
- For all DTMs of Pepperl+Fuchs
- Approved FDT/DTM technology
- Free of charge
- Internet download possible

**Function**

- Manufacturer and fieldbus independent configuration tool with FDT interface (Field Device Tool)
- Based on FDT technology
  - Device Type Manager (DTMs) available for all Pepperl+Fuchs devices and systems
  - Commissioning, configuration and parameter assignment independent of the process control system
  - Communication DTMs available for serial interfaces and fieldbus systems
  - Maintenance, diagnostics and error correction
  - In accordance with VDI/VDE 2187

**Accessories**

Microsoft .NET

K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

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### Features

- Isolated USB interface cable
- Used with K-, E- and H-System devices
- Used with PACT<sub>ware</sub><sup>TM</sup>

### Function

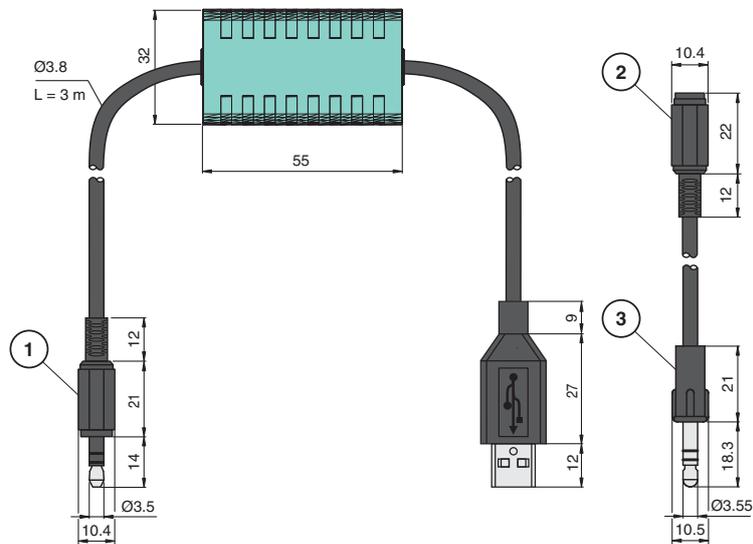
The K-ADP-USB is a programming adapter that connects the USB interface of a PC/notebook for the PACT<sub>ware</sub><sup>TM</sup> configuration software and can be used to program K-, E- and H system barriers via the programming socket on the front panel of these barriers.

As K-, E- and H-System devices have formerly been equipped with programming sockets with different standard dimensions (3.55 mm x 18.3 mm, see drawing, pos. 3 – newer devices 3.5 mm x 14 mm, pos. 1), an adapter (pos. 2) for the parameterisation of all devices is attached to K-ADP-USB.

The 18.3 mm version can still be used for urgent service assignments. However, the user must be aware of the fact that the plug protrudes from new units by approx. 4 mm. Extensive pushing of the plug may lead to damage on units.

For information about programming and software, refer to [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

### Dimensions



### Technical data

#### Electrical specifications

Current consumption	50 mA (via USB)
Electrical isolation	functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>

#### Ambient conditions

Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
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#### Mechanical specifications

Connection	to the PC: USB type A to the device: connector 3.5 mm and 3.55 mm
------------	--

#### Cable

Length L	3 m
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K-System

Digital Inputs

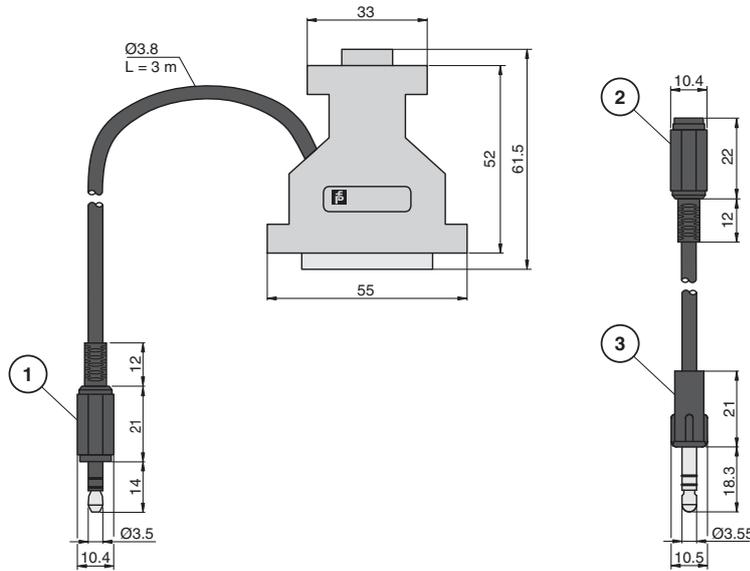
Digital Outputs

Analog Inputs

Analog Outputs

Accessories

Dimensions



Technical data

Electrical specifications

Electrical isolation functional insulation acc. to IEC 62103, rated insulation voltage 50 V<sub>eff</sub>

Ambient conditions

Ambient temperature -20 ... 60 °C (-4 ... 140 °F)

Mechanical specifications

Connection to the PC: 9-pin and 25-pin  
to the device: connector 3.5 mm and 3.55 mm

Cable

Length L 3 m

Features

- Isolated RS 232 interface cable
- Used with K-, E- and H-System devices
- Used with PACT<sub>ware</sub>™

Function

The K-ADP1 is an interface adapter that connects the serial interface of a PC/notebook for the PACT<sub>ware</sub>™ configuration software and can be used to program K-, H-, and E-System barriers via the programming socket on the front panel of these barriers.

As K-, E- and H-System devices have formerly been equipped with programming sockets with different standard dimensions (3.55 mm x 18.3 mm, see drawing, pos. 3 – newer devices 3.5 mm x 14 mm, pos. 1), an adapter (pos. 2) for the parameterisation of all devices is attached to K-ADP1.

The 18.3 mm version can still be used for urgent service assignments. However, the user must be aware of the fact that the plug protrudes from new units by approx. 4 mm. Extensive pushing of the plug may lead to damage on units.

For information about programming and software, refer to [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).



K-System

Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories

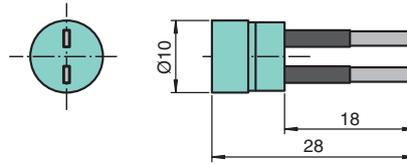
**Measuring Resistor**  
**K-500R0%1**

**Features**

- 1-channel
- High precision resistor
- Conversion of 4 mA ... 20 mA/2 V ... 10 V

**Function**

A 500 Ω 0.1% high-precision resistor that can be used to convert 4 mA ... 20 mA to 2 V ... 10 V.



**Technical data**

**Electrical specifications**

Measuring resistor 500 Ω, 0.1 %, TK10

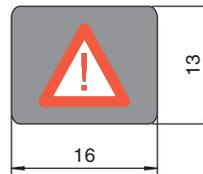
**Mechanical specifications**

Dimensions Ø10 x 28 mm (0.4 x 1.1 in)

**Adhesive Sticker**  
**KF-SEAL**

**Features**

- Destructive, removable Scotchmark sticker 3812, white, matte
- Rectangular shape, 16 mm x 13 mm
- For securing front-side programming switches and sockets as well as potentiometers, designed to match the K-system
- Packaging unit: 20 pieces



**Technical data**

**Mechanical specifications**

Dimensions 16 x 13 mm (0.63 x 0.5 in)



**Technical data**

**Electrical specifications**

Rated voltage	≤50 V
Rated current	≤2 A

**Ambient conditions**

Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
---------------------	-------------------------------

**Mechanical specifications**

Protection degree	IP20
Mass	approx. 120 g
Dimensions	20 x 107 x 115 mm (0.8 x 4.2 x 4.5 in), housing type B1

**Data for application in connection with Ex-areas**

Statement of conformity	Pepperl+Fuchs
Group, category, type of protection, temperature classification	⊕ II 3G Ex nA II T4 X

**Features**

- Non-IS K-System place holder module
- Housing width 20 mm
- Marshalling for field and control side circuits
- Jumper configurable

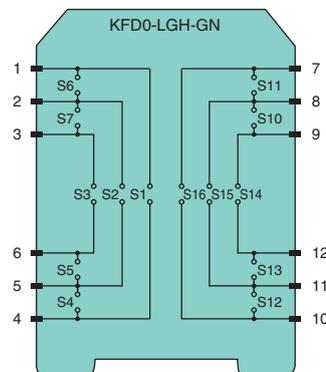
**Function**

This place holder barrier is a module for use in cable distribution cables. It improves accessibility and compactness within a control cabinet.

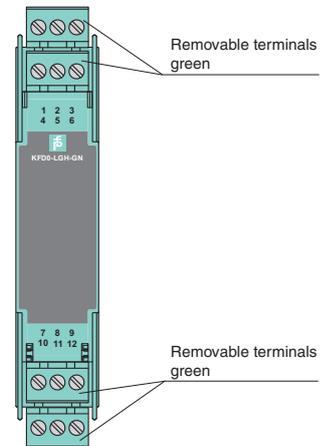
Different configurations are possible by using solder bridges.

Safe area circuits can be connected to the terminals.

**Diagrams**



Front view



Zone 2

Edition 908837 (US) / 208599 (EU) 11/2010

Subject to modifications without notice

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**PEPPERL+FUCHS 675**  
PROTECTING YOUR PROCESS

**Features**

- IS K-System place holder module
- Housing width 20 mm
- Marshalling for field and control side circuits
- No electrical function: empty housing

**Function**

This place holder barrier is an empty housing that fills unused space on DIN rail or Power Rail.

**Technical data**

**Electrical specifications**

Rated voltage	≤ 50 V
Rated current	≤ 2 A

**Ambient conditions**

Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
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**Mechanical specifications**

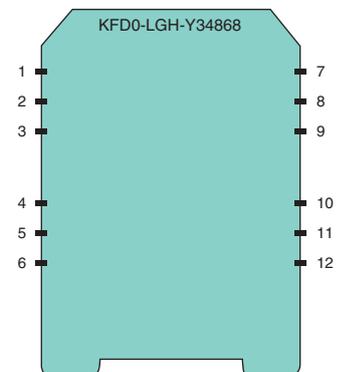
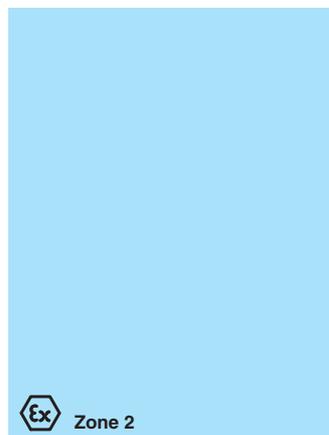
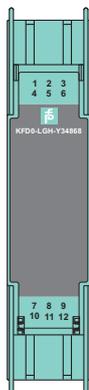
Protection degree	IP20
Mass	approx. 100 g
Dimensions	20 x 93 x 115 mm (0.8 x 3.7 x 4.5 in), housing type B1

**Data for application in connection with Ex-areas**

Statement of conformity	Pepperl+Fuchs
Group, category, type of protection, temperature classification	Ex II 3G Ex nA II T4 X

**Diagrams**

Front view



Zone 2

Edition 908837 (US) / 208599 (EU) 11/2010



K-System

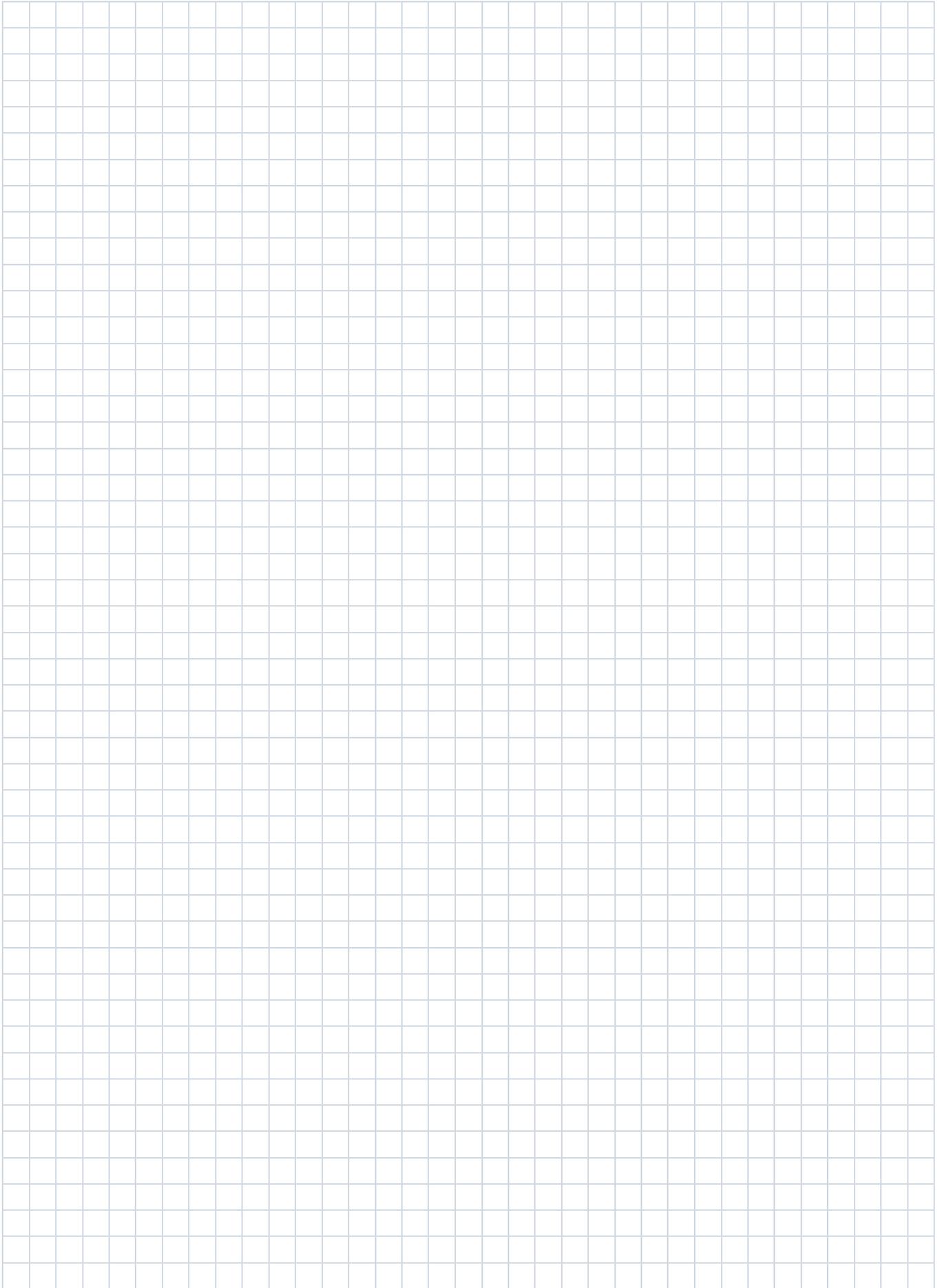
Digital Inputs

Digital Outputs

Analog Inputs

Analog Outputs

Accessories



Edition 908837 (US) / 208599 (EU) 11/2010

Subject to modifications without notice

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