

**Features**

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Thermocouple, RTD, potentiometer or voltage input
- Redundant TC input
- Current output 0/4 mA ... 20 mA
- 2 relay contact outputs
- Configurable by PACTware or keypad
- Line fault (LFD) and sensor burnout detection
- Up to SIL2 acc. to IEC 61508/IEC 61511

**Function**

This signal conditioner provides the galvanic isolation between field circuits and control circuits.

The device converts the signal of a resistance thermometer, thermocouple, potentiometer, or voltage source to a proportional output current. It also provides a relay trip value.

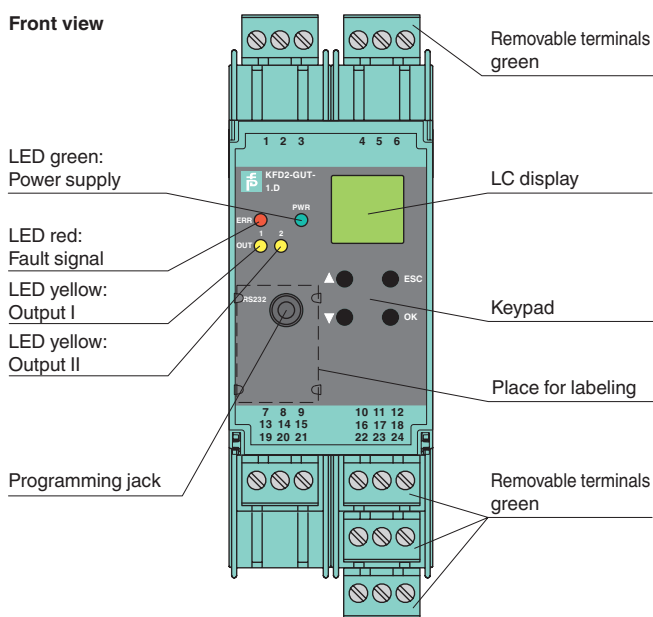
The removable terminal block K-CJC-\*\* is available as an accessory for internal cold junction compensation of thermocouples.

A fault is signaled by LEDs acc. to NAMUR NE44 and a separate collective error message output.

The device is easily configured by the use of the PACTware configuration software.

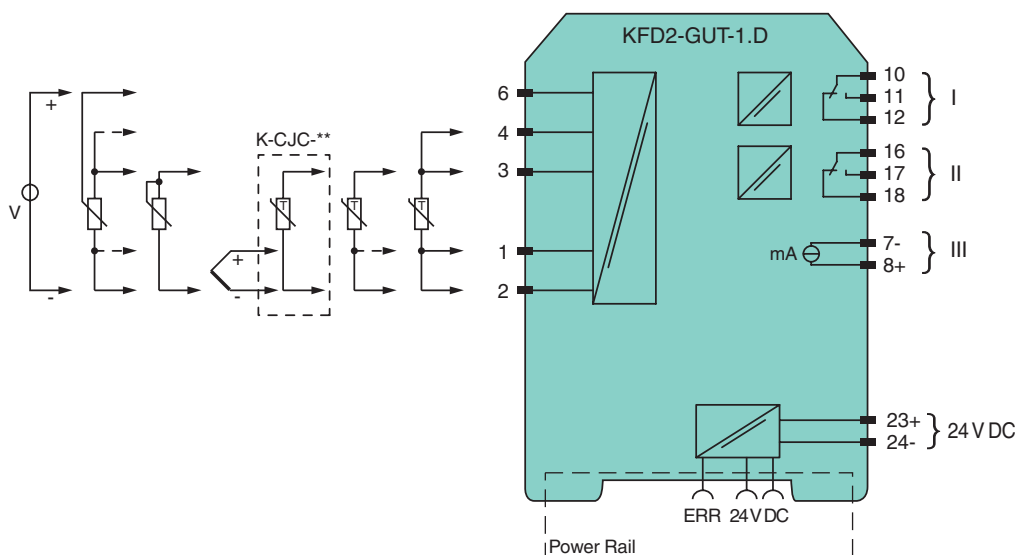
For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Assembly**



**SIL2**

**Connection**



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

<b>General specifications</b>	
Signal type	Analog input
<b>Supply</b>	
Connection	terminals 23+, 24- or power feed module/Power Rail
Rated voltage $U_n$	20 ... 30 V DC
Rated current $I_n$	approx. 100 mA
Power loss/power consumption	$\leq 2 \text{ W} / 2.2 \text{ W}$
<b>Input</b>	
Connection	terminals 1, 2, 3, 4, 6
RTD	Pt100, Pt500, Pt1000, Ni100, Ni1000
Measuring current	approx. 400 $\mu\text{A}$
Types of measuring	2-, 3-, 4-wire technology
Lead resistance	$\leq 50 \Omega$
Measuring circuit monitoring	sensor breakage, sensor short-circuit
Thermocouples	type B, E, J, K, L, N, R, S, T (IEC 584-1: 1995)
Cold junction compensation	external and internal
Measuring circuit monitoring	sensor breakage
Voltage	0 ... 10 V, 2 ... 10 V, 0 ... 1 V, -100 ... 100 mV
Potentiometer	0.8 ... 20 k $\Omega$
Types of measuring	2-, 3-, 5-wire technology
Open loop voltage	max. 5 V with resistance measuring sensor
Input resistance	$\geq 250 \text{ k}\Omega$ (0 ... 10 V) $\geq 1 \text{ M}\Omega$ (0 ... 1 V, -100 ... 100 mV)
<b>Output</b>	
Connection	output I: terminals 10, 11, 12 output II: terminals 16, 17, 18 output III: terminals 8+, 7-
Output I, II	relay
Contact loading	250 V AC / 2 A / $\cos \phi \geq 0.7$ ; 40 DC / 2 A
Mechanical life	$5 \times 10^7$ 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	$\leq 24 \text{ V DC}$
Load	$\leq 650 \Omega$
Fault signal	downscale I $\leq 3.6 \text{ mA}$ , upscale I $\geq 21 \text{ mA}$ (acc. NAMUR NE43)
Collective error message	Power Rail
<b>Transfer characteristics</b>	
Deviation	
Temperature effect	Input: 0.005 %/K (50 ppm) of span ; current output: 0.005 %/K (50 ppm) of span
RTD	$\leq 0.2 \%$ of span
Thermocouples	max. 10 $\mu\text{V}$ deviation of CJC: $\pm 0.8 \text{ K}$
Voltage	0.1 % of span
Potentiometer	0.1 % of span when $< 5 \text{ k}\Omega$ 0.5 % of span when $> 5 \text{ k}\Omega$
Current output	$\leq 20 \mu\text{A}$
Sampling rate	approx. 700 ms
<b>Electrical isolation</b>	
Input/Other circuits	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Output I, II against eachother	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Output I, II/other circuits	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Output III/power supply and collective error	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Interface/power supply	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
<b>Directive conformity</b>	
Electromagnetic compatibility	
Directive 2004/108/EC	EN 61326-1:2013 (industrial locations)
Low voltage	
Directive 2006/95/EC	EN 61010-1:2010
<b>Conformity</b>	
Electromagnetic compatibility	NE 21:2007
Degree of protection	IEC 60529:2001
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)

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<b>Mechanical specifications</b>	
Degree of protection	IP20
Mass	300 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in) , housing type C3
Mounting	on 35 mm DIN mounting rail acc. to EN 60715:2001
<b>General information</b>	
Supplementary information	Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .

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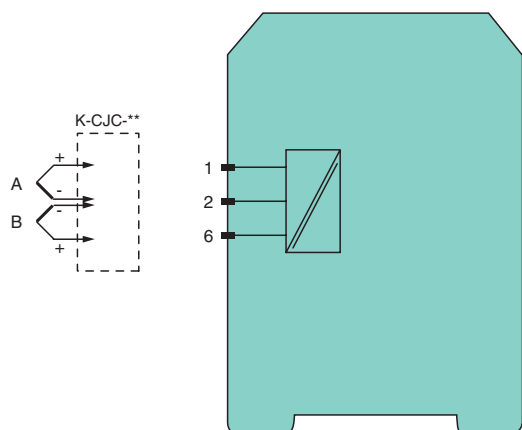
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**Application**



**Redundant thermocouple**

For higher availability it is possible to connect a second redundant thermocouple (B) of the same type to the temperature converter. The cold junction temperature is taken from the connected terminal block.

If the deviation of the both thermocouples (A and B) exceed the selected tolerance, an error will occur. If a lead breakage of one thermocouple (e. g. A) has been detected, an error message occurs and the value of the second thermocouple (B) will be taken for further calculation.

**Accessories**

**Power feed module KFD2-EB2**

The power feed module is used to supply the devices with 24 V DC via the Power Rail. The fuse-protected power feed module can supply up to 150 individual devices depending on the power consumption of the devices. A galvanically isolated mechanical contact uses the Power Rail to transmit collective error messages.

**Power Rail UPR-03**

The Power Rail UPR-03 is a complete unit consisting of the electrical inset and an aluminium profile rail 35 mm x 15 mm. To make electrical contact, the devices are simply engaged.

**Profile Rail K-DUCT with Power Rail**

The profile rail K-DUCT is an aluminum profile rail with Power Rail insert and two integral cable ducts for system and field cables. Due to this assembly no additional cable guides are necessary.



*Power Rail and Profile Rail must not be fed via the device terminals of the individual devices!*

**K-CJC-\*\***

This removable terminal block with integrated temperature measurement sensor is needed for internal cold junction compensation for thermocouples. One K-CJC-\*\* is needed for each channel.

**PACTware™**

Device-specific drivers (DTM)

**Adapter K-ADP-USB**

Programming adapter for parameterisation via the serial USB interface of a PC/Notebook

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