Features

- 1-channel isolated barrier
- 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 isolated barrier is used for intrinsic safety applications.

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.

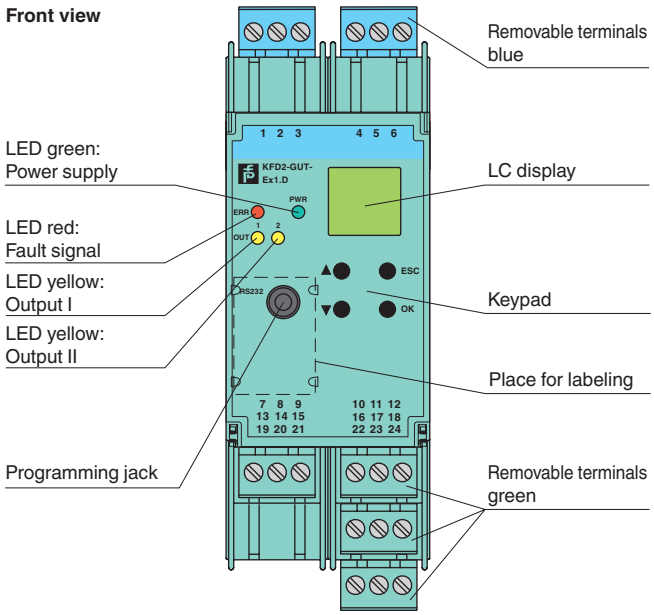
The removable terminal block K-CJC-** is available as an accessory for internal cold junction compensation of thermocouples.

A fault is signalized 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.

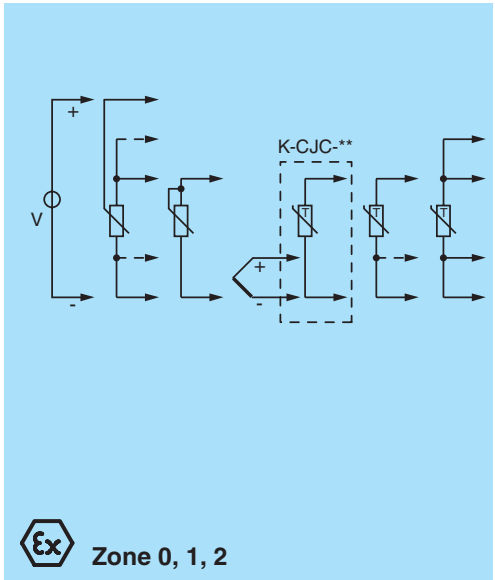
For additional information, refer to the manual and www.pepperl-fuchs.com.

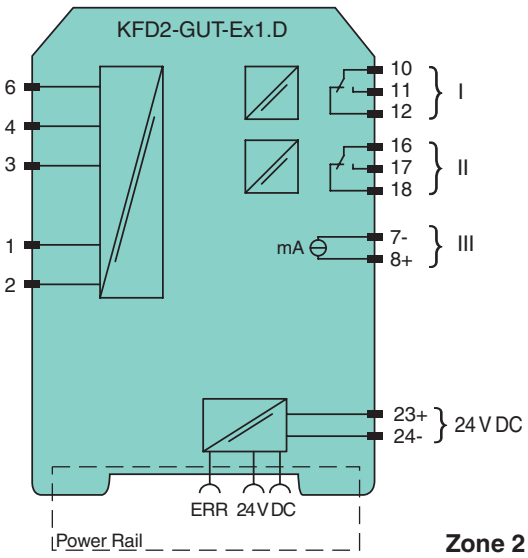
Assembly



CE Ex SIL2

Connection





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General specifications		
Signal type		Analog input
Supply		
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		≤ 2 W / 2.2 W
Input		
Connection		terminals 1, 2, 3, 4, 6
RTD		Pt100, Pt500, Pt1000, Ni100, Ni1000
Types of measuring		2-, 3-, 4-wire technology
Lead resistance		≤ 50 Ω
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 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
Output		
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 ϕ ≥ 0.7 ; 40 DC / 2 A
Mechanical life		5 x 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		≤ 24 V DC
Load		≤ 650 Ω
Fault signal		downscale I ≤ 3.6 mA, upscale I ≥ 21 mA (acc. NAMUR NE43)
Transfer characteristics		
Deviation		
Temperature effect		Input: 0.005 %/K (50 ppm) of span ; current output: 0.005 %/K (50 ppm) of span
RTD		≤ 0.2 % of span
Thermocouples		max. 10µV deviation of CJC: ±0.8 K
Voltage		0.1 % of span
Potentiometer		0.1 % of span when < 5 kΩ 0.5 % of span when > 5 kΩ
Current output		≤ 20 µA
Sampling rate		approx. 700 ms
Electrical isolation		
Input/Other circuits		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Output I, II against eachother		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Output I, II/other circuits		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Output III/power supply and collective error		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Interface/power supply		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Directive conformity		
Electromagnetic compatibility		
Directive 2004/108/EC		EN 61326-1:2006
Low voltage		
Directive 2006/95/EC		EN 61010-1:2010
Conformity		
Electromagnetic compatibility		NE 21:2007
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications		
Degree of protection		IP20

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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
Data for application in connection with Ex-areas		
EC-Type Examination Certificate		TÜV 03 ATEX 2140 , for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection		⟨Ex⟩ II (1) G [Ex ia] IIC ⟨Ex⟩ II (1) D [Ex iaD]
Input		Ex ia IIC, Ex iaD
Supply		
Maximum safe voltage	U_m	40 V DC (Attention! The rated voltage can be lower.)
Input		terminals 2, 6 (for active equipment)
Voltage	U_o	13.1 V
Current	I_o	8 mA
Power	P_o	67 mW
Voltage	U_i	29 V
Current	I_i	11 mA
Power	P_i	200 mW
Inputs		terminals 1, 2, 3, 4, 6 (for passive equipment)
Voltage	U_o	13.1 V
Current	I_o	21 mA
Power	P_o	67 mW
Output		
Contact loading		253 V AC/2 A/cos ϕ > 0.7; 40 V DC/2 A resistive load (TÜV 03 ATEX 2140)
Analog output		
Maximum safe voltage	U_m	40 V (Attention! The rated voltage can be lower.)
Interface		
Maximum safe voltage	U_m	40 V (Attention! The rated voltage can be lower.) , RS 232
Statement of conformity		PF 08 CERT 1213 X
Group, category, type of protection, temperature class		⟨Ex⟩ II 3G Ex nA nC IIC T4 Gc
Output I, II		
Contact loading		50 V AC/2 A/cos ϕ > 0.7; 40 V DC/1 A resistive load
Electrical isolation		
Input/Other circuits		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Directive conformity		
Directive 94/9/EC		EN 60079-0:2009, EN 60079-11:2007, EN 60079-15:2010, EN 60079-26:2007, EN 61241-11:2006
General information		
Supplementary information		EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see www.pepperl-fuchs.com.

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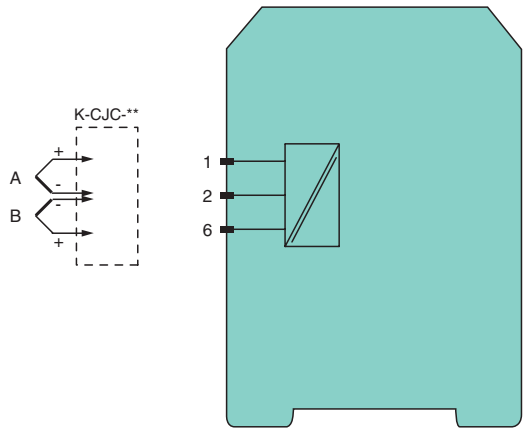
Application



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 futher 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.

PACT*ware*™

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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