

Features

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

Function

This isolated barrier is used for intrinsic safety applications. It is designed to connect RTDs, thermocouples, or potentiometers in the hazardous area, and provide a proportional 0/4 mA ... 20 mA signal to the safe area.

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.

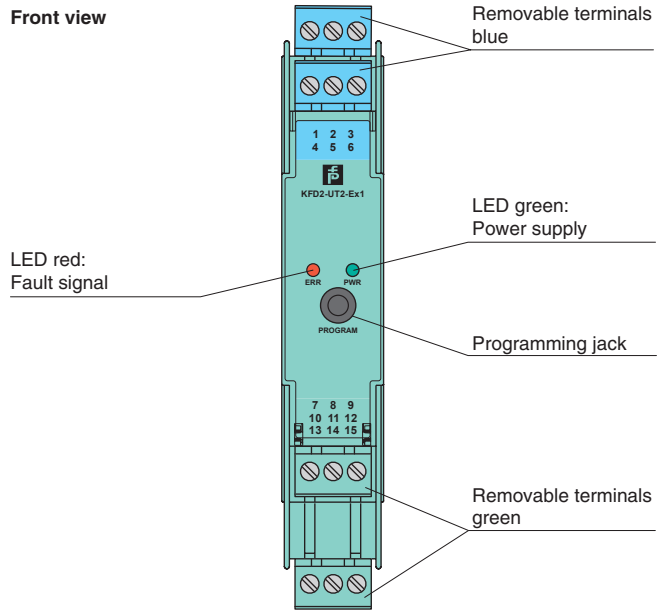
A fault is indicated by a red flashing LED per NAMUR NE44 and user-configured fault outputs.

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

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

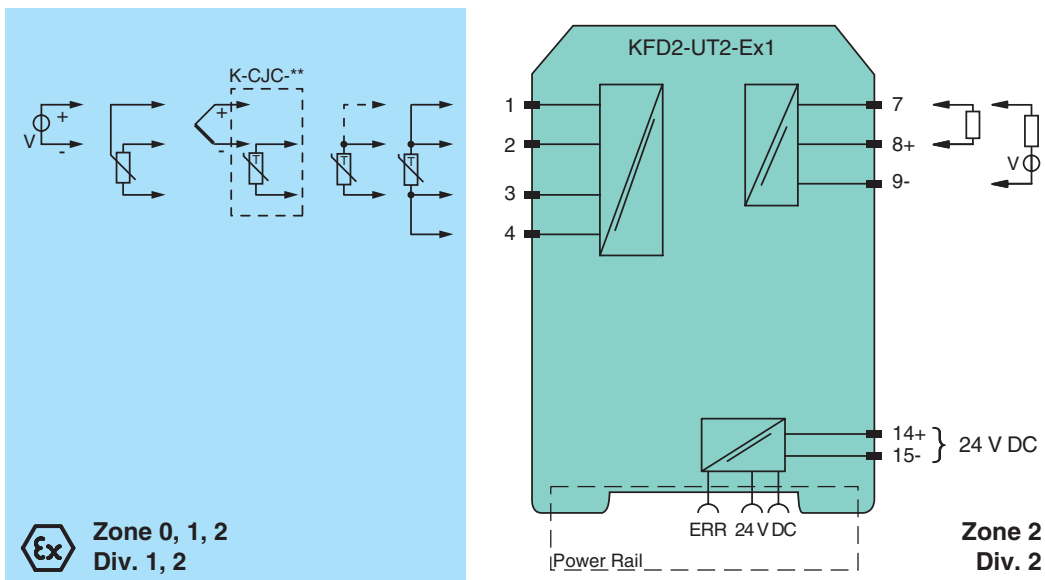
For additional information, refer to the manual and www.pepperl-fuchs.com.

Assembly



SIL2

Connection



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| | |
|----------------------------------|---|
| General specifications | |
| Signal type | Analog input |
| Supply | |
| Connection | terminals 14+, 15- or power feed module/Power Rail |
| Rated voltage | 20 ... 30 V DC |
| Ripple | within the supply tolerance |
| Power loss/power consumption | ≤ 0.95 W / 0.95 W |
| Input | |
| Connection | terminals 1, 2, 3, 4 |
| 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 | |
| Connection | output I: terminal 7: source (-), sink (+), terminal 8: source (+), terminal 9: sink(-) |
| 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. |
| Transfer characteristics | |
| Deviation | |
| After calibration | <u>Pt100</u> : ± (0.06 % of measurement value in K + 0.1 % of span + 0.1 K (4-wire connection)) <u>thermocouple</u> : ± (0.05 % of measurement value in °C + 0.1 % of span + 1 K (1.2 K for types R and S)) this includes ± 0.8 K error of the cold junction compensation <u>mV</u> : ± (50 µV + 0.1 % of span) <u>potentiometer</u> : ± (0.05 % of full scale + 0.1 % of span, (excludes errors due to lead resistance)) |
| Influence of ambient temperature | deviation of CJC included: <u>Pt100</u> : ± (0.0015 % of measurement value in K + 0.006 % of span)/K ΔT _{amb} ¹⁾ <u>thermocouple</u> : ± (0.02 K + 0.005 % of measurement value in °C + 0.006 % of span)/K ΔT _{amb} ¹⁾ <u>mV</u> : ± (0.01 % of measurement value + 0.006 % of span)/K ΔT _{amb} ¹⁾ <u>potentiometer</u> : ± 0.006 % of span/K ΔT _{amb} ¹⁾ ¹⁾ ΔT _{amb} = ambient temperature change referenced to 23 °C (296 K) |
| Influence of supply voltage | < 0.01 % of span |
| Influence of load | ≤ 0.001 % of output value per 100 Ω |
| Reaction time | sensor burnout and sensor short circuit selected where appropriate mV: 1 s, thermocouples with CJC: 1.1 s, thermocouples with fixed reference temperature: 1.1 s, 3- or 4-wire RTD: 920 ms, 2-wire RTD: 800 ms, Potentiometer: 2.05 s |
| Electrical isolation | |
| Output/supply, programming input | functional insulation acc. to IEC 62103, rated insulation voltage 50 V _{eff} There is no electrical isolation between the programming input and the supply. The programming cable (see section accessories and installation) provides galvanic isolation so that ground loops are avoided. |
| Directive conformity | |
| Electromagnetic compatibility | |
| Directive 2004/108/EC | EN 61326-1:2006 |
| Conformity | |
| Electromagnetic compatibility | NE 21:2006 |
| Protection degree | IEC 60529 |
| Ambient conditions | |
| Ambient temperature | -20 ... 60 °C (-4 ... 140 °F) |
| Mechanical specifications | |
| Protection degree | IP20 |

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|---|--|
| Mass | approx. 130 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 | |
| EC-Type Examination Certificate | CESI 04 ATEX 143 , for additional certificates see www.pepperl-fuchs.com |
| Group, category, type of protection | ⊕ II (1)GD [Ex ia] IIC [circuit(s) in zone 0/1/2], [Ex iaD] |
| Input | Ex ia IIC |
| Inputs | terminals 1, 2, 3, 4 |
| Voltage U_o | 9 V |
| Current I_o | 22 mA |
| Power P_o | 50 mW |
| Analog outputs, power supply, collective error | |
| Maximum safe voltage U_m | 250 V (Attention! This is not the rated voltage.) |
| Interface | |
| Maximum safe voltage U_m | 250 V (Attention! The rated voltage is lower.), RS 232 |
| Statement of conformity | |
| Group, category, type of protection, temperature classification | ⊕ II 3G Ex nA II T4 X |
| 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 60079-0:2006, EN 60079-11:2007, EN 60079-15:2005, EN 60079-26:2007, EN 61241-0:2006, EN 61241-11:2006 |
| International approvals | |
| CSA approval | |
| Control drawing | 366-024CS-12 (cCSAus) |
| 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 . |

Accessories

Power feed modules 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 100 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.

The Power 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-ADP1

Programming adapter for parameterisation via the serial RS 232 interface of a PC/Notebook
 For programming, please use the new version of adapter K-ADP1 (part no. 181953, connector length 14mm). When using the previous version K-ADP1 (connector length 18 mm) the plug is exposed by approx. 3 mm. The function is not affected.

Adapter K-ADP-USB

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

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