



- 2-channel
- Inputs EEx ia IIC
- 3-way galvanic isolation
- Accuracy $\pm 0.1\%$
- Adjustment option of temperature measuring range for Pt100, Ni100 in 2-, 3- or 4-wire versions
- Adjustment option of thermocouple (B, E, J, K, L, N, R, S or T)
- 3-wire resistance (Potentiometer) $800\ \Omega \dots 20\ k\Omega$
- Internal or external cold junction compensation
- Sensor burnout monitoring for thermocouples
- Sensor burnout and short-circuit monitoring (SC) for Pt100
- All settings via serial interface to PC (online parameterisation)
- EMC acc. to EN 61326

Current output 0/4 mA ... 20 mA
KFD2-UT2-Ex2

Function

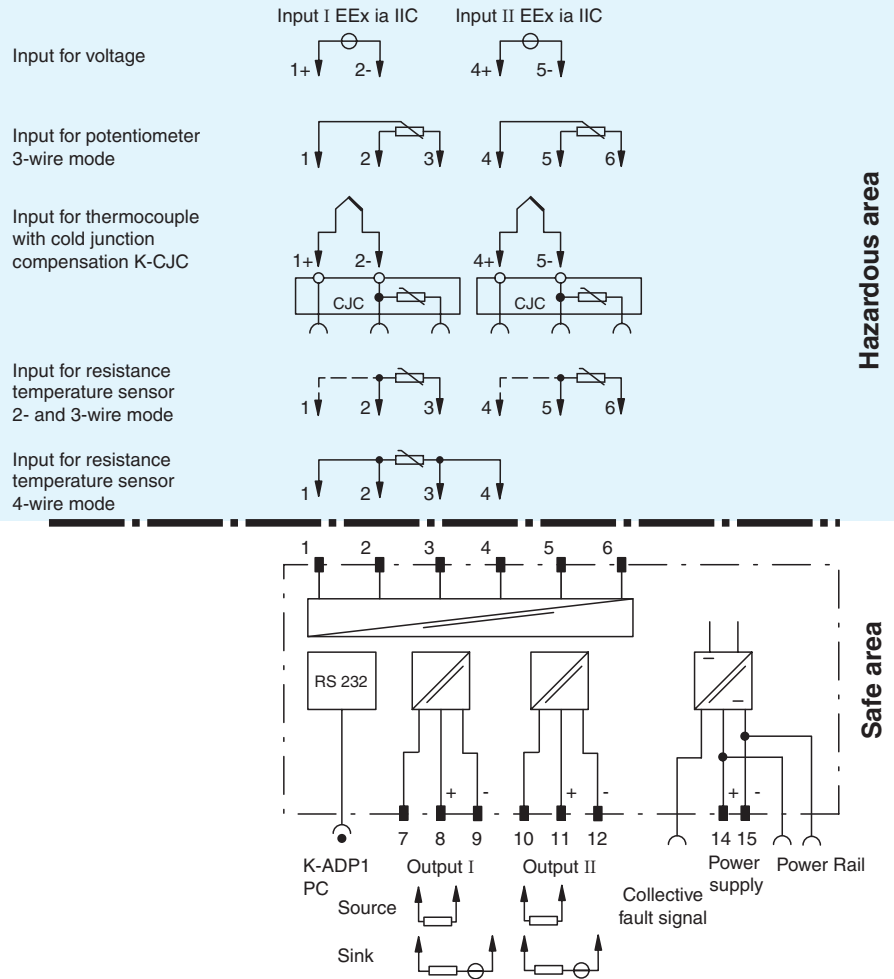
The KFD2-UT2-Ex2 is designed for the connection of Pt100, Ni100 (2-, 3-, or 4-wire version) and models B, E, J, K, L, N, R, S, or T thermocouples. A current signal of 0/4 mA ... 20 mA proportional to the temperature is available at the output.

The parameterisation occurs via software in accordance with VDI/VDE GMA 2187. Input, output and power supply are galvanically isolated in all directions. The PC's serial interface is galvanically isolated from the programming input by connecting the K-ADP1 program adapter. The isolation of the programming jack from the input makes programming during operation and through a connected measurement circuit possible.

Internal or external cold junction compensation may be selected when using thermocouples.

The reaction to fault signals is programmable (up or downscaled output). A fault is indicated by a red flashing LED per NAMUR NE 44.

Connection



Composition

Front View

Housing type C (see system description)

LED red: Fault signal

LED red: Fault signal

Removable terminals blue

LED green: Power


Programming socket

Removable terminals green



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| | |
|---|---|
| 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 | ≤ 1,4 W / 1,5 W |
| Input | |
| Connection | terminals 1, 2, 3; 4, 5, 6 |
| RTD | Cu10, Cu50, Cu100, Pt10, Pt50, Pt100, Pt1000, Ni100, Ni1000 |
| Measuring current | approx. 200 µA with RTD |
| Types of measuring | 2-, 3-, 4-wire connection (4-wire on 1 channel only) |
| Lead resistance | ≤ 50 Ω per lead |
| Measuring circuit monitoring | sensor burnout, sensor short-circuit |
| Thermocouples | type B, E, J, K, L, N, R, S, T, TXK, TXKH, TXA |
| Cold junction compensation | external and internal |
| Measuring circuit monitoring | sensor burnout |
| Voltage | selectable within the range -100 ... 100 mV |
| Potentiometer | 0,8 ... 20 kΩ |
| Types of measuring | 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 II: terminal 10: source (-), sink (+), terminal 11: source (+), terminal 12: sink(-) |
| Output I and II | Analogue current output |
| Current range | 0 ... 20 mA or 4 ... 20 mA |
| Fault signal | downscale 0 or 2 mA, upscale 21.5 mA (acc. NAMUR NE 43) |
| Sourcing | load 100 ... 550 Ω open-circuit voltage ≤ 18 V |
| Sinking | 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 $(V - 5)/0.0215 \Omega$. |
| Transfer characteristics | |
| Deviation | |
| After calibration | Pt100: ± 0.05 % of measurement value in K + 0.05 % of span + 0.1 K (4-wire connection) <u>thermocouple</u> : ± 0.05 % of measurement value in °C + 0.05 % of span + 1 K (1.2 K for types R and S) This includes ± 0.8 K error of the cold junction compensation |
| Influence of ambient temperature | current output (deviation of CJC included): Pt100: $(\pm 0.0015 \% \text{ of measurement value in K} + 0.006 \% \text{ of span})/K \Delta T_U$ ^{*)} <u>thermocouple</u> : $(\pm 0.02 \text{ K} + 0.01 \% \text{ of measurement value in } ^\circ\text{C} + 0.006 \% \text{ of span})/K \Delta T_U$ ^{*)} |
| | ^{*)} ΔT_U = 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 Ohm |
| Response time | sensor burnout and sensor short circuit selected where appropriate mV: 1.2 s, thermocouples with CJC: 1.4 s, thermocouples with fixed ref. temp: 1.4 s, 3- or 4-wire RTD: 1.1 s, 2-wire RTD: 920 ms |
| Electrical isolation | |
| Input/Output | safe electrical isolation acc. to EN 50020, voltage peak value 375 V |
| Input/power supply | safe electrical isolation acc. to EN 50020, voltage peak value 375 V |
| Input/Programming input | safe electrical isolation acc. to EN 50020, voltage peak value 375 V There is no electrical isolation between the programming input and the supply. The K-ADP1 interface (see section accessories and installation) provides galvanic isolation so that ground loops are avoided. |
| Directive conformity | |
| Electromagnetic compatibility | |
| Directive 89/336/EC | EN 61326 |
| Ambient conditions | |
| Ambient temperature | -20 ... 60 °C (253 ... 333 K) |
| Mechanical specifications | |
| Protection degree | IP20 |
| Mass | approx. 130 g |
| Dimensions | 20 x 118 x 115 mm (0.8 x 4.6 x 4.5 in) |
| Data for application in conjunction with hazardous areas | |
| EC-Type Examination Certificate | CESI 04 ATEX 143 , for additional certificates see www.pepperl-fuchs.com |
| Group, category, type of protection |  II (1) G D [EEx ia] IIC [circuit(s) in zone 0/1/2] |

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| | | |
|---|------------------------------|--|
| Input | | EEx ia IIC |
| Inputs | | terminals 1, 2, 3, 4, 5, 6 (for passive equipment) |
| Voltage | U_o | 9 V |
| Current | I_o | 22 mA |
| Power | P_o | 50 mW |
| Analogue outputs, power supply, collective fault signal | | |
| | Safety maximum voltage U_m | 250 V (Attention! This is not the rated voltage.) |
| Interface | | |
| | Safety maximum voltage U_m | 250 V (Attention! The rated voltage is lower, RS 232.) |
| Directive conformity | | |
| | Directive 94/9 EC | EN 50014, EN 50020 |

Supplementary information

EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity and instructions have to be observed. For information see www.pepperl-fuchs.com.

Accessories

Power Rail PR-03

Power Rail UPR-03

Power feed module KFD2-EB2...

Power supply of the devices is only permissible via the power feed modules KFD2-EB... Via the Power Rail PR-03 or UPR-03 the devices are supplied with 24 V DC by means of the power feed modules.

Each power feed module is used for fusing and monitoring groups with up to 100 individual devices. The Power Rail PR-03 is an inset component for the DIN rail. The Power Rail UPR-03 is a complete unit consisting of the electrical inset and an aluminium profile rail 35 mm x 15 mm x 2000 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!

If no Power Rails are used, power supply of the individual devices is realised directly via their device terminals.

K-CJC

Removable terminals with integrated temperature measurement sensor for cold junction compensation for thermocouples.

PACT^{ware}™

Device-specific drivers (DTM)

Adapter K-ADP1

Interface adapter for connection with the RS 232 serial interface of a PC/Notebook