



- 1-channel
- Input EEx ia IIC
- 24 V DC supply voltage
- 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)
- Freely definable characteristic curve for resistance $0 \Omega \dots 400 \Omega$ and voltage $-50 \text{ mV} \dots +150 \text{ mV}$
- Internal or external cold junction compensation
- Sensor burnout monitoring for thermocouples
- Sensor burnout and short-circuit monitoring (SC) for Pt100
- Online adjustments via serial interface to PC
- Factory set on request
- EMC acc. to NAMUR NE 21

Voltage output 1 V ... 5 V
KFD2-UT-Ex1-1

Function

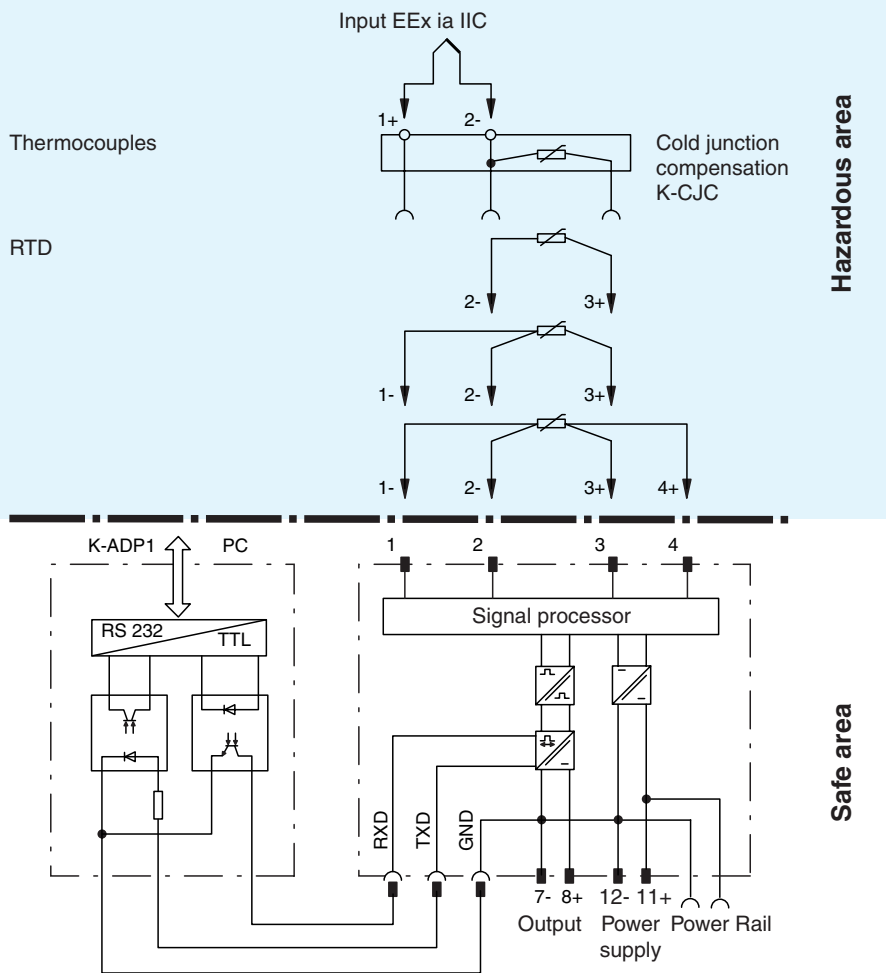
The KFD2-UT-Ex1-1 is designed for the connection of Pt100, Ni100 (2-, 3-, or 4-wire version) and models B, E, J, K, L, N, R, S, or T thermocouples. A current signal of 1 V ... 5 V proportional to the temperature is available at the output.

The parameterisation occurs via software in accordance with VDI/VDE GMA 2187. The input is galvanically isolated from the output, the programming output and the power supply. 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 by 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 A4
 (see system description)

LED green:
 Power supply

Removable terminals
 blue

LED red:
 Fault signal

Programming jack

Removable terminals
 green



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Supply	
Connection	Power Rail or terminals 11+, 12-
Rated voltage	20 ... 35 V DC
Ripple	within the supply tolerance
Power loss	1 W
Power consumption	≤ 1.5 W
Input	
Connection	terminals 1, 2, 3 and 4 suitable for Pt100, Ni100, thermocouples type B, E, J, K, L, N, R, S or T (IEC 584) configuration via programming jack
Line resistance	≤ 50 Ω per lead
Measuring current	approx. 400 μA with resistance measuring sensor current for lead breakage monitoring switched off during the measurement
Output	
Voltage output	1 ... 5 V ; 5.125 V at input signal overrange fault signal: downscale 0.5 ... 1 V or upscale 5.025 ... 5.125 V (programmable) output resistance: ≤ 10 Ω ; load: ≥ 10 kΩ
Connection	terminals 7-, 8+
Transfer characteristics	
Deviation	
After calibration	<u>Pt100</u> : ± 0.01 % of measurement value in K + 0.05 % of span (4-wire connection) <u>thermocouple</u> : ± 0.05 % of measurement value in °C + 0.05 % of span + 1 K This includes ± 0.8 K error of the cold junction compensation
Influence of ambient temperature	current output (deviation of CJC included): <u>Pt100</u> : (± 0.0015 % of measurement value in K + 0.006 % of span)/K ΔT _{amb} ^{*)} <u>thermocouple</u> : (± 0.02 K + 0.004 % of measurement value in °C + 0.006 % of span)/K ΔT _{amb} ^{*)} voltage output (deviation of CJC included): <u>Pt100</u> : (± 0.0015 % from measurement value in K + 0.0075 % of range)/K ΔT _{amb} ^{*)} <u>thermocouple</u> : (± 0.02 K + 0.004 % from measurement value in °C + 0.0075 % of range)/K ΔT _{amb} ^{*)} ^{*)} 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 (current output)
Response time	≤ 430 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	available There is no electrical isolation between the programming input and the supply and output. The K-ADP1 interface (see section accessories and installation) provide electrical isolation so that ground loops are avoided.
Directive conformity	
Electromagnetic compatibility	
Directive 2004/108/EC	EN 61326-1:2006
Conformity	
Insulation coordination	EN 50178
Electrical isolation	EN 50178
Electromagnetic compatibility	NE 21
Protection degree	IEC 60529
Ambient conditions	
Ambient temperature	-20 ... 60 °C (253 ... 333 K)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 110 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in)
Data for application in conjunction with hazardous areas	
EC-Type Examination Certificate	BAS 01 ATEX 7256 , for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection	⊕ II (1)GD [Ex ia] IIC (-20 °C ≤ T _{amb} ≤ 60 °C)
Voltage U _o	11 V
Current I _o	33 mA
Power P _o	90 mW
Supply	
Safety maximum voltage U _m	250 V (Attention! The rated voltage can be lower.)
Type of protection [Ex ia]	
Output	
Safety maximum voltage U _m	250 V (Attention! The rated voltage can be lower.)
Statement of conformity	TÜV 02 ATEX 1797 X (observe statement of conformity)

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Group, category, type of protection, temperature classification	⊕ II 3G EEx nA II T4
Electrical isolation	
Input/output	safe electrical isolation acc. to EN 50020, voltage peak value 375 V
Directive conformity	
Directive 94/9/EC	EN 50014, EN 50020, EN 50021

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...

Using Power Rail PR-03 or UPR-03 the devices are supplied with 24 V DC by means of the power feed modules. If no Power Rails are used, power supply of the individual devices is possible directly via their device terminals.

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!

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