



- 1-channel
- Input EEx ia IIC
- 24 V DC nominal 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
- All settings via serial interface to PC (online parameterisation)
- Factory set on request
- EMC acc. to NAMUR NE 21

Current output 4 mA ... 20 mA
KFD2-UT-Ex1

Function

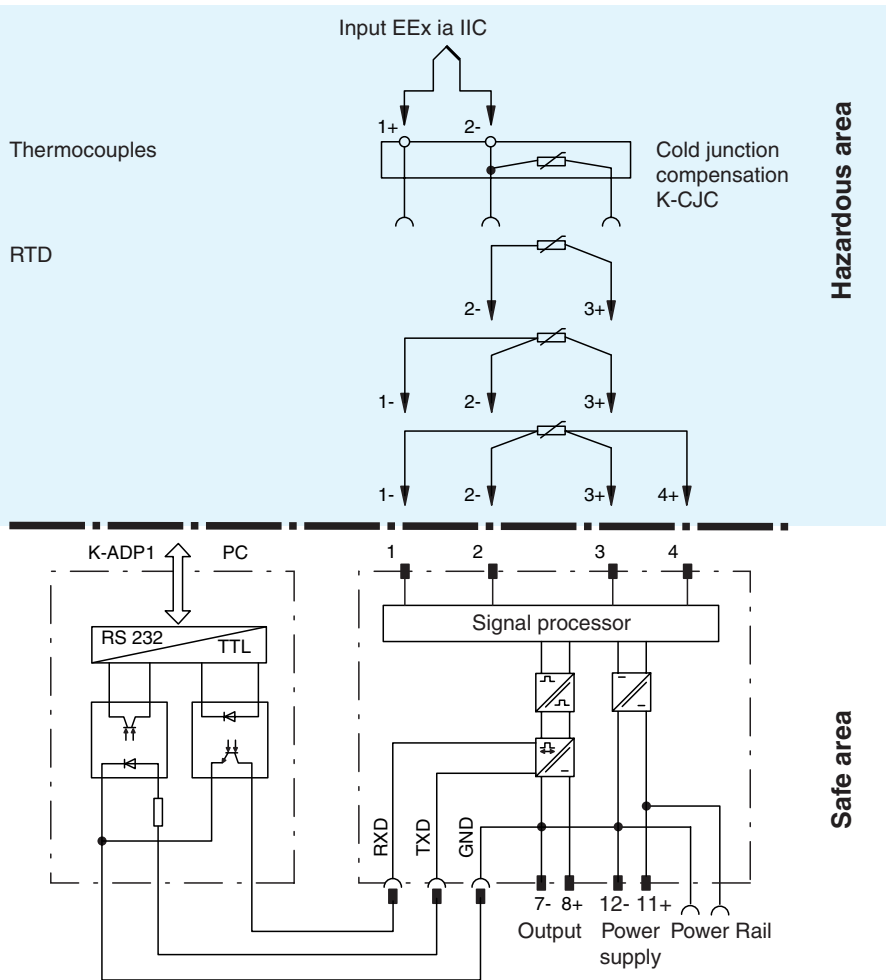
The KFD2-UT-Ex1 is designed for the connection of Pt100, Ni100 (2-, 3-, or 4-wire version) and models B, E, J, K, L, N, R, S, or T thermocouples. A current signal of 4 mA ... 20 mA proportional to the temperature is available at the output.

The parameterisation occurs via software in accordance with VDI/VDE GMA 2187. 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 C (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 socket
Lead 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 Ohm ; load: ≥ 10 kOhm
Connection	terminals 7-, 8+
Current output	4 ... 20 mA ; 20.5 mA at input signal overrange ; fault signal: downscale 2 ... 4 mA or upscale 20.5 ... 22 mA (programmable) ; load: ≤ 500 Ω
Safety maximum voltage U _m	250 V
Transfer characteristics	
Deviation	
After calibration	<u>Pt100</u> : ± 0.01 % 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 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 _U ¹⁾ <u>thermocouple</u> : (± 0.02 K + 0.004 % of measurement value in °C + 0.006 % of span)/K ΔT _U ¹⁾ voltage output (deviation of CJC included): <u>Pt100</u> : (± 0.0015 % from measurement value in K + 0.0075 % of range)/K ΔT _U ¹⁾ <u>thermocouple</u> : (± 0.02 K + 0.004 % from measurement value in °C + 0.0075 % of range)/K ΔT _U ¹⁾ ¹⁾ 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 (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	standards
Directive 89/336/EC	on request
Standard conformity	
Insulation coordination	acc. to DIN EN 50178
Electrical isolation	acc. to DIN EN 50178
Electromagnetic compatibility	acc. to EN 50081-2 / EN 50082-2, NAMUR NE 21
Climatic conditions	acc. to DIN IEC 721
Ambient conditions	
Ambient temperature	-20 ... 60 °C (253 ... 333 K)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 110 g
Data for application in conjunction with hazardous areas	
EC-Type Examination Certificate	BASEEFA No. Ex 94C2435 ; for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection	[EEx ia] IIC (T _{amb} = 60 °C)
Voltage U ₀	11 V
Current I ₀	33 mA
Power P ₀	90 mW
Supply	
Safety maximum voltage U _m	250 V
Type of protection [EEx ia]	
Explosion group	IIA IIB IIC

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External capacitance	17.6 µF	6.6 µF	2.2 µF
External inductance	248 mH	93 mH	31 mH
Statement of conformity	TÜV 02 ATEX 1797 X (observe statement of conformity)		
Group, category, type of protection, temperature classification	⊕ II 3 G EEx nA II T4		
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		
Directive conformity	standards		
Directive 94/9 EC	on request		
Entity parameter			
Certification number	4Z6A5.AX		
FM control drawing	No. 116-0129		
Suitable for installation in division 2	yes		
Connection	terminals 1, 2, 3, 4		
Input I			
Voltage V_{OC}	11.6 V		
Current I_t	30.9 mA		
Explosion group	A&B	C&E	D, F&G
Max. external capacitance C_a	1.83 µF	5.48 µF	14.61 µF
Max. external inductance L_a	35.9 mH	128.2 mH	307.1 mH
Safety parameter			
CSA control drawing	LR 65756-13		
Control drawing	No. 116-0132		
Connection	terminals 1, 2, 3, 4, 5		
Input I			
Voltage V_{OC}	10.5 V		
Explosion group	A&B	C&E	D, F&G
Max. external capacitance C_a	2.6 µF	8 µF	21 µF
Max. external inductance L_a	45 mH	160 mH	387 mH

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

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