- 1-channel
- Input EEx ia IIC
- 3-way galvanic isolation
- Accuracy ± 0.1 %
- Resistance sensors acc. to IEC 751 or GOST 50353-92
- Thermocouples acc. to IEC 584-1, GOST 50431-92 or GOST P85.585-2001
- 3-wire resistance (Potentiometer) 800 Ω ... 20 kΩ
- Voltage signals between -100 mV and +100 mV
- Internal or external cold junction compensation
- Sensor burnout and short-circuit monitoring
- Collective error message via Power Rail
- All settings via serial interface to PC (online parameterisation)
- EMC acc. to EN 61326

Current output 0/4 mA ... 20 mA

KFD2-UT2-Ex1

Function

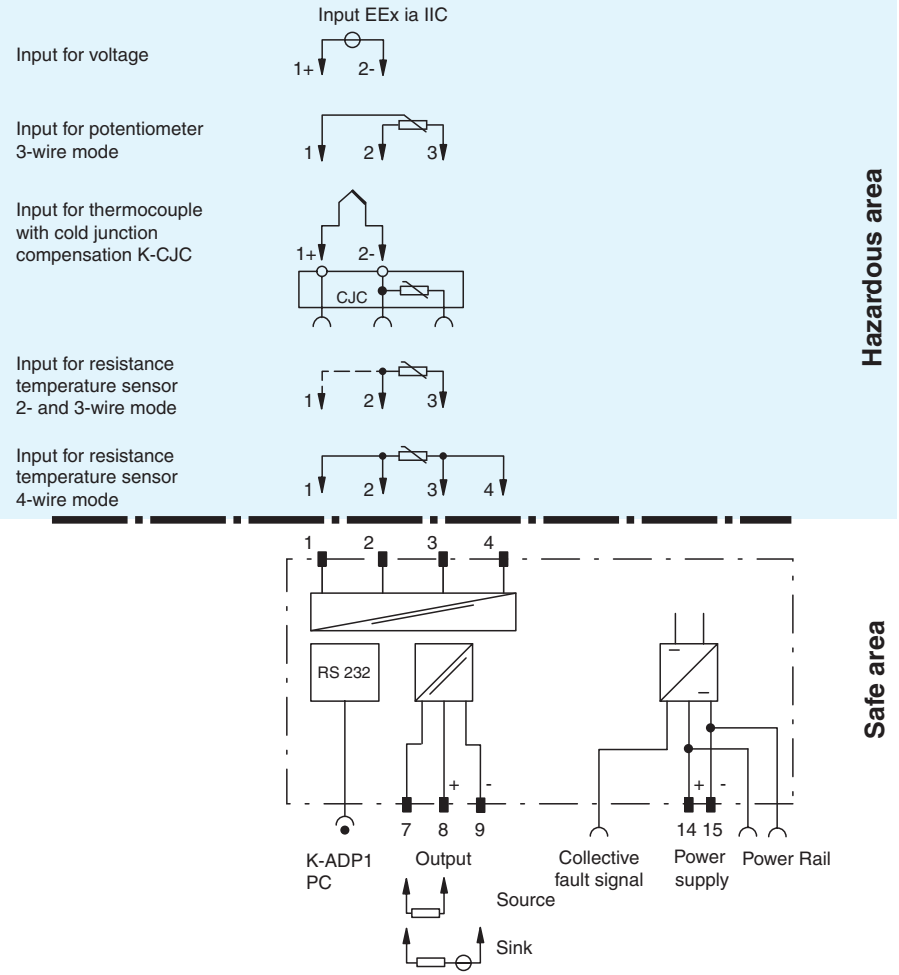
The KFD2-UT2-Ex1 is designed for the connection of resistance sensors and thermocouples. A current signal of 0/4 mA ... 20 mA proportional to the temperature is available at the output.

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.

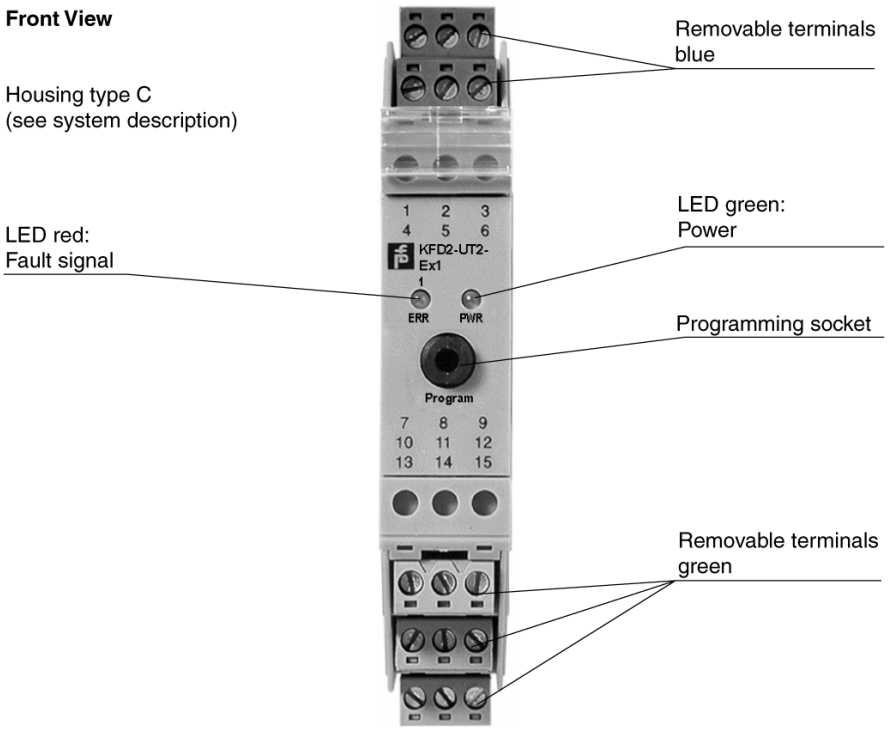
Internal or external cold junction compensation may be selected when using thermocouples.

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



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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	≤ 0.9 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	0.8 ... 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	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 ≥ (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	Pt100: ± (0.06 % of measurement value in K + 0.1 % of span + 0.1 K (4-wire connection)) thermocouple: ± (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 mV: ± (50 µV + 0.1 % of span) Potentiometer: ± (0.05 % of full scale + 0.1 % of span, (excludes errors due to lead resistance))
Influence of ambient temperature	deviation of CJC included: Pt100: ± (0.0015 % of measurement value in K + 0.006 % of span)/K ΔT_U *) thermocouple: ± (0.02 K + 0.01 % of measurement value in °C + 0.006 % of span)/K ΔT_U *) mV: ± (0.005 % of measurement value + 0.006 % of span)/K ΔT_U *) Potentiometer: ± 0.006 % of span/K ΔT_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 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
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

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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		⟨Ex⟩ II (1) G D [EEx ia] IIC [circuit(s) in zone 0/1/2]
Input		EEx ia IIC
Inputs		terminals 1, 2, 3, 4
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...

Via the Power Rail PR-03 or UPR-03 can the devices be 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 realised 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

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 connector overlaps by approx. 3 mm. The function is not being affected.

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