



- 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  $-50\ mV \dots +150\ mV$
- 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**

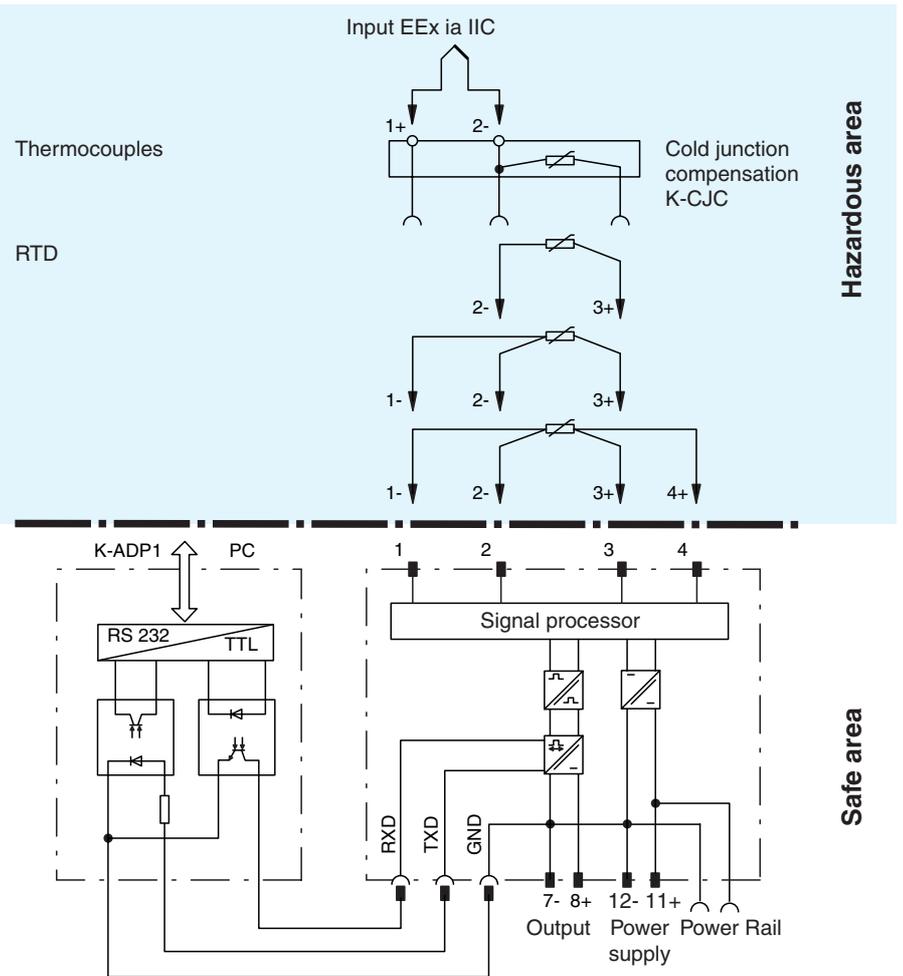
The KFD2-UT-Ex1 is designed for the connection of Pt100, Ni100 (2-, 3-, or 4-wire version) and models B, E, J, K, L, N, R, S, or T thermocouples. A current signal of 4 mA ... 20 mA proportional to the temperature is available at the output.

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 A4 (see system description)

LED green: Power supply

Removable terminals blue

LED red: Fault signal

Programming jack

Removable terminals green



Release date 2006-03-01 15:14 Date of issue 2006-03-01 112879\_ENG.xml

<b>Supply</b>	
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
<b>Input</b>	
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
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
<b>Output</b>	
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
<b>Transfer characteristics</b>	
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 <sub>U</sub> <sup>*)</sup> <u>thermocouple</u> : (± 0.02 K + 0.004 % of measurement value in °C + 0.006 % of span)/K ΔT <sub>U</sub> <sup>*)</sup> voltage output (deviation of CJC included): <u>Pt100</u> : (± 0.0015 % from measurement value in K + 0.0075 % of range)/K ΔT <sub>U</sub> <sup>*)</sup> <u>thermocouple</u> : (± 0.02 K + 0.004 % from measurement value in °C + 0.0075 % of range)/K ΔT <sub>U</sub> <sup>*)</sup>  <sup>*)</sup> ΔT <sub>U</sub> = 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
<b>Electrical isolation</b>	
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.
<b>Directive conformity</b>	
Electromagnetic compatibility	
Directive 89/336/EC	EN 50081-2, EN 50082-2
<b>Conformity</b>	
Insulation coordination	EN 50178
Electrical isolation	EN 50178
Electromagnetic compatibility	NE 21
Protection degree	IEC 60529
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (253 ... 333 K)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 110 g
Dimensions	20 x 118 x 115 mm (0.8 x 4.6 x 4.5 in)
<b>Data for application in conjunction with hazardous areas</b>	
EC-Type Examination Certificate	BAS 01 ATEX 7256 , for additional certificates see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a>
Group, category, type of protection	 II (1) G D [EEx ia] IIC (-20 °C ≤ T <sub>amb</sub> ≤ 60 °C)
Voltage U <sub>0</sub>	11 V
Current I <sub>0</sub>	33 mA
Power P <sub>0</sub>	90 mW
<b>Supply</b>	
Safety maximum voltage U <sub>m</sub>	250 V (Attention! The rated voltage can be lower.)
<b>Type of protection [EEx ia]</b>	
Explosion group	IIA      IIB      IIC
External capacitance	60 μF    13.8 μF    1.97 μF
External inductance	251 mH    121 mH    32 mH

Release date 2006-03-01 15:14 Date of issue 2006-03-01 112879\_ENG.xml

Internal capacitance	0 µF		
Internal inductance	0 mH		
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)		
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			
Directive 94/9 EC	EN 50014, EN 50020, EN 50021		
<b>Entity parameter</b>			
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
<b>Safety parameter</b>			
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](http://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<sup>ware</sup>™

Device-specific drivers (DTM)

#### Adapter K-ADP1

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