



- 1-channel
- Input EEx ia IIC
- 2 relay outputs
- High/low alarm settable
- Mode of operation adjustable
- Inputs for voltage (0 V ... 10 V), current (0 mA ... 20 mA) RTDs (Pt100, Ni100) thermocouples (B, E, J, K, L, N, R, S, or T)
- Sensor burnout monitoring for thermocouples
- Sensor burnout and short-circuit monitoring for Pt100
- Online adjustments via serial interface to PC
- EMC acc. to NAMUR NE 21

**24 V DC  
KFD2-GU-Ex1**

**Function**

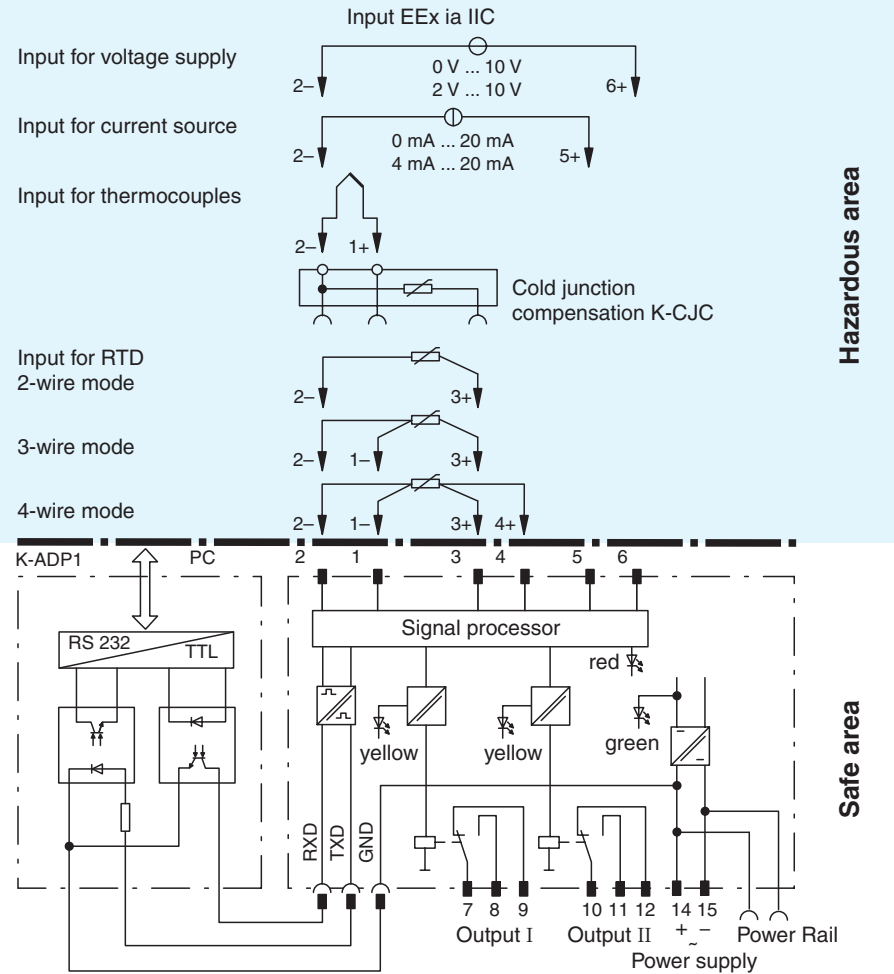
The limit switches are used with temperature measurements with Pt100 or thermocouples. In addition, inputs for current/voltage unit signals are available.

The parameterisation is accomplished via **PACTware™**, a K-ADP1 adapter and a PC (surface in accordance with VDI/VDE GMA 2187). The input is galvanically isolated from the output, the programming input and the power supply. The PC's serial interface is galvanically isolated from the programming input by connecting the K-ADP1 programming adapter. The isolation of the programming jack from the input makes programming during operation and through a connected measurement circuit possible.

The internal or external cold junction compensation options can be selected when using thermocouples. Terminal K-CJC is available for internal compensation.

The action taken during error conditions can be adjusted at the switch outputs. A fault is indicated by a red flashing LED per NAMUR NE 44.

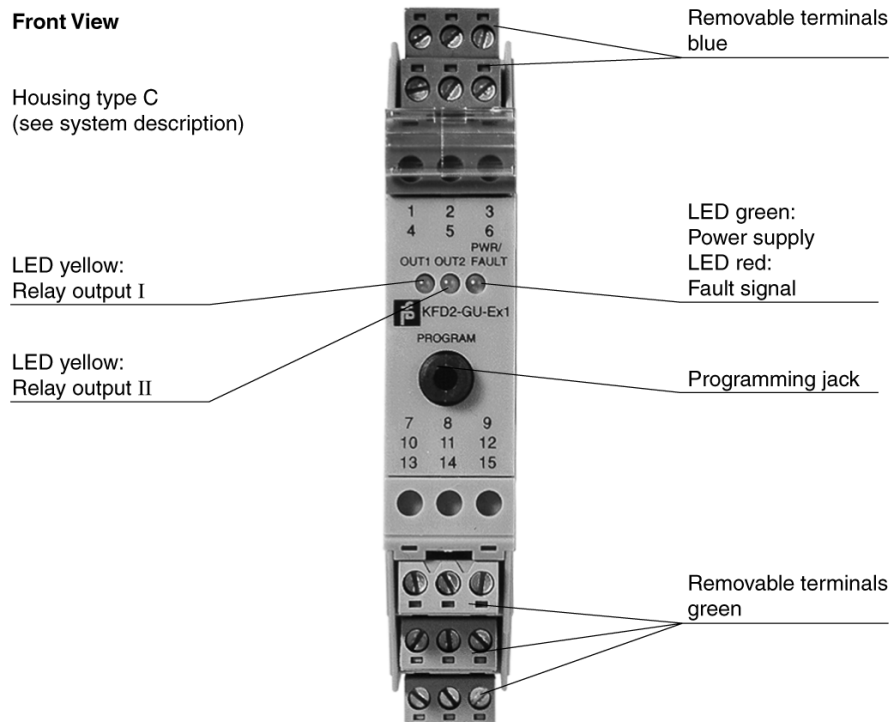
**Connection**



Hazardous area

Safe area

**Composition**



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<b>Supply</b>	
Rated voltage	19 ... 35 V DC
Ripple	within the supply tolerance
Power loss	0.8 W
Power consumption	approx. 1.5 W
<b>Input</b>	
Connection	terminals 1, 2, 3, 4, 5, 6 ; suitable for Pt100, Ni100, thermocouples type B, E, J, K, L, N, R, S or T 0 ... 10 V, 0 ... 20 mA, 0 ... 500 Ω configuration via programming jack
Lead resistance	≤ 50 Ω per lead
Measuring current	for Pt100: approx. 400 µA ; current for lead monitoring switched off during the measurement
Load	20 Ω for 20 mA; 200 kΩ for 10 V
<b>Output</b>	
Connection	output I: terminals 7, 8, 9; output II: terminals 10, 11, 12
<b>Output I and II</b>	
Contact loading	253 V AC/2 A/500 VA/cos φ min. 0.7; 40 V DC/2 A resistive load
Mechanical life	2 x 10 <sup>7</sup> switching cycles
<b>Transfer characteristics</b>	
<b>Deviation</b>	
Voltage input	± 0.01 % of 10 V measuring range
Resistance input	± 0.025 % of measuring range (4-wire connection)
Current input	± 0.01 % of 20 mA measuring range
<u>Pt100</u>	± 0.01 % of abs. temperature value of switching point in K + 0.2 K (4-wire connection)
<u>Thermocouple</u>	± 0.05 % of abs. temperature value of switching point in Kelvin + 1.1 K (1.2 K for thermocouple types R and S) this includes ± 0.8 K error of the cold junction compensation (+0.9 K for thermocouple types R and S).
<b>Influence of ambient temperature</b>	
<u>Pt100</u>	± (0.0015 % of abs. temperature value of switching point in K + 0.01 K) / KΔT <sub>amb</sub> <sup>*)</sup>
<u>Thermocouple</u>	± (0.004 % of abs. temperature value of switching point in Kelvin + 0.01 K) / KΔT <sub>amb</sub> <sup>*)</sup>
<u>Thermocouple type R and S</u>	± (0.005 % of abs. temperature value of switching point in Kelvin + 0.01 K) / KΔT <sub>amb</sub> <sup>*)</sup>
<u>Voltage source</u>	± (0.007 % of the switching point voltage) / KΔT <sub>amb</sub> <sup>*)</sup>
<u>Current source</u>	± (0.007 % of the switching point current)/KΔT <sub>amb</sub> <sup>*)</sup>
*) ΔT <sub>amb</sub> = ambient temperature change referenced to 23 °C (296 K)	
Influence of supply voltage	< 0.001 % of sensor input range
Input delay	≤ 370 ms (rise time and energising delay of relay)
<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
Output/power supply	acc. to VDE 0106, part 101 safety isolated, rated insulation voltage 253 V <sub>eff</sub>
<b>Directive conformity</b>	
<b>Electromagnetic compatibility</b>	
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. 150 g
Dimensions	20 x 119 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 98 ATEX 7152 , for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection	⊗ II (1)GD [EEx ia] IIC (-20 °C ≤ T <sub>amb</sub> ≤ 60 °C)
Input	EEx ia IIC
Voltage U <sub>o</sub>	10.5 V
Current I <sub>o</sub>	27 mA
Power P <sub>o</sub>	70 mW
<b>Supply</b>	
Safety maximum voltage U <sub>m</sub>	40 V DC (Attention! The rated voltage can be lower.)
<b>Type of protection [EEx ia]</b>	
Explosion group	IIA IIB IIC

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External capacitance	75 µF	16.8 µF	2.4 µF
External inductance	290 mH	142 mH	37 mH
Electrical isolation	safe electrical isolation acc. to EN 50020, voltage peak value 375 V		
Input/other circuits	safe electrical isolation acc. to EN 50020, voltage peak value 375 V		
Output/power supply	basic insulation according to IEC 61140, rated insulation voltage 300 V <sub>eff</sub>		
Output/output	basic insulation according to IEC 61140, rated insulation voltage 300 V <sub>eff</sub>		
Directive conformity	EN 50014, EN 50020		
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](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!**