



- 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, current and voltage
- Online adjustments via serial interface to PC
- EMC acc. to NAMUR NE 21

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

Standard model, replaces models KFD2-GR-Ex1*, KHD2-GT-Ex1*, KFD2-GS-Ex1*

Function

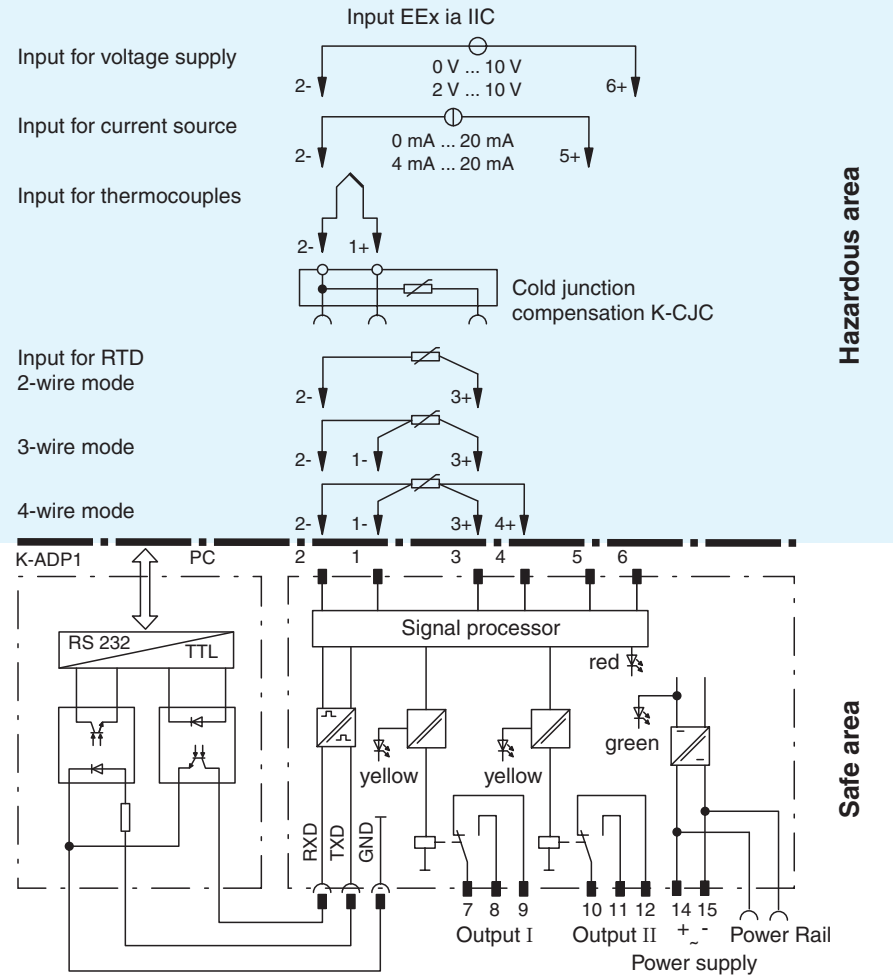
The limit switches are used with temperature measurements with Pt100 or thermocouples. In addition, inputs for current/voltage unit signals are available.

The parameterisation is accomplished via **PACT^{ware}™**, 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



Composition

Front View

Housing type C (see system description)

LED yellow:
Relay output I

LED yellow:
Relay output II

Removable terminals blue

LED green:
Power supply
LED red:
Fault signal

Programming jack

Removable terminals green



Release date 2009-07-01 11:57 Date of issue 2009-07-01 072139_ENG.xml

General specifications	
Signal type	Analog input
Supply	
Rated voltage	20 ... 35 V DC
Ripple	within the supply tolerance
Power loss	0.8 W
Power consumption	0.8 W
Input	
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 configuration via programming jack
Line 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
Output	
Output I	limit value 1: terminals 7, 8, 9
Output II	limit value 2: terminals 10, 11, 12
Contact loading	253 V AC/2 A/cos φ > 0.6
Mechanical life	2 x 10 ⁷ switching cycles
Transfer characteristics	
Deviation	
<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 K + 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).
<u>Current source</u>	± 0.02 % of 20 mA measuring range + 1 μA
<u>Voltage source</u>	± 0.02 % of 10 V measuring range + 500 μV
Influence of the power supply	
<u>Pt100</u>	(± 0.0015 % of abs. temperature value of switching point in K + 0.01 K) / KΔT _{amb} *
<u>Thermocouple</u>	(± 0.004 % of abs. temperature value of switching point in K + 0.01 K) / KΔT _{amb} *
<u>Thermocouple type R and S</u>	(± 0.005 % of abs. temperature value of switching point in K + 0.01 K) / KΔT _{amb} *
<u>Voltage source</u>	(± 0.007 % of the switching point voltage) / KΔT _{amb} *
<u>Current source</u>	(± 0.007 % of the switching point current) / KΔT _{amb} *
	^{*)} ΔT _{amb} = ambient temperature change referenced to 23 °C (296 K)
Influence of supply voltage	
<u>Voltage source</u>	< 0.001 % of span
<u>Pt100, Ni100, thermocouples, voltage input</u>	< 0.001 % of span
<u>Current source</u>	0.0035 % of span
Input delay	≤ 370 ms (rise time and energizing delay of relay)
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
Output/power supply	acc. to VDE 0106, part 101 safety isolated, rated insulation voltage 253 V _{eff}
Directive conformity	
Electromagnetic compatibility	standards
Directive 89/336/EEC	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. 150 g
Data for application in conjunction with hazardous areas	
EC-Type Examination Certificate	BAS 98 ATEX 7152 ; for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection	⊕ II (1)G [EEx ia] IIC (Ta = -20 °C up to 60 °C)
Voltage U _o	10.5 V
Current I _o	27 mA
Power P _o	70 mW
Supply	
Safety maximum voltage U _m	40 V DC

Release date 2009-07-01 11:57 Date of issue 2009-07-01 072139_ENG.xml

Type of protection [EEx ia]	
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

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!