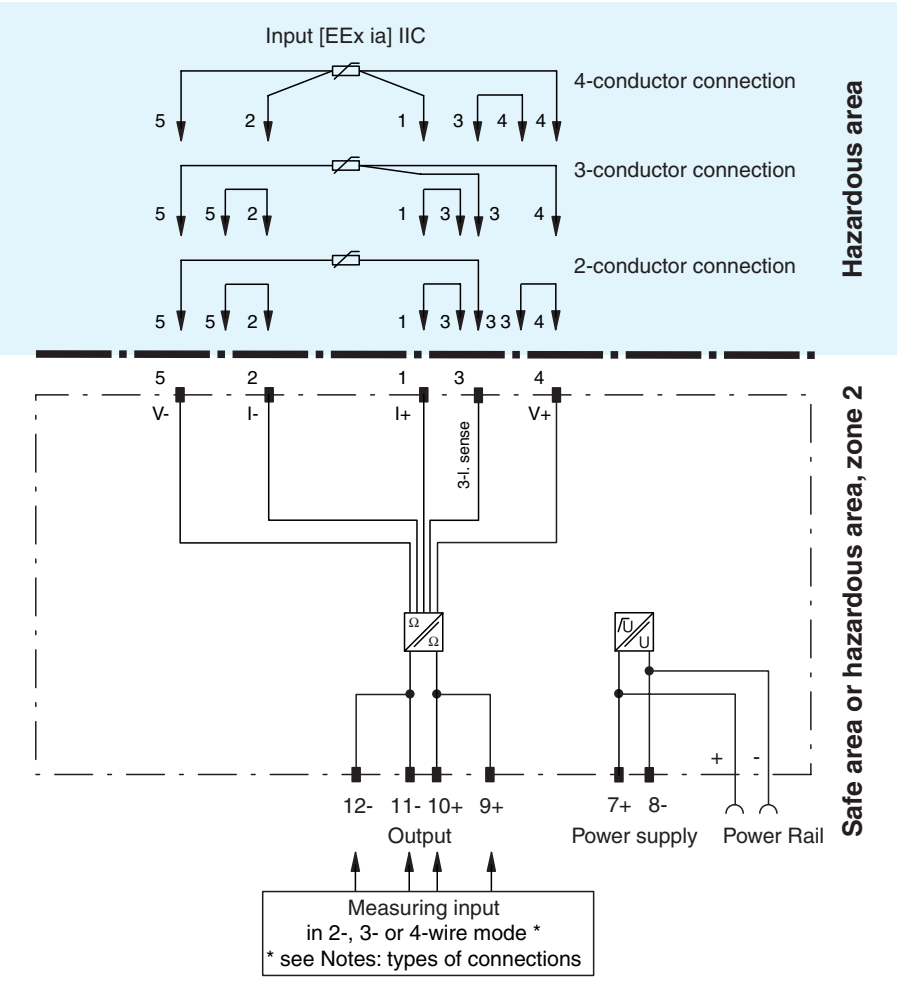
- 1-channel
- Input EEx ia IIC
- Device installation permissible in zone 2
- 24 V DC nominal supply voltage
- Accuracy 0.1 %
- EMC acc. to NAMUR NE 21

KFD2-RR-Ex1

Application

As an Ex-isolator between the temperature sensor in the hazardous area and the converter or thermometer in the safe area.

Connection



Composition

Release date 2005-07-08 10:56 Date of issue 2005-07-08 071847_ENG.xml

Supply	
Connection	Power Rail or terminals 7+, 8-
Rated voltage	20 ... 35 V DC
Ripple	within the supply tolerance
Rated current	< 20 mA
Power loss	0.25 W (24 V and 1 mA sense current)
Input	
Connection	terminals 1, 2, 3, 4, 5
Lead resistance	≤ 10 % of resistance value
Transmission range	0 ... 10 mA
Available voltage	9 V
Output	
Connection	terminals 12-, 11-, 10+, 9+
Current	0 ... 10 mA
Available voltage	0 ... 7 V
Safety maximum voltage U_m	250 V
Transfer characteristics	
Deviation	$I_m \geq 1$ mA: ± 0.1 % of R_m or ± 0.1 Ω (the larger value is applicable) $I_m < 1$ mA: Accuracy reduces in proportion to I_m. e.g. $I_m = 0.1$ mA: ± 1 % of R_m or 1 Ω (the larger value is applicable).
Influence of ambient temperature	$I_m \geq 1$ mA, $R_m \geq 100$ Ω : 0.01 % / K in the range -20 ... +60 °C (253 ... 333 K) $I_m < 1$ mA or $R_m < 100$ Ω: temperature stability reduces in proportion to I_m or R_m
Rise time	≤ 2 ms (bounce from 10 ... 90 %) < 3 ms for 1% accuracy
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	basic insulation acc. to DIN EN 50178, rated insulation voltage of AC 50 V
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, DIN IEC 801-2 and DIN IEC 801-4 ... 6
Climatic conditions	acc. to DIN IEC 721
Ambient conditions	
Ambient temperature	-20 ... 60 °C (253 ... 333 K)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 100 g
Data for application in conjunction with hazardous areas	
EC-Type Examination Certificate	BAS 01 ATEX 7282 ; for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection	⟨Ex⟩ II (1) G D [EEx ia] IIC (-20 °C ≤ T_{amb} ≤ 60 °C)
Voltage U_0	12.4 V
Current I_0	17 mA
Power P_0	53 mW
Supply	
Safety maximum voltage U_m	250 V
Type of protection [EEx ia]	
Explosion group	IIA IIB IIC
External capacitance	30 µF 7.9 µF 1.24 µF
External inductance	855 mH 458 mH 120 mH
Statement of conformity	TÜV 99 ATEX 1499 X (observe statement of conformity)
Group, category, type of protection, temperature classification	⟨Ex⟩ II 3 G EEx nA II T4
Electrical isolation	
Input/Output	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, 5

Release date 2005-07-08 10:56 Date of issue 2005-07-08 071847_ENG.xml

Input I				
Current	I_t	17.4 mA		
Voltage	V_t	12.8 V		
Explosion group		A&B	C&E	D, F&G
Max. external capacitance C_a		1.33 µF	3.99 µF	10.64 µF
Max. external inductance L_a		108.6 mH	381.1 mH	957.8 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}	11.6 V		
Current	I_{SC}	15.6 mA		
Explosion group		A&B	C&E	D, F&G
Max. external capacitance C_a		1.8 µF	5.6 µF	15 µF
Max. external inductance L_a		1000 mH	1000 mH	1000 mH

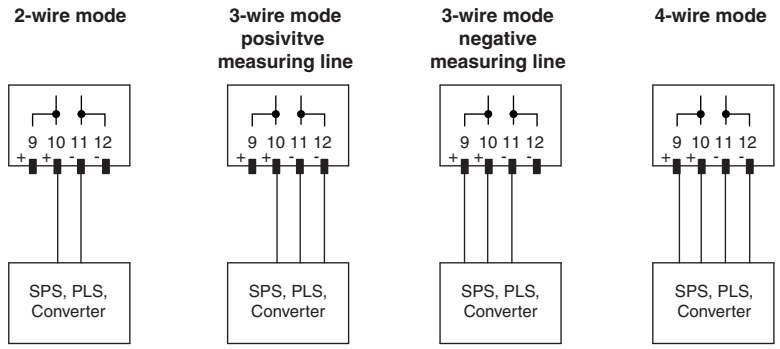
Function

The KFD2-RR-Ex1 transfers the resistance value (R_m) of a temperature sensor (e. g. Pt100, Pt500, Pt1000, ...) in the 2-, 3- or 4- wire mode. The connection of a converter located in the safe area in the 2-, 3- or 4- wire mode may also be successfully employed.

The converter determines the measurement current (I_m). The current is transferred to the hazardous area by the repeater and causes a voltage drop at the temperature sensor. This voltage is then reproduced in the safe area by the repeater. The present resistance value of the sensor is thereby reproduced at the repeater output. All resistance repeaters are compatible provided measurement current x (R_m + 900 W) < 10 V and measurement voltage < 7 V.

Notes

Connection types:



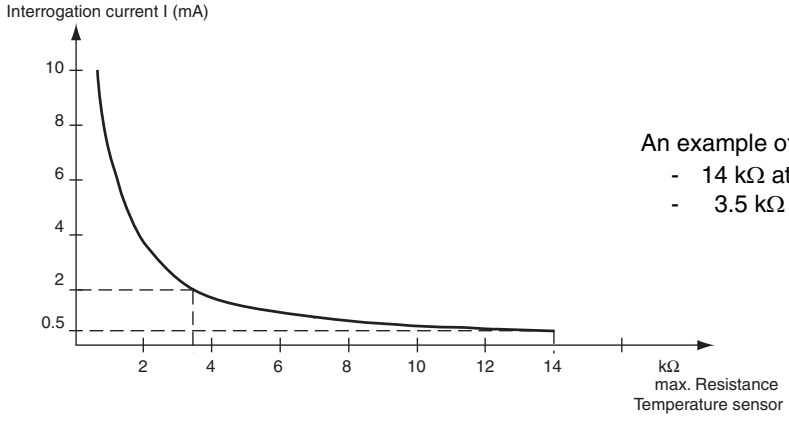
In the case of fast multiplex input cards, transmission problems might be experienced in connection with low resistance values and/or high sensor currents. For data see Rise Time

Measurement range:

The isolated transformer can convey a maximum of 10 mA and a maximum of 7 V. The maximum transferable resistance value can be derived from the following equation:

Resistance value = 7 V/sensing current

The sensing current is determined by the original Non-Ex converter.



An example of the maximum transferable resistance value:
- 14 kΩ at 0.5 mA sensing current
- 3.5 kΩ at 2 mA sensing current

Release date 2005-07-08 10:56 Date of issue 2005-07-08 071847_ENG.xml

Accessories

Power Rail PR-03
Power Rail UPR-03
Power feed module KFD2-EB2...

By means of the Power Rail PR-03 or UPR-03 the devices can be provided with 24 V DC via the power feed module. 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!

Release date 2005-07-08 10:56 Date of issue 2005-07-08 071847_ENG.xml