Features

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- RTD/resistance input
- Resistance output
- Accuracy 0.1 %

Function

This isolated barrier is used for intrinsic safety applications. It transfers RTD resistance values from hazardous areas to safe areas.

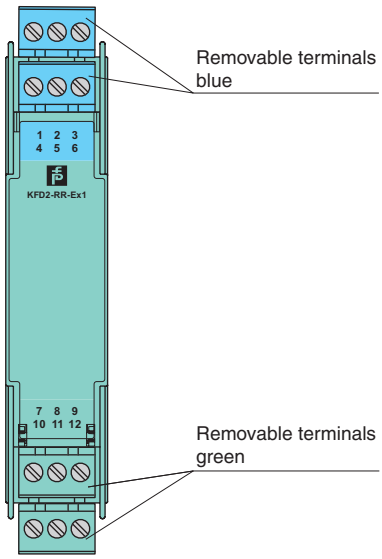
A 2-, 3-, or 4-wire mode is available depending on the required accuracy. The configuration must be the same in the hazardous and safe area.

The monitor registers the same load as if it were connected directly to the resistance in a hazardous area.

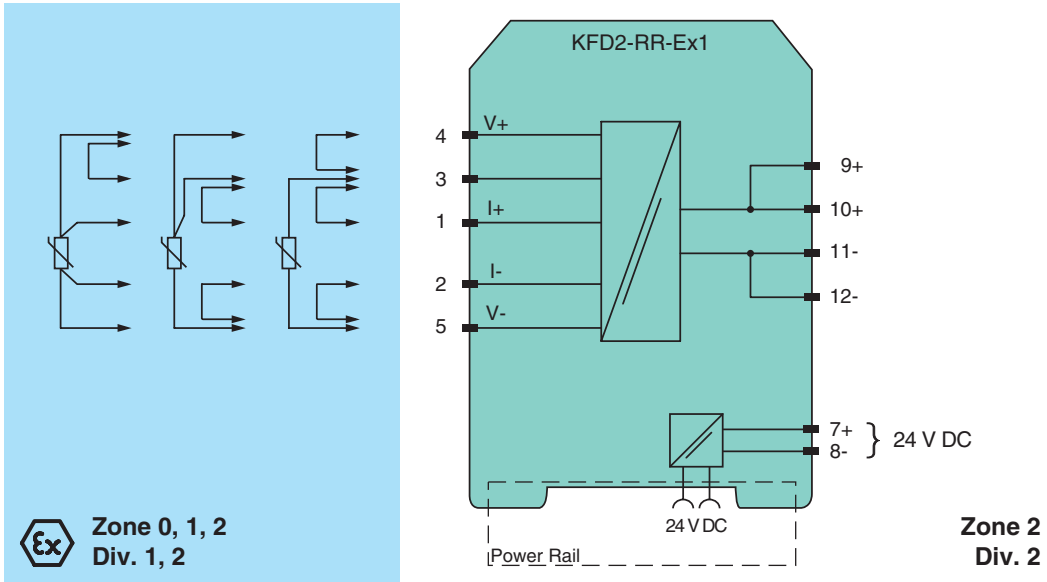
All resistive sensors are connectable as long as the limit "measurement current x (R_m + 900 Ω) < 10 V" is not exceeded and the measurement voltage is smaller than 7 V.

Assembly

Front view



Connection



Release date 2010-02-02 14:11 Date of issue 2010-02-02 127819_ENG.xml

General specifications	
Signal type	Analog input
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
Line 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
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	signal response time ≤ 2 ms (10 ... 90 %) response to application of I_m: $R_m > 50$ Ω and $I_m < 5$mA: < 5ms response to application of I_m: $R_m > 30$ Ω and $I_m < 5$mA: < 10ms response to application of I_m: $R_m > 18$ Ω and $I_m < 5$mA: < 20ms
Electrical isolation	
Output/power supply	basic insulation acc. to EN 50178, rated insulation voltage of 50 V AC
Directive conformity	
Electromagnetic compatibility	
Directive 2004/108/EC	EN 61326-1:2006
Conformity	
Insulation coordination	EN 50178
Electrical isolation	EN 50178
Electromagnetic compatibility	NE 21
Protection degree	IEC 60529
Ambient conditions	
Ambient temperature	-20 ... 60 °C (253 ... 333 K)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	20 x 107 x 115 mm (0.8 x 4.2 x 4.5 in) , housing type B1
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)GD [EEx ia] IIC (-20 °C ≤ T_{amb} ≤ 60 °C)
Voltage U_o	12.4 V
Current I_o	17 mA
Power P_o	53 mW
Supply	
Safety maximum voltage U_m	250 V (Attention! The rated voltage can be lower.)
Type of protection [EEx ia]	
Output	
Safety maximum voltage U_m	250 V (Attention! The rated voltage can be lower.)
Statement of conformity	TÜV 99 ATEX 1499 X , observe statement of conformity
Group, category, type of protection, temperature classification	⟨Ex⟩ II 3G 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
International approvals	
FM approval	
Control drawing	116-0129

Release date 2010-02-02 14:11 Date of issue 2010-02-02 127819_ENG.xml

UL approval	
Control drawing	116-0173 (cULus)
CSA approval	
Control drawing	116-0132
General information	
Supplementary information	EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see www.pepperl-fuchs.com.

Release date 2010-02-02 14:11 Date of issue 2010-02-02 127819_ENG.xml

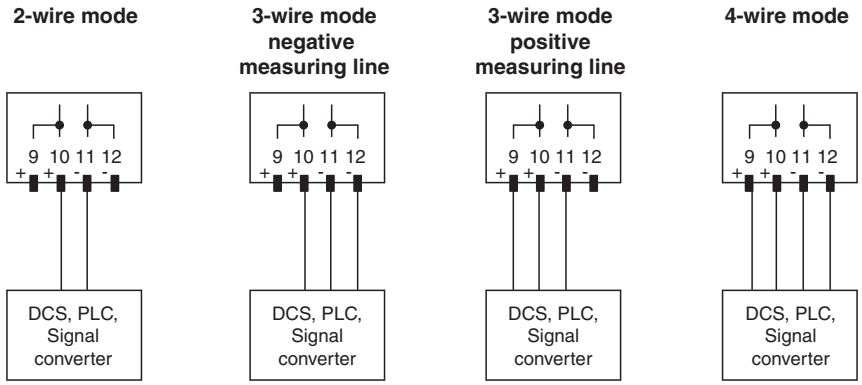
Additional information

Function

When a signal converter, a DCS or PLC is connected to terminals 9, 10, 11, and 12 (control side), the measuring current is transferred to terminals 1 and 2 (field side). The resulting voltage at terminals 3, 4, and 5 is transferred to terminals 9, 10, 11, and 12.

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.

Connection types control side (safe area)

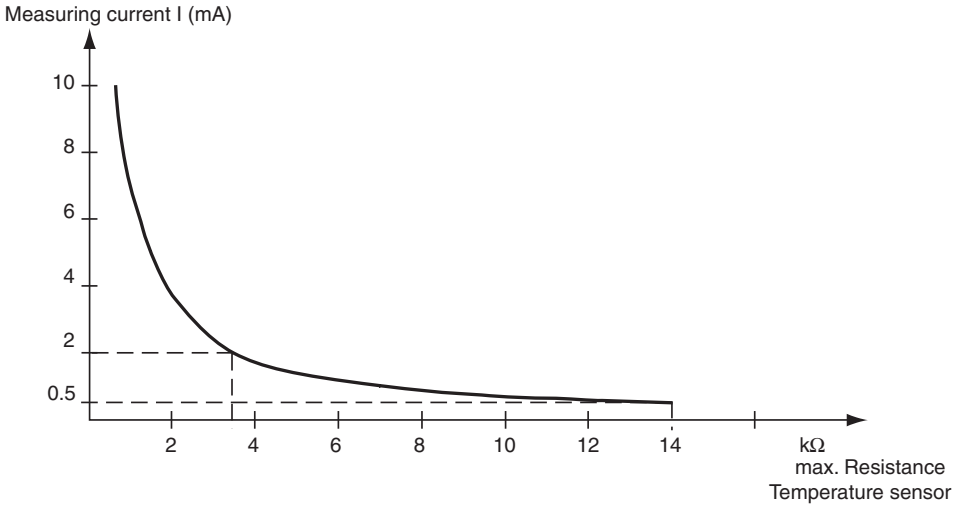


Measurement range

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

Resistance value = 7 V/measuring current

The measuring current is determined by control.



An example of the maximum transferable resistance value:

- 14 kΩ at 0.5 mA measuring current
- 3.5 kΩ at 2 mA measuring current

Accessories

Power feed modules KFD2-EB2...

The power feed module is used to supply the devices with 24 V DC via the Power Rail. The fuse-protected power feed module can supply up to 100 individual devices depending on the power consumption of the devices. A galvanically isolated mechanical contact uses the Power Rail to transmit collective error messages.

Power Rail UPR-03

The Power Rail UPR-03 is a complete unit consisting of the electrical inset and an aluminium profile rail 35 mm x 15 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 2010-02-02 14:11 Date of issue 2010-02-02 127819_ENG.xml

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