## Features

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Resistance and RTD input (Pt100, Pt500, Pt1000)
- Resistance output
- Accuracy 0.1 %
- Line fault detection (LFD) for Pt100
- Connection via spring terminals with push-in connection technology
- Housing width 12.5 mm

## Function

This isolated barrier is used for intrinsic safety applications.

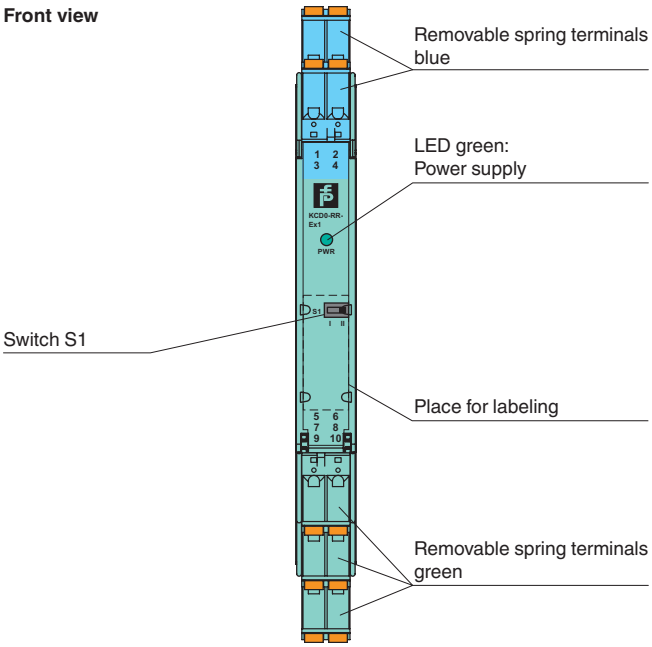
It transfers resistance values of RTDs or potentiometers from hazardous areas to safe areas.

A 2-, 3-, or 4-wire technique is available depending on the required accuracy.

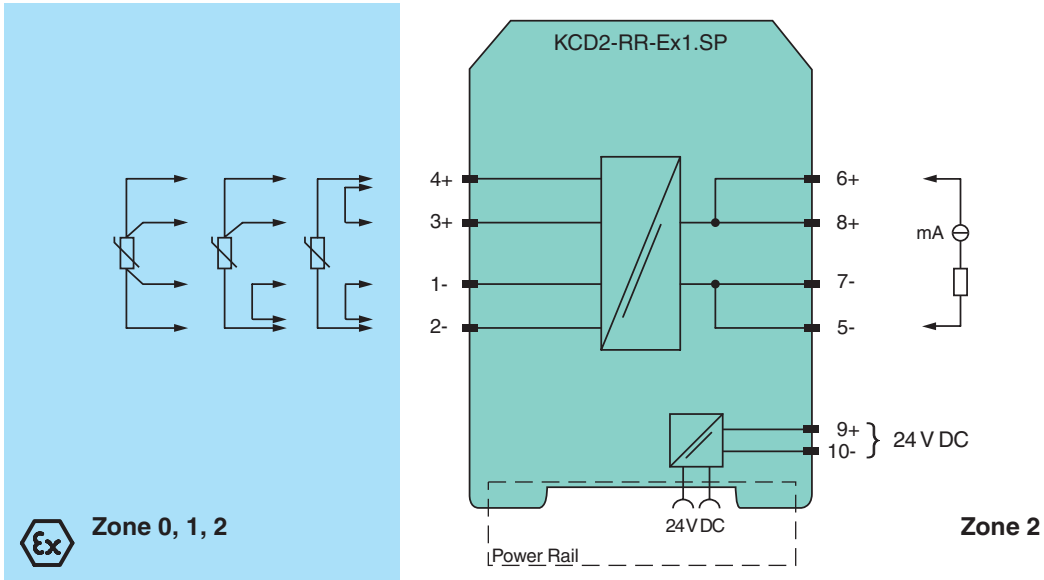
The input card of the control system measures the same load as if it were connected directly to the resistance in a hazardous area.

## Assembly

**Front view**




## Connection

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| **General specifications** | | |
| Signal type | | Analog input |
| **Supply** | | |
| Connection | | Power Rail or terminals 9+, 10- |
| Rated voltage | $U_r$ | 19 ... 30 V DC |
| Ripple | | within the supply tolerance |
| Rated current | $I_r$ | < 20 mA |
| Power consumption | | 0.35 W (24 V and 1 mA sense current) |
| **Input** | | |
| Connection | | terminals 1, 2, 3, 4 |
| Line fault detection | | yes , at Pt100 |
| Lead resistance | | ≤ 10 % of resistance value |
| Transmission range | | 0 ... 10 mA |
| Available voltage | | 9 V |
| Line fault detection | | 50 nA |
| **Output** | | |
| Connection | | terminals 5-, 7-, 6+, 8+ |
| Current | | 0 ... 10 mA |
| Available voltage | | 0 ... 7 V |
| Fault signal | | < 10 Ω or > 400 Ω, depending on lead disconnected (measuring current ≤ 1 mA) |
| **Transfer characteristics** | | |
| Deviation | | $I_m \geq 1$ mA: ±0.1 % of $R_m$ or ± 0.1 Ω (the larger value is applicable)<br>$I_m < 1$ mA: accuracy reduces in proportion to $I_m$.<br>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)<br>$I_m < 1$ 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 %)<br>response to application of $I_m$: $R_m > 50$ Ω and $I_m < 5$mA: < 5ms<br>response to application of $I_m$: $R_m > 30$ Ω and $I_m < 5$mA: < 10ms<br>response to application of $I_m$: $R_m > 18$ Ω and $I_m < 5$mA: < 20ms |
| **Galvanic isolation** | | |
| Input/Output | | reinforced insulation acc. to EN 50178, rated insulation voltage 300 $V_{eff}$ |
| Input/power supply | | reinforced insulation acc. to EN 50178, rated insulation voltage 300 $V_{eff}$ |
| Output/power supply | | functional insulation, rated insulation voltage 50 V AC |
| **Directive conformity** | | |
| Electromagnetic compatibility | | |
| Directive 2004/108/EC | | EN 61326-1:2013 (industrial locations) |
| **Conformity** | | |
| Electromagnetic compatibility | | NE 21 |
| Degree of protection | | IEC 60529 |
| Protection against electrical shock | | EN 61010-1 |
| **Ambient conditions** | | |
| Ambient temperature | | -20 ... 60 °C (-4 ... 140 °F) |
| **Mechanical specifications** | | |
| Degree of protection | | IP20 |
| Mass | | approx. 100 g |
| Dimensions | | 12.5 x 114 x 124 mm (0.5 x 4.5 x 4.9 inch) , housing type A2 |
| Mounting | | on 35 mm DIN mounting rail acc. to EN 60715:2001 |
| **Data for application in connection with hazardous areas** | | |
| EU-type examination certificate | | BASEEFA 10 ATEX 0061 , for additional certificates see www.pepperl-fuchs.com |
| Marking | | ⟨Ex⟩ II (1)G [Ex ia Ga] IIC , ⟨Ex⟩ II (1)D [Ex ia Da] IIIC , ⟨Ex⟩ I (M1) [Ex ia Ma] I |
| Input | | [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I |
| Voltage | $U_o$ | 12.4 V |
| Current | $I_o$ | 17.4 mA |
| Power | $P_o$ | 54 mW |
| Supply | | |
| Maximum safe voltage | $U_m$ | 253 V (Attention! The rated voltage can be lower.) |
| Type of protection [EEx ia] | | |
| Output | | |
| Maximum safe voltage | $U_m$ | 253 V (Attention! The rated voltage can be lower.) |
| Certificate | | BASEEFA 10 ATEX 0062X , observe statement of conformity |
| Marking | | ⟨Ex⟩ II 3G Ex nA IIC T4 Gc |
| Galvanic isolation | | |
| Input/Output | | safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V |
| Input/power supply | | safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V |

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|---|---|
| Directive conformity | |
| Directive 94/9/EC | EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010 |
| **International approvals** | |
| IECEx approval | IECEx BAS 10.0024<br>IECEx BAS 10.0025X |
| Approved for | [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I , Ex nA IIC T4 Gc |
| **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. |
| **Accessories** | |
| Optional accessories | - power feed module KFD2-EB2(.R4A.B)(.SP)<br>- universal power rail UPR-03(-M)(-S)<br>- profile rail K-DUCT-BU(-UPR-03)<br>- insertion bridge EBP 2- 5 |

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## Additional information

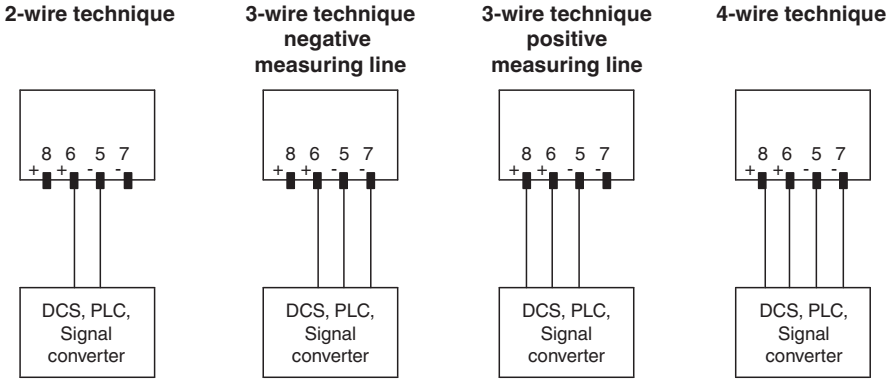
### Function

When a signal converter, a DCS or PLC is connected to terminals 5, 6, 7, and 8 (control side), the measuring current is transferred to terminals 2 and 4 (field side). The resulting voltage at terminals 1, and 3 is transferred to terminals 5, 6, 7, and 8.

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.

The quoted accuracy is for a 4-wire technique connection. The accuracy in 3-wire technique will depend on the matching of the line resistance.

### Connection types control side (safe area)




### Connection types field side (hazardous area)

The resistance in the hazardous area can be measured with a 2-, 3- or 4-wire technique.

- 2-wire technique:
  Link terminals 1 and 2 and terminals 3 and 4. Connect the resistance to terminal 4 and terminal 2. Switch S1 in the position II.
- 3-wire technique:
  Link terminals 1 and 2. Connect the resistance to terminals 3 and 4 and terminal 2. Switch S1 in the position I.
- 4-wire technique
  Connect the resistance to terminals 3 and 4 and terminals 1 and 2. Switch S1 in the position II.

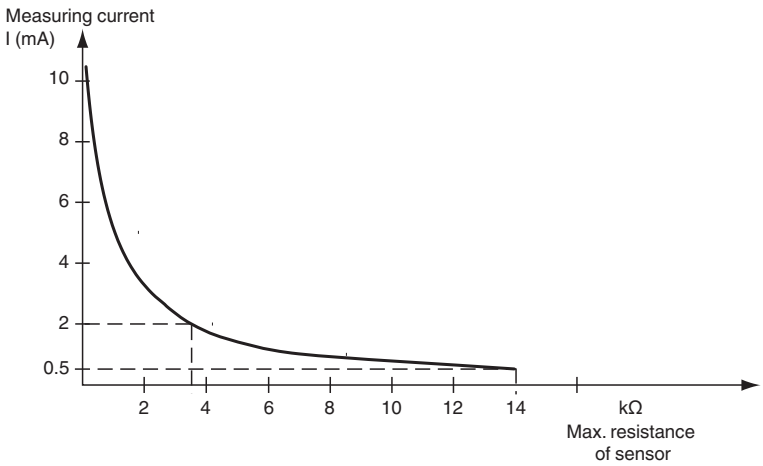
### Measurement range

The resistance repeater can convey a maximum of 10 mA and a maximum of 7 V. The maximum connectable resistance value can be calculated with the following equations

- Resistance value = 7 V / measuring current
- Resistance value = 9 V / measuring current - 758 Ω

Use the smaller of these two resistance values as maximum allowed load.

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

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**Line Fault Detection (LFD)**

The output will indicate less than 10 Ω or greater than 400 Ω for a lead breakage at terminals 1, 2, 3 or 4 for measuring current of less than or equal to 1 mA i.e. out of range for Pt100.

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