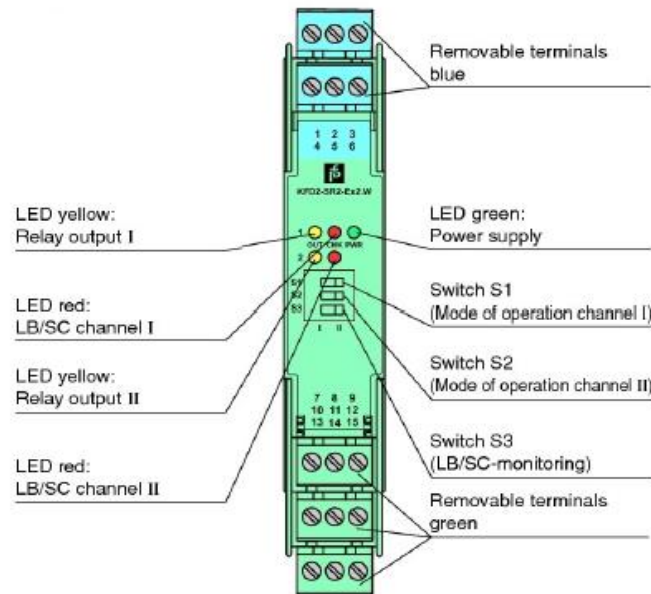


# KFD2-SR2-EX2.W

## BARRIER



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**Switch Amplifier** **KFD2-SR2-Ex2.W**

**Features**

- 2-channel isolated barrier
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Relay contact output
- Line fault detection (LFD)
- Reversible mode of operation
- Up to SIL2 acc. to IEC 61508

**Function**

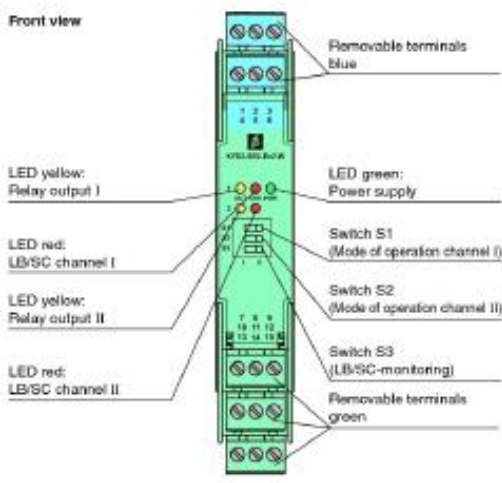
This isolated barrier is used for intrinsic safety applications. It transfers digital signals (NAMUR sensors/mechanical contacts) from a hazardous area to a safe area.

The proximity sensor or switch controls a form C changeover relay contact for the safe area load. The normal output state can be reversed using switches S1 and S2. Switch S3 is used to enable or disable line fault detection of the field circuit.

During an error condition, the relays revert to their de-energized state and the LEDs indicate the fault according to NAMUR NE44.

A unique collective error messaging feature is available when used with the Power Rail system.

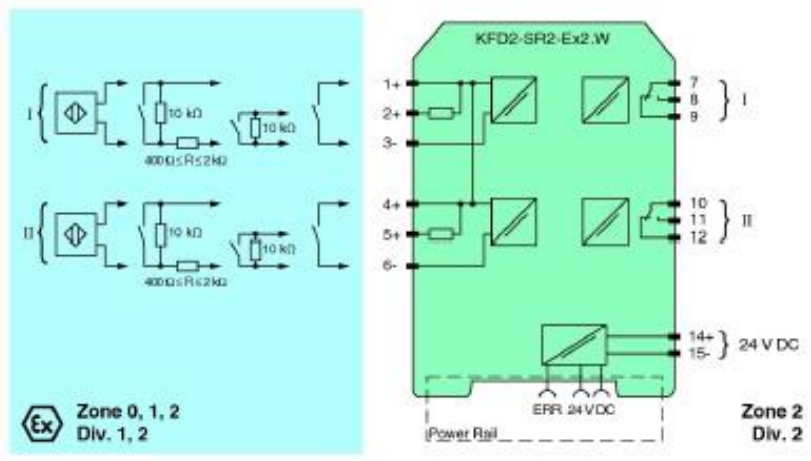
**Assembly**



**SIL2**

**Connection**

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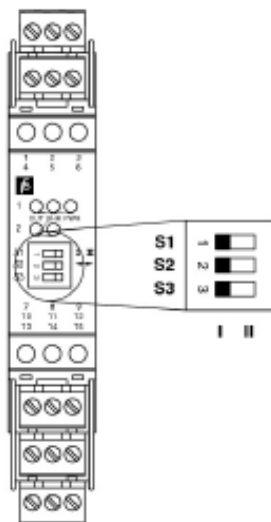
|   |   |
|---|---|
| <b>General specifications</b>                           |   |
| Signal type   | Digital input   |
| <b>Supply</b>   |   |
| Connection  | Power Rail or terminals 14+, 15-  |
| Rated voltage   | 20 ... 30 V DC  |
| Ripple  | ≤ 10 %  |
| Rated current   | ≤ 50 mA   |
| Power loss  | 1 W   |
| Power consumption                                       | < 1.3 W   |
| <b>Input</b>  |   |
| Connection  | terminals 1+, 2+, 3-, 4+, 5+  |
| Rated values  | acc. to EN 60947-5-6 (NAMUR)  |
| Open circuit voltage/short-circuit current              | approx. 9 V DC / approx. 8 mA   |
| Switching point/switching hysteresis                    | 1.2 ... 2.1 mA / approx. 0.2 mA   |
| Line fault detection                                    | breakage I ≤ 0.1 mA , short-circuit I > 6 mA  |
| Pulse/Pause ratio                                       | ≥ 20 ms / ≥ 20 ms   |
| <b>Output</b>   |   |
| Connection  | output I: terminals 7, 8, 9; output II: terminals 10, 11, 12  |
| Output I, II  | signal, relay   |
| Minimum switch current                                  | 2 mA / 24 V DC  |
| Energized/De-energized delay                            | approx. 20 ms / approx. 20 ms   |
| Mechanical life   | 10 <sup>7</sup> switching cycles  |
| <b>Transfer characteristics</b>                         |   |
| Switching frequency                                     | ≤ 10 Hz   |
| <b>Electrical isolation</b>                             |   |
| Output/power supply                                     | reinforced insulation according to IEC 61140, rated insulation voltage 300 V <sub>eff</sub>                         |
| Output/Output   | reinforced insulation according to IEC 61140, rated insulation voltage 300 V <sub>eff</sub>                         |
| <b>Directive conformity</b>                             |   |
| Electromagnetic compatibility                           |   |
| Directive 2004/108/EC                                   | EN 61326-1:2006   |
| Low voltage   |   |
| Directive 2006/95/EC                                    | EN 50178:1997   |
| <b>Conformity</b>                                       |   |
| Electromagnetic compatibility                           | NE 21   |
| Protection degree                                       | IEC 60529   |
| Protection against electric shock                       | IEC 61140   |
| <b>Ambient conditions</b>                               |   |
| Ambient temperature                                     | -20 ... 60 °C (-4 ... 140 °F)   |
| <b>Mechanical specifications</b>                        |   |
| Protection degree                                       | IP20  |
| Mass  | approx. 150 g   |
| Dimensions  | 20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in) , housing type B2  |
| <b>Data for application in connection with Ex-areas</b> |   |
| EC-Type Examination Certificate                         |   |
| Group, category, type of protection                     | PTB 00 ATEX 2080 , for additional certificates see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> |
| Input   | Ⓔ II (1)GD [EEEx ia] IIC [circuit(s) in zone 0/1/2]   |
| Voltage U <sub>0</sub>                                  | EEEx ia IIC   |
| Current I <sub>0</sub>                                  | 10.5 V  |
| Power P <sub>0</sub>                                    | 13 mA   |
| Supply  | 34 mW (linear characteristic)   |
| Maximum safe voltage U <sub>M</sub>                     | 253 V AC / 125 V DC (Attention! U <sub>M</sub> is no rated voltage.)  |
| Output  |   |
| Contact loading   | 253 V AC/2 A/cos φ > 0.7; 126.5 V AC/4 A/cos φ > 0.7; 40 V DC/2 A resistive load                                    |
| Maximum safe voltage U <sub>M</sub>                     | 253 V AC (Attention! The rated voltage can be lower.)   |
| Statement of conformity                                 |   |
| Group, category, type of protection                     | Ⓔ II (3)G [Ex ic] IIC; [Ex nL] IIC  |
| Input   | [Ex ic] IIC; [Ex nL] IIC  |
| Voltage U <sub>0</sub>                                  | 10.5 V  |
| Current I <sub>0</sub>                                  | 13 mA   |
| Power P <sub>0</sub>                                    | 34 mW (linear characteristic)   |
| Output  |   |
| Contact loading   | 253 V AC/2 A/cos φ > 0.7; 126.5 V AC/4 A/cos φ > 0.7; 40 V DC/2 A resistive load                                    |
| Statement of conformity                                 | TÜV 99 ATEX 1493 X , observe statement of conformity  |

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**Technical data**
**KFD2-SR2-Ex2.W**

|   |  |
|---|--|
| Group, category, type of protection, temperature classification | Ⓔ II 3G Ex nA nC IIC T4  |
| <b>Output</b>   |  |
| Contact loading   | 50 V AC/4 A/cos $\phi$ > 0.7; 40 V DC/2 A resistive load   |
| <b>Electrical isolation</b>                                     |  |
| Input/Output  | safe galvanic isolation acc. to EN 50020, voltage peak value 375 V   |
| Input/power supply  | safe galvanic isolation acc. to EN 50020, voltage peak value 375 V   |
| <b>Directive conformity</b>                                     |  |
| Directive 94/9/EC   | EN 50014, EN 50020, EN 60079-0:2006, EN 60079-15:2005  |
| <b>International approvals</b>                                  |  |
| <b>FM approval</b>  |  |
| Control drawing   | 116-0035   |
| <b>CSA approval</b>   |  |
| Control drawing   | 116-0047   |
| <b>General information</b>                                      |  |
| 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 <a href="http://www.pepperfuchs.com">www.pepperfuchs.com</a> . |

**Configuration**



**Switch position**

| S | Function                                      |                         | Position |
|---|---|-------------------------|----------|
| 1 | Mode of operation Output I (relay) energized  | with high input current | I        |
|   |   | with low input current  | II       |
| 2 | Mode of operation Output II (relay) energized | with high input current | I        |
|   |   | with low input current  | II       |
| 3 | Line fault detection                          | ON                      | I        |
|   |   | OFF                     | II       |

**Operating status**

| Control circuit                             | Input signal       |
|---|--------------------|
| Initiator high impedance/<br>contact opened | low input current  |
| Initiator low impedance/<br>contact closed  | high input current |
| Lead breakage,<br>lead short-circuit        | Line fault         |

Factory settings: switch 1, 2 and 3 in position I

**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!**