

**Features**

- 2-channel isolated barrier
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Usable as signal splitter (1 input and 2 outputs)
- 2 x 2 relay contact outputs with AND logic
- Line fault detection (LFD)
- Reversible mode of operation
- Up to SIL 2 acc. to IEC 61508

**Function**

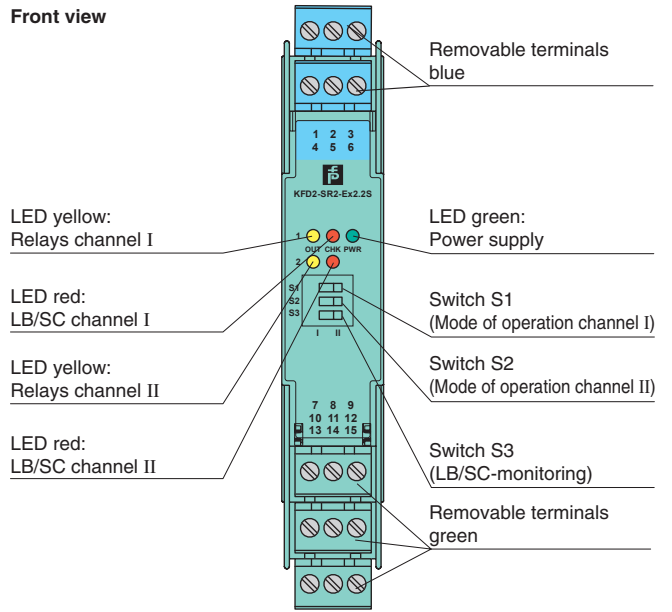
This isolated barrier is used for intrinsic safety applications. It transfers digital signals (NAMUR sensors/mechanical contacts) from a hazardous area to a safe area.

Each sensor or switch controls two form A normally open relay contacts 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.

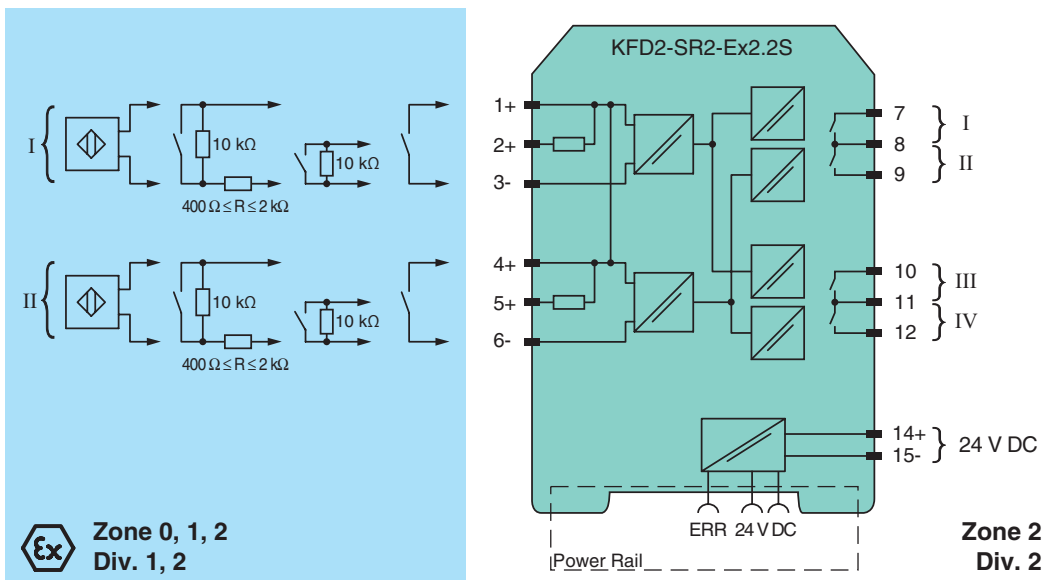
A unique collective error messaging feature is available when used with the Power Rail system.

**Assembly**




**SIL 2**


**Connection**



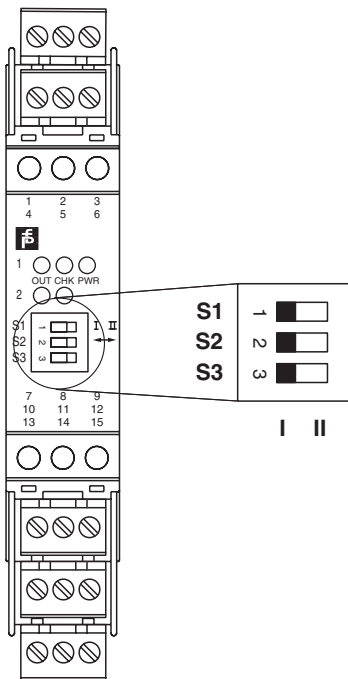
Release date 2018-05-08 08:09 Date of issue 2018-05-08 181284\_eng.xml

|  |       |  |
|--|-------|--|
| <b>General specifications</b>                                  |       |  |
| Signal type  |       | Digital Input  |
| <b>Functional safety related parameters</b>                    |       |  |
| Safety Integrity Level (SIL)                                   |       | SIL 2  |
| <b>Supply</b>  |       |  |
| Connection   |       | Power Rail or terminals 14+, 15-   |
| Rated voltage  | $U_r$ | 20 ... 30 V DC   |
| Ripple   |       | ≤ 10 %   |
| Rated current  | $I_r$ | ≤ 50 mA  |
| Power dissipation  |       | 1 W  |
| Power consumption  |       | < 1.3 W  |
| <b>Input</b>   |       |  |
| Connection side  |       | field side   |
| Connection   |       | terminals 1+, 2+, 3-; 4+, 5+, 6-   |
| Rated values   |       | acc. to EN 60947-5-6 (NAMUR)   |
| Open circuit voltage/short-circuit current                     |       | approx. 8 V DC / approx. 8 mA  |
| Switching point/switching hysteresis                           |       | 1.2 ... 2.1 mA / approx. 0.2 mA  |
| Line fault detection   |       | breakage $I \leq 0.1$ mA , short-circuit $I > 6$ mA  |
| Pulse/Pause ratio  |       | ≥ 20 ms / ≥ 20 ms  |
| <b>Output</b>  |       |  |
| Connection side  |       | control side   |
| Connection   |       | output I: terminals 7, 8 ; output II: terminals 8, 9 ; output III: terminals 10, 11 ; output IV: terminals 11, 12  |
| Output I, II, III, IV  |       | channel 1, 2; relay  |
| Contact loading  |       | 50 V AC/1 A/cos $\phi > 0.7$ ; 40 V DC/1 A resistive load  |
| Minimum switch current   |       | 1 mA / 24 V DC   |
| Energized/De-energized delay                                   |       | approx. 20 ms / approx. 20 ms  |
| Mechanical life  |       | 10 <sup>8</sup> switching cycles   |
| Collective error message                                       |       | Power Rail   |
| <b>Transfer characteristics</b>                                |       |  |
| Switching frequency  |       | ≤ 10 Hz  |
| <b>Galvanic isolation</b>                                      |       |  |
| Input/Output   |       | reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>   |
| Input/power supply   |       | reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>   |
| Output/power supply  |       | basic insulation according to IEC/EN 61010-1, rated insulation voltage 32 V <sub>eff</sub> , functional insulation, rated insulation voltage 50 V <sub>eff</sub> |
| Output/Output  |       | basic insulation according to IEC/EN 61010-1, rated insulation voltage 32 V <sub>eff</sub> , functional insulation, rated insulation voltage 50 V <sub>eff</sub> |
| <b>Indicators/settings</b>                                     |       |  |
| Display elements   |       | LEDs   |
| Control elements   |       | DIP-switch   |
| Configuration  |       | via DIP switches   |
| Labeling   |       | space for labeling at the front  |
| <b>Directive conformity</b>                                    |       |  |
| Electromagnetic compatibility                                  |       |  |
| Directive 2014/30/EU   |       | EN 61326-1:2013 (industrial locations)   |
| Low voltage  |       |  |
| Directive 2014/35/EU   |       | EN 61010-1:2010  |
| <b>Conformity</b>  |       |  |
| Electromagnetic compatibility                                  |       | NE 21:2004   |
| Degree of protection   |       | IEC 60529:2001   |
| Input  |       | EN 60947-5-6:2000  |
| <b>Ambient conditions</b>                                      |       |  |
| Ambient temperature  |       | -20 ... 60 °C (-4 ... 140 °F)  |
| <b>Mechanical specifications</b>                               |       |  |
| Degree of protection   |       | IP20   |
| Connection   |       | screw terminals  |
| Mass   |       | approx. 150 g  |
| Dimensions   |       | 20 x 119 x 115 mm (0.8 x 4.7 x 4.5 inch) , housing type B2   |
| Mounting   |       | on 35 mm DIN mounting rail acc. to EN 60715:2001   |
| <b>Data for application in connection with hazardous areas</b> |       |  |
| EU-Type Examination Certificate                                |       | PTB 00 ATEX 2083   |
| Marking  |       |  II (1)GD [EEx ia] IIC [circuit(s) in zone 0/1/2]                             |
| Input  |       | EEx ia IIC   |
| Voltage  | $U_o$ | 10.5 V   |

Release date 2018-05-08 08:09 Date of issue 2018-05-08 181284\_eng.xml

|                                |                                 |   |
|--------------------------------|---------------------------------|---|
| Current                        | $I_o$                           | 13 mA   |
| Power                          | $P_o$                           | 34 mW (linear characteristic)   |
| <b>Supply</b>                  |                                 |   |
| Maximum safe voltage           | $U_m$                           | 253 V AC / 125 V DC (Attention! $U_m$ is no rated voltage.)   |
| <b>Output</b>                  |                                 |   |
| Contact loading                |                                 | 50 V AC/1 A/ $\cos \phi > 0.7$ ; 40 V DC/1 A resistive load   |
| Maximum safe voltage           | $U_m$                           | 253 V AC (Attention! The rated voltage can be lower.)   |
| Certificate                    |                                 | TÜV 99 ATEX 1493 X  |
| Marking                        |                                 |  II 3G Ex nA nC IIC T4 |
| Galvanic isolation             |                                 |   |
| Input/input                    |                                 | not available   |
| 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                             |
| Directive conformity           |                                 |   |
| Directive 2014/34/EU           |                                 | EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010  |
| <b>International approvals</b> |                                 |   |
| FM approval                    |                                 |   |
| Control drawing                |                                 | 116-0035  |
| CSA approval                   |                                 |   |
| Control drawing                |                                 | 116-0047  |
| <b>General information</b>     |                                 |   |
| Supplementary information      | Observe the cer information see | conformity, instruction manuals, and manuals where applicable. For                                      |

**Configuration**



**Switch position**

| S | Function                                       |                         | Position |
|---|--|-------------------------|----------|
| 1 | Mode of operation Channel I (relay) energized  | with high input current | I        |
|   |  | with low input current  | II       |
| 2 | Mode of operation Channel 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 module 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 150 individual devices depending on the power consumption of the devices. Collective error messages received from the Power Rail activate a galvanically-isolated mechanical contact.

**Power Rail UPR-03**

The Power Rail UPR-03 is a complete unit consisting of the electrical insert and an aluminium profile rail 35 mm x 15 mm. To make electrical contact, the devices are simply engaged.

**Profile Rail K-DUCT with Power Rail**

The profile rail K-DUCT is an aluminum profile rail with Power Rail insert and two integral cable ducts for system and field cables. Due to this assembly no additional cable guides are necessary.



*Power Rail and Profile Rail must not be fed via the device terminals of the individual devices!*