Features

- 2-channel isolated barrier
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Active transistor output
- 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. The device transfers digital signals (NAMUR sensors or dry contacts) from a hazardous area to a safe area.

A proximity sensor or switch controls an active transistor output for the safe area load. The output changes state when the input signal changes state.

The output state can be reversed using switches S1 and S2. Switch S3 enables or disables line fault detection of the field circuit.

During an error condition, the transistor reverts to its de-energized state.

A fault is signalized by LEDs acc. to NAMUR NE44 and a separate collective error message output.

Connection

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Assembly

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SIL 2

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Refer to “General Notes Relating to Pepperl+Fuchs Product Information”.
### Technical data KFD2-ST2-Ex2

**General specifications**
- **Signal type**: Digital Input

**Functional safety related parameters**
- **Safety Integrity Level (SIL)**: SIL 2

**Supply**
- **Connection**: Power Rail or terminals 1+4, 15-
- **Rated voltage** $U_r$: 20 ... 30 V DC
- **Ripple**: $< 10\%$
- **Rated current** $I_r$: $< 50\ mA$

**Input**
- **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 $I > 6 \ mA$

**Output**
- **Connection side**: control side
- **Connection**: output I: terminals 7+ ; output II: terminals 9+
- **Signal level**:
  - 1-signal: (L+) - 3.5 V (100 mA, short-circuit protected)
  - 0-signal: switched off (off-state current $\leq 10 \ \mu A$)
- **Output I, II**
  - Collective error message: Power Rail

**Transfer characteristics**
- **Switching frequency**: $\leq 5 \ kHz$

**Galvanic isolation**
- **Input/Output**: reinforced insulation acc. to IEC 62103, rated insulation voltage 300 V$_{rms}$
- **Input/power supply**: reinforced insulation acc. to IEC 62103, rated insulation voltage 300 V$_{rms}$
- **Output/power supply**: not available, common pole terminal 14+
- **Input/input**: not available
- **Output/Output**: not available, common pole terminal 14+

**Indicators/settings**
- **Display elements**: LEDs
- **Control elements**: DIP-switch
- **Configuration**: via DIP switches
- **Labeling**: space for labeling at the front

**Directive conformity**
- **Electromagnetic compatibility**: Directive 2014/30/EU EN 61326-1:2013 (industrial locations)
- **Galvanic isolation**: IEC 62103:2003
- **Degree of protection**: NE 21:2004
- **Degree of protection**: IEC 60529:2001
- **Input**: EN 60947-5-6:2000

**Ambient conditions**
- **Ambient temperature**: -20 ... 60 °C (-4 ... 140 °F)

**Mechanical specifications**
- **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

**Data for application in connection with hazardous areas**
- **EU-Type Examination Certificate**: PTB 00 ATEX 2035
- **Marking**:
  - II (1) G [Ex ia] IIC
  - II (1) D [Ex ia] IIIC
- **Input**: Ex ia IIC, Ex ia IIIC
- **Voltage** $U_o$: 10.5 V
- **Current** $I_o$: 13 mA
- **Power** $P_o$: 34 mW (linear characteristic)
- **Supply**
  - **Maximum safe voltage** $U_m$: 40 V DC (Attention! The rated voltage can be lower.)
- **Output**
  - **Maximum safe voltage** $U_m$: 40 V DC (Attention! The rated voltage can be lower.)
## Technical data

### KFD2-ST2-Ex2

<table>
<thead>
<tr>
<th>Certificate</th>
<th>TÜV 99 ATEX 1499 X</th>
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<tbody>
<tr>
<td>Marking</td>
<td>II 3G Ex nA II T4</td>
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<td>Galvanic isolation</td>
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<td>Input/Output</td>
<td>safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V</td>
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<tr>
<td>Input/power supply</td>
<td>safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V</td>
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### International approvals

<table>
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<th>Control drawing</th>
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<tr>
<td>Control drawing</td>
<td>116-0035</td>
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<tr>
<td>CSA approval</td>
<td>Control drawing</td>
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<td>Control drawing</td>
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<td>IECEx approval</td>
<td>IECEx PTB 05.0011</td>
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### General information

| Supplementary information | Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com. |

Configuration

Switch position

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<tr>
<th>S</th>
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<th>Position</th>
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<tbody>
<tr>
<td>1</td>
<td>Mode of operation</td>
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</tr>
<tr>
<td></td>
<td>Output I active</td>
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</tr>
<tr>
<td></td>
<td>with high input current</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>with low input current</td>
<td>II</td>
</tr>
<tr>
<td>2</td>
<td>Mode of operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Output II active</td>
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</tr>
<tr>
<td></td>
<td>with high input current</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>with low input current</td>
<td>II</td>
</tr>
<tr>
<td>3</td>
<td>Line fault detection</td>
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</tr>
<tr>
<td></td>
<td>ON</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td>II</td>
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Operating status

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

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!