



Switch Amplifier KCD2-ST-Ex2

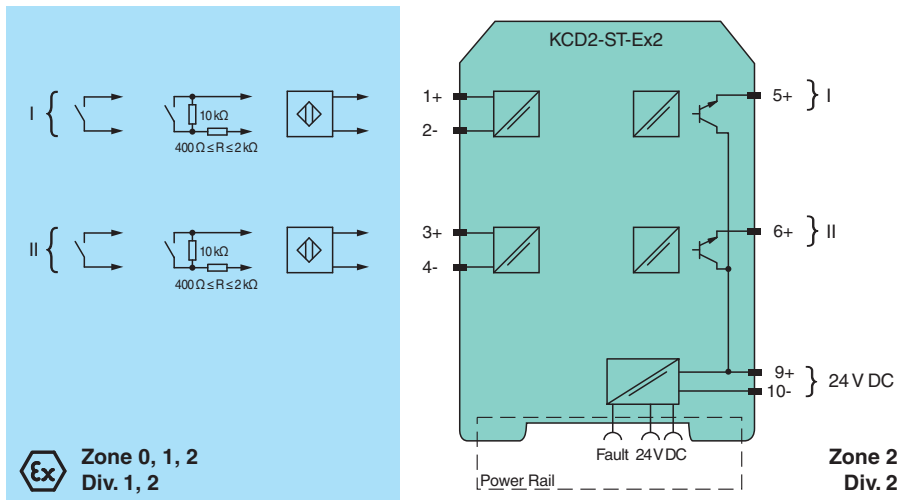
- 2-channel isolated barrier
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- 2 active transistor outputs
- Reversible mode of operation
- Line fault detection (LFD)
- Housing width 12.5 mm
- Up to SIL 2 (SC 3) acc. to IEC/EN 61508



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. Each input controls an active transistor output. Via switches the mode of operation can be reversed and the line fault detection can be switched off. A fault is signaled by LEDs acc. to NAMUR NE44 and a separate collective error message output.

Connection



Technical Data

| General specifications | |
|--------------------------------------|--|
| Signal type | Digital Input |
| Functional safety related parameters | |
| Safety Integrity Level (SIL) | SIL 2 |
| Systematic capability (SC) | SC 3 |
| Supply | |
| Connection | Power Rail or terminals 9+, 10- |
| Rated voltage | U_r 19 ... 30 V DC |
| Ripple | ≤ 10 % |
| Rated current | I_r 30 ... 20 mA + I_{out} |
| Power dissipation | ≤ 800 mW including maximum power dissipation in the output |

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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Technical Data

| | | |
|--|-------|---|
| Input | | |
| Connection side | | field side |
| Connection | | terminals 1+, 2-; 3+, 4- |
| Rated values | | acc. to EN 60947-5-6 (NAMUR) |
| Open circuit voltage/short-circuit current | | approx. 10 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 $I \geq 6.5$ mA |
| Pulse/Pause ratio | | min. 100 μ s / min. 100 μ s |
| Output | | |
| Connection side | | control side |
| Connection | | terminals 5, 6 |
| Rated voltage | U_r | 30 V DC |
| Rated current | I_r | 50 mA |
| Response time | | ≤ 200 μ s |
| Signal level | | 1-signal: (supply voltage) - 3 V max. for 50 mA 0-signal: blocked output (off-state current ≤ 10 μ A) |
| Output I | | signal ; Transistor |
| Output II | | signal ; Transistor |
| Collective error message | | Power Rail |
| Transfer characteristics | | |
| Switching frequency | | ≤ 5 kHz |
| 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 | | not available , common pole terminal 9+ |
| Output/Output | | not available , common pole terminal 9+ |
| 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) |
| Conformity | | |
| Electromagnetic compatibility | | NE 21:2011 |
| Degree of protection | | IEC 60529:2001 |
| Protection against electrical shock | | IEC 61010-1:2010 |
| Input | | EN 60947-5-6:2000 |
| Ambient conditions | | |
| Ambient temperature | | -20 ... 60 °C (-4 ... 140 °F) extended ambient temperature range up to 70 °C (158 °F), refer to manual for necessary mounting conditions |
| Mechanical specifications | | |
| Degree of protection | | IP20 |
| Connection | | screw terminals |
| Mass | | approx. 100 g |
| Dimensions | | 12.5 x 119 x 114 mm (0.5 x 4.7 x 4.5 inch) (W x H x D) , 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 13 ATEX 0080 |
| Marking | | Ⓜ II (1)G [Ex ia Ga] IIC Ⓜ II (1)D [Ex ia Da] IIIC Ⓜ I (M1) [Ex ia Ma] I |
| Input | | Ex ia |

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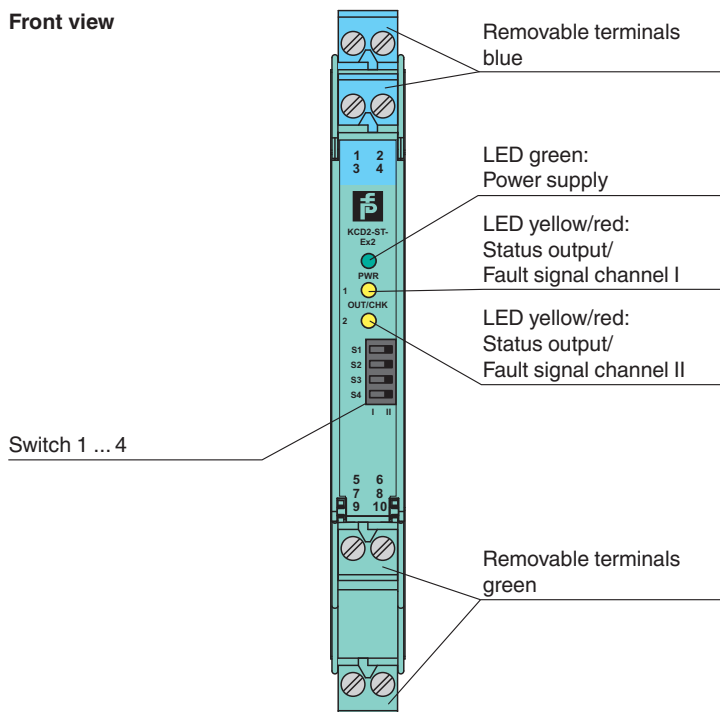
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Technical Data

| | | |
|--------------------------------|-------|---|
| Voltage | U_o | 10.5 V |
| Current | I_o | 17.1 mA |
| Power | P_o | 45 mW (linear characteristic) |
| Supply | | |
| Maximum safe voltage | U_m | 253 V AC (Attention! U_m is no rated voltage.) |
| Output | | |
| Maximum safe voltage | U_m | 253 V AC (Attention! The rated voltage can be lower.) |
| Certificate | | CML 19 ATEX 4410 X |
| Marking | | Ⓜ II 3G Ex ec 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 |
| Directive conformity | | |
| Directive 2014/34/EU | | EN IEC 60079-0:2018 , EN 60079-7:2015+A1:2018 , EN 60079-11:2012 |
| International approvals | | |
| UL approval | | |
| Control drawing | | 116-0374 (cULus) |
| IECEX approval | | |
| IECEX certificate | | IECEX BAS 13.0046 IECEX CML 19.0147X |
| IECEX marking | | [Ex ia Ga] IIC , [Ex ia Da] IIIC , [Ex ia Ma] I Ex ec IIC T4 Gc |
| General information | | |
| Supplementary information | | Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com . |

Assembly

Front view



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




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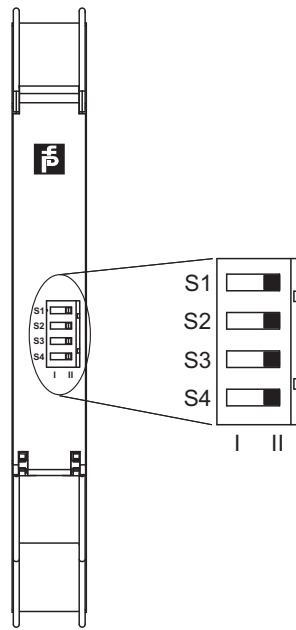
Matching System Components

| | | |
|---|-------------------------|--|
|  | KFD2-EB2 | Power Feed Module |
|  | UPR-03 | Universal Power Rail with end caps and cover, 3 conductors, length: 2 m |
|  | UPR-03-M | Universal Power Rail with end caps and cover, 3 conductors, length: 1,6 m |
|  | UPR-03-S | Universal Power Rail with end caps and cover, 3 conductors, length: 0.8 m |
|  | K-DUCT-BU | Profile rail, wiring comb field side, blue |
|  | K-DUCT-BU-UPR-03 | Profile rail with UPR-03- * insert, 3 conductors, wiring comb field side, blue |

Accessories

| | | |
|---|------------------|--|
|  | F-NR3-Ex1 | NAMUR Resistor Network |
|  | KC-ST-5GN | Terminal block for KC modules, 2-pin screw terminal, green |
|  | KC-ST-5BU | Terminal block for KC modules, 2-pin screw terminal, blue |
|  | KF-CP | Red coding pins, packaging unit: 20 x 6 |

Configuration



Switch settings

| S | Function | | Position |
|---|--------------------------------------|-------------------------|----------|
| 1 | Mode of operation output I (active) | with high input current | I |
| | | with low input current | II |
| 2 | Mode of operation output II (active) | with high input current | I |
| | | with low input current | II |
| 3 | Line fault detection of the input I | ON | I |
| | | OFF | II |
| 4 | Line fault detection of the input II | ON | I |
| | | OFF | II |

Operating states

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

Factory setting: switch 1, 2, 3 and 4 in position I

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