

Switch Amplifier

KCD2-SR-Ex1.LB

SIL 2

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Usable as signal splitter (1 input and 2 outputs)
- Relay contact output
- Fault relay contact output
- Line fault detection (LFD)
- Housing width 12.5 mm
- Up to SIL 2 acc. to IEC 61508

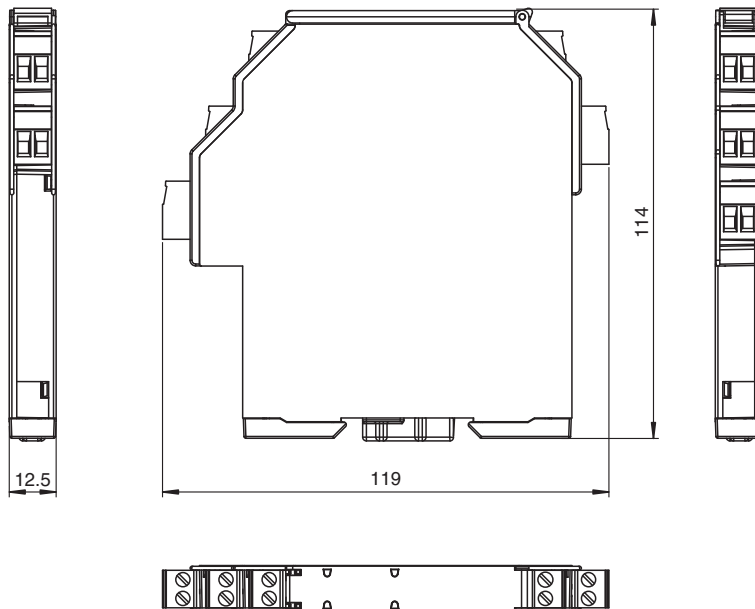
24 V DC



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 A normally open relay contact for the safe area load. The normal output state can be reversed using switch S1. Switch S2 allows output II to be switched between a signal output and an error message output. Switch S3 enables or disables line fault detection of the field circuit. During an error condition, relays revert to their de-energized state and LEDs indicate the fault according to NAMUR NE44. A unique collective error messaging feature is available when used with the Power Rail system. Due to its compact housing design and low heat dissipation, this device is useful for detecting positions, end stops, and switching states in space-critical applications.

Dimensions



Release date: 2020-04-06 Date of issue: 2020-04-06 Filename: 216712_eng.pdf

Technical Data

General specifications

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

Pepperl+Fuchs Group
www.pepperl-fuchs.com

USA: +1 330 486 0002
pa-info@us.pepperl-fuchs.com

Germany: +49 621 776 2222
pa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091
pa-info@sg.pepperl-fuchs.com

PF PEPPERL+FUCHS

Technical Data

| | | |
|---|--|----------------------|
| Signal type | Digital Input | |
| Functional safety related parameters | | |
| Safety Integrity Level (SIL) | SIL 2 | |
| Supply | | |
| Connection | Power Rail or terminals 9+, 10- | |
| Rated voltage | U_r | 19 ... 30 V DC |
| Ripple | $\leq 10 \%$ | |
| Rated current | I_r | $\leq 30 \text{ mA}$ |
| Power dissipation | $\leq 500 \text{ mW}$ | |
| Power consumption | $\leq 500 \text{ mW}$ | |
| Input | | |
| Connection side | field side | |
| Connection | terminals 1+, 2- | |
| 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 $I \leq 0.1 \text{ mA}$, short-circuit $I \geq 6.5 \text{ mA}$ | |
| Pulse/Pause ratio | min. 20 ms / min. 20 ms | |
| Output | | |
| Connection side | control side | |
| Connection | output I: terminals 5, 6 ; output II: terminals 7, 8 | |
| Output I | signal ; relay | |
| Output II | signal or error message ; relay | |
| Contact loading | 253 V AC/2 A/cos $\phi > 0.7$; 126.5 V AC/4 A/cos $\phi > 0.7$; 30 V DC/2 A resistive load | |
| Minimum switch current | 2 mA / 24 V DC | |
| Energized/De-energized delay | $\leq 20 \text{ ms} / \leq 20 \text{ ms}$ | |
| Mechanical life | 10^7 switching cycles | |
| Transfer characteristics | | |
| Switching frequency | $\leq 10 \text{ Hz}$ | |
| 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 | reinforced insulation acc. to EN 50178, rated insulation voltage 300 V _{eff} | |
| Output/Output | reinforced insulation acc. to EN 50178, rated insulation voltage 300 V _{eff} | |
| 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) | |
| Low voltage | | |
| Directive 2014/35/EU | EN 61010-1:2010 | |
| Conformity | | |
| Electromagnetic compatibility | NE 21 | |
| Degree of protection | IEC 60529:2001 | |
| Ambient conditions | | |
| Ambient temperature | -20 ... 60 °C (-4 ... 140 °F) | |
| Mechanical specifications | | |
| Degree of protection | IP20 | |
| Connection | screw terminals | |
| Mass | approx. 100 g | |

Release date: 2020-04-06 Date of issue: 2020-04-06 Filename: 216712_eng.pdf

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

Pepperl+Fuchs Group
www.pepperl-fuchs.comUSA: +1 330 486 0002
pa-info@us.pepperl-fuchs.comGermany: +49 621 776 2222
pa-info@de.pepperl-fuchs.comSingapore: +65 6779 9091
pa-info@sg.pepperl-fuchs.com

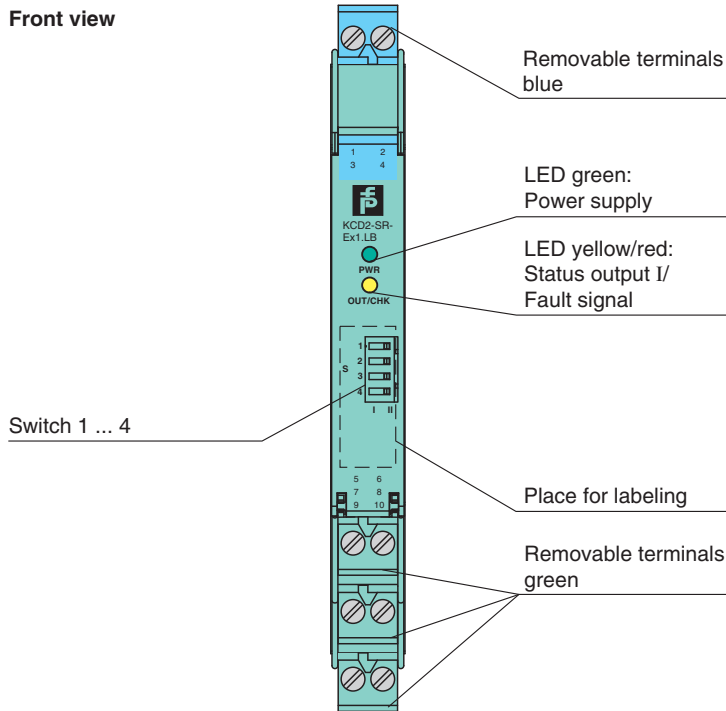
PEPPERL+FUCHS

Technical Data

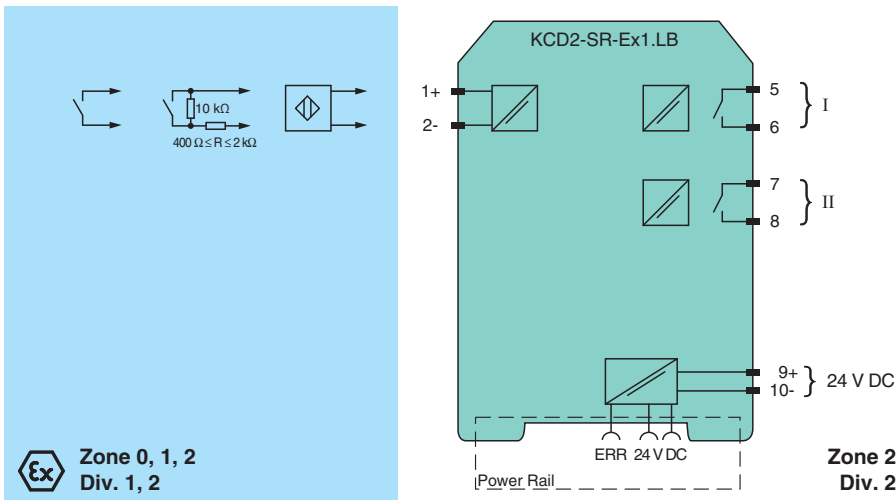
| | | |
|--|----------------|---|
| Dimensions | | 12.5 x 114 x 119 mm (0.5 x 4.5 x 4.7 inch) , housing type A2 |
| Mounting | | on 35 mm DIN mounting rail acc. to EN 60715:2001 |
| Data for application in connection with hazardous areas | | |
| EU-type examination certificate | | BASEEFA 06 ATEX 0092 |
| Marking | | Ⓜ II (1)G [Ex ia Ga] IIC , Ⓜ II (1)D [Ex ia Da] IIIC , Ⓜ I (M1) [Ex ia Ma] I |
| Input | | [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I |
| 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 I, II | | |
| Maximum safe voltage | U _m | 253 V AC (Attention! U _m is no rated voltage.) |
| Contact loading | | 253 V AC/2 A/cos φ > 0.7; 126.5 V AC/4 A/cos φ > 0.7; 30 V DC/2 A resistive load |
| Certificate | | PF 06 CERT 0972 X |
| Marking | | Ⓜ II 3G Ex nA nC IIC T4 Gc |
| Output I, II | | |
| Contact loading | | 50 V AC/2 A/cos φ > 0.7; 30 V DC/2 A resistive load |
| 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 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010 |
| International approvals | | |
| FM approval | | |
| Control drawing | | 116-0419 (cFMus) |
| UL approval | | |
| Control drawing | | 116-0420 (cULus) |
| IECEx approval | | |
| Approved for | | [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I |
| 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



Connection



Ex Zone 0, 1, 2
Div. 1, 2

Accessories

| | | |
|--|------------------|---|
| | 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 | |

Release date: 2020-04-06 Date of issue: 2020-04-06 Filename: 216712_eng.pdf

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

Accessories



K-DUCT-BU-UPR-03

Profile rail with UPR-03- * insert, 3 conductors, wiring comb field side blue

Release date: 2020-04-06 Date of issue: 2020-04-06 Filename: 216712_eng.pdf

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

Pepperl+Fuchs Group
www.pepperl-fuchs.com

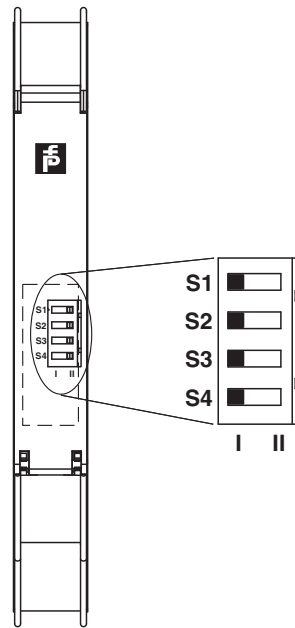
USA: +1 330 486 0002
pa-info@us.pepperl-fuchs.com

Germany: +49 621 776 2222
pa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091
pa-info@sg.pepperl-fuchs.com

 **PEPPERL+FUCHS**

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 | Assignment output II (relay) | Switching state like relay I | I |
| | | Fault indication output (de-energized if fault) | II |
| 3 | Line fault detection | ON | I |
| | | OFF | II |
| 4 | no function | | |

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 |

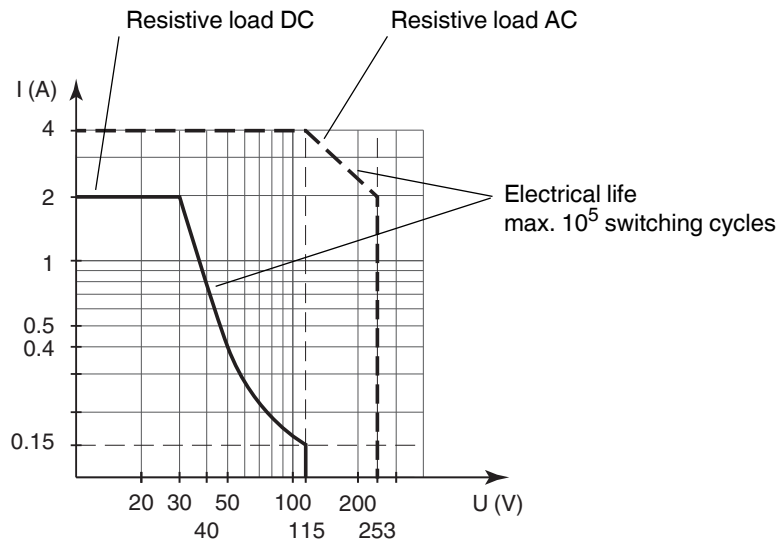
Factory setting: switch 1, 2, 3 and 4 in position I

Characteristic Curve

Maximum switching power of output contacts

Release date: 2020-04-06 Date of issue: 2020-04-06 Filename: 216712_eng.pdf

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



The maximum number of switching cycles is depending on the electrical load and may be higher when reduced currents and voltages are applied.