Features

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input for dry contacts or SN/S1N sensors
- Relay contact output
- Error message output
- For usage in accordance with ISO 13849-1
- Line fault detection (LFD)
- Up to SIL3 acc. to IEC 61508

Function

This isolated barrier is used for intrinsic safety applications. It transfers digital signals (SN/S1N proximity sensors and approved mechanical contacts) from a hazardous area to a safe area. It has additional protective circuitry to maintain a reliable safety function.

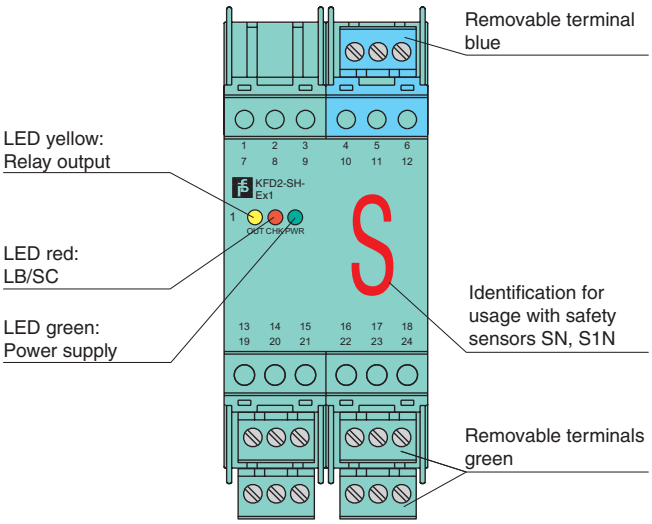
The proximity sensor or switch controls 1 safety output with 3 form A normally open relay contacts (one is in series to the 2 output relay contacts for the safety function), 1 standard output with 1 form A normally open relay contact, and 1 error message output with a passive transistor. Lead breakage (LB) and short circuit (SC) conditions are continuously monitored.

During an error condition, fault output energizes and outputs I and II de-energize.

For safety applications, terminals 13 and 14 (output I) must be used.

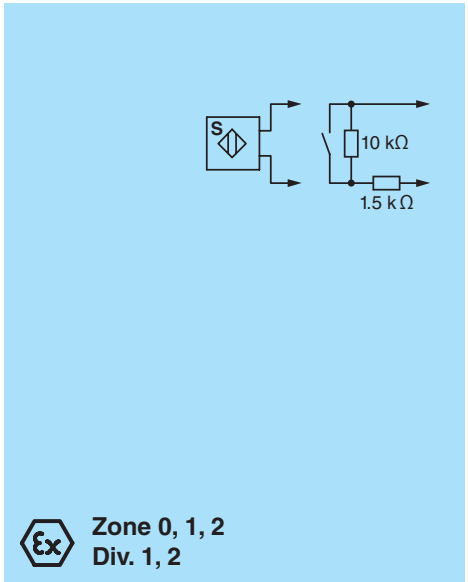
Assembly

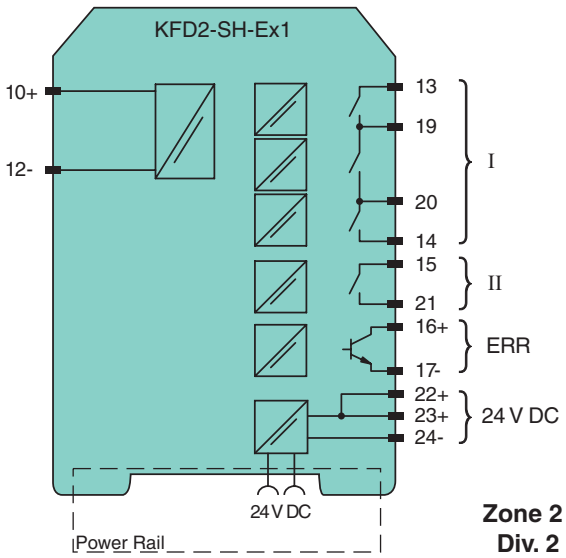
Front view



SIL3

Connection





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General specifications	
Signal type	Digital Input
Supply	
Connection	Power Rail or terminals 22+, 23+, 24-
Rated voltage	20 ... 35 V DC
Ripple	≤ 10 %
Rated current	≤ 130 mA
Power loss	2.1 W
Power consumption	≤ 2.3 W
Input	
Connection	terminals 10+, 12-
Open circuit voltage/short-circuit current	approx. 8.4 V DC / approx. 11.7 mA
Lead resistance	≤ 50 Ω, in hazardous area cable capacitances and inductivities are to be taken into account
Switching point	
Relay de-energized	I < 2.1 mA and I > 5.9 mA
Relay energized	2.8 mA < I < 5.3 mA
Response delay	≤ 1 ms
Output	
Connection	output I: terminals 13, 14 ; output II: terminals 15, 21 ; output III: terminals 16+, 17-
Output I	signal , safety oriented ; relay
Output I, II	
Contact loading	50 V AC/1 A/cos ϕ > 0.7; 24 V DC/1 A resistive load
Mechanical life	50 x 10^6 switching cycles
Output II	signal , not safety oriented ; relay
Output III	fault signal , not safety oriented ; electronic output, passive
Rated voltage	10 ... 30 V DC
Signal level	1-signal: (L+) -2.5 V (7 mA, short-circuit proof) / 0-signal: blocked output (Leakage current ≤ 10 mA)
Transfer characteristics	
Switching frequency	5 Hz
Electrical isolation	
Output/power supply	reinforced insulation according to IEC 61140, rated insulation voltage 300 V_{eff}
Mutual output I, II, III	basic insulation acc. to DIN EN 50178, rated insulation voltage of 50 V_{eff}
Directive conformity	
Electromagnetic compatibility	
Directive 2004/108/EC	EN 61326-1:2006
Conformity	
Electromagnetic compatibility	NE 21
Protection degree	IEC 60529
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 280 g
Dimensions	40 x 107 x 115 mm (1.6 x 4.2 x 4.5 in) , housing type C1
Data for application in connection with Ex-areas	
EC-Type Examination Certificate	PTB 00 ATEX 2042 , for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection	⟨Ex⟩ II (1)GD [EEx ia] IIC [circuit(s) in zone 0/1/2]
Input	EEx ia IIC
Voltage U_o	9.56 V
Current I_o	16.8 mA
Power P_o	41 mW (linear characteristic)
Supply	
Maximum safe voltage U_m	40 V AC/DC (Attention! The rated voltage can be lower.)
Type of protection [EEx ia]	
Output	
Maximum safe voltage U_m	output I/output II: 253 V AC/DC (Attention! U_m is no rated voltage.) output III: 60 V AC/DC (Attention! U_m is no rated voltage .)
Statement of conformity	TÜV 99 ATEX 1493 X , observe statement of conformity
Group, category, type of protection, temperature classification	⟨Ex⟩ II 3G Ex nA nC IIC T4
Electrical isolation	
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

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Directive conformity	
Directive 94/9/EC	EN 50014, EN 50020 , EN 60079-0:2006, EN 60079-15:2005
International approvals	
FM approval	
Control drawing	116-0158
General information	
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 www.pepperl-fuchs.com.

Function

Unlike an SN/S1N series NAMUR proximity sensor, a mechanical contact, requires a 10 kΩ resistor to be placed across the contact in addition to a 1.5 kΩ resistor in series.

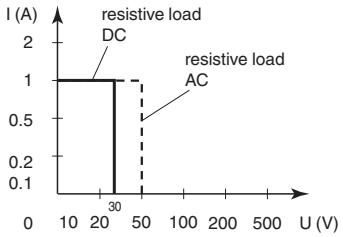
The input (terminals 10, 12) may generally be operated only with **potentially free** (passive) switches.

Single channel safe operations **must** occur via terminals 13 and 14. The center tap of the contacts (terminals 19, 20) can **also** be used if an safe operation is to occur a redundant branch.

If the device is used for safety operations the information in the test documents should be observed. The output III error message delivers a "1"-signal when the control circuit experiences lead breakage (LB) or a short circuit (LK).

The device has removable terminals.

Maximal switching power of the output



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 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.

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.

Attention

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

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