Features

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input for approved dry contacts or SN/S1N sensors
- Active voltage output
- Relay output
- Fault indication output
- Line fault detection (LFD)
- Up to SIL3 acc. to IEC 61508
- Up to PL d acc. to EN ISO 13849

Function

This isolated barrier is used for intrinsic safety applications.

The device transfers digital signals (SN/S1N proximity sensors or approved dry contacts) from a hazardous area to a safe area.

The input controls one active voltage output, one relay contact output with a NO contact, and one passive transistor output.

Unlike an SN/S1N series 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.

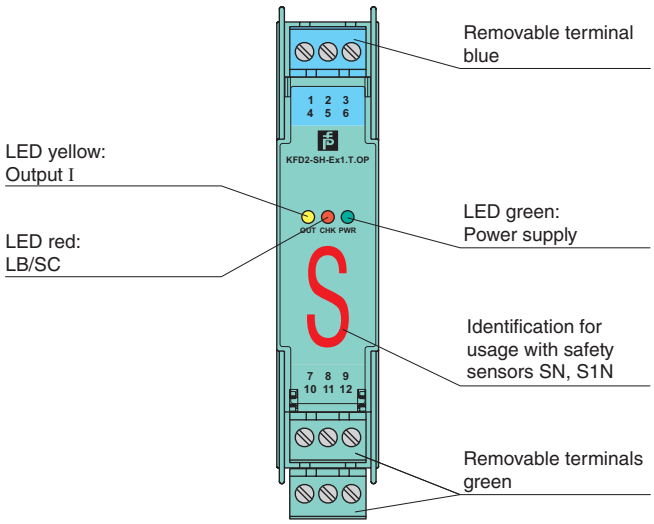
Lead breakage (LB) and short circuit (SC) conditions of the control circuit are continuously monitored.

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

For safety applications up to SIL3, output I must be used. For safety applications up to SIL2, output I and output II can be used.

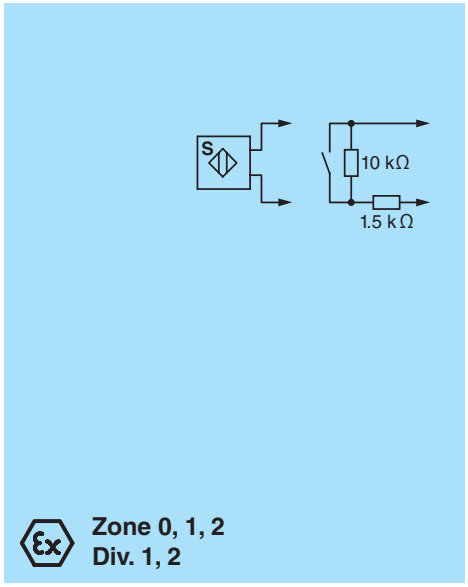
Assembly

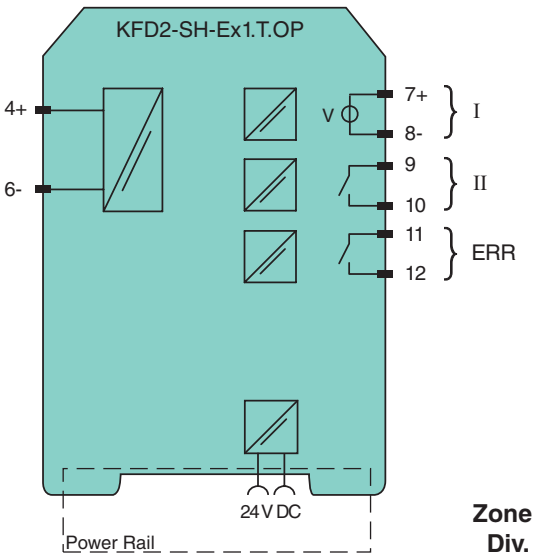
Front view



CE Ex SIL3

Connection





Release date 2014-12-08 10:46 Date of issue 2015-02-27 035845_eng.xml

General specifications		
Signal type		Digital Input
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Performance level (PL)		PL d
Supply		
Connection		Power Rail
Rated voltage	U_n	20 ... 30 V DC
Ripple		≤ 10 %
Rated current	I_n	≤ 100 mA
Power loss		1.5 W
Power consumption		≤ 1.7 W
Input		
Connection		terminals 4+, 6-
Open circuit voltage/short-circuit current		approx. 8.4 V DC / approx. 11.7 mA
Lead resistance		≤ 50 Ω , cable capacitances and inductances must be observed in hazardous areas
Switching point		
Relay de-energized		I < 2.1 mA and I > 5.9 mA , output switched off
Relay energized		2.8 mA < I < 5.3 mA , output switched on
Response delay		≤ 1 ms
Output		
Connection		output I: terminals 7+, 8- ; output II: terminals 9, 10 ; output III: terminals 11, 12
Output I		active voltage output, short-circuit proof 0-signal: 0 V 1-signal: 20 ... 31 V DC at max. 15 mA fault: 0 V
Output II		relay
Contact loading		48 V AC/DC 250 mA
Mechanical life		≤ 20 x 10^6 switching cycles
Output III		relay , fault signal
Contact loading		48 V AC/DC 250 mA
Mechanical life		≤ 20 x 10^6 switching cycles
Transfer characteristics		
Switching frequency		
Output I		≤ 50 Hz
Output II		≤ 5 Hz
Output III		≤ 5 Hz
Directive conformity		
Electromagnetic compatibility		
Directive 2004/108/EC		EN 61326-1:2006
Low voltage		
Directive 2006/95/EC		EN 61010-1:2010
Conformity		
Electromagnetic compatibility		NE 21:2011
Degree of protection		IEC 60529:2001
Safety		IEC 61508:2000 , EN ISO 13849-1:2008
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 150 g
Dimensions		20 x 107 x 115 mm (0.8 x 4.2 x 4.5 in) , housing type B1
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with Ex-areas		
EC-Type Examination Certificate		PTB 00 ATEX 2041 , 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.)

Release date 2014-12-08 10:46 Date of issue 2015-02-27 035845_eng.xml

Output	
Contact loading	48 V AC/DC 250 mA
Maximum safe voltage U_m	60 V AC/DC (Attention! The rated voltage can be lower.)
Statement of conformity	TÜV 99 ATEX 1493 X , observe statement of conformity
Group, category, type of protection, temperature class	Ⓔx 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
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.

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!

Release date 2014-12-08 10:46 Date of issue 2015-02-27 035845_eng.xml