

Features

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Output 45 mA at 11.2 V DC
- Logic input, non-polarized
- Fault indication output
- Line fault detection (LFD)
- Up to SIL 2 acc. to IEC 61508

Function

This isolated barrier is used for intrinsic safety applications. It supplies power to solenoids, LEDs, and audible alarms, located in a hazardous area.

It is controlled via a logic signal. The input has two defined states: 1-Signal = 16 V DC ... 30 V DC, 0-Signal = 0 V DC ... 5 V DC.

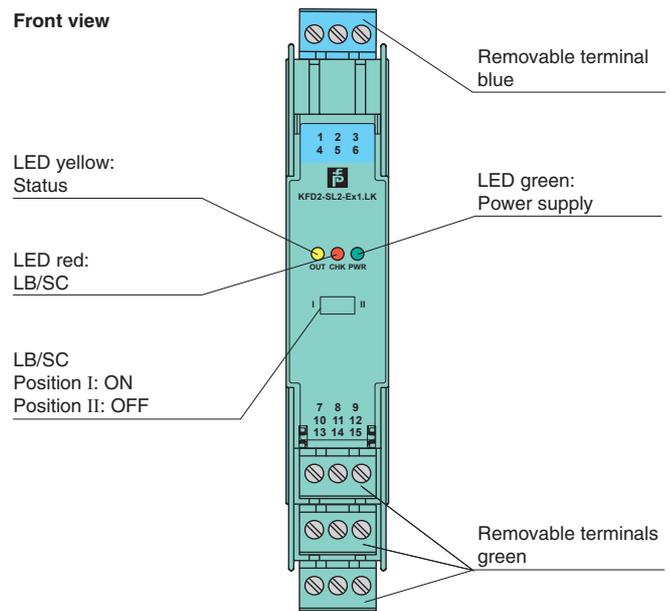
At full load, 11.2 V at 45 mA is available for the hazardous area application.

If the field impedance is > 10 kΩ for lead breakage or < 50 Ω for short circuits a line fault is detected.

During an error condition, the fault indication output de-energizes.

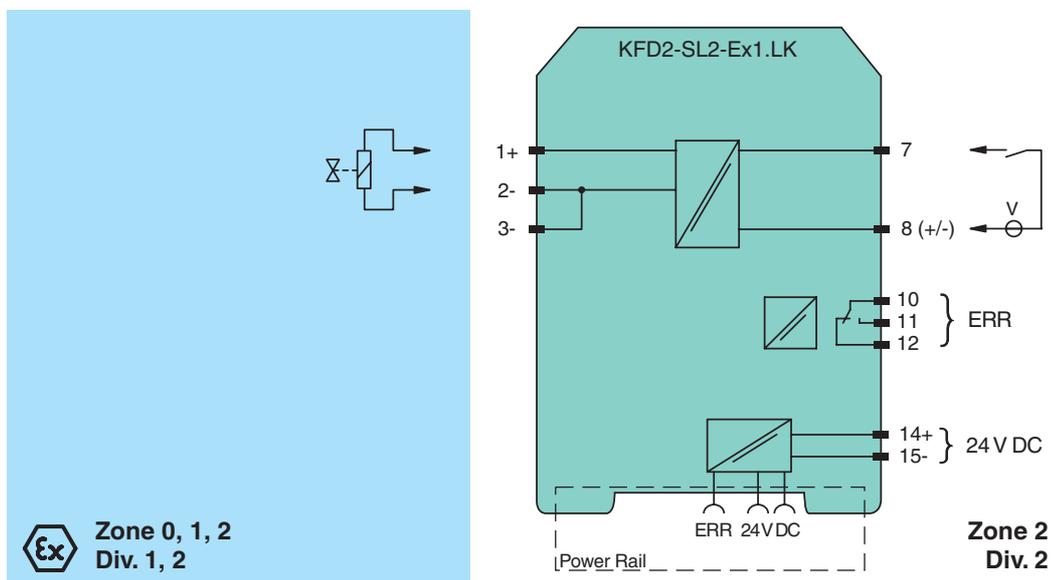
A fault is signaled by LEDs acc. to NAMUR NE44 and a separate collective error message output.

Assembly



Connection

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

General specifications		
Signal type		Digital Output
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Supply		
Connection		Power Rail or terminals 14+, 15-
Rated voltage	U_r	19 ... 30 V DC
Power dissipation		max. 1.5 W
Power consumption		≤ 2 W at 45 mA output current
Input		
Connection side		control side
Connection		terminals 7, 8
Input current		approx. 3 mA
Signal level		1-signal: 16 ... 30 V DC 0-signal: 0 ... 5 V DC
Output		
Connection side		field side
Output I		
Connection		terminals 1+, 2- or 3-
Internal resistor	R_i	270 Ω
Current	I_e	≤ 45 mA
Voltage	U_e	≥ 11.2 V
Open loop voltage	U_s	≥ 23.5 V
Output signal		These values are valid for the rated operating voltage 19 ... 30 V DC.
Energized/De-energized delay		≤ 20 ms / ≤ 20 ms
Line fault detection		signal at short-circuit $R_B < 50 \Omega$, lead breakage $R_B > 10 \text{ k}\Omega$; test current < 650 μA
Output II		
Connection		terminals 10, 11, 12, non-intrinsically safe
Contact loading		253 V AC/2 A/cos φ > 0.7; 40 V DC/2 A resistive load
Mechanical life		2 x 10 ⁷ switching cycles
Energized/De-energized delay		≤ 20 ms / ≤ 20 ms
Galvanic isolation		
Input/power supply		basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V _{eff}
Output I, II against each other		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Output II/power supply		reinforced insulation according to IEC/EN 61010-1, 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 21:2007
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. 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		
Marking		ZELM 99 ATEX 0015 ⊕ II (1)G [Ex ia Ga] IIC ⊕ II (1)D [Ex ia Da] IIIC ⊕ I (M1) [Ex ia Ma] I
Output I		Ex ia
Voltage	U_o	28 V
Current	I_o	110 mA

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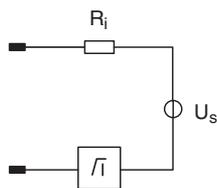
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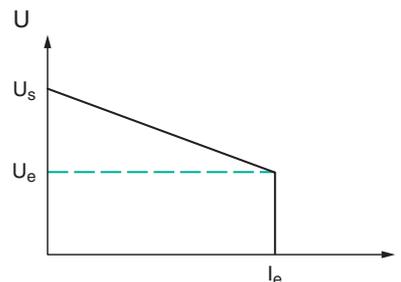
Power	P_o	770 mW (linear characteristic)
Supply		
Maximum safe voltage	U_m	40 V (Attention! The rated voltage can be lower.)
Input		
Maximum safe voltage	U_m	60 V (Attention! The rated voltage can be lower.)
Collective error message		
Maximum safe voltage	U_m	40 V (Attention! The rated voltage can be lower.)
Certificate		TÜV 02 ATEX 1820 X
Marking		⊕ II 3G Ex nA nC IIC T4 Gc
Output II		
Contact loading		50 V AC/2 A/cos $\phi > 0.7$; 40 V DC/2 A resistive load
Galvanic isolation		
Output I/other circuits		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 , EN 60079-26:2007 , EN 50303:2000
International approvals		
CSA approval		
Control drawing		116-0362
IECEx approval		IECEx ZLM 14.0001
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 .

Output characteristics

Output circuit diagram



Output characteristic



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!

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