

Features

- 1-channel isolated barrier
- 24 V DC supply (bus or loop powered)
- Output 45 mA at 12 V DC
- Line fault transparency (LFT)
- Test pulse immunity
- Housing width 12.5 mm
- Up to SIL 3 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.

The device is controlled with a loop powered signal or a bus powered logic signal.

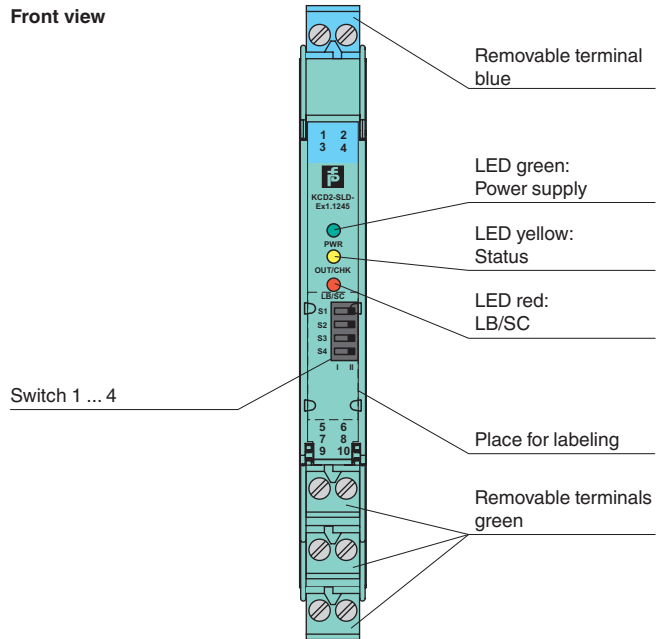
The device is immune to the test pulses of various control systems.

The device simulates a minimum load at the input. The minimum load can be activated and de-activated.

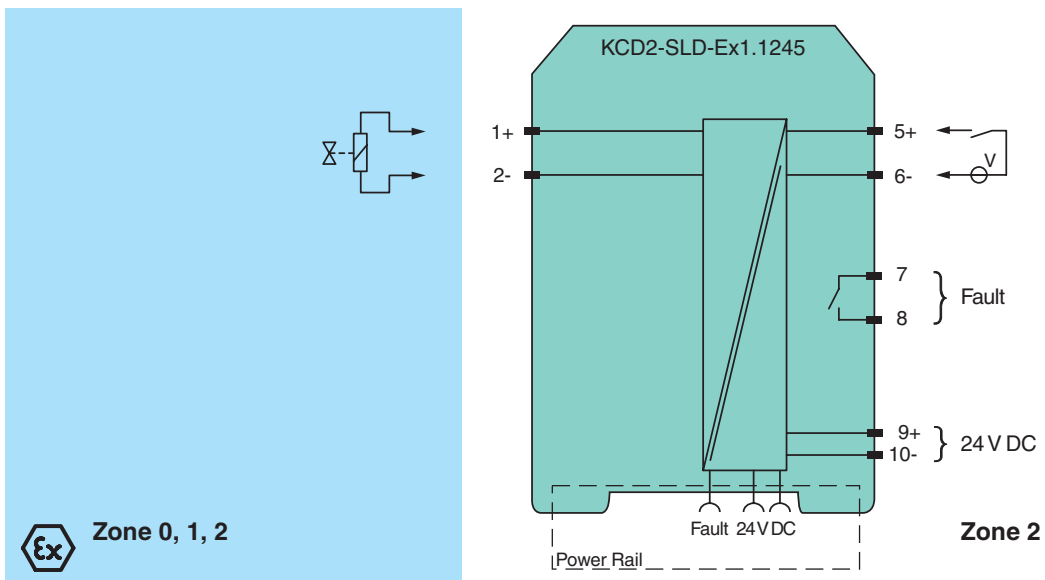
The line fault transparency function can display a line fault in the field by a change in impedance at the switching input of the solenoid driver.

A line fault is indicated by a red LED and output via the fault indication output or a switch contact.

Assembly



Connection



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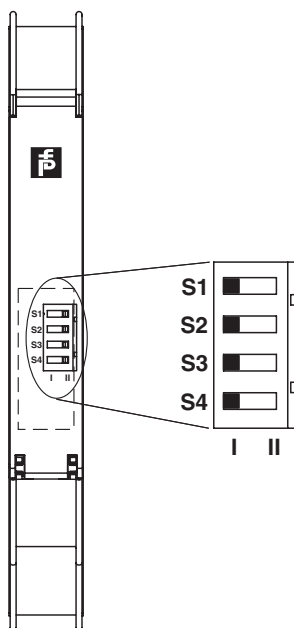
Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

General specifications		
Signal type		Digital Output
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Supply		
Connection		terminals 5+, 6- loop powered Power Rail or terminals 9+, 10- bus powered
Rated voltage	U_r	19 ... 30 V DC
Input current		75 mA at 24 V , 270 Ω load
Power dissipation		1.3 W at 24 V , 270 Ω load
Input		
Connection side		control side
Connection		terminals 5+, 6-
Test pulse length		≤ 2 ms from DO card
Signal level		loop powered 1-signal: 19 ... 30 V DC 0-signal: 0 ... 5 V DC bus powered 1-signal: 15 ... 30 V DC (current limited at 5 mA) 0-signal: 0 ... 5 V DC
Rated current	I_r	0-signal: typ. 1.6 mA at 1.5 V DC; typ. 8 mA at 3 V DC (maximum leakage current DO card) 1-signal: ≥ 36 mA (minimum load current DO card)
Inrush current		< 200 mA , 10 ms loop powered
Output		
Connection side		field side
Connection		terminals 1+, 2-
Internal resistor	R_i	240 Ω
Current	I_e	typ. 45 mA
Voltage	U_e	typ. 12 V
Current limit	I_{max}	50 mA
Open loop voltage	U_s	typ. 24.6 V
Load		nominal 0.05 ... 18 k Ω
Output II		fault signal
Connection		terminals 7, 8 , non-intrinsically safe
Contact loading		30 V DC/ 0.5 A resistive load
Mechanical life		10 ⁵ switching cycles
Energized/De-energized delay		≤ 20 ms / ≤ 20 ms
Line fault detection		signal at short-circuit $R_B < 25 \Omega$, lead breakage $R_B > 50 \text{ k}\Omega$; test current $< 500 \mu\text{A}$
Galvanic isolation		
Output/other circuits		basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Output II/power supply		basic insulation according to IEC/EN 61010-1, rated insulation voltage 32 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)
Conformity		
Electromagnetic compatibility		NE 21:2012 , EN 61326-3-2:2008 For further information see system description.
Degree of protection		IEC 60529:2013
Protection against electrical shock		EN 61010-1:2010
Ambient conditions		
Ambient temperature		-20 ... 60 $^{\circ}\text{C}$ (-4 ... 140 $^{\circ}\text{F}$)
Mechanical specifications		
Degree of protection		IP20
Connection		screw terminals
Mass		approx. 150 g
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		EXA 17 ATEX 0002 X

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Marking		II 3(1)G Ex nC ec [ia Ga] IIC T4 Gc II (1)D [Ex ia Da] IIIC I (M1) [Ex ia Ma] I
Output I		Ex ia
Voltage	U_o	26 V
Current	I_o	110 mA
Power	P_o	715 mW
Supply		
Maximum safe voltage	U_m	60 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	60 V (Attention! The rated voltage can be lower.)
Galvanic isolation		
Output I/other circuits		safe electrical isolation acc. to IEC/EN 60079-11, rated insulation voltage 300 V_{rms}
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-7:2015 , EN 60079-11:2012 , EN 60079-15:2010
International approvals		
IECEX approval		
IECEX certificate		IECEX EXA 17.0001X
IECEX marking		Ex nC ec [ia Ga] IIC T4 Gc [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 .

Configuration



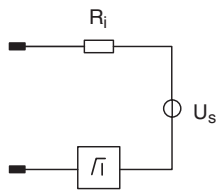
Switch settings

Switch	Function		Position
S1	Line fault detection	enabled	I
		disabled	II
S2	Operating mode	loop powered	I
		bus powered with logic input	II
S3	Minimum load	enabled	I
		disabled	II
S4	No function		

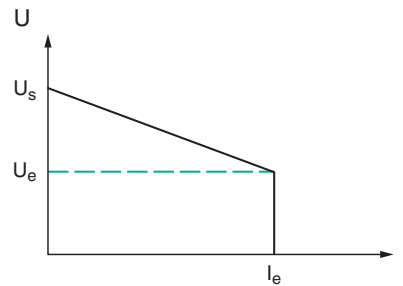
Factory settings: line fault detection enabled, operating mode loop powered, minimum load enabled

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!