



Solenoid Driver

KCD2-SLD-Ex1.1045

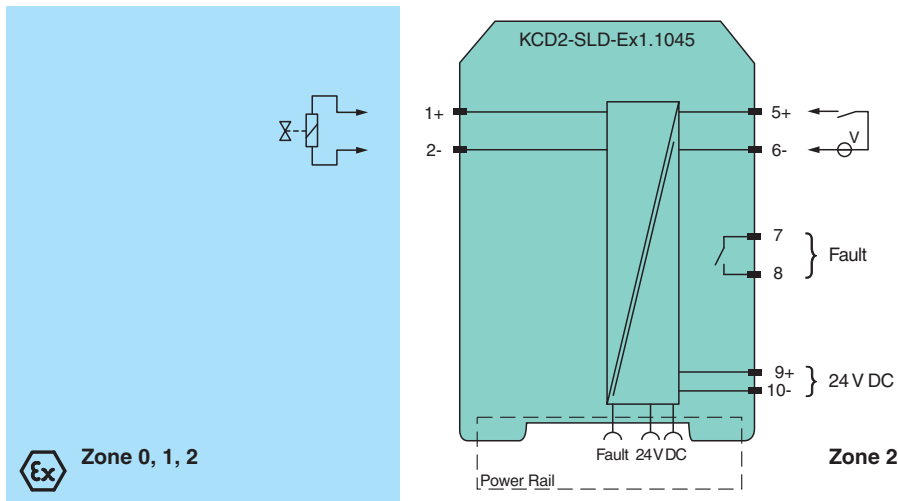
- 1-channel isolated barrier
- 24 V DC supply (bus or loop powered)
- Output 45 mA at 10 V DC
- Line fault transparency (LFT)
- Test pulse immunity
- Housing width 12.5 mm
- Up to SIL 3 acc. to IEC/EN 61508



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.

Connection



Technical Data

General specifications	
Signal type	Digital Output
Functional safety related parameters	
Safety Integrity Level (SIL)	SIL 3
Systematic capability (SC)	SC 3
Supply	
Connection	terminals 5+, 6- loop powered Power Rail or terminals 9+, 10- bus powered
Rated voltage	U_r 19 ... 30 V DC loop powered

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

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Technical Data

Input current		75 mA at 24 V, 220 Ω load
Power dissipation		1.4 W at 24 V, 220 Ω load
Input		
Connection side		control side
Connection		terminals 5+, 6-
Test pulse length		max. 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	285 Ω
Current	I_e	typ. 45 mA
Voltage	U_e	typ. 10 V
Current limit	I_{max}	45 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 $R_{load} < 25 \Omega$, lead breakage $R_{load} > 50 \text{ k}\Omega$; test current < 500 μA
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 °C (-4 ... 140 °F) Observe the temperature range limited by derating, see section derating.
Mechanical specifications		
Degree of protection		IP20
Connection		screw terminals
Mass		approx. 150 g
Dimensions		12.5 x 119 x 114 mm (0.5 x 4.7 x 4.5 inch) (W x H x D) , housing type A2
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001

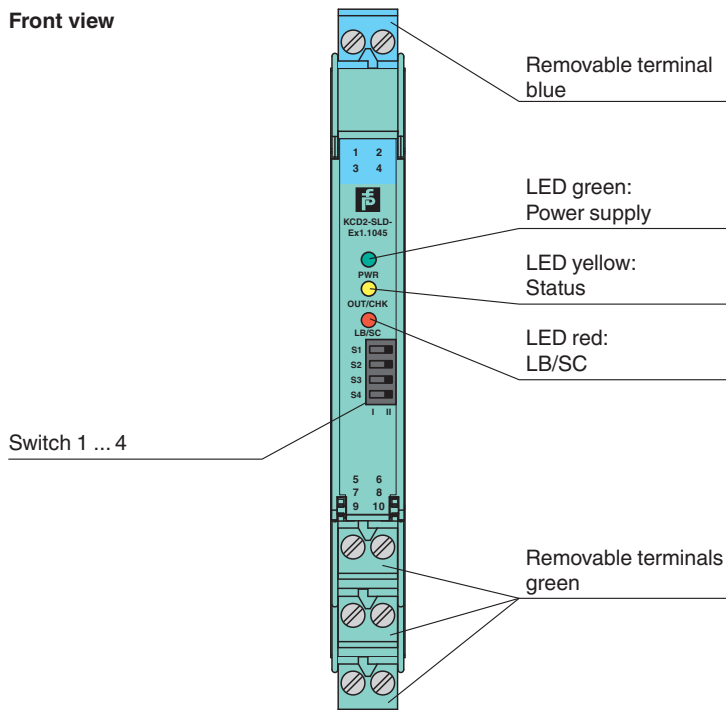
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Technical Data

Data for application in connection with hazardous areas	
EU-type examination certificate	EXA 17 ATEX 0002 X
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 93 mA
Power	P _o 605 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	
UL approval	E106378
Control drawing	116-0448 (cULus)
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 .

Assembly







Front view






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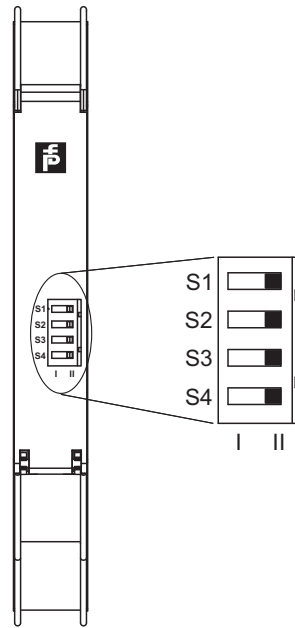
Matching System Components

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

Accessories

	KC-ST-5GN	Terminal block for KC modules, 2-pin screw terminal, green
	KC-ST-5BU	Terminal block for KC modules, 2-pin screw terminal, blue
	KF-CP	Red coding pins, packaging unit: 20 x 6

Configuration



Switch settings

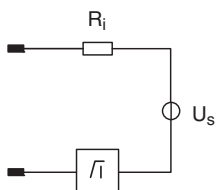
Switch	Function		Position
S1	Line fault detection	enabled	I
		disabled	II
S2	Mode of operation	loop powered	I
		bus powered with logic input	II
S3	Minimum load	enabled	I
		disabled	II
S4	No function		

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

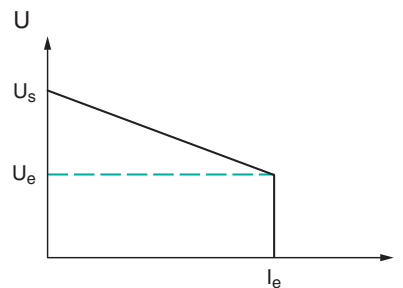
Characteristic Curve

Output characteristics

Output circuit diagram



Output characteristic



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