



## Solenoid Driver KFD2-SLD-Ex1.13100

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Logic input
- Output 100 mA at 13 V DC
- Alternating outputs for the operation of solenoids with 2 coils
- High output power for IIB gas group
- Line fault transparency (LFT)
- Test pulse immunity
- Up to SIL 3 acc. to IEC/EN 61508



### Function

This isolated barrier is used for intrinsic safety applications.

The device supplies power to solenoids, LEDs and audible alarms located in the explosion-hazardous area.

The device has 2 alternating outputs, in order to be able to operate a valve with 2 coils.

If both inputs are energized, then only output 1 is energized.

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

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 fault is signalized by LEDs and a separate collective error message output.

### Application

#### Device function with 2 alternating outputs

The device has 2 alternating outputs, in order to be able to operate a valve with 2 coils. The table shows the behavior of input to output in relationship with the alternating outputs.

Input 1	Input 2	Active output
High signal	Low signal	Output 1
Low signal	High signal	Output 2
High signal	High signal	Output 1
Low signal	Low signal	No output

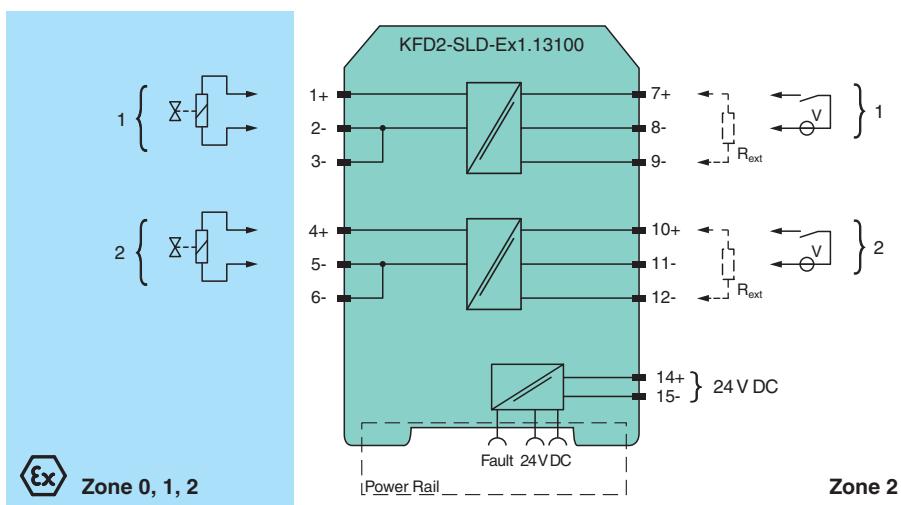
#### Input current setting

For DO cards that require a minimum load, the input current can be adapted via an external resistor. The device has an auxiliary terminal at each input for connecting the external resistor.

For example

The minimum load of the DO card is 20 mA. Subtract the input current of the isolator from the minimum load of the DO card. This results in  $20 \text{ mA} - 6 \text{ mA} = 14 \text{ mA}$ . In this case, create a bypass with 14 mA. With an output voltage of the DO card of 24 V, this results in  $1714 \Omega$ . The suitable external resistor  $R_{\text{ext}}$  is  $1.5 \text{ k}\Omega/1 \text{ W}$ .

## Connection



## Technical Data

## General specifications

Signal type	Digital Output	
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## Functional safety related parameters

Safety Integrity Level (SIL)	SIL 3	
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Systematic capability (SC)	SC 3
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## Supply

Connection	Power Rail or terminals 14+, 15-	
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Rated voltage	$U_r$	19 ... 30 V DC loop powered
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Input current	115 mA at 24 V, 130 $\Omega$ load	
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Power dissipation	1.5 W at 24 V, 130 $\Omega$ load	
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## Input

Connection side	control side	
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Connection	input 1: terminals 7+, 8-, optional $R_{ext}$ between terminals 7 and 9 input 2: terminals 10+, 11-, optional $R_{ext}$ between terminals 10 and 12	
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Test pulse length	max. 2 ms from DO card	
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Input current	approx. 6 mA at 24 V DC If necessary, the current value can be increased by resistor $R_{ext}$ .	
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Signal level	1-signal: 15 ... 30 V DC 0-signal: 0 ... 5 V DC	
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## Output

Connection side	field side	
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Connection	output 1: terminals 1+, 2-, 3 output 2: terminals 4+, 5-, 6-	
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Internal resistor	$R_i$	approx. 64 $\Omega$
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Current	$I_e$	typ. 100 mA
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Voltage	$U_e$	$\geq 13$ V
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Current limit	$I_{max}$	105 mA
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Open loop voltage	$U_s$	typ. 19.2 V
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Load	nominal 0.08 ... 1 k $\Omega$	
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Switching frequency	$f$	max. 2 Hz
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Energized/De-energized delay	30 ms / 30 ms	
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## Galvanic isolation

Input/power supply	basic insulation according to IEC/EN 61010-1, rated insulation voltage 60 V <sub>eff</sub>	
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Input/input	basic insulation according to IEC/EN 61010-1, rated insulation voltage 60 V <sub>eff</sub>	
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Output/Output	basic insulation according to IEC/EN 61010-1, rated insulation voltage 60 V <sub>eff</sub>	
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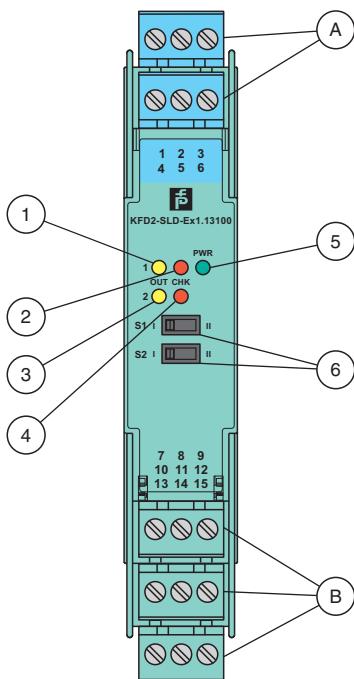
Output/other circuits	basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>	
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## Indicators/settings

## Technical Data

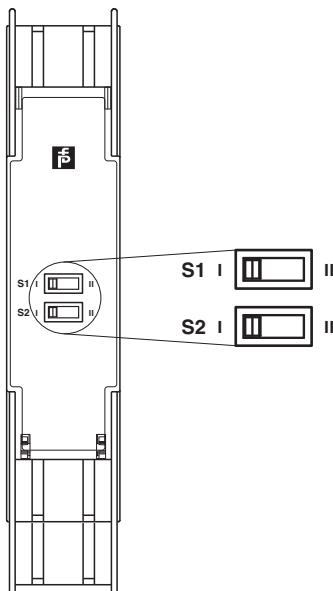
Display elements	LEDs	
Control elements	DIP switch	
Configuration	via DIP switches	
Labeling	space for labeling at the front	
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU	EN 61326-1:2013 (industrial locations)	
<b>Conformity</b>		
Electromagnetic compatibility	NE 21:2011 For further information see system description.	
Degree of protection	IEC 60529:2001	
Protection against electrical shock	EN 61010-1:2010	
<b>Ambient conditions</b>		
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)	
<b>Mechanical specifications</b>		
Degree of protection	IP20	
Connection	screw terminals	
Mass	approx. 200 g	
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 inch) (W x H x D) , housing type B2	
Mounting	on 35 mm DIN mounting rail acc. to EN 60715:2001	
<b>Data for application in connection with hazardous areas</b>		
EU-type examination certificate	EXA 17 ATEX 0076X	
Marking	Ex II 3(1)G Ex ec [ia IIB Ga] IIC T4 Gc Ex II (1)D [Ex ia Da] IIIC Ex I (M1) [Ex ia Ma] I	
Voltage	U <sub>o</sub>	22.2 V
Current	I <sub>o</sub>	360 mA
Power	P <sub>o</sub>	1990 mW
Supply		
Maximum safe voltage	U <sub>m</sub>	60 V (Attention! The rated voltage can be lower.)
Input		
Maximum safe voltage	U <sub>m</sub>	60 V (Attention! The rated voltage can be lower.)
Galvanic isolation		
Output/Output		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 60 V
Output/other circuits		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
<b>Directive conformity</b>		
Directive 2014/34/EU	EN IEC 60079-0:2018+AC:2020 , EN 60079-7:2015+A1:2018 , EN 60079-11:2012	
<b>International approvals</b>		
IECEx approval		
IECEx certificate	IECEx EXA 17.0019X	
IECEx marking	Ex ec [ia IIB Ga] IIC T4 Gc [Ex ia Da] IIIC [Ex ia Ma] I	
<b>General information</b>		
Supplementary information	Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .	

## Assembly



1	LED yellow: Status output 1
2	LED red: LB/SC output 1
3	LED yellow: Status output 2
4	LED red: LB/SC output 2
5	LED green: power supply
6	Switches S1, S2
A	Removable terminals, blue
B	Removable terminals, green

## Configuration



Release date: 2025-02-22 Date of issue: 2025-02-22 Filename: 243753\_eng.pdf

### Switch Settings

Switch	Function	Position
S1	Line fault detection (LB/SC)	enabled
		disabled
S1	Line fault transparency (LFT)	enabled
		disabled

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

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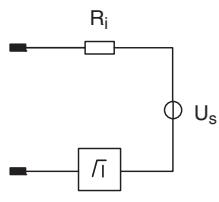
 PEPPERL+FUCHS

Factory setting: line fault detection enabled, line fault transparency enabled

## Characteristic Curve

### Output characteristics

Output circuit diagram



Output characteristic

