

# Solenoid Driver

## KFD2-SL2-Ex2

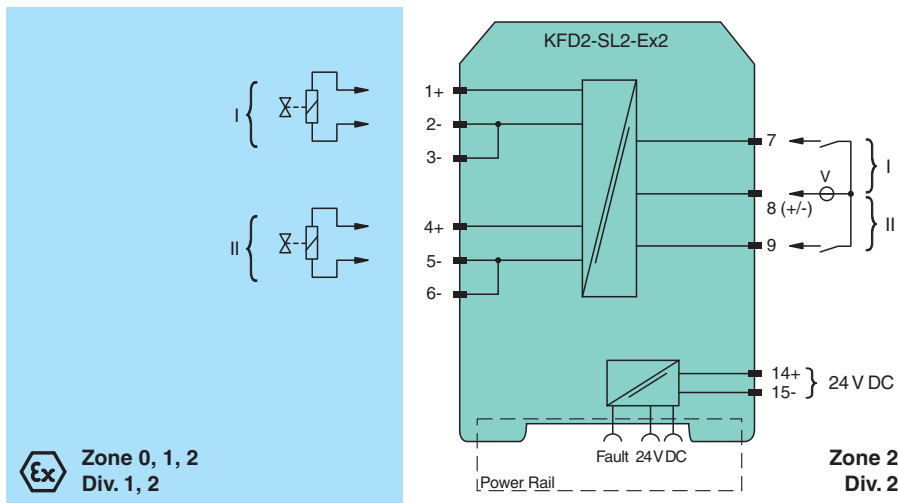
- 2-channel isolated barrier
- 24 V DC supply (Power Rail)
- Output 45 mA at 11.7 V DC
- Logic input, non-polarized
- Line fault detection (LFD)
- Up to SIL 2 acc. to IEC/EN 61508



### Function

This isolated barrier is used for intrinsic safety applications. The device supplies power to solenoids, LEDs and audible alarms located in a hazardous area. It is controlled via logic signals. The inputs have two defined states: 1-Signal = 16 V DC ... 30 V DC, 0-Signal = 0 V DC ... 5 V DC. The current consumption of the input is about 3 mA. At full load, 11.7 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. A fault is signaled by LEDs and a separate collective error message output.

### Connection



### Technical Data

<b>General specifications</b>	
Signal type	Digital Output
<b>Functional safety related parameters</b>	
Safety Integrity Level (SIL)	SIL 2
<b>Supply</b>	
Connection	Power Rail or terminals 14+, 15-
Rated voltage	$U_r$ 20 ... 30 V DC
Power consumption	max. 3.3 W at 45 mA output current
<b>Input</b>	
Connection side	control side

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

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## Technical Data

Connection		terminals 7, 8, 9
Input current		approx. 3 mA at 24 V DC
Signal level		1-signal: 16 ... 30 V DC 0-signal: 0 ... 5 V DC
<b>Output</b>		
Connection side		field side
Connection		channel 1: terminals 1+, 2-, 3 channel 2: terminals 4+, 5-, 6-
Internal resistor	$R_i$	272 $\Omega$
Current	$I_e$	$\leq 45$ mA
Voltage	$U_e$	$\geq 11.7$ V
Open loop voltage	$U_s$	min. 24 V
Output signal		These values are valid for the rated operating voltages from 20 ... 30 V DC.
Energized/De-energized delay		$\leq 20$ ms / $\leq 20$ ms
Line fault detection		
Short-circuit		$< 50$ $\Omega$
Open-circuit		$> 10$ k $\Omega$
Test current		$< 650$ $\mu$ A
<b>Galvanic isolation</b>		
Input/Output		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Input/power supply		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Power supply/Output		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
<b>Indicators/settings</b>		
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 21:2006
Degree of protection		IEC 60529:2001
Protection against electrical shock		EN 61010-1:2010
<b>Ambient conditions</b>		
Ambient temperature		-20 ... 50 °C (-4 ... 122 °F)
<b>Mechanical specifications</b>		
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) (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		ZELM 00 ATEX 0024
Marking		⊕ II (1)G [Ex ia Ga] IIC ⊕ II (1)D [Ex ia Da] IIIC ⊕ I (M1) [Ex ia Ma] I
Output		Ex ia
Voltage	$U_o$	28 V
Current	$I_o$	110 mA
Power	$P_o$	770 mW (linear characteristic)
<b>Supply</b>		
Maximum safe voltage	$U_m$	40 V (Attention! The rated voltage can be lower.)
Input		

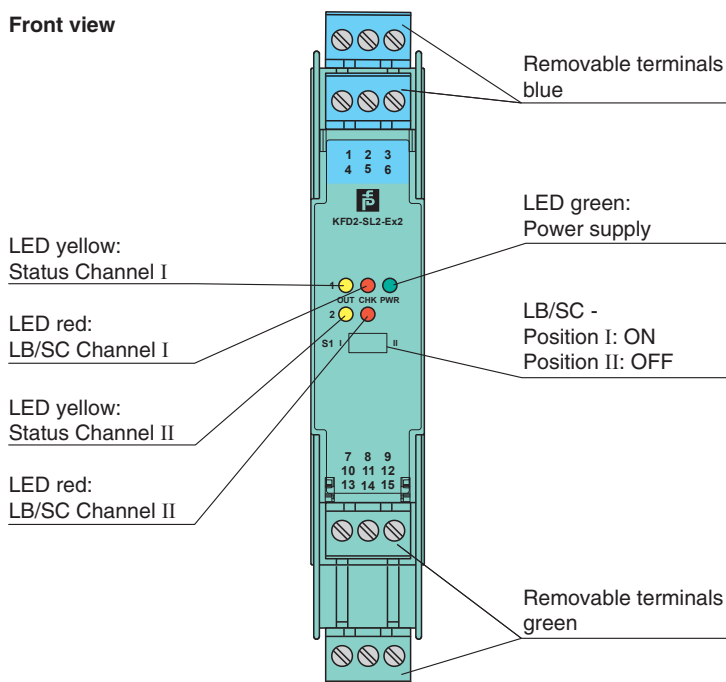
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**Technical Data**



Maximum safe voltage	U <sub>m</sub>	60 V (Attention! The rated voltage can be lower.)
Collective error message		
Maximum safe voltage	U <sub>m</sub>	40 V (Attention! The rated voltage can be lower.)
Certificate		TÜV 02 ATEX 1820 X
Marking		Ⓔ II 3G Ex nA IIC T4 Gc
Galvanic isolation		
Input/Output		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Output/power supply		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012 , EN 60079-15:2010 , EN 50303:2000
<b>International approvals</b>		
CSA approval		
Control drawing		116-0304
IECEx approval		
IECEx certificate		IECEx TUN 04.0001
IECEx marking		[Ex ia Ga] IIC, [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**

**Front view**







**Matching System Components**




	<b>KFD2-EB2</b>	Power Feed Module
	<b>UPR-03</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 2 m

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## Matching System Components

	<b>UPR-03-M</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 1,6 m
	<b>UPR-03-S</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 0.8 m
	<b>K-DUCT-BU</b>	Profile rail, wiring comb field side, blue
	<b>K-DUCT-BU-UPR-03</b>	Profile rail with UPR-03- * insert, 3 conductors, wiring comb field side, blue

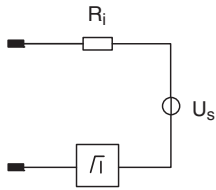
## Accessories

	<b>KF-ST-5GN</b>	Terminal block for KF modules, 3-pin screw terminal, green
	<b>KF-ST-5BU</b>	Terminal block for KF modules, 3-pin screw terminal, blue
	<b>KF-CP</b>	Red coding pins, packaging unit: 20 x 6

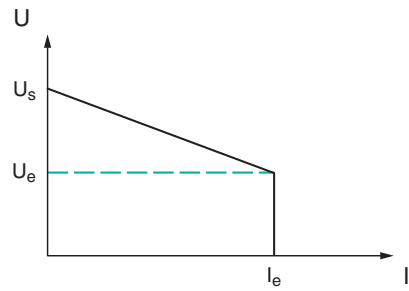
# Characteristic Curve

## Output characteristics

Output circuit diagram



Output characteristic



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