



# Solenoid Driver, Power Amplifier

## KFD2-SL-4

- 4-channel signal conditioner
- 24 V DC supply (Power Rail)
- Output 600 mA per channel
- Logic inputs
- Common safety-oriented disable input
- Line fault detection (LFD)
- Up to SIL 2 acc. to IEC/EN 61508

# CE SIL2

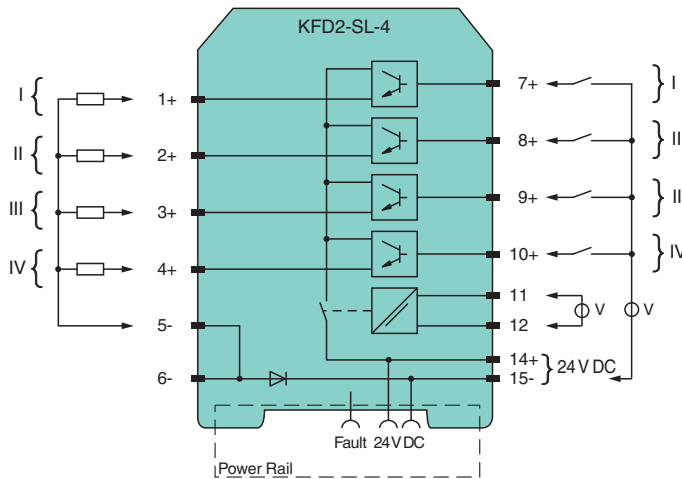
## Function

This signal conditioner is a 4-channel barrier with outputs that switch 600 mA to high-power solenoids. It is also used as power amplifier up to a switching frequency of 1 kHz. Two channels per module can be paralleled. The output current of a parallel combination is 1.2 A. If the supply voltage falls below 18 V, the outputs will be switched off.

The outputs are sustained short-circuit proofed and overload-proofed

Lead breakage and short circuit, which is selected via DIP switch, is indicated by a red LED and through the collective error output via Power Rail. With the common disable input (terminals 11 and 12), the auxiliary power for all 4 channels can be switched off simultaneously. This central switch-off is also indicated by a red LED and reported as an error signal to the Power Rail.

## Connection



## Technical Data

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	$U_r$ 20 ... 30 V DC
Undervoltage switching-off	$\leq$ 18 V DC
Quiescent current indication	$<$ 50 mA at 24 V DC
Power dissipation	$<$ 2 W supply voltage 30 V, all outputs loaded with 600 mA

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

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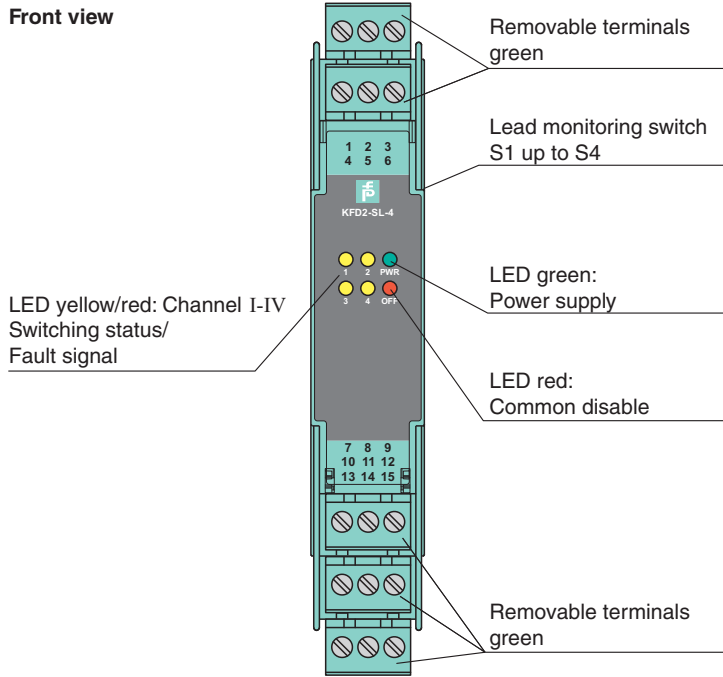
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## Technical Data

<b>Input</b>	
Connection side	control side
Connection	Terminals 7+, 8+, 9+, 10+, 15-
Input current	approx. 2 mA at 24 V DC
Signal level	0-signal: 0 ... 5 V DC 1-signal: 16 ... 30 V
<b>Common disable</b>	
Connection	terminals 11, 12
Input current	≤ 50 mA at 24 V, depolarized currentless state: downscale of the outputs
Switch on	min. 15 V
Switch off	max. 5 V
<b>Output</b>	
Connection side	field side
Current	$I_e$ ≤ 600 mA
Voltage	$U_e$ typ. 23.8 V
Open loop voltage	$U_s$ 24 V DC
Connection	terminals 1+, 2+, 3+, 4+, 5-, 6-
Switching frequency	$f$ 1 kHz
Output current	600 mA per channel , sustained short-circuit proof and overload-proof
Off-state current	$I_r$ < 1 mA at 24 V DC
Line fault detection	lead breakage: ≤ 4 mA
<b>Galvanic isolation</b>	
Common disable/input and outputs	basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V <sub>eff</sub>
<b>Indicators/settings</b>	
Display elements	LEDs
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
Degree of protection	IEC 60529:2001
<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. 100 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>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**



**Operation**

The outputs are switched high and current-limited for each channel (electronically pulsed). The outputs are suited for inductive loads such as magnet operated valves or solenoid coils and incandescent lamps or indicator lamps. Each channel is continuous short circuit- and overload-proof. In this case, the max. power loss in the device of 2 W ( $U_b = 24\text{ V}$ ) is not exceeded. 2 channels per device may be paralleled input- and output-sided. The output current of this dual combination may not exceed 1.2 A. Both remaining channels may not be loaded with more than (in sum) 200 mA. The maximum current loading capacity of the Power Rail is to be considered. Alternatively, the device may be supplied with the terminals 14+, 15-.

**Device Behavior**

**Behavior in the event of lead breakage (LB)**

Input (control side)	Switch position S1 ... S4 line fault detection	LED indication switching state/fault signal	Collective error
0-Signal	II	off	not active
1-Signal	II	yellow	not active
0-Signal	I	flashing red	active
1-Signal	I	yellow	not active

Lead breakage detection is only active when the output is deactivated (0-Signal).

**Behavior in the event of a short circuit (SC)**

Input (control side)	Switch position S1 ... S4 line fault detection	LED indication switching state/fault signal	Collective error
0-Signal	II	off	not active
1-Signal	II	yellow	not active
0-Signal	I	off	not active
1-Signal	I	flashing red	active

Short circuit detection is only active when the output is activated (1-Signal).

**Behavior when common disable is active**

If common disable is active (0-Signal at terminals 11, 12), all outputs are switched to a de-energized state. When line fault detection S1 ... S4 of a channel is active, its switching state/fault signal LED flashes red and the collective error is output to the Power Rail.

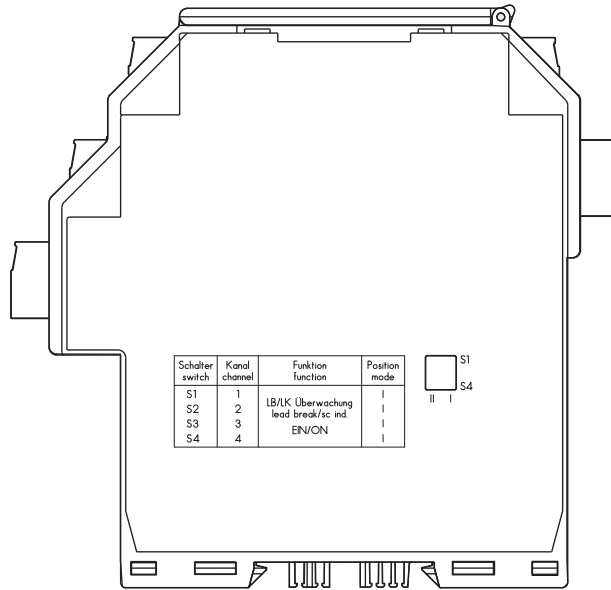
**Behavior in the event of undervoltage**

If the supply voltage falls below 18 V, the device reacts as follows:

- All outputs are disabled.
- The green power LED goes out.
- A collective error message is output.

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**Configuration**



**Switch position**

Switch	Channel	Function	Position
S1	1	LB/SC	ON
			OFF
S2	2	LB/SC	ON
			OFF
S3	3	LB/SC	ON
			OFF
S4	4	LB/SC	ON
			OFF

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