Solenoid Driver, Power Amplifier

KFD2-SL-4

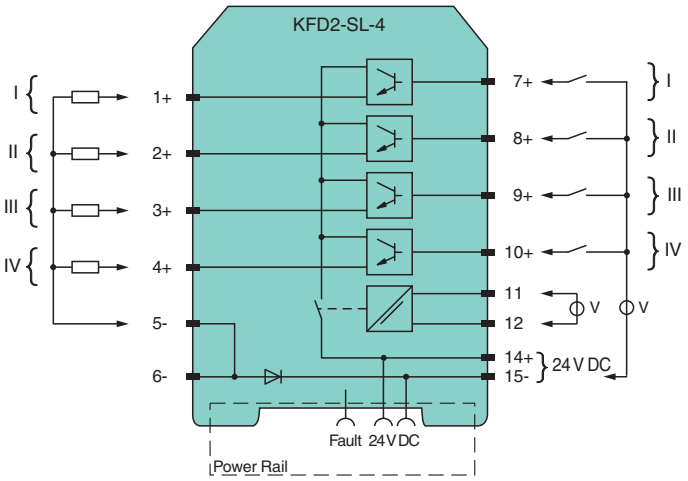
- 4-channel signal conditioner
- 24 V DC supply (Power Rail)
- Output 600 mA per channel
- Logic inputs
- Common safety-oriented disable input
- Line fault detection (LFD)
- Up to SIL 2 acc. to IEC/EN 61508

CE SIL 2

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		≤ 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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Technical Data

Input		
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
Common disable		
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
Output		
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
Galvanic isolation		
Common disable/input and outputs		basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V_{eff}
Indicators/settings		
Display elements		LEDs
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 21:2011
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications		
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
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com.

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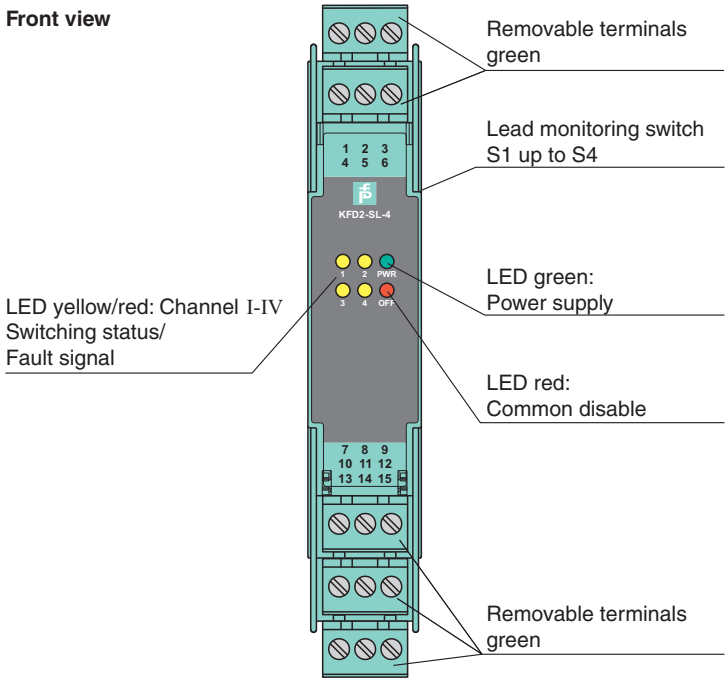
Assembly

Front view



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 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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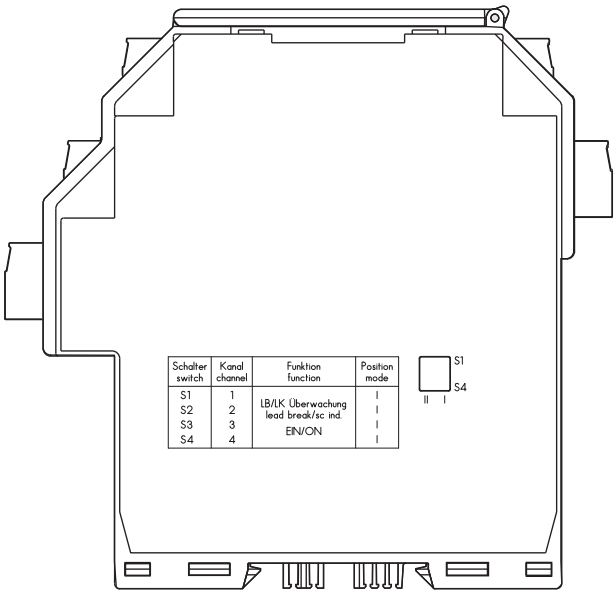
Configuration



Switch position

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

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