

# Switch Amplifier

## KCD2-SOT-Ex1.LB.SP

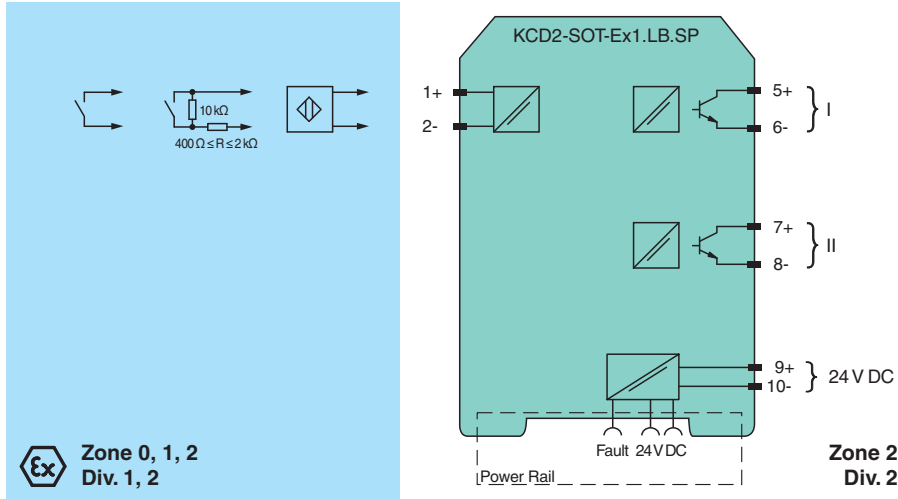
- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR input
- 2 passive transistor outputs
- Usable as signal splitter (1 input and 2 outputs)
- Reversible mode of operation
- Line fault detection (LFD)
- Housing width 12.5 mm
- Connection via spring terminals with push-in connection technology
- Up to SIL 2 (SC 3) acc. to IEC/EN 61508



### Function

This isolated barrier is used for intrinsic safety applications. The device transfers digital signals (NAMUR sensors or dry contacts) from a hazardous area to a safe area. The input controls two passive transistor outputs. Via switches the mode of operation can be reversed and the line fault detection can be switched off. Via switch the function of the second output can be defined as a signal output or an error output. A fault is signaled by LEDs acc. to NAMUR NE44 and a separate collective error message output.

### Connection



### Technical Data

General specifications		
Signal type		Digital Input
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Systematic capability (SC)		SC 3
Supply		
Connection		Power Rail or terminals 9+, 10-
Rated voltage	$U_r$	19 ... 30 V DC
Ripple		≤ 10 %
Rated current	$I_r$	20 ... 15 mA

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Pepperl+Fuchs Group  
www.pepperl-fuchs.com

USA: +1 330 486 0002  
pa-info@us.pepperl-fuchs.com

Germany: +49 621 776 2222  
pa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091  
pa-info@sg.pepperl-fuchs.com

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## Technical Data

Power dissipation		≤ 700 mW including maximum power dissipation in the output
<b>Input</b>		
Connection side		field side
Connection		terminals 1+, 2-
Rated values		acc. to EN 60947-5-6 (NAMUR)
Open circuit voltage/short-circuit current		approx. 10 V DC / approx. 8 mA
Switching point/switching hysteresis		1.2 ... 2.1 mA / approx. 0.2 mA
Line fault detection		breakage $I \leq 0.1$ mA , short-circuit $I \geq 6.5$ mA
Pulse/Pause ratio		min. 100 $\mu$ s / min. 100 $\mu$ s
<b>Output</b>		
Connection side		control side
Connection		output I: terminals 5, 6 ; output II: terminals 7, 8
Rated voltage	$U_r$	30 V DC
Rated current	$I_r$	50 mA
Response time		≤ 200 $\mu$ s
Signal level		1-signal: (external voltage) - 3 V max. for 50 mA 0-signal: blocked output (off-state current $\leq 10$ $\mu$ A)
Output I		signal ; Transistor
Output II		signal or fault message ; Transistor
Collective error message		Power Rail
<b>Transfer characteristics</b>		
Switching frequency		≤ 5 kHz
<b>Galvanic isolation</b>		
Input/Output		reinforced insulation acc. to EN 50178, rated insulation voltage 300 $V_{eff}$
Input/power supply		reinforced insulation acc. to EN 50178, rated insulation voltage 300 $V_{eff}$
Output/power supply		basic insulation according to EN 50178, rated insulation voltage 50 $V_{eff}$
Output/Output		basic insulation according to EN 50178, rated insulation voltage 50 $V_{eff}$
<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 21:2011
Degree of protection		IEC 60529:2001
Protection against electrical shock		IEC 61010-1:2010
Input		EN 60947-5-6:2000
<b>Ambient conditions</b>		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F) extended ambient temperature range up to 70 °C (158 °F) , refer to manual and derating characteristics for necessary mounting conditions
<b>Mechanical specifications</b>		
Degree of protection		IP20
Connection		spring terminals
Mass		approx. 100 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
<b>Data for application in connection with hazardous areas</b>		
EU-type examination certificate		BASEEFA 13 ATEX 0080
Marking		⊕ II (1)G [Ex ia Ga] IIC ⊕ II (1)D [Ex ia Da] IIIC ⊕ I (M1) [Ex ia Ma] I

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www.pepperl-fuchs.comUSA: +1 330 486 0002  
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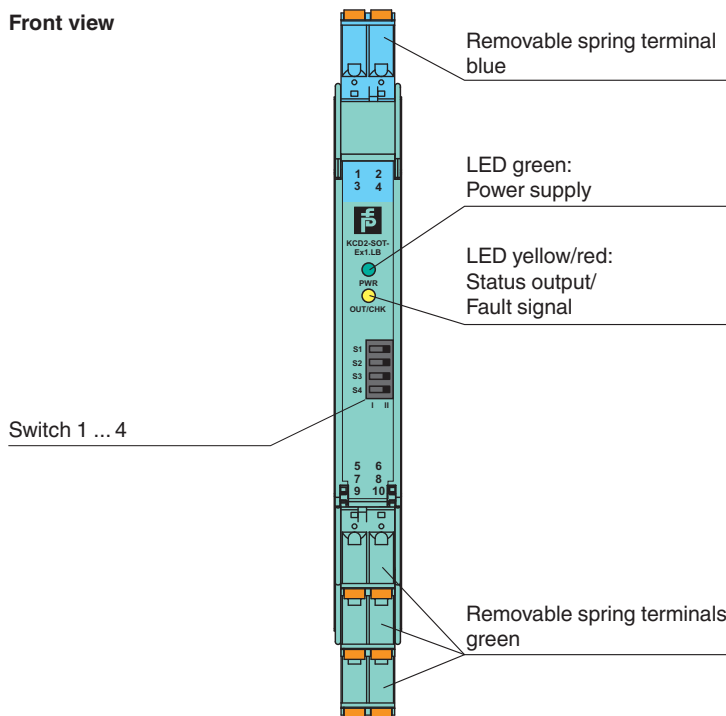
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**Technical Data**

Input		Ex ia
Voltage	$U_o$	10.5 V
Current	$I_o$	17.1 mA
Power	$P_o$	45 mW (linear characteristic)
Supply		
Maximum safe voltage	$U_m$	253 V AC (Attention! $U_m$ is no rated voltage.)
Output		
Maximum safe voltage	$U_m$	253 V AC (Attention! The rated voltage can be lower.)
Certificate		CML 19 ATEX 4410 X
Marking		Ⓔ II 3G Ex ec IIC T4 Gc
Galvanic isolation		
Input/Output		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Input/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 , EN 60079-7:2015+A1:2018 , EN 60079-11:2012
<b>International approvals</b>		
UL approval		
Control drawing		116-0374 (cULus)
IECEX approval		
IECEX certificate		IECEX BAS 13.0046 IECEX CML 19.0147X
IECEX marking		[Ex ia Ga] IIC , [Ex ia Da] IIIC , [Ex ia Ma] I Ex ec IIC T4 Gc
<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



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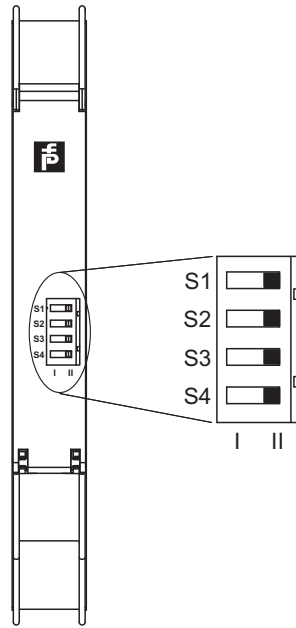
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**Configuration**



**Switch settings**

S	Function	Position	
1	Mode of operation output I (active)	with high input current	I
		with low input current	II
2	Assignment output II	Switching state like output I	I
		Fault indication output (passive if fault)	II
3	Line fault detection of the input	ON	I
		OFF	II
4	no function		

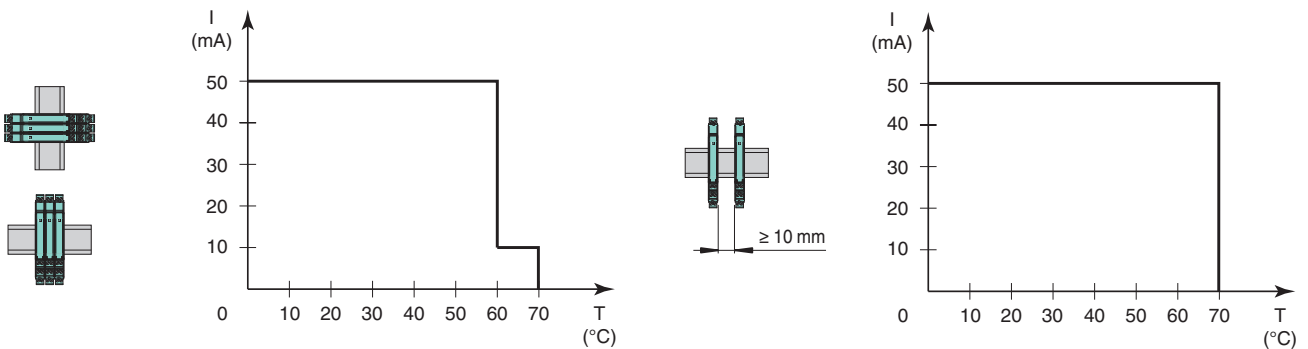
**Operating states**

Control circuit	Input signal
Initiator high impedance/contact opened	low input current
Initiator low impedance/contact closed	high input current
Lead breakage, lead short circuit	Line fault

Factory setting: switch 1, 2, 3 and 4 in position I

**Characteristic Curve**

**Derating of the rated current  $I_r$  at the output**



- Horizontal or vertical mounting
- without separation distance
  - with the same device type

- Horizontal mounting
- with separation distance
  - with different device types

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