



# Switch Amplifier

## KFD2-SH-Ex1.T.OP

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input for approved dry contacts or SN/S1N sensors
- Active voltage output
- Relay contact output
- Fault indication output
- Line fault detection (LFD)
- Up to SIL 3 acc. to IEC 61508
- Up to PL d acc. to EN/ISO 13849



SIL 3

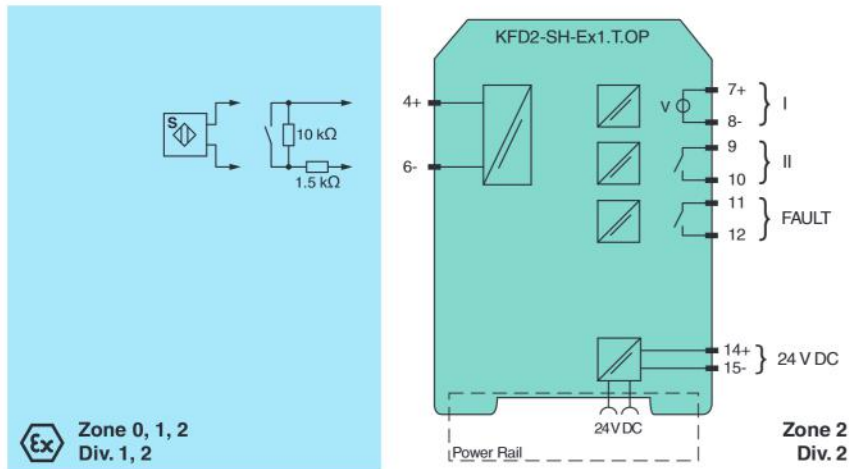
PL d



### Function

This isolated barrier is used for intrinsic safety applications. The device transfers digital signals (SN/S1N proximity sensors or approved dry contacts) from a hazardous area to a safe area. The input controls one active voltage output and one relay contact output with a NO contact. Unlike an SN/S1N series proximity sensor, a mechanical contact requires a 10 kΩ resistor to be placed across the contact in addition to a 1.5 kΩ resistor in series. Lead breakage (LB) and short circuit (SC) conditions of the control circuit are continuously monitored. During a fault condition, the fault indication output and the outputs I and II de-energize. For safety applications up to SIL3, output I must be used. For safety applications up to SIL2, output I and output II can be used.

### Connection



### Technical Data

General specifications	
Signal type	Digital Input
Functional safety related parameters	
Safety Integrity Level (SIL)	SIL 3
Performance level (PL)	PL d
Supply	
Connection	Power Rail or terminals 14+, 15-
Rated voltage	$U_r$ 20 ... 30 V DC
Ripple	≤ 10 %

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

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## Technical Data

Rated current	$I_r$	$\leq 100 \text{ mA}$
Power dissipation		1.5 W
Power consumption		max. 1.7 W
<b>Input</b>		
Connection side		field side
Connection		terminals 4+, 6-
Open circuit voltage/short-circuit current		approx. 8.4 V DC / approx. 11.7 mA
Lead resistance		max. 50 $\Omega$ , cable capacitances and inductances must be observed in hazardous areas
<b>Switching point</b>		
Relay de-energized		$I < 2.1 \text{ mA}$ and $I > 5.9 \text{ mA}$ , output switched off
Relay energized		$2.8 \text{ mA} < I < 5.3 \text{ mA}$ , output switched on
Response delay		$\leq 1 \text{ ms}$
<b>Output</b>		
Connection side		control side
Connection		output I: terminals 7+, 8- ; output II: terminals 9, 10 ; output III: terminals 11, 12
Output I		active voltage output, short-circuit proof 0-signal: 0 V 1-signal: 19 V DC at 15 mA ... 31 V DC at no-load fault: 0 V
Output II		relay
Contact loading		48 V AC/DC 250 mA
Mechanical life		$\leq 20 \times 10^6$ switching cycles
Output III		relay , fault signal
Contact loading		48 V AC/DC 250 mA
Mechanical life		$\leq 20 \times 10^6$ switching cycles
<b>Transfer characteristics</b>		
Switching frequency		
Output I		$\leq 50 \text{ Hz}$
Output II		$\leq 5 \text{ Hz}$
Output III		$\leq 5 \text{ Hz}$
<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)
Machinery Directive		
Directive 2006/42/EC		EN/ISO 13849-1:2015
<b>Conformity</b>		
Electromagnetic compatibility		NE 21:2017 , EN 61326-3-2:2008
Degree of protection		IEC 60529:2001
Safety		IEC/EN 61508:2010
<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 for necessary mounting conditions
<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) , 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>		

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