

# Switch Amplifier

## KFA6-SR2-Ex1.W.LB

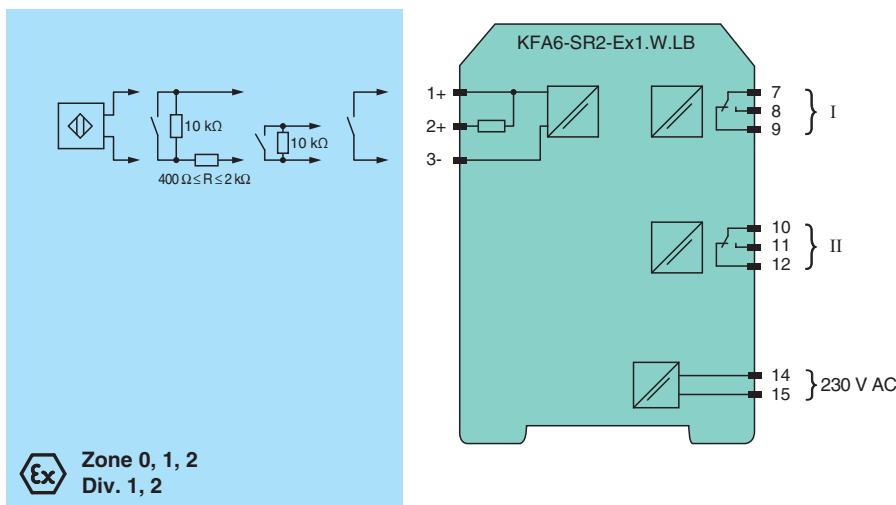
- 1-channel isolated barrier
- 230 V AC supply
- Dry contact or NAMUR inputs
- Relay contact output
- Fault relay contact output
- Line fault detection (LFD)
- Reversible mode of operation
- Up to SIL 2 acc. to IEC/EN 61508 / IEC/EN 61511



### Function

This isolated barrier is used for intrinsic safety applications. It transfers digital signals (NAMUR sensors/mechanical contacts) from a hazardous area to a safe area. The proximity sensor or switch controls a form C changeover relay contact for the safe area load. The normal output state can be reversed using switch S1. Switch S2 allows output II to be switched between a signal output or an error message output. Switch S3 is used to enable or disable line fault detection of the field circuit. During an error condition, relays revert to their de-energized state and LEDs indicate the fault according to NAMUR NE44.

### Connection



### Technical Data

General specifications	
Signal type	Digital Input
Functional safety related parameters	
Safety Integrity Level (SIL)	SIL 2
Supply	
Connection	terminals 14, 15
Rated voltage	$U_r$ 207 ... 253 V AC, 45 ... 65 Hz
Power dissipation	1.2 W
Power consumption	max. 1.3 W
Input	
Connection side	field side

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

## Technical Data

Connection	terminals 1+, 2+, 3-	
Rated values	acc. to EN 60947-5-6 (NAMUR)	
Open circuit voltage/short-circuit current	approx. 8 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 $I > 6$ mA	
Pulse/Pause ratio	min. 20 ms / min. 20 ms	
<b>Output</b>		
Connection side	control side	
Connection	output I: terminals 7, 8, 9 ; output II: terminals 10, 11, 12	
Output I	signal ; relay	
Output II	signal or fault message ; relay	
Contact loading	253 V AC/2 A/cos $\phi > 0.7$ ; 126.5 V AC/4 A/cos $\phi > 0.7$ ; 40 V DC/2 A resistive load	
Energized/De-energized delay	approx. 20 ms / approx. 20 ms	
Mechanical life	$10^7$ switching cycles	
<b>Transfer characteristics</b>		
Switching frequency	$\leq 10$ Hz	
<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>	
Output/power supply	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>	
Output/Output	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 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)	
Low voltage		
Directive 2014/35/EU	EN 61010-1:2010	
<b>Conformity</b>		
Electromagnetic compatibility	NE 21:2006	
Degree of protection	IEC 60529:2001	
Input	EN 60947-5-6:2000	
<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. 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	PTB 00 ATEX 2081	
Marking	Ⓢ II (1)G [Ex ia Ga] IIC Ⓢ II (1)D [Ex ia Da] IIIC Ⓢ I (M1) [Ex ia Ma] I	
Input	Ex ia	
Voltage	U <sub>o</sub>	10.6 V
Current	I <sub>o</sub>	19.1 mA
Power	P <sub>o</sub>	51 mW (linear characteristic)
<b>Supply</b>		
Maximum safe voltage	U <sub>m</sub>	253 V AC (Attention! U <sub>m</sub> is no rated voltage.)
<b>Output</b>		
Contact loading	253 V AC/2 A/cos $\phi > 0.7$ ; 126.5 V AC/4 A/cos $\phi > 0.7$ ; 40 V DC/2 A resistive load	

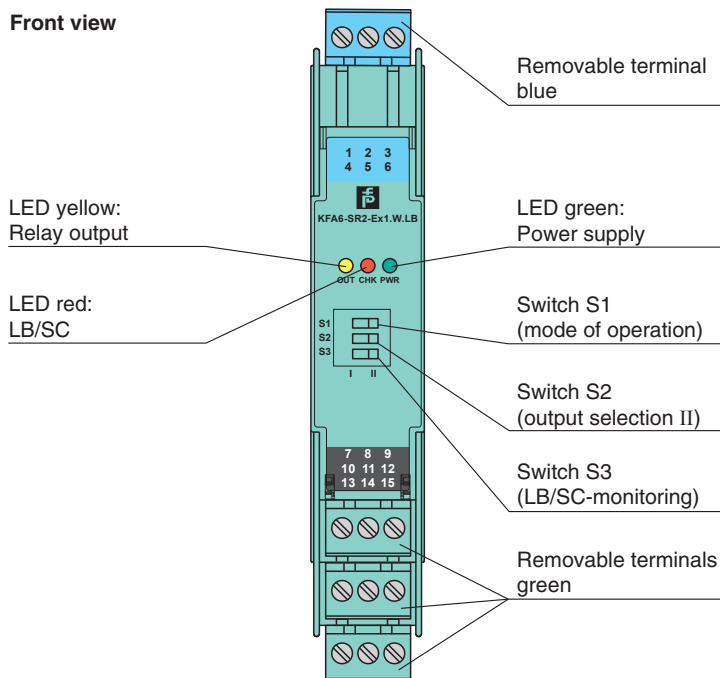
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**Technical Data**


Maximum safe voltage	U <sub>m</sub>	253 V AC (Attention! The rated voltage can be lower.)
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+AC:2020 , EN 60079-11:2012
<b>International approvals</b>		
FM approval		
Control drawing		116-0035
UL approval		
Control drawing		116-0145
CSA approval		
Control drawing		116-0047
IECEX approval		
IECEX certificate		IECEX PTB 11.0031
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>K-DUCT-BU</b>	Profile rail, wiring comb field side, blue
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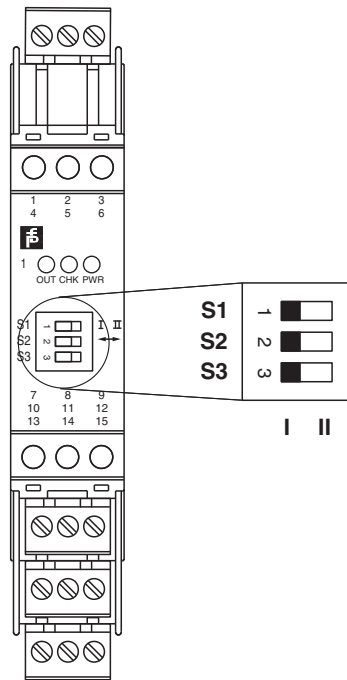
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 **PEPPERL+FUCHS**

## Accessories

	<b>F-NR3-Ex1</b>	NAMUR Resistor Network
	<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

**Configuration**



**Switch position**

S	Function		Position
1	Mode of operation output I (relay) energized	with high input current	I
		with low input current	II
2	Assignment output II (relay)	Switching state like output I	I
		Fault indication output (de-energized if fault)	II
3	Line fault detection	ON	I
		OFF	II

**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

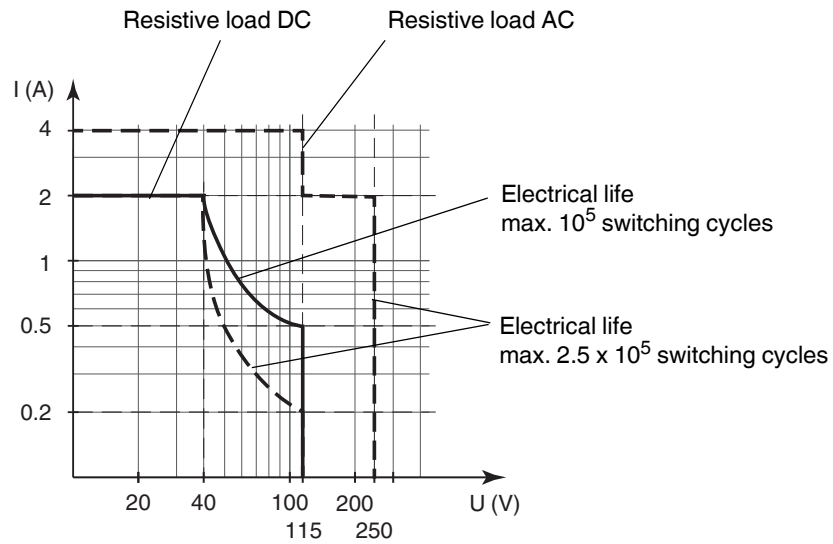
Factory setting: switch 1, 2 and 3 in position I

**Characteristic Curve**

**Maximum switching power of output contacts**

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The maximum number of switching cycles is depending on the electrical load and may be higher when reduced currents and voltages are applied.

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