

Switch Amplifier

KFA5-SR2-Ex2.W

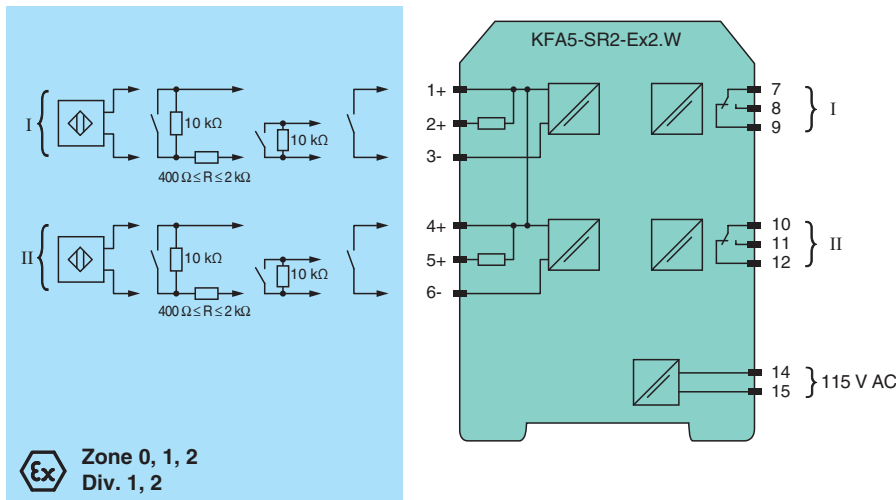
- 2-channel isolated barrier
- 115 V AC supply
- Dry contact or NAMUR inputs
- Relay contact output
- Line fault detection (LFD)
- Reversible mode of operation
- Up to SIL 2 acc. to IEC/EN 61508 / IEC/EN 61511



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 switches S1 and S2. Switch S3 is used to enable or disable line fault detection of the field circuit. During an error condition, the relays revert to their de-energized state and the 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 103.5 ... 126 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".

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Technical Data

Connection	terminals 1+, 2+, 3-; 4+, 5+, 6-	
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	
Output		
Connection side	control side	
Connection	output I: terminals 7, 8, 9 ; output II: terminals 10, 11, 12	
Output I, II	signal ; 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	
Transfer characteristics		
Switching frequency	≤ 10 Hz	
Galvanic isolation		
Input/Output	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}	
Input/power supply	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}	
Output/power supply	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}	
Output/Output	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}	
Indicators/settings		
Display elements	LEDs	
Control elements	DIP switch	
Configuration	via DIP switches	
Labeling	space for labeling at the front	
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU	EN 61326-1:2013 (industrial locations)	
Low voltage		
Directive 2014/35/EU	EN 61010-1:2010	
Conformity		
Electromagnetic compatibility	NE 21:2006	
Degree of protection	IEC 60529:2001	
Input	EN 60947-5-6:2000	
Ambient conditions		
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)	
Mechanical specifications		
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	
Data for application in connection with hazardous areas		
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 _o	10.6 V
Current	I _o	19.1 mA
Power	P _o	51 mW (linear characteristic)
Supply		
Maximum safe voltage	U _m	126.5 V AC (Attention! U _m is no rated voltage.)
Output		

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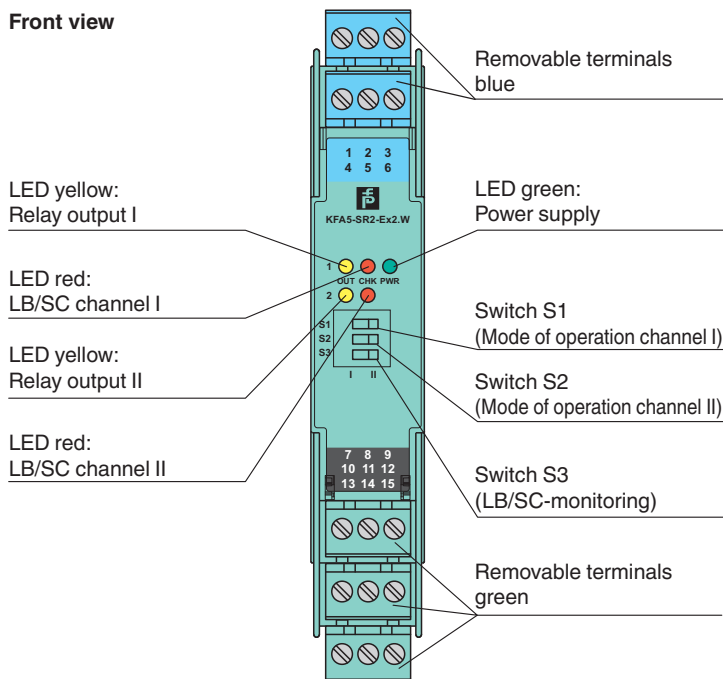
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Technical Data

Contact loading	253 V AC/2 A/cos φ > 0.7; 126.5 V AC/4 A/cos φ > 0.7; 40 V DC/2 A resistive load	
Maximum safe voltage	U _m	253 V AC (Attention! The rated voltage can be lower.)
Galvanic isolation		
Input/input	not available	
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	
International approvals		
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	
General information		
Supplementary information	Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com .	


Assembly

Front view







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Matching System Components

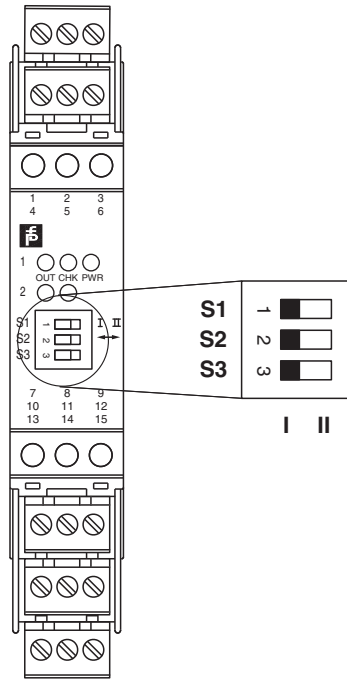
	K-DUCT-BU	Profile rail, wiring comb field side, blue
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Accessories

	F-NR3-Ex1	NAMUR Resistor Network
	KF-ST-5GN	Terminal block for KF modules, 3-pin screw terminal, green
	KF-ST-5BU	Terminal block for KF modules, 3-pin screw terminal, blue
	KF-CP	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	Mode of operation output II (relay) energized	with high input current	I
		with low input current	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

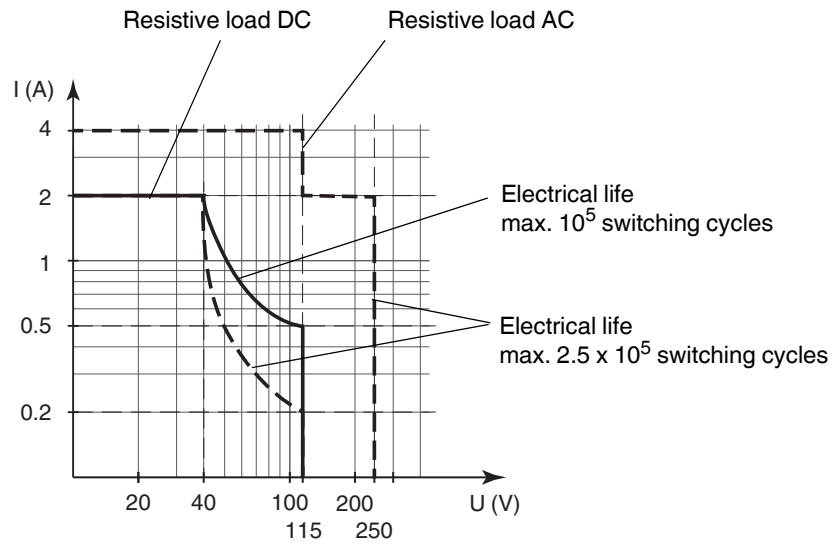
Factory setting: switch 1, 2 and 3 in position I

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.