

# Switch Amplifier

## KFD2-SOT3-Ex2.IO

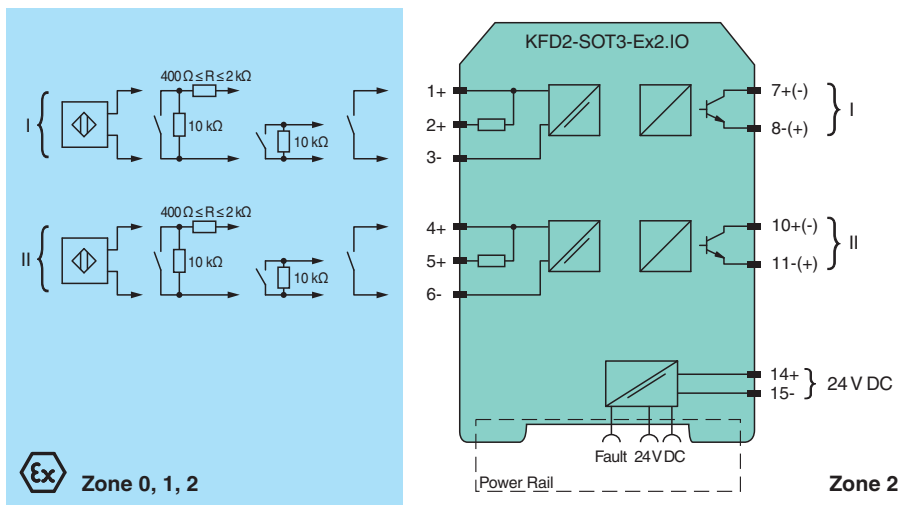
- 2-channel isolated barrier
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Isolated passive transistor output, non-polarized
- Line fault detection (LFD)
- Reversible mode of operation
- Up to SIL 2 (SC 3) acc. to IEC/EN 61508



### 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. Each input controls a passive transistor output. The outputs are galvanically isolated from each other. Via switches the mode of operation can be reversed and the line fault detection can be switched off. 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 14+, 15-
Rated voltage	$U_r$ 19 ... 30 V DC
Ripple	≤ 10 %
Rated current	$I_r$ 30 ... 20 mA
Power dissipation	≤ 1.1 W including maximum power dissipation in the output

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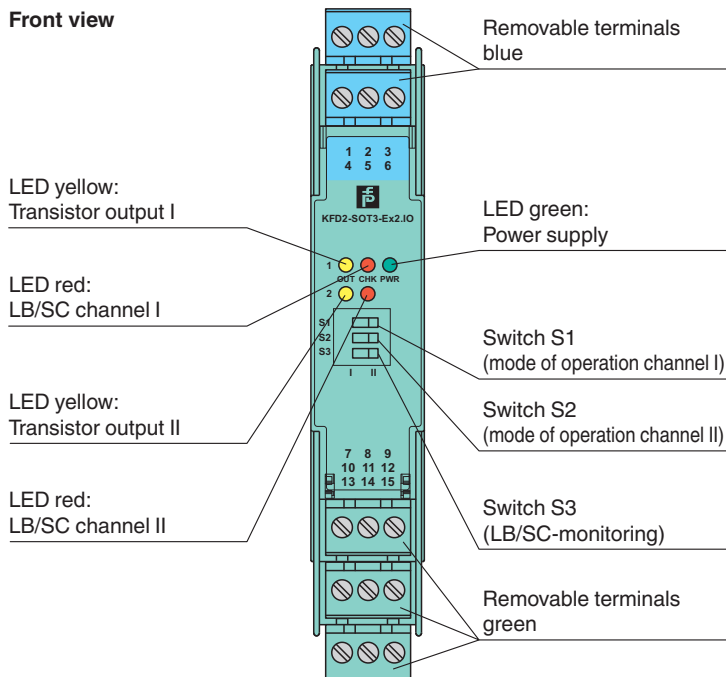
## Technical Data

Input		
Connection side		field side
Connection		terminals 1+, 2+, 3-; 4+, 5+, 6-
Rated values		acc. to EN 60947-5-6 (NAMUR), see manual for electrical data
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
Output		
Connection side		control side
Connection		output I: terminals 7, 8 ; output II: terminals 10, 11
Rated voltage	$U_r$	30 V DC
Rated current	$I_r$	100 mA , short-circuit protected
Response time		$\leq 200$ $\mu$ s
Signal level		1-signal: (external voltage) - 3 V max. for 100 mA 0-signal: blocked output (off-state current $\leq 10$ $\mu$ A)
Output I		signal ; Transistor
Output II		signal ; Transistor
Collective error message		Power Rail
Transfer characteristics		
Switching frequency		$\leq 5$ kHz
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		basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 $V_{eff}$
Output/Output		basic insulation according to IEC/EN 61010-1, rated insulation voltage 60 $V_{eff}$
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)
Conformity		
Electromagnetic compatibility		NE 21:2012 , EN 61326-3-2:2008
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		EXA 16 ATEX 0016 X
Marking		Ⓜ II 3(1)G Ex nA [ia Ga] IIC T4 Gc Ⓜ II (1)D [Ex ia Da] IIIC Ⓜ I (M1) [Ex ia Ma] I
Input		Ex ia
Voltage	$U_o$	10.5 V
Current	$I_o$	17.1 mA



**Technical Data**

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.)
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 , EN 60079-15:2010
<b>International approvals</b>		
UL approval		E106378
Control drawing		116-0424 (cULus)
IECEX approval		
IECEX certificate		IECEX EXA 16.0009X
IECEX marking		Ex nA [ia Ga] IIC T4 Gc , [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**







**Matching System Components**





	<b>KFD2-EB2</b>	Power Feed Module
	<b>UPR-03</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 2 m

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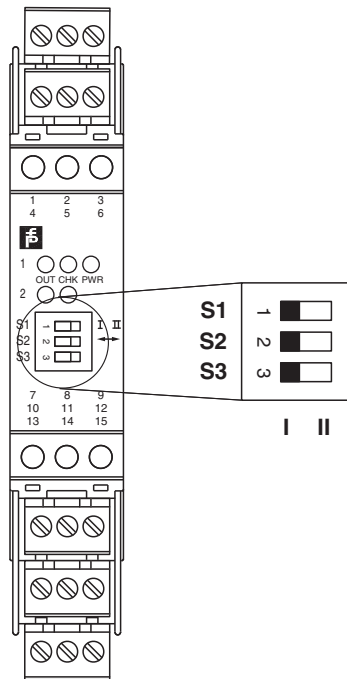
## Matching System Components

	<b>UPR-03-M</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 1,6 m
	<b>UPR-03-S</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 0.8 m
	<b>K-DUCT-BU</b>	Profile rail, wiring comb field side, blue
	<b>K-DUCT-BU-UPR-03</b>	Profile rail with UPR-03- * insert, 3 conductors, wiring comb field side, blue

## 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 active	with high input current	I
		with low input current	II
2	Mode of operation output II active	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

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