

Switch Amplifier

KFD2-ST3-Ex2

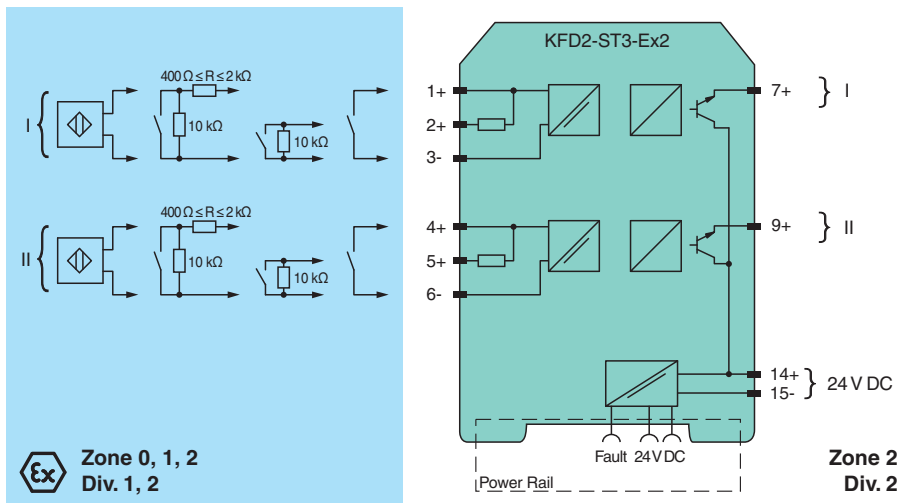
- 2-channel isolated barrier
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Active transistor output
- Line fault detection (LFD)
- Reversible mode of operation
- SIL 2 (SC 3) acc. to IEC/EN 61508



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 an active transistor output. 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 20 ... 15 mA + I_{out}
Power dissipation	≤ 900 mW including maximum power dissipation in the output

Release date: 2022-01-10 Date of issue: 2022-01-10 Filename: 262111_eng.pdf

Technical Data

Input			
Connection side		field side	
Connection		terminals 1+, 2+, 3-; 4+, 5+, 6-	
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 μ s / min. 100 μ s	
Output			
Connection side		control side	
Connection		output I: terminal 7+ ; output II: terminal 9+	
Rated voltage	U_r	30 V DC	
Rated current	I_r	100 mA	
Response time		≤ 200 μ s	
Signal level		1-signal: (supply voltage) - 3 V max. for 100 mA 0-signal: blocked output (off-state current ≤ 10 μ A)	
Output I		signal ; Transistor	
Output II		signal ; Transistor	
Collective error message		Power Rail	
Transfer characteristics			
Switching frequency		≤ 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}	
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	
Power	P_o	45 mW (linear characteristic)	
Supply			

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

 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

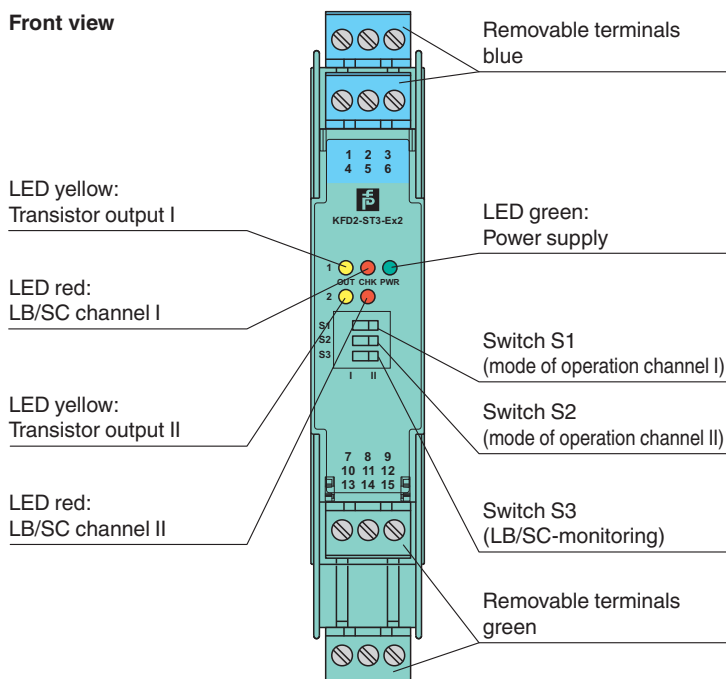

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Technical Data

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
International approvals		
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
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



Matching System Components

	KFD2-EB2	Power Feed Module
	UPR-03	Universal Power Rail with end caps and cover, 3 conductors, length: 2 m
	UPR-03-M	Universal Power Rail with end caps and cover, 3 conductors, length: 1,6 m

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


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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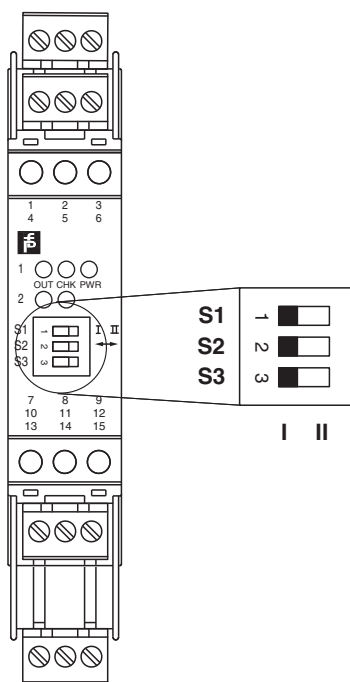
Matching System Components

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

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 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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