

# Switch Amplifier KFD2-SH-Ex1.T

- 1-channel isolated barrier
- 24 V DC supply
- 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/EN 61508
- Up to PL d acc. to EN/ISO 13849

**CE** **Ex** **SIL3 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.

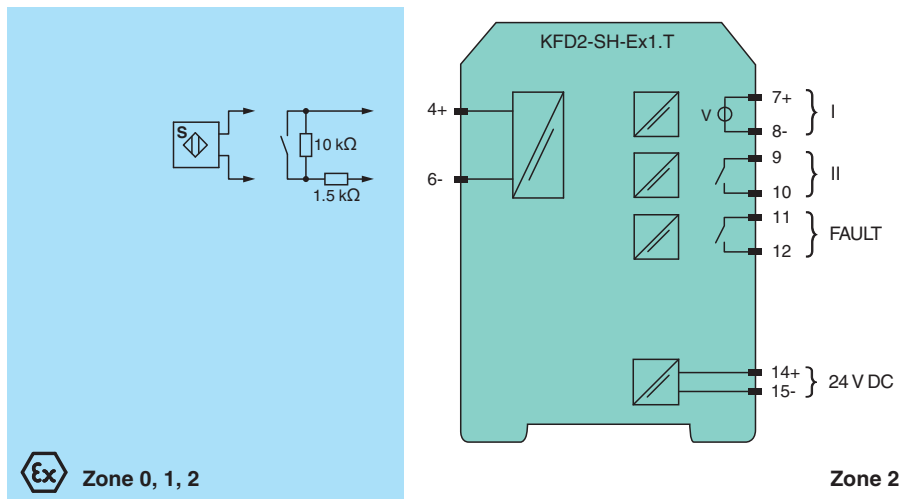
Unlike an SN/S1N series proximity sensor, a mechanical contact requires a 10 kΩ resistor to be placed across the contact in addition to a 1.5 kΩ resistor in series.

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



Release date: 2022-02-15 Date of issue: 2022-02-15 Filename: 217783\_eng.pdf

## 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 terminals 14, 15

Rated voltage  $U_r$  20 ... 30 V DC

Ripple  $\leq 10$  %

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

**PF** PEPPERL+FUCHS

## Technical Data

Rated current	$I_r$	$\leq 100$ 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		$I < 2.1$ mA and $I > 5.9$ mA , output switched off
Relay energized		$2.8$ mA $< I < 5.3$ mA , output switched on
Response delay		$\leq 1$ 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: 20 ... 31 V DC at max. 15 mA 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		$\leq 50$ Hz
Output II		$\leq 5$ Hz
Output III		$\leq 5$ 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 21:2011
Degree of protection		IEC 60529:2001
Safety		IEC/EN 61508:2010
<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 2041

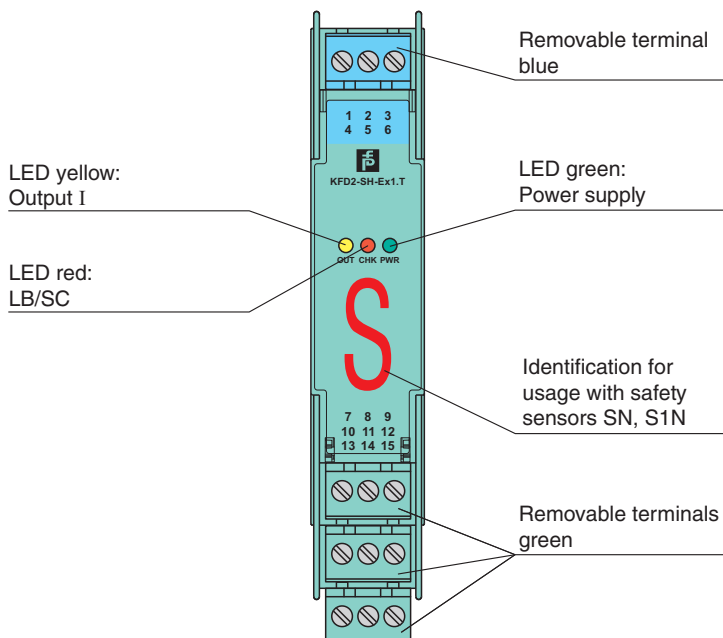
Release date: 2022-02-15 Date of issue: 2022-02-15 Filename: 217783\_eng.pdf

**Technical Data**

Marking		⊕ II (1)GD [Ex ia] IIC [circuit(s) in zone 0/1/2]
Input		EEx ia IIC
Voltage	$U_o$	9.56 V
Current	$I_o$	16.8 mA
Power	$P_o$	41 mW (linear characteristic)
<b>Supply</b>		
Maximum safe voltage	$U_m$	40 V AC/DC (Attention! The rated voltage can be lower.)
<b>Output</b>		
Contact loading		48 V AC/DC 250 mA
Maximum safe voltage	$U_m$	60 V AC/DC (Attention! The rated voltage can be lower.)
Certificate		TÜV 99 ATEX 1493 X
Marking		⊕ II 3G Ex nA nC IIC T4
<b>Galvanic isolation</b>		
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
<b>Directive conformity</b>		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>		
IECEX approval		
IECEX certificate		IECEX TUN 19.0013X
IECEX marking		Ex ec nC IIC T4 Gc
<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**






Release date: 2022-02-15 Date of issue: 2022-02-15 Filename: 217783\_eng.pdf

## 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
	<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>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