

# Relay Module

## KFD0-RSH-1.1E.1

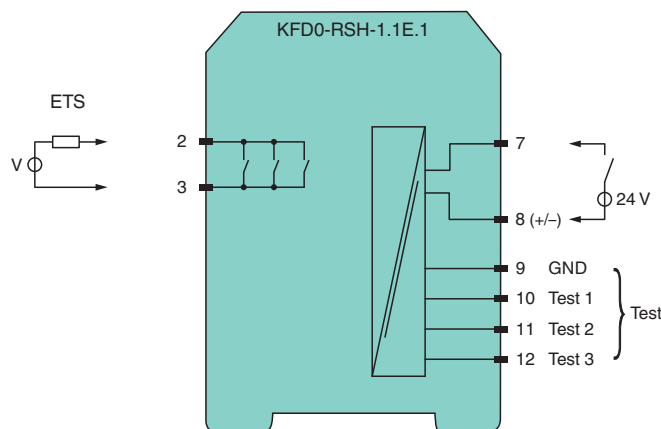
- 1-channel signal conditioner
- 24 V DC supply (loop powered)
- Logic input 19 V DC ... 26.5 V DC, non-polarized
- Relay contact output for energized to safe function
- Test pulse immunity
- Up to SIL 3 acc. to IEC/EN 61508



### Function

This signal conditioner provides the galvanic isolation between field circuits and control circuits. The device is a relay module that is suitable for safely switching applications of a load circuit. The device isolates load circuits up to 230 V and the 24 V control circuit. The energized to safe (ETS) function is permitted for SIL 3 applications. For testing of the relays, test terminals can be used. The test mode will be indicated by a LED according to NAMUR NE44.

### Connection



Zone 2

### Technical Data

#### General specifications

Signal type Digital Output

#### Functional safety related parameters

Safety Integrity Level (SIL) SIL 3

Systematic capability (SC) SC 3

#### Supply

Connection loop powered

Rated voltage  $U_r$  19 ... 30 V DC loop powered

Power dissipation < 1.5 W

Power consumption < 1.5 W

#### Input

Release date: 2021-12-20 Date of issue: 2021-12-20 Filename: 274889\_eng.pdf

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

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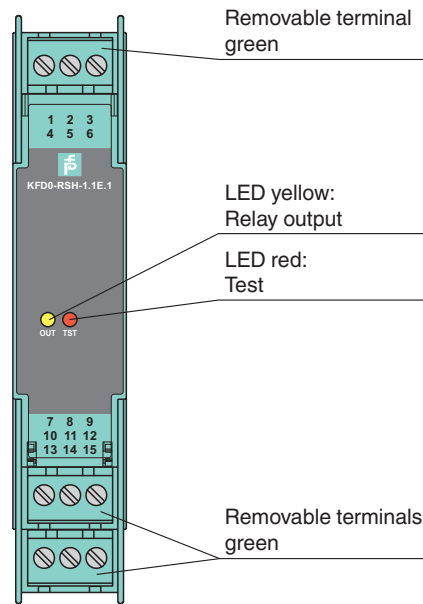
**PF** PEPPERL+FUCHS

## Technical Data


Connection side		control side
Connection		Input terminals 7, 8 ; test input terminals 9, 10, 11, 12
Pulse/Pause ratio		150 ms / 150 ms
Test pulse length		max. 4 ms from DO card
Test input		see functional safety manual
Signal level		0-signal: -5 ... 5 V 1-signal: 19 ... 26.5 V
Rated current	$I_r$	0-signal: typ. 1.6 mA at 1.5 V DC; typ. 8 mA at 3 V DC (maximum leakage current DO card) 1-signal: $\geq 36$ mA (minimum load current DO card)
<b>Output</b>		
Connection side		field side
Connection		terminals 2, 3
Contact loading		253 V AC/5 A/cos $\phi$ 0.7; 30 V DC/5 A resistive load 253 V AC / 1/2 HP
Minimum switch current		10 mA / 24 V DC
Energized/De-energized delay		150 ms / 150 ms
Mechanical life		$5 \times 10^6$ switching cycles
<b>Transfer characteristics</b>		
Switching frequency		< 3 Hz
<b>Galvanic isolation</b>		
Input/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 21:2012 , EN 61326-3-1:2008 , EN 61326-3-2:2008
Degree of protection		IEC 60529:2013
<b>Ambient conditions</b>		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F) Observe the temperature range limited by derating, see section derating.
<b>Mechanical specifications</b>		
Degree of protection		IP20
Connection		screw terminals
Mass		approx. 120 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>		
Certificate		PF 15 CERT 3933 X
Marking		Ⓜ II 3G Ex nC ec IIC T4 Gc [device in zone 2]
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-7:2015 , EN 60079-15:2010
<b>International approvals</b>		
UL approval		E106378
<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-GY</b>	Profile rail, wiring comb field side, gray
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## Accessories

	<b>KF-ST-5GN</b>	Terminal block for KF modules, 3-pin screw terminal, green
	<b>KF-CP</b>	Red coding pins, packaging unit: 20 x 6

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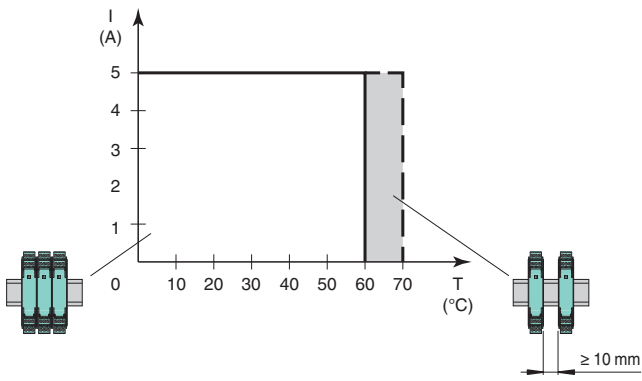
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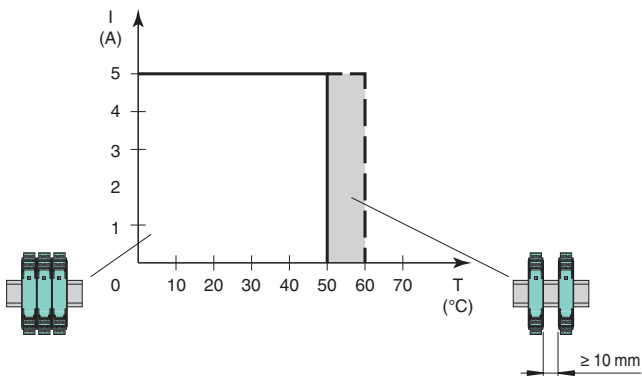
**Characteristic Curve**

**Derating**



— unfused  
 - - - unfused, 10 mm  
 $U_i$  26.5 V

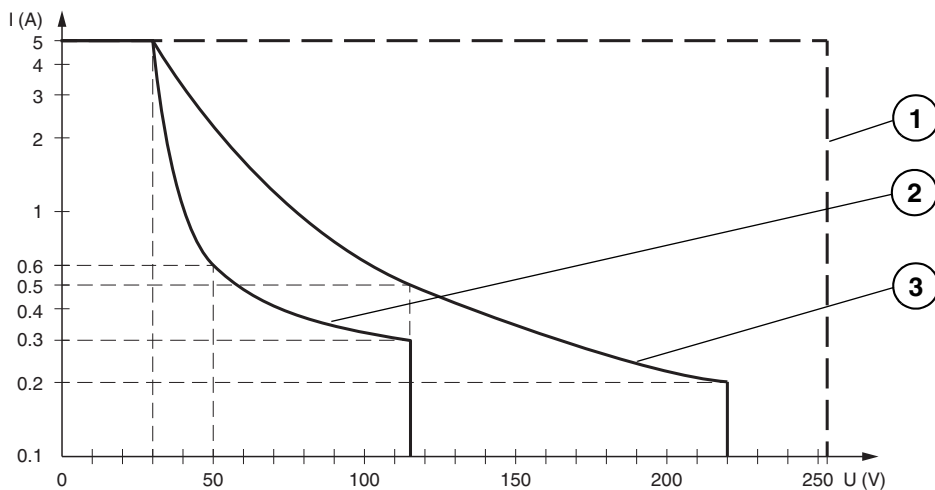
**Derating for Zone 2 Application**



— unfused  
 - - - unfused, 10 mm  
 $U_i$  26.5 V

**Characteristic Curve**

**Maximum Switching Power of Output Contacts**



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- Resistive load DC
- - - - - Resistive load AC
- 1 max.  $10^5$  switching cycles
- 2 max.  $10^5$  switching cycles
- 3 max.  $3 \times 10^4$  switching cycles

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

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