

# Relay Module

## KFD0-RSH-1.1D.F1

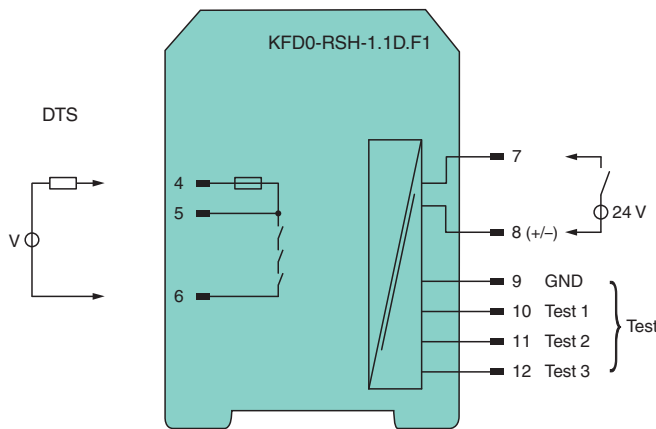
- 1-channel signal conditioner
- 24 V DC supply (loop powered)
- Logic input 19 V DC ... 26.5 V DC, non-polarized
- Relay contact output for de-energized to safe function
- Test pulse immunity
- Up to SIL 3 acc. to IEC/EN 61508
- Up to PL e acc. to EN/ISO 13849

# CE SIL3 PL e

## 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 de-energized to safe (DTS) function is permitted for SIL 3 and PL e applications. The relays are of diverse design, but have a common effect on the individual switching output. For testing of the relays, test terminals can be used. The test mode will be indicated by a LED according to NAMUR NE44. The output is protected against contact welding by a fuse.

## Connection



## Technical Data

### General specifications

Signal type Digital Output

### Functional safety related parameters

Safety Integrity Level (SIL) SIL 3  
 Systematic capability (SC) SC 3  
 Performance level (PL) PL e

### 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

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

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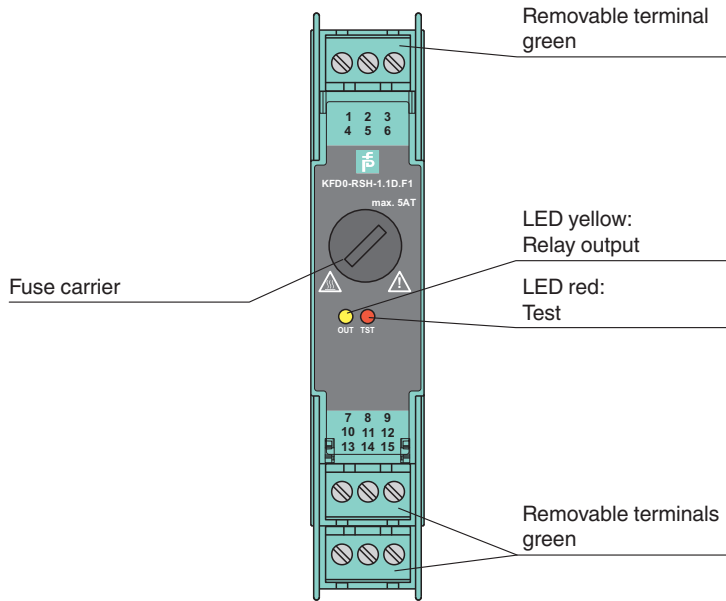
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## Technical Data

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 4, 5, 6
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 x 10 <sup>6</sup> switching cycles
Fuse rating		2.5 A (scope of delivery) max. 5 AT, recommended maximum utilization of the fuse: 80 %
<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
Machinery Directive		
Directive 2006/42/EC		EN IEC 62061:2021 , EN/ISO 13849-1:2015
<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>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



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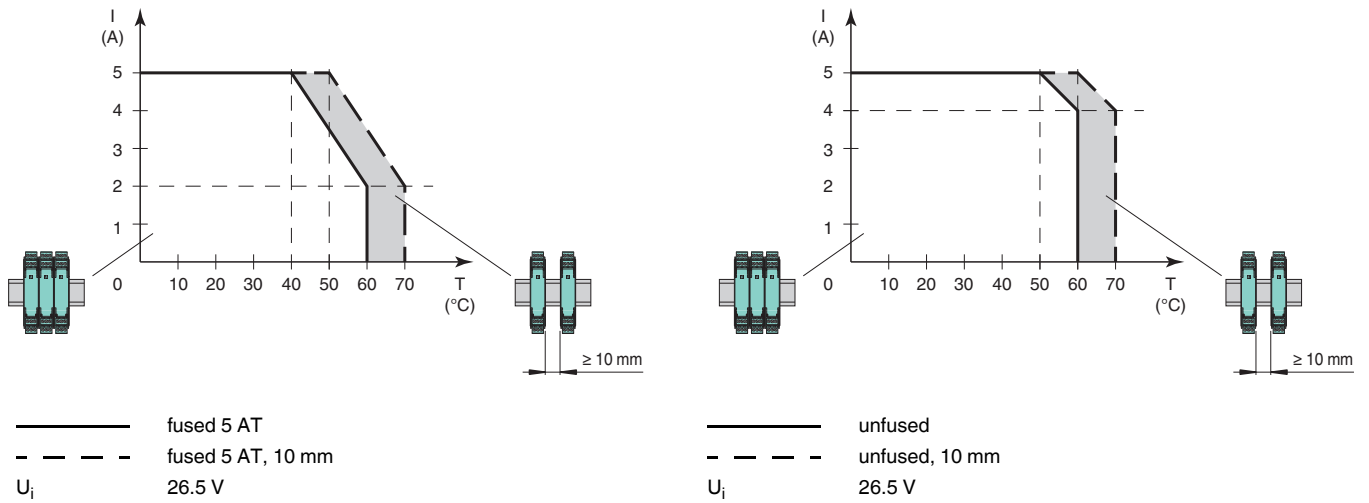
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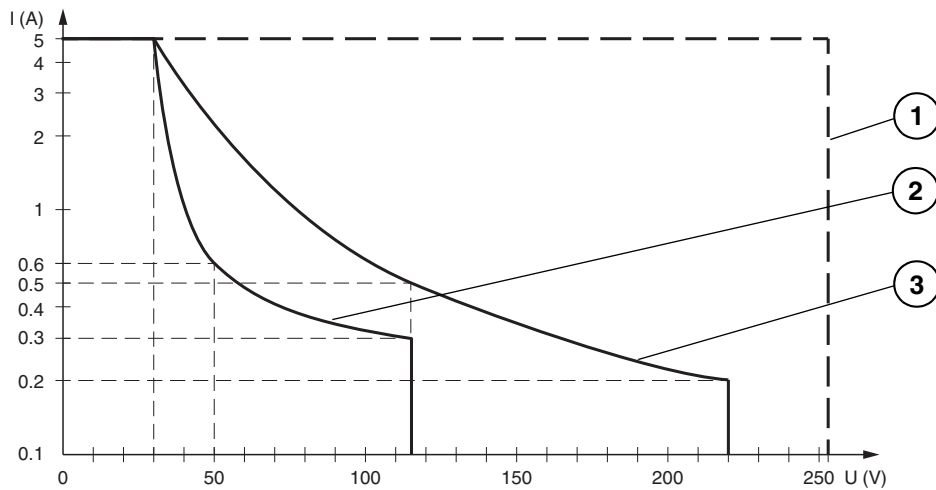
**Characteristic Curve**

**Derating**



**Characteristic Curve**

**Maximum Switching Power of Output Contacts**



- 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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