



## Relay Module KFD2-RSH-1.2E.L2

- 1-channel signal conditioner
- 24 V DC supply
- Logic input 19 V DC ... 26.4 V DC
- Recommended connectable voltage 8 V DC ... 60 V DC
- Relay contact output for energized to safe function
- Line fault transparency (LFT)
- Diagnostic function
- Up to SIL 3 acc. to IEC/EN 61508



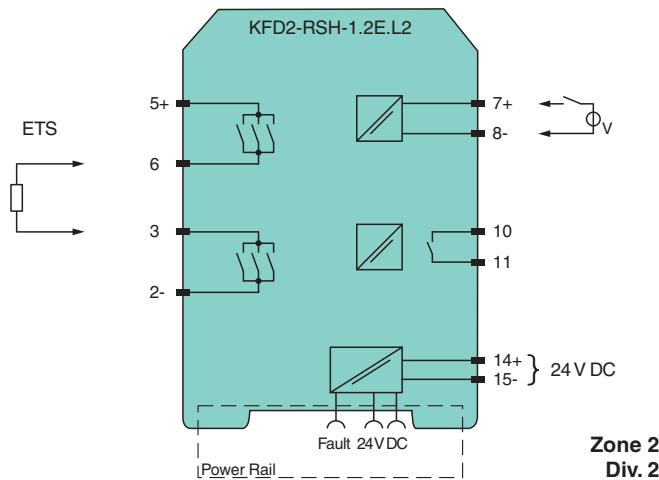
SIL 3



### 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 60 V DC and the 24 V DC control circuit. The energized to safe (ETS) function is permitted for SIL 3 applications. An internal fault or a line fault is signalized by the impedance change of the relay contact input and an additional relay contact output. A fault is signalized by LEDs and a separate collective error message output.

### Connection



### Technical Data

#### General specifications

Signal type	Digital Output
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#### Functional safety related parameters

Safety Integrity Level (SIL)	SIL 3
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Systematic capability (SC)	SC 3
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#### Supply

Connection	Power Rail or terminals 14+, 15-
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Rated voltage	$U_r$
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Input current	max. 35 mA at 24 V DC, max. 44 mA at 19 V DC, with enabled internal fault detection
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Power consumption	< 1.7 W, includes the power consumption of the digital input, see derating curves
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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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## Technical Data

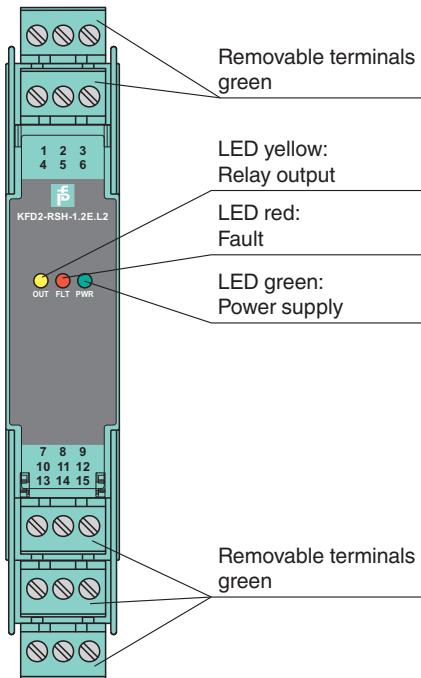
Input	
Connection side	control side
Connection	terminals 7+, 8-
Pulse/Pause ratio	min. 150 ms / min. 150 ms with disabled internal fault detection min. 1 s / min. 1 s with enabled internal fault detection
Test pulse length	max. 2 ms from DO card
Signal level	0-signal: -5 ... 5 V DC 1-signal: 19 ... 26.4 V DC
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)
Inrush current	< 200 mA after 100 $\mu$ s
Output	
Connection side	field side
Connection	external voltage : terminals 5+, 2- load : terminals 6, 3
Connectable voltage	8 ... 60 V DC
Power dissipation	< 3.3 W at 5 A , see derating curves
Contact loading	30 V DC / 5 A resistive load , see derating curves
Minimum switch current	10 mA
Mechanical life	$5 \times 10^6$ switching cycles
Line fault detection	low voltage < 5 V DC underright: 10 mA DC; overcurrent: 2.2 A DC (relay energized) breakage: 8.2 k $\Omega$ ; short-circuit: 11 $\Omega$ (load, relay de-energized)
Fault indication output	
Connection	terminals 10, 11
Contact loading	30 V DC/ 0.5 A resistive load
Reaction time	< 2 s
Mechanical life	$10^5$ switching cycles
Transfer characteristics	
Switching frequency	< 3 Hz with disabled internal fault detection < 0.5 Hz with enabled internal fault detection
Galvanic isolation	
Input/power supply	basic insulation according to IEC/EN 61010-1, rated insulation voltage 60 V <sub>eff</sub>
Input/fault indication output	basic insulation according to IEC/EN 61010-1, rated insulation voltage 30 V <sub>eff</sub>
Output/other circuits	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
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 21:2017 , IEC/EN 61326-3-2:2018 , EN 61326-3-1:2017
Degree of protection	IEC 60529:2013
Protection against electrical shock	EN 61010-1:2010
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F) Observe the temperature range limited by derating, see section derating.
Mechanical specifications	
Degree of protection	IP20
Connection	screw terminals
Mass	approx. 134 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

## Technical Data

Mounting	on 35 mm DIN mounting rail acc. to EN 60715:2001
<b>Data for application in connection with hazardous areas</b>	
Certificate	PF 17 CERT 4305 X
Marking	Ex II 3G Ex nC ec IIC T4 Gc [device in zone 2]
<b>Directive conformity</b>	
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

Release date: 2021-10-22 Date of issue: 2021-10-22 Filename: 274895\_eng.pdf

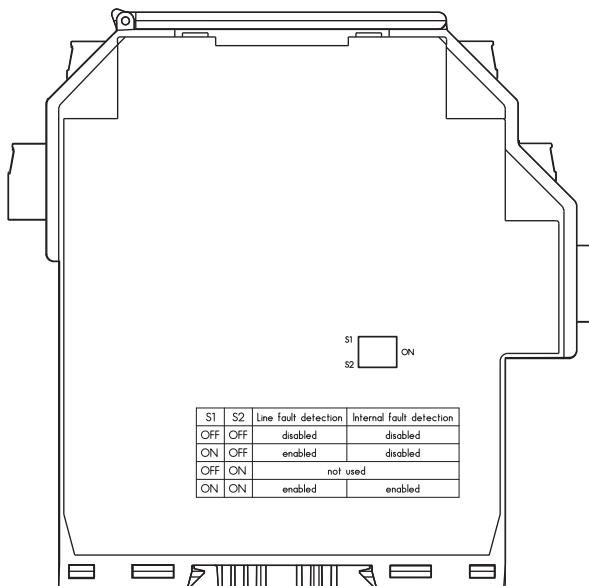
	<b>KFD2-EB2</b>	Power Feed Module
	<b>UPR-03</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 2 m
	<b>UPR-03-M</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 1,6 m
	<b>UPR-03-S</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 0.8 m
	<b>K-DUCT-GY</b>	Profile rail, wiring comb field side, gray
	<b>K-DUCT-GY-UPR-03</b>	Profile rail with UPR-03-* insert, 3 conductors, wiring comb field side, gray

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

## 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

## Configuration



### Output switch settings

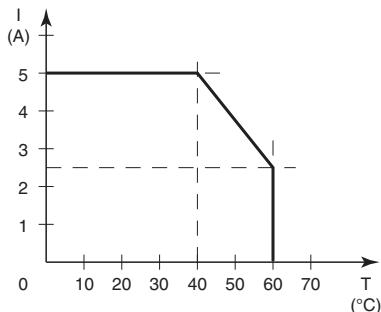
S1	S2	Line fault detection	Internal fault detection
OFF	OFF	disabled	disabled
ON	OFF	enabled	disabled
OFF	ON	not used	
ON	ON	enabled	enabled

Factory settings: line fault detection enabled, internal fault detection enabled

During a switching event the device detects an internal fault. A full test of all 3 redundant relay channels requires 3 consecutive switching events.

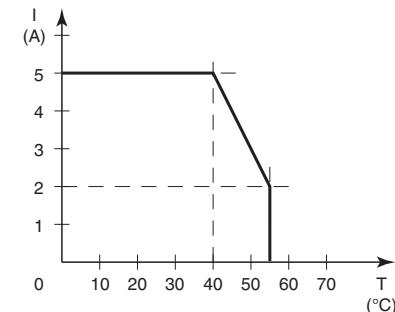
## Characteristic Curve

### Derating



U<sub>i</sub>

unfused, non-hazardous area  
26.4 V

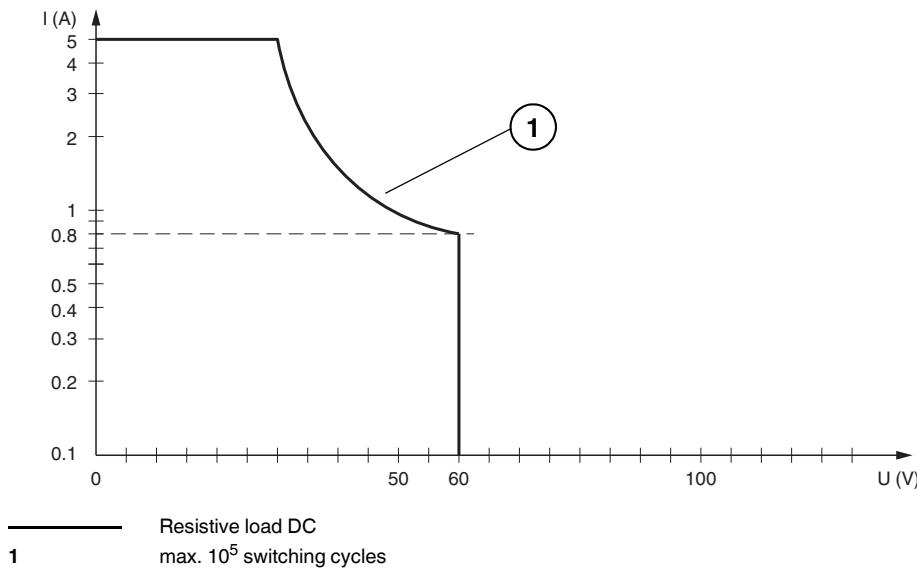


U<sub>i</sub>

unfused, Zone 2  
26.4 V

## Characteristic Curve

### Maximum Switching Power of Output Contacts



— Resistive load DC

1 max.  $10^5$  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.