

Features

- 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 61508

Function

This signal conditioner provides the galvanic isolation between field circuits and control circuits.

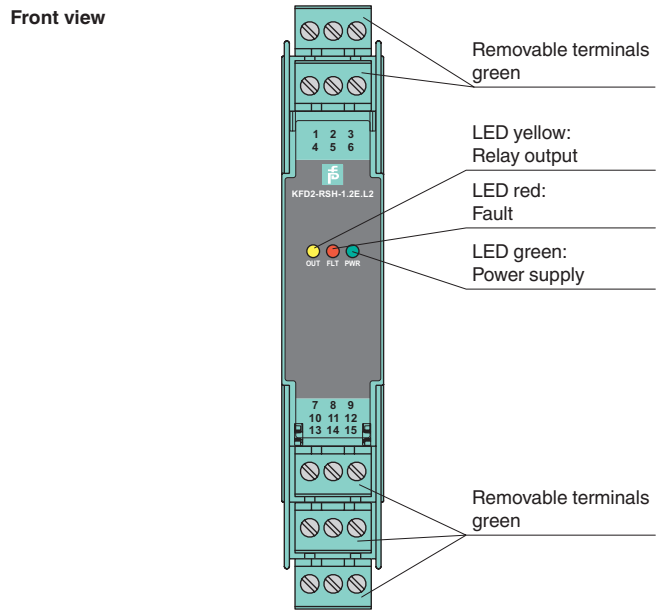
The device is a relay module that is suitable for safely switching applications of a load circuit. The device isolates load circuits up to 60 V DC and the 24 V DC control circuit.

The energized to safe (ETS) function is permitted for SIL 3 applications.

An internal fault or a line fault is signaled by the impedance change of the relay contact input and an additional relay contact output.

A fault is signaled by LEDs and a separate collective error message output.

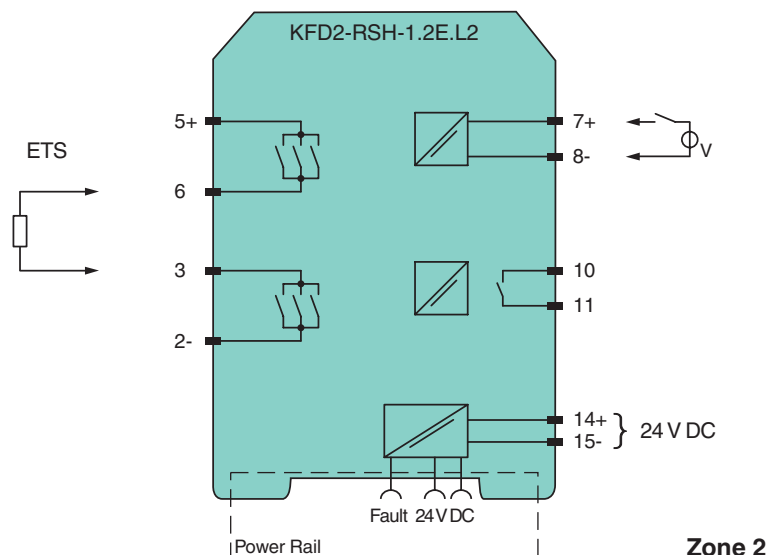
Assembly



CE

SIL 3

Connection



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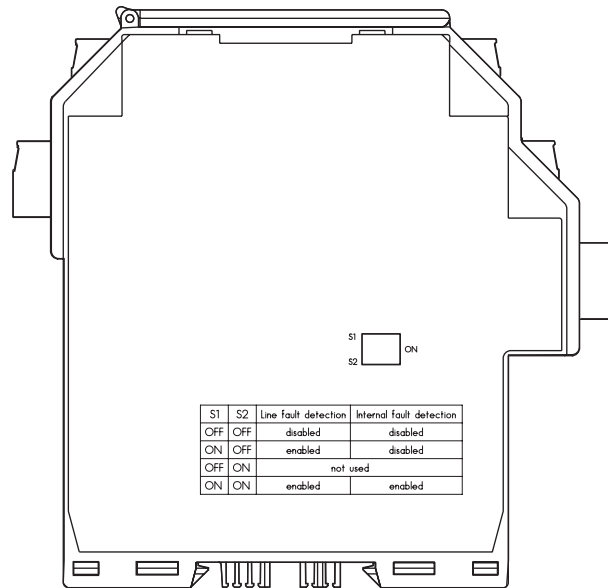
General specifications	
Signal type	Digital Output
Functional safety related parameters	
Safety Integrity Level (SIL)	SIL 3
Supply	
Connection	Power Rail or terminals 14+, 15-
Rated voltage U_r	19 ... 26.4 V DC
Input current	35 mA at 24 V DC , \leq 44 mA at 19 V DC , with enabled internal fault detection
Power consumption	< 1.7 W , includes the power consumption of the digital input , see derating curves
Input	
Connection side	control side
Connection	terminals 7+, 8-
Pulse/Pause ratio	\geq 150 ms / \geq 150 ms with disabled internal fault detection \geq 1 s / \geq 1 s with enabled internal fault detection
Test pulse length	\leq 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 μ 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	5×10^6 switching cycles
Line fault detection	low voltage < 5 V DC undercurrent: 10 mA DC; overcurrent: 2.2 A DC (relay energized) breakage: 8.2 k Ω ; short-circuit: 11 Ω (load, relay de-energized)
Fuse rating	2.5 A (scope of delivery) max. 5 AT, recommended maximum utilization of the fuse: 80 %
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 _{eff}
Input/fault indication output	basic insulation according to IEC/EN 61010-1, rated insulation voltage 30 V _{eff}
Output/other circuits	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 , EN 61326-3-1:2008
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) , housing type B2

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

Mounting	on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazardous areas	
Certificate	PF 17 CERT 4305 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
General information	
Supplementary information	Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com .

Configuration



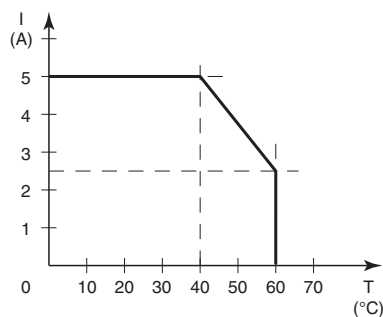
Output switch settings

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

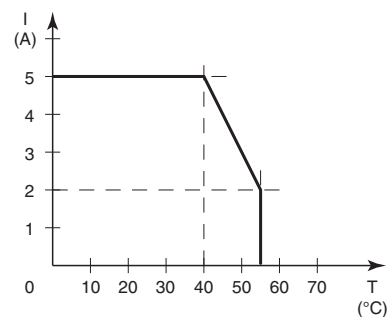
Factory settings: line fault detection enabled, internal fault detection enabled

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

Derating



unfused, non-hazardous area
U_i 26.4 V

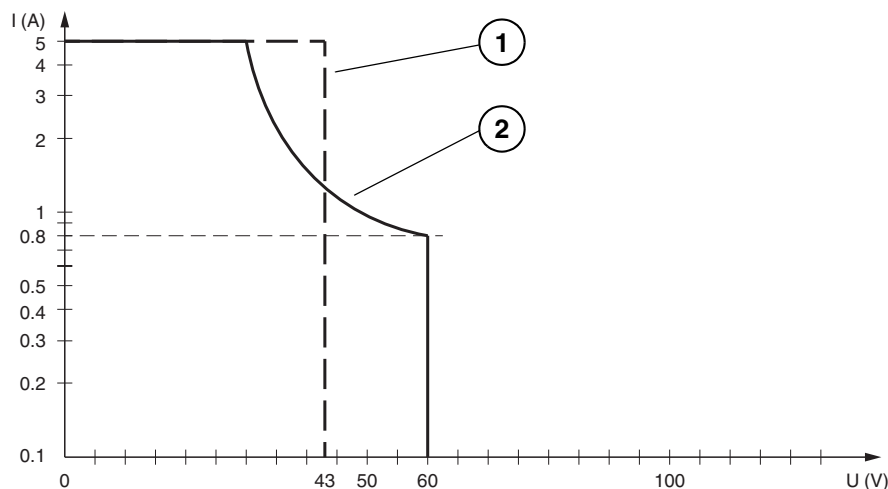


unfused, Zone 2
U_i 26.4 V

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Maximum Switching Power of Output Contacts



- Resistive load DC
- - - Resistive load AC
- 1 max. 10⁵ switching cycles
- 2 max. 10⁵ 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.

Accessories

Power feed module KFD2-EB2

The power feed module is used to supply the devices with 24 V DC via the Power Rail. The fuse-protected power feed module can supply up to 150 individual devices depending on the power consumption of the devices. Collective error messages received from the Power Rail activate a galvanically-isolated mechanical contact.

Power Rail UPR-03

The Power Rail UPR-03 is a complete unit consisting of the electrical insert and an aluminium profile rail 35 mm x 15 mm. To make electrical contact, the devices are simply engaged.

Profile Rail K-DUCT with Power Rail

The profile rail K-DUCT is an aluminum profile rail with Power Rail insert and two integral cable ducts for system and field cables. Due to this assembly no additional cable guides are necessary.



Power Rail and Profile Rail must not be fed via the device terminals of the individual devices!

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