Features

- 1-channel signal conditioner
- 24 V DC supply (loop powered)
- Logic input 20 V DC ... 26.5 V DC, non-polarized
- Fail-safe relay contact output for de-energized and energized to safe function
- Test pulse immunity
- Up to SIL 3 acc. to IEC 61508

Function

This signal conditioner 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 interface.

The energized to safe (ETS) function is permitted for SIL3 applications with output I. The de-energized to safe (DTS) function is permitted for SIL3 applications with output II. Additionally a dual pole switching (DPS) is possible by combination of output I and II.

The relays are of diverse design, but have a common effect on the individual switch output. For checking of these relays, terminals 10, 11 and 12 can be used. The test mode will be indicated by LEDs according to NAMUR NE44.

The outputs are galvanically isolated from the input. Output II is protected against contact welding by a fuse depending on the used terminal.

Application

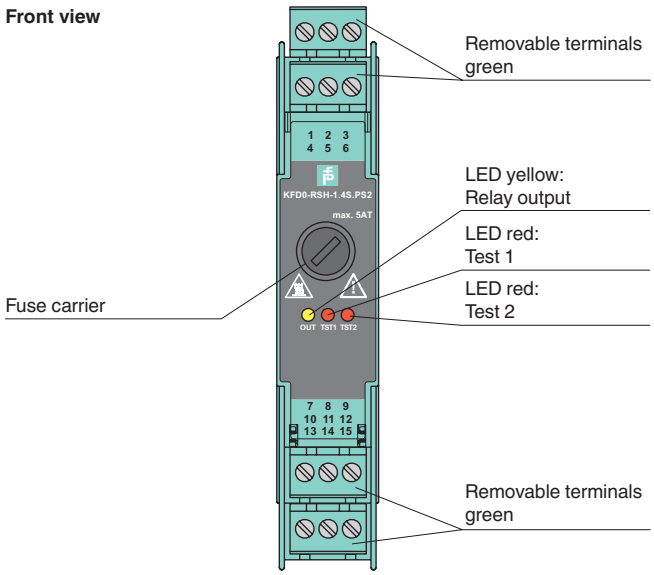
This device is compatible to the controls:

- Yokogawa ProSafe DO cards SDV531, SDV541
- Honeywell DO card SDO-0824

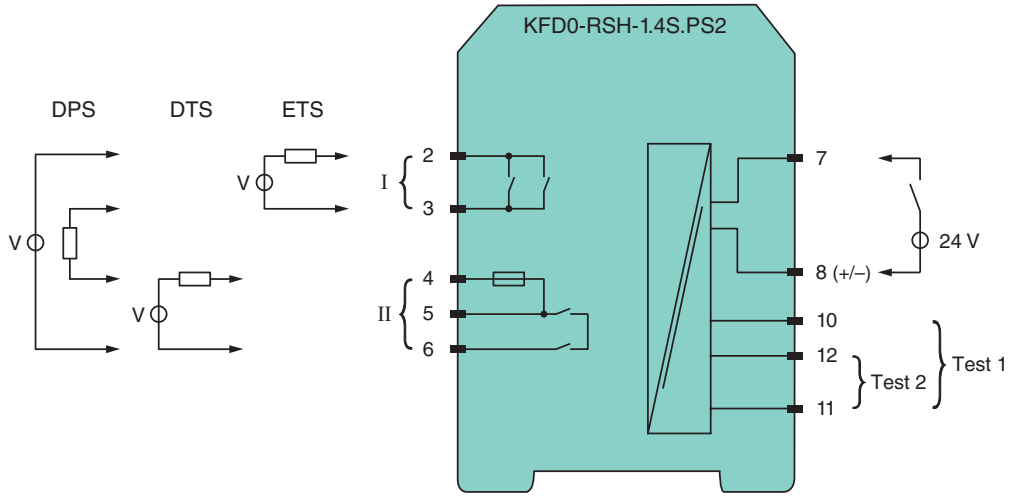
Compatibility check to other ESD/DCS systems on request.

Assembly

Front view



Connection



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General specifications		
Signal type		Digital Output
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Supply		
Rated voltage	U_r	loop powered
Power dissipation		< 1.5 W
Power consumption		< 1.5 W
Input		
Connection side		control side
Connection		Input terminals 7, 8 ; test input terminals 10, 11, 12
Pulse/Pause ratio		≥ 20 ms / ≥ 20 ms
Test input		see Functional Safety Manual
Signal level		0-signal: -3 ... 3 V DC 1-signal: 20 ... 26.5 V
Rated current	I_r	45 ... 50 mA
Output		
Connection side		field side
Connection		output I (ETS): terminals 2, 3 output II (DTS): terminals 4, 5, 6 output I and II (DPS): terminals 2, 3, 4, 5, 6
Contact loading		253 V AC/5 A/cos ϕ 0.7; 30 V DC/5 A resistive load
Minimum switch current		2 mA / 24 V DC
Energized/De-energized delay		approx. 10 ms / approx. 5 ms
Mechanical life		5 x 10^6 switching cycles
Fuse rating		2.5 A (max. 5 A) recommended maximum utilization of the fuse: 80 %
Transfer characteristics		
Switching frequency		< 10 Hz
Galvanic isolation		
Input/Output		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Output/Output		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Indicators/settings		
Display elements		LEDs
Labeling		space for labeling at the front
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
Low voltage		
Directive 2014/35/EU		EN 61010-1:2010
Conformity		
Electromagnetic compatibility		NE 21:2012
Degree of protection		IEC 60529:2013
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications		
Degree of protection		IP20
Connection		screw terminals
Mass		approx. 100 g
Dimensions		20 x 119 x 115 mm (0.8 x 4.7 x 4.5 inch) , housing type B2
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazardous areas		
Certificate		PF 15 CERT 3844 X
Marking		⟨Ex⟩ II 3G Ex nA nC IIC T4 Gc [device in zone 2]
Output		
Contact loading		50 V AC/4 A; 30 V DC/4 A , see derating curves for Zone 2
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013, 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.

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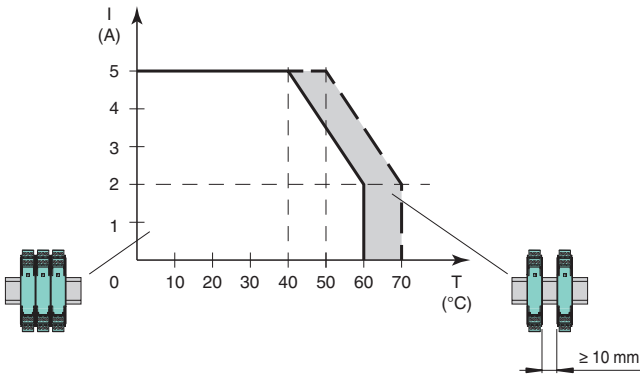
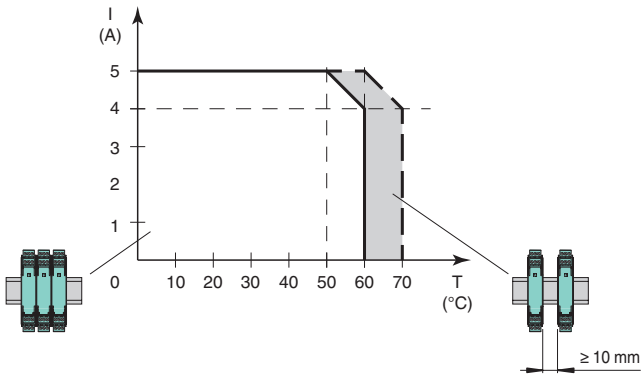
Derating

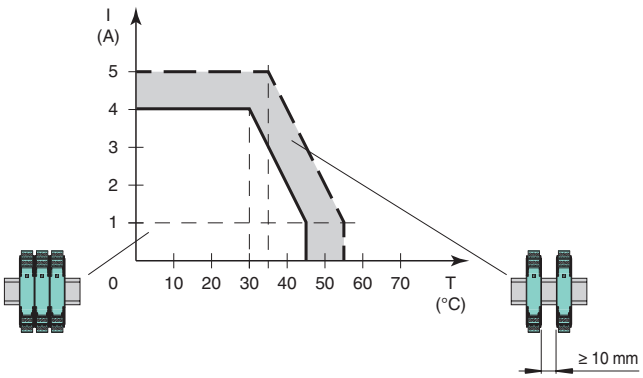


fused 5 AT
fused 5 AT, 10 mm
U_i 26.5 V

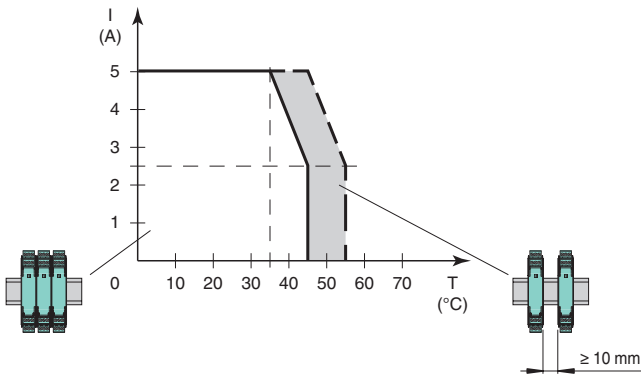


unfused
unfused, 10 mm
U_i 26.5 V

Derating for Zone 2 Application



fused 5 AT
fused 5 AT, 10 mm
U_i 26.5 V



unfused
unfused, 10 mm
U_i 26.5 V

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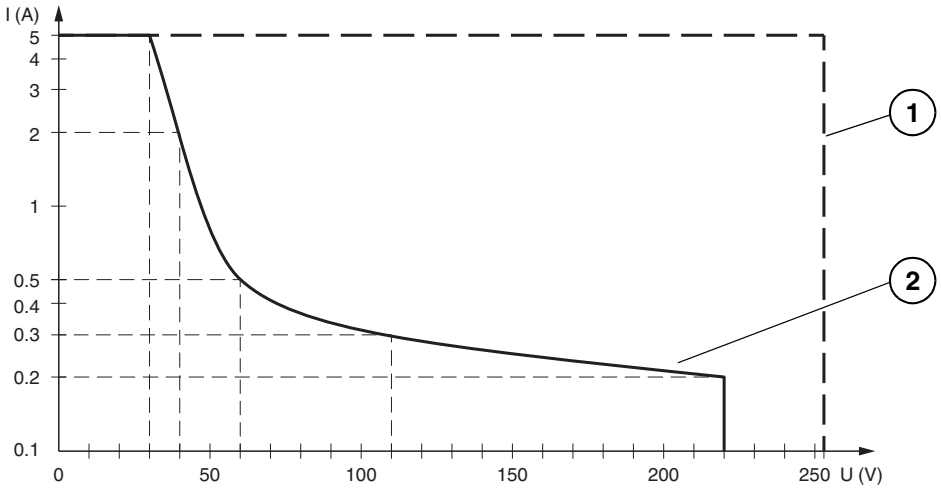
Maximum Switching Power of Output Contacts



Resistive load DC

Resistive load AC

1 max. 10^5 switching cycles

2 max. 3×10^4 switching cycles

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