Switch Amplifier

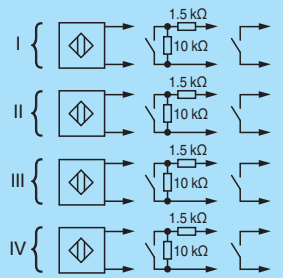
HiD2824

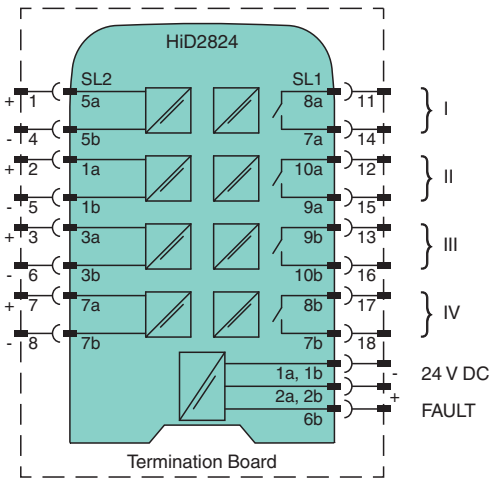
- 4-channel isolated barrier
- 24 V DC supply (bus powered)
- Dry contact or NAMUR inputs
- 4 relay contact outputs
- Line fault detection (LFD)
- Up to SIL 2 acc. to IEC/EN 61508

Function

This isolated barrier is used for intrinsic safety applications.
The device transfers digital signals from NAMUR sensors or dry contacts from the hazardous area to the non-hazardous area.
The proximity sensor or switch controls a form A normally open relay output for the non-hazardous area load. The device output changes state when the input signal changes state. The normal output state can be reversed with a switch on the side of the device.
The line fault detection can be abled or disabled via a switch.
During a fault state, the relay reverts to the de-energized state and LEDs indicate the fault according to NAMUR NE 44. A separate fault indication output is available. The fault states are monitored via a Fault Indication Board.
This device mounts on a HiD Termination Board.

Connection





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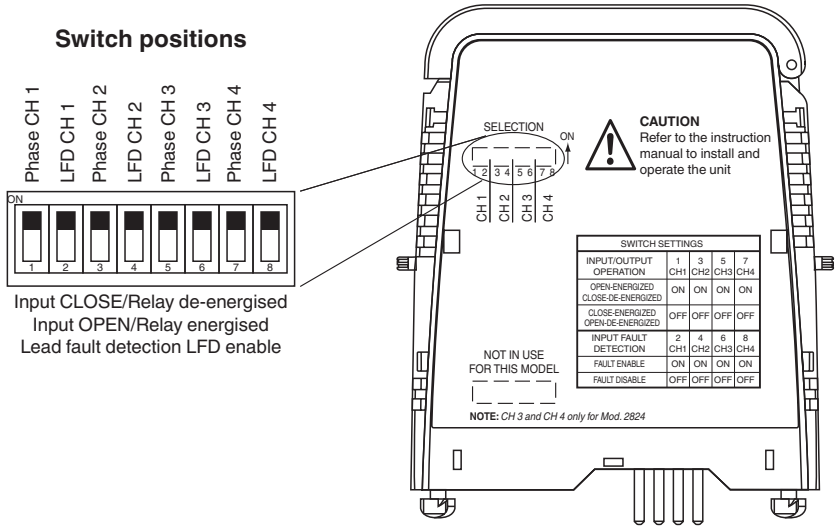
Configuration



Technical Data

General specifications		
Signal type		Digital Input
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Supply		
Connection		SL1: 1a(-), 1b(-); 2a(+), 2b(+)
Rated voltage	U_r	19 ... 30 V DC bus powered via Termination Board
Rated current	I_r	60 mA at 24 V, relay energized
Power dissipation		1.45 W at 24 V
Input		
Connection side		field side
Connection		SL2: 5a(+), 5b(-); 1a(+), 1b(-); 3a(+), 3b(-); 7a(+), 7b(-)
Rated values		acc. to EN 60947-5-6 (NAMUR)
Open circuit voltage/short-circuit current		approx. 10 V DC / approx. 8 mA
Switching point/switching hysteresis		1.2 ... 2.1 mA / approx. 0.2 mA
Line fault detection		breakage I ≤ 0.1 mA , short-circuit I ≥ 6.5 mA
Pulse/Pause ratio		min. 20 ms / min. 20 ms
Output		
Connection side		control side
Connection		SL1: 8a, 7a; 10a, 9a; 10b, 9b; 8b, 7b
Output		signal: relay SPST per channel, phase selectable
Response time		20 ms
Contact loading		50 V DC / 0.5 A non-inductive
Mechanical life		10^7 switching cycles
Fault indication output		
Connection		SL1: 6b
Output type		open collector transistor (internal fault bus)
Transfer characteristics		
Switching frequency		< 10 Hz

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Technical Data

Galvanic isolation		
Input/Output		basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Input/power supply		basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Output/power supply		basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V_{eff}
Output/Output		basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 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 21:2017 EN 61326-3-2:2018 For further information see system description.
Degree of protection		IEC 60529:2001
Protection against electrical shock		UL 61010-1:2012
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 140 g
Dimensions		18 x 114 x 130 mm (0.7 x 4.5 x 5.1 inch) (W x H x D)
Mounting		on Termination Board
Coding		pin 1 and 2 trimmed For further information see system description.
Data for application in connection with hazardous areas		
EU-type examination certificate		CESI 21 ATEX 017
Marking		⟨Ex⟩ II (1)G [Ex ia Ga] IIC ⟨Ex⟩ II (1)D [Ex ia Da] IIIC ⟨Ex⟩ I (M1) [Ex ia Ma] I
Input		Ex ia
Voltage	U_o	13.2 V
Current	I_o	20 mA
Power	P_o	66 mW
Supply		
Maximum safe voltage	U_m	250 V AC (Attention! U_m is no rated voltage.)
Galvanic isolation		
Input/input		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 60 V
Input/Output		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Input/power supply		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018 , EN 60079-11:2012
International approvals		
CSA approval		CoC 80097459 (cCSAus)
Control drawing		116-0487 (cCSAus)
IECEx approval		
IECEx certificate		IECEx CES 21.0011
IECEx marking		[Ex ia Ga] IIC , [Ex ia Da] IIIC , [Ex ia Ma] I
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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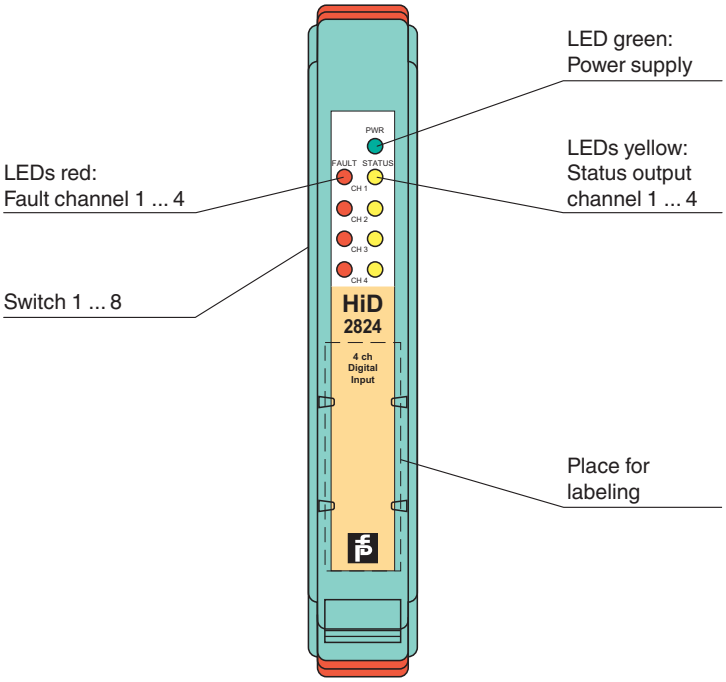
Assembly

Front view



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Configuration

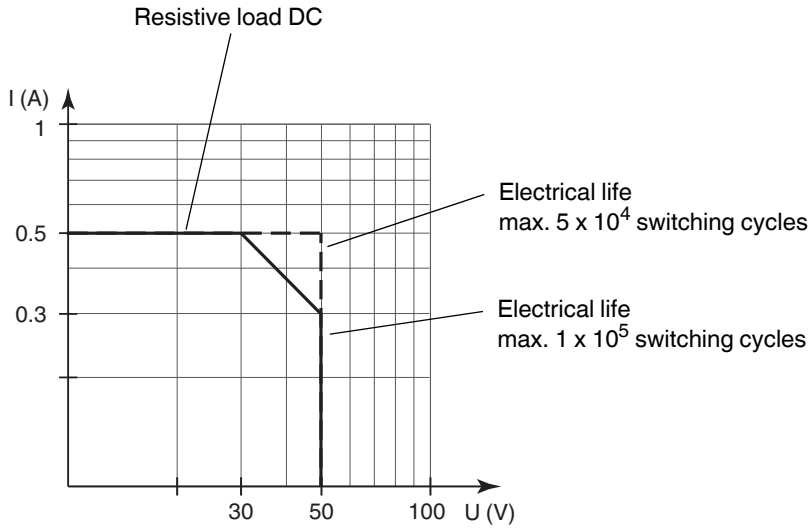
Configure the device in the following way:

- Push the red Quick Lok Bars on each side of the device in the upper position.
- Remove the device from Termination Board.
- Set the DIP switches according to the figure.

The pins for this device are trimmed to polarize it according to its safety parameter. Do not change! For further information see system description.

Characteristic Curve

Maximum switching power of output contacts



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

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