Features

- 1-channel isolated barrier
- 24 V DC supply (bus or loop powered)
- Output 45 mA at 12 V DC
- Line fault transparency (LFT)
- Test pulse immunity
- Up to SIL 3 acc. to IEC 61508

Function

This isolated barrier is used for intrinsic safety applications.

It supplies power to solenoids, LEDs and audible alarms located in a hazardous area.

The device is controlled with a loop powered signal or a bus powered logic signal.

The device is immune to the test pulses of various control systems.

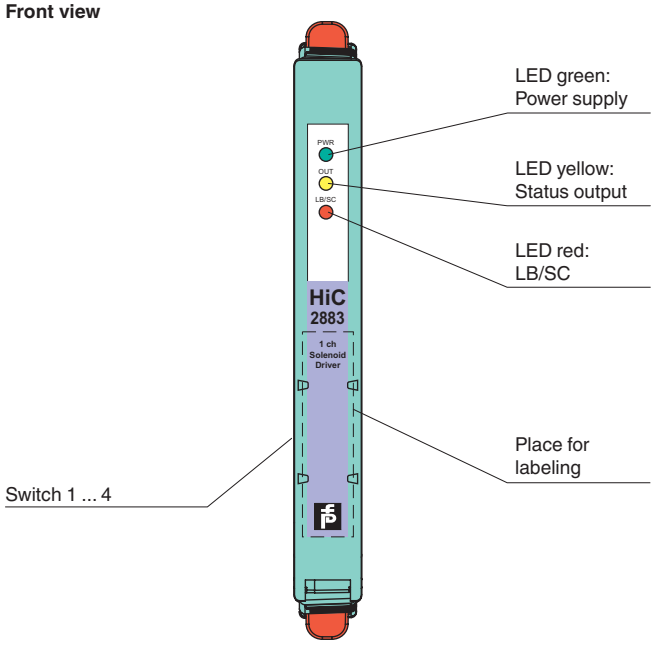
The device simulates a minimum load at the input. The minimum load can be activated and de-activated.

The line fault transparency function can display a line fault in the field by a change in impedance at the switching input of the solenoid driver.

The line fault transparency function is only available, if the device is supplied via the termination board.

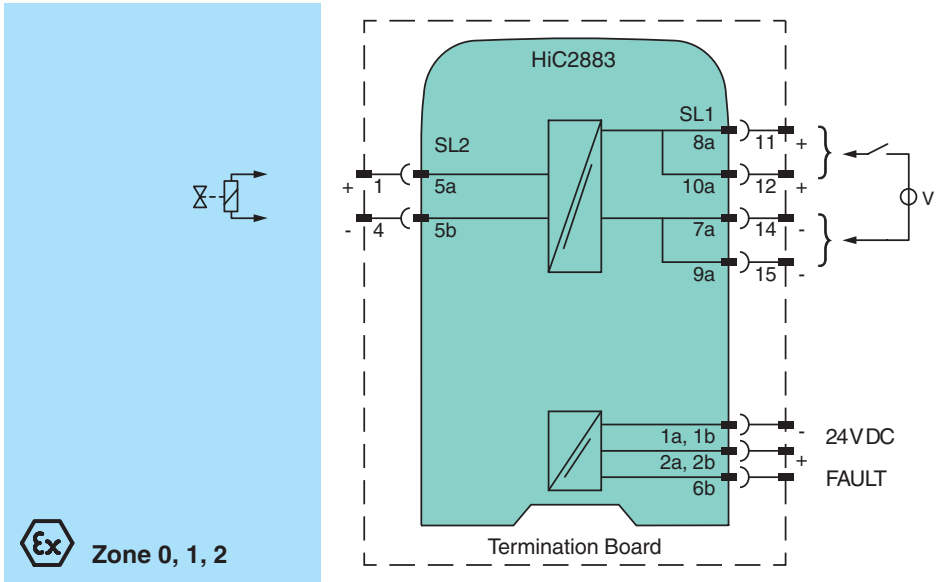
Assembly

Front view



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		SL1: 1a, 1b(-); 2a, 2b(+)
Rated voltage	U_r	19 ... 30 V bus powered via Termination Board 19 ... 30 V loop powered via input , reverse polarity protected
Input current		75 mA at 24 V, 270 Ω load
Power dissipation		1.3 W at 24 V, 270 Ω load
Input		
Connection side		control side
Connection		SL1: 7a(-), 9a(-); 8a(+), 10a(+)
Test pulse length		≤ 2 ms from DO card
Signal level		loop powered 1-signal: 19 ... 30 V DC 0-signal: 0 ... 5 V DC bus powered 1-signal: 15 ... 30 V DC (current limited at 5 mA) 0-signal: 0 ... 5 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: ≥ 36 mA (minimum load current DO card)
Inrush current		< 200 mA , 10 ms loop powered
Output		
Connection side		field side
Connection		SL2: 5a(+), 5b(-)
Internal resistor	R_i	approx. 240 Ω
Current	I_e	typ. 45 mA
Voltage	U_e	≥ 12 V
Current limit	I_{max}	50 mA
Open loop voltage	U_s	typ. 24.6 V
Load		nominal 0.05 ... 18 kΩ
Switching frequency	f	max. 10 Hz
Energized/De-energized delay		20 ms / 5 ms
Line fault detection		signal at short-circuit R_B < 25 Ω, lead breakage R_B > 50 kΩ ; test current < 500 µA
Fault indication output		
Connection		SL1: 6b
Output type		open collector transistor (internal fault bus)
Galvanic isolation		
Output/other circuits		basic 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 For further information see system description.
Degree of protection		IEC 60529:2013
Protection against electrical shock		EN 61010-1:2010
Ambient conditions		
Ambient temperature		-20 ... 70 °C (-4 ... 158 °F) Observe the temperature range limited by derating, see section derating.
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 150 g
Dimensions		12.5 x 128 x 106 mm (0.5 x 5.1 x 4.2 inch)
Mounting		on Termination Board
Coding		pin 1 and 4 trimmed For further information see system description.
Data for application in connection with hazardous areas		
EU-Type Examination Certificate		EXA 17 ATEX 0040 X

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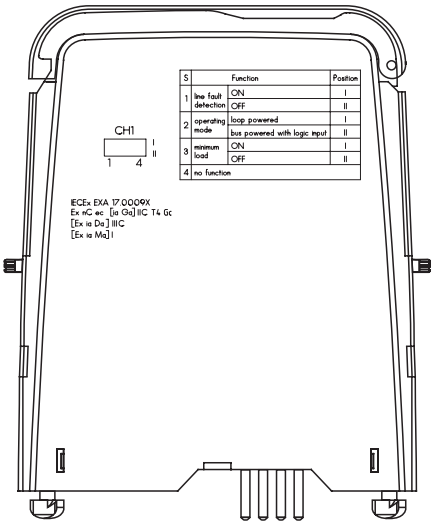
Marking		Ex II 3(1)G Ex nC ec [ia Ga] IIC T4 Gc Ex II (1)D [Ex ia Da] IIIC Ex I (M1) [Ex ia Ma] I
Output		Ex ia
Voltage	U_o	26 V
Current	I_o	110 mA
Power	P_o	715 mW
Supply		
Maximum safe voltage	U_m	60 V (Attention! The rated voltage can be lower.)
Input		
Maximum safe voltage	U_m	60 V (Attention! The rated voltage can be lower.)
Galvanic isolation		
Input/Output		safe electrical isolation acc. to IEC/EN 60079-11, rated insulation voltage 300 V_{rms}
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-7:2015 , EN 60079-11:2012 , EN 60079-15:2010
International approvals		
IECEx approval		IECEx EXA 17.0009X
Approved for		Ex nC ec [ia Ga] IIC T4 Gc , [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.

Configuration



Switch settings

Switch	Function		Position
S1	Line fault detection	enabled	I
		disabled	II
S2	Operating mode	loop powered	I
		bus powered with logic input	II
S3	Minimum load	enabled	I
		disabled	II
S4	No function		

Factory settings: line fault detection enabled, operating mode loop powered, minmum load enabled

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.

If the control system DO card does not support the line fault transparency function of the isolator, disable the line fault detection, e. g. Yokogawa Network IO for SIS "S2MMM843/S2MDV843" as style = 1.

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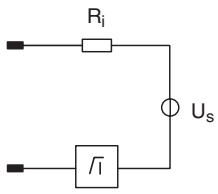
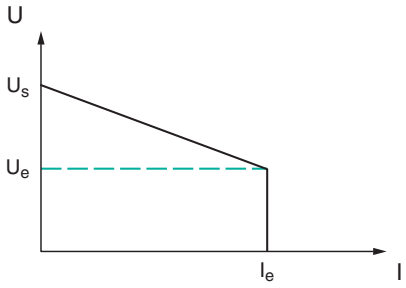
Output characteristics

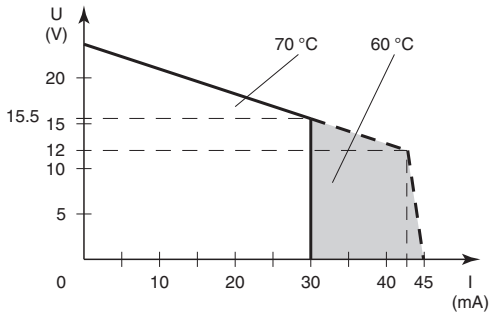
Output circuit diagram



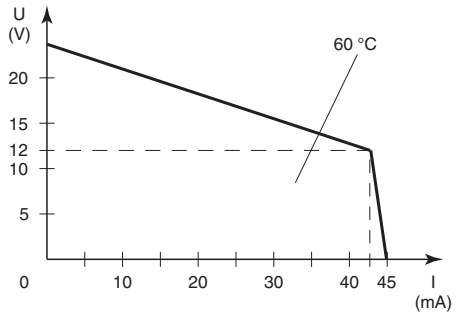
Output characteristic



Derating



Derating for Zone 2 Application



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