



Solenoid Driver

HiC2883

- 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/EN 61508



SIL 3



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.

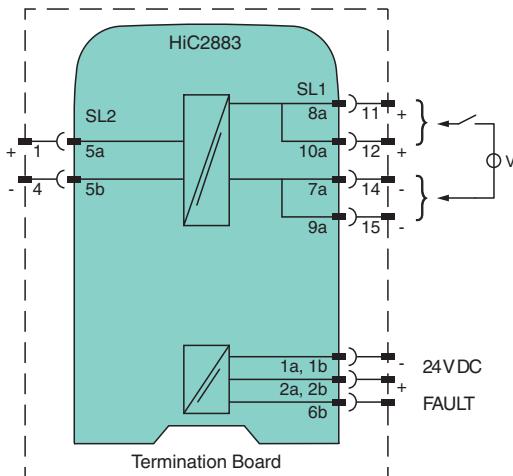
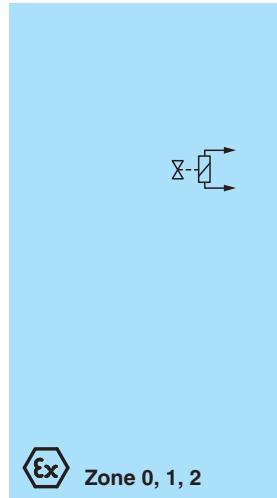
The device is immune to the test pulses of various control systems.

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.

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	SL1: 1a, 1b(-); 2a, 2b(+)
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Rated voltage	U_r	19 ... 30 V bus powered via Termination Board 19 ... 30 V loop powered via input, reverse polarity protected
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Input current	75 mA at 24 V, 270 Ω load
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Power dissipation	1.3 W at 24 V, 270 Ω load
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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Technical Data

Input		
Connection side		control side
Connection		SL1: 7a(-), 9a(-); 8a(+), 10a(+)
Test pulse length		max. 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 k Ω
Switching frequency	f	max. 10 Hz
Energized/De-energized delay		20 ms / 5 ms
Line fault detection		
Short-circuit		< 25 Ω
Open-circuit		> 50 k Ω
Test current		< 500 μ A
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 21:2017, IEC/EN 61326-3-2:2018 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 106 x 128 mm (0.5 x 4.2 x 5.1 inch) (W x H x D)
Mounting		on termination board
Coding		pin 1 and 4 trimmed For further information see system description.

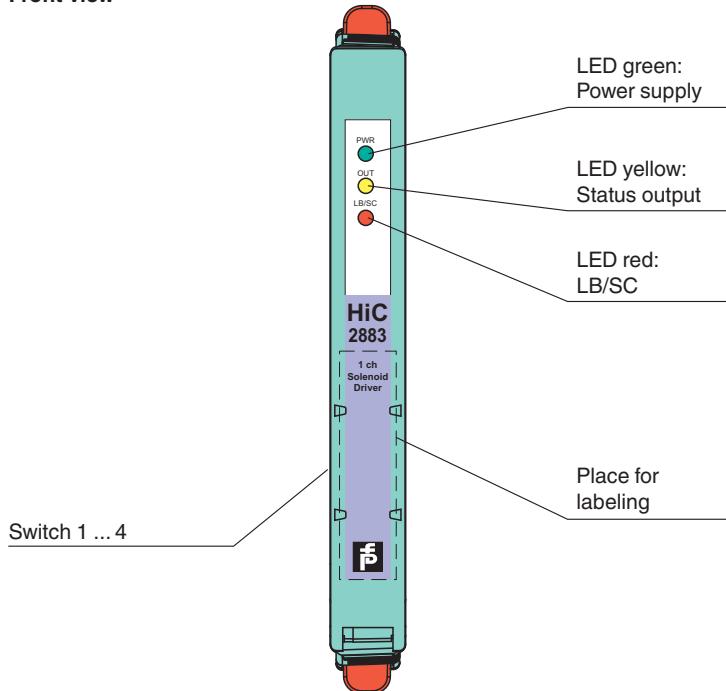
Technical Data

Data for application in connection with hazardous areas

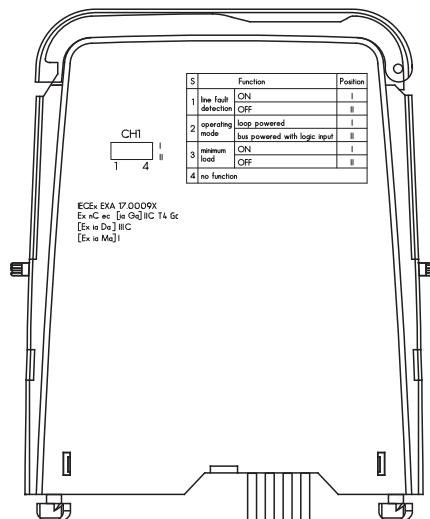
EU-type examination certificate	EXA 17 ATEX 0040 X	
Marking	Ex II 3(1)G Ex nC ec [ia Ga] IIC T4 Gc Ex II (1)D [Ex ia Da] IIIC Ex I (M1) [Ex ia Ma] I	
Output	Ex ia	
Voltage	U _o	26 V
Current	I _o	110 mA
Power	P _o	715 mW
Supply		
Maximum safe voltage	U _m	60 V (Attention! The rated voltage can be lower.)
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 IEC 60079-0:2018+AC:2020 , EN 60079-7:2015+A1:2018 , EN 60079-11:2012 , EN 60079-15:2010	
International approvals		
FM approval	FM 17 US 0111 X , FM 17 CA 0057 X	
Control drawing	116-0442	
UL approval	E106378	
Control drawing	116-0447 (cULus)	
IECEx approval		
IECEx certificate	IECEx EXA 17.0009X	
IECEx marking	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 .	

Assembly

Front view



Configuration



Switch settings

Switch	Function	Position
S1	Line fault detection	enabled (I)
		disabled (II)
S2	Mode of operation	loop powered (I)
		bus powered with logic input (II)
S3	Minimum load	enabled (I)
		disabled (II)
S4	No function	

Factory setting: line fault detection enabled, operating mode loop powered, minimum load enabled

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.*

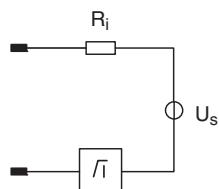


If the control system DO card does not support the line fault transparency function of the isolator, disable the line fault detection, e. g. Yokogawa Network IO for SIS "S2MMM843/S2MDV843" as style = 1.

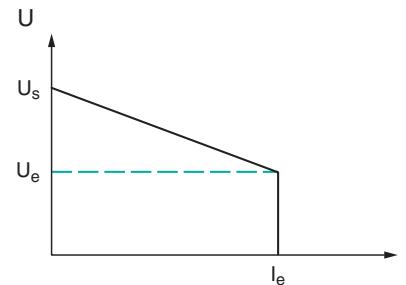
Characteristic Curve

Output characteristics

Output circuit diagram

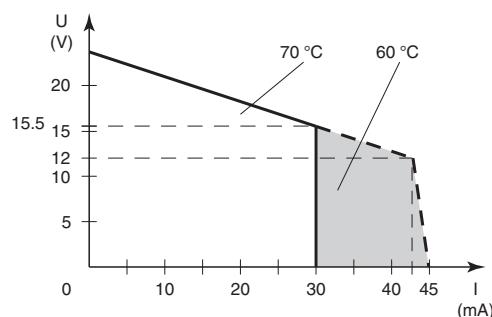


Output characteristic



Characteristic Curve

Derating



Derating for Zone 2 Application

