Solenoid Driver

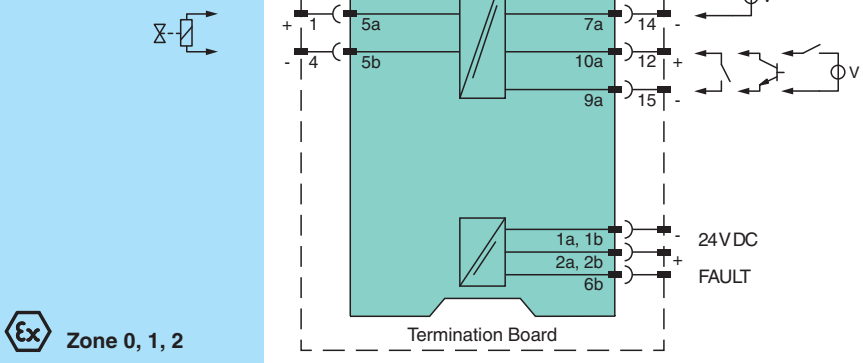
HiC2873

- 1-channel isolated barrier
- 24 V DC supply (bus or loop powered)
- Output 40 mA at 12 V DC, 55 mA current limit
- Contact or logic control input
- Entity parameter I_o/I_{sc} = 110 mA
- Line fault detection (LFD)
- Test pulse immunity
- Up to SIL 2 acc. to IEC/EN 61508 (bus powered)
- Up to SIL 3 acc. to IEC/EN 61508 (loop powered)

Function

This isolated barrier is used for intrinsic safety applications.
The device supplies power to solenoids, LEDs and audible alarms located in a hazardous area.
It is controlled with a loop powered control signal, switch contact, transistor, or logic signal.
At full load, 12 V at 40 mA (with 55 mA current limit) is available for the hazardous area application.
Line fault detection of the field circuit is indicated by a red LED and an output on the fault bus.
This device mounts on a HiC termination board.

Connection



Technical Data

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	20.4 ... 30 V DC loop powered 20.4 ... 30 V DC bus powered via Termination Board
Input current		62 mA at 24 V, 300 Ω load
Power dissipation		1 W at 24 V, 300 Ω load
Input		

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Technical Data

Connection side		control side
Connection		SL1: 8a(+), 7a(-) loop powered SL1: 10a(+), 9a(-) bus powered
Control input		external switch (dry contact or open collector) non isolated or logic signal input fully floating
Signal level		1-signal: 15...30 V DC (current limited to 3 mA) or contact close (internal 10 kΩ pull-up) 0-signal: 0...5 V DC or contact open
Power dissipation		1 W at 24 V, 300 Ω load for loop powered
Inrush current		0.2 A , 15 ms loop powered
Output		
Connection side		field side
Connection		SL2: 5a(+), 5b(-)
Internal resistor	R_i	approx. 240 Ω
Current	I_e	≤ 40 mA
Voltage	U_e	≥ 12 V
Current limit	I_{max}	55 mA
Open loop voltage	U_s	approx. 22.5 V
Load		nominal 0.1 ... 5 kΩ
Switching frequency	f	- bus powered: filter OFF: max. 150 Hz, filter ON: max. 15 Hz - loop powered: max. 10 Hz
Energized/De-energized delay		- bus powered: filter OFF: 1 ms, filter ON: 10 ms - loop powered: switch-on 50 ms, switch-off 6 ms (300 Ω load)
Line fault detection		
Short-circuit		< 25 Ω
Open-circuit		> 100 kΩ
Test current		< 4 mA
Fault indication output		
Connection		SL1: 6b
Output type		open collector transistor (internal fault bus)
Fault current		4 mA pulsing (20 ms ON, 200 ms OFF)
Fault level		lead short-circuit detection at < 25 Ω lead breakage detection at > 100 kΩ typical
Galvanic isolation		
Output/power supply, inputs, and collective error		safe electrical isolation acc. to EN 60079-11: 2007, voltage peak value 375 V
Indicators/settings		
Display elements		LEDs
Control elements		DIP switch
Factory setting		bus powered, logic level control, line fault detection enabled
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 21:2006 For further information see system description.
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 100 g
Dimensions		12.5 x 106 x 128 mm (0.5 x 4.2 x 5.1 inch) (W x H x D)
Height		106 mm
Width		12.5 mm

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Technical Data

Depth		128 mm
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		CESI 10 ATEX 046
Marking		⟨Ex⟩ II (1)G [Ex ia Ga] IIC ⟨Ex⟩ II (1)D [Ex ia Da] IIIC ⟨Ex⟩ I (M1) [Ex ia Ma] I
Output		Ex ia Ga, Ex ia Da, Ex ia Ma
Voltage	U_o	25.2 V
Current	I_o	110 mA
Power	P_o	693 mW
Supply		
Maximum safe voltage	U_m	253 V AC (Attention! U_m is no rated voltage.)
Certificate		KIWA 15 ATEX 0036 X
Marking		⟨Ex⟩ II 3G Ex ec IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-7:2015+A1:2018
International approvals		
FM approval		
Control drawing		116-0431 (cFMus)
UL approval		
Control drawing		116-0383 (cULus)
IECEx approval		
IECEx certificate		IECEx CES 10.0017 IECEx KIWA 15.0018X
IECEx marking		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I Ex ec IIC T4 Gc
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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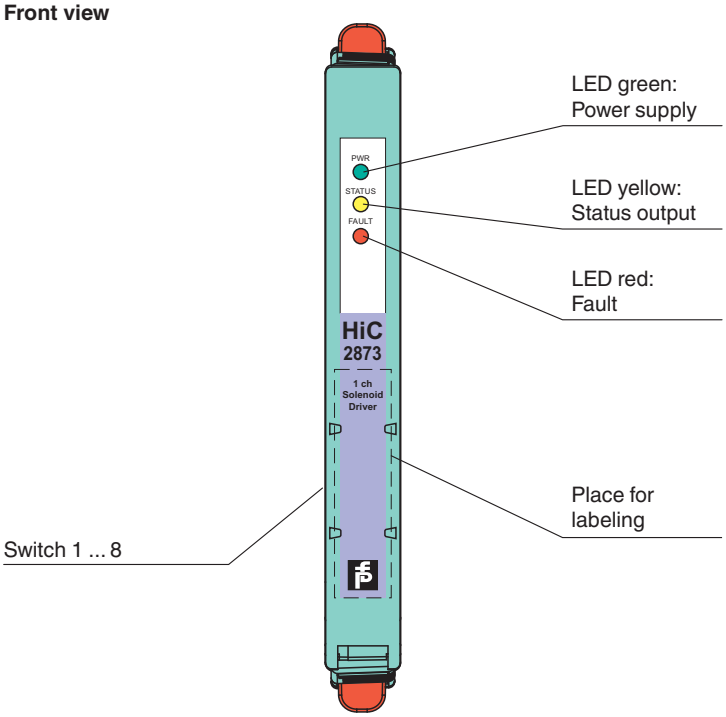
Assembly

Front view



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 switches according to the figure in the **Configuration** section.

Note
The pins for this device are trimmed to polarize it according to its safety parameters. Do not change the setting. For further information see system description.

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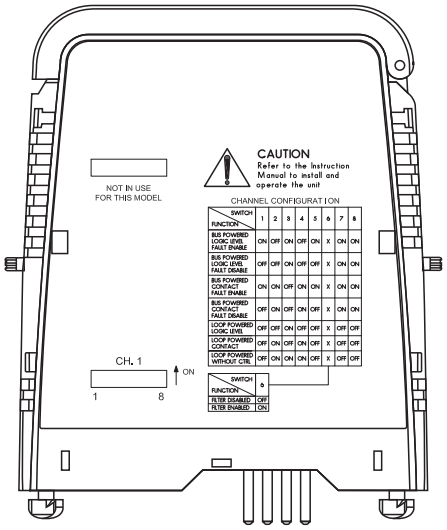
Configuration



Switch settings

Switches for channel I	S1	S2	S3	S4	S5	S6	S7	S8
Function								
• Bus powered • Control input: logic signal • Line fault detection enabled	ON	OFF	ON	OFF	ON	X	ON	ON
• Bus powered • Control input: logic signal • Line fault detection disabled	OFF	OFF	ON	OFF	OFF	X	ON	ON
• Bus powered • Control input: contact • Line fault detection enabled	ON	ON	OFF	ON	ON	X	ON	ON
• Bus powered • Control input: contact • Line fault detection disabled	OFF	ON	OFF	ON	OFF	X	ON	ON
• Loop powered • Control input: logic signal • Line fault detection disabled	OFF	OFF	ON	OFF	OFF	X	OFF	OFF
• Loop powered • Control input: contact • Line fault detection disabled	OFF	ON	OFF	ON	OFF	X	OFF	OFF
• Loop powered • Control input: without control • Line fault detection disabled	OFF	ON	ON	ON	OFF	X	OFF	OFF

Switches for channel I and II	S6
Function	
Filter disable	OFF
Filter enable	ON

Factory settings: bus powered, control input: contact, line fault detection enabled, filter disabled

Characteristic Curve

Output characteristics

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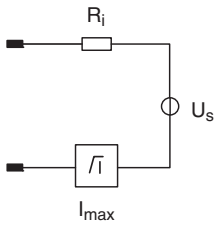
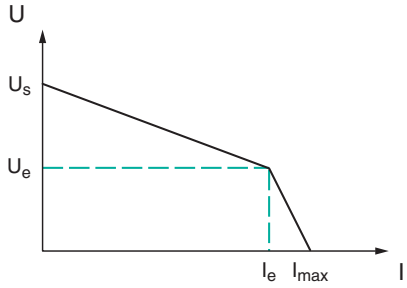
Output circuit diagram



Output characteristic



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