



# Solenoid Driver

## HiC2877

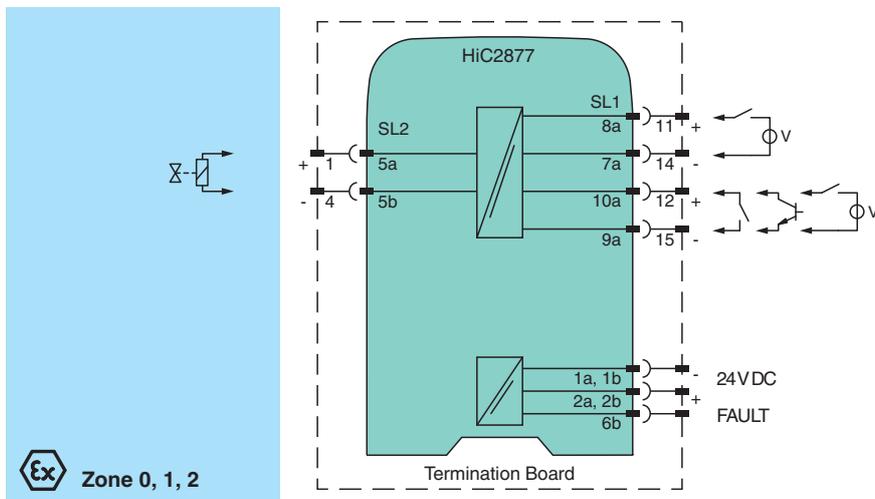
- 1-channel isolated barrier
- 24 V DC supply (bus or loop powered)
- Output 40 mA at 11.2 V DC, 55 mA current limit
- Contact or logic control input
- Entity parameter  $I_O/I_{SC} = 93$  mA
- Line fault detection (LFD)
- Test pulse immunity
- Up to SIL 3 acc. to IEC/EN 61508 (loop powered)



### 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, 11.2 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

<b>General specifications</b>	
Signal type	Digital Output
<b>Functional safety related parameters</b>	
Safety Integrity Level (SIL)	SIL 3
Systematic capability (SC)	SC 3
<b>Supply</b>	
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 $\Omega$ load
Power dissipation	1 W at 24 V, 300 $\Omega$ load

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group  
www.pepperl-fuchs.com

USA: +1 330 486 0002  
pa-info@us.pepperl-fuchs.com

Germany: +49 621 776 2222  
pa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091  
pa-info@sg.pepperl-fuchs.com

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## Technical Data

Input	
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 at 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. 280 Ω
Current	$I_e$ ≤ 40 mA
Voltage	$U_e$ ≥ 11.2 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)
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
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)
Mounting	on termination board
Coding	pin 2 and 3 trimmed For further information see system description.
Data for application in connection with hazardous areas	
EU-type examination certificate	CESI 10 ATEX 046

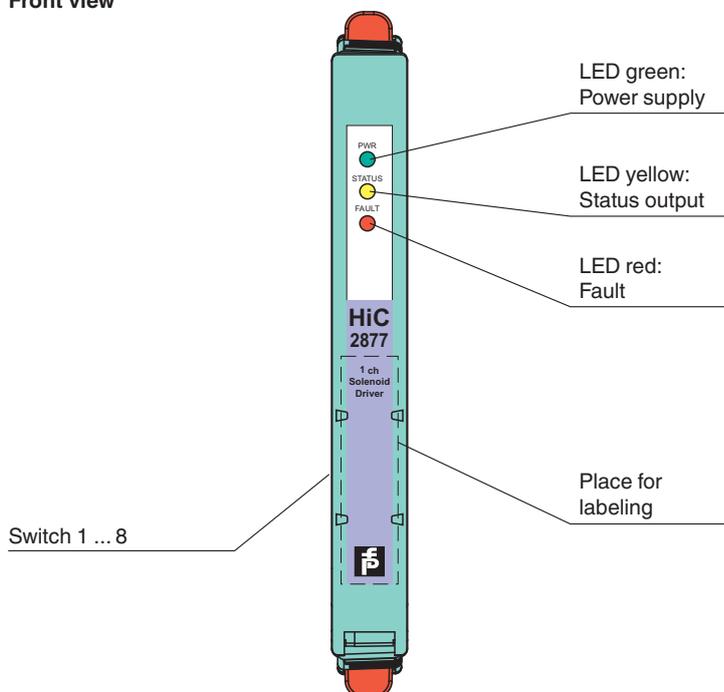
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## Technical Data

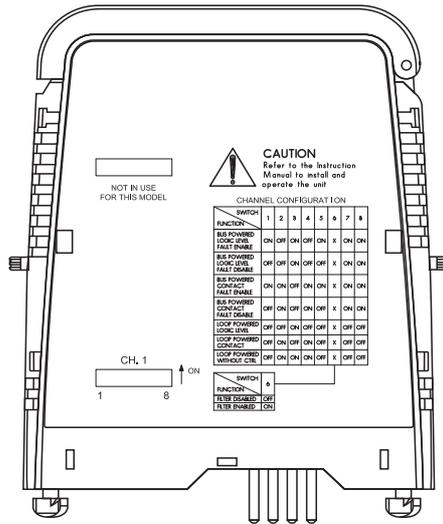
Marking		Ⓜ II (1)G [Ex ia Ga] IIC Ⓜ II (1)D [Ex ia Da] IIIC Ⓜ I (M1) [Ex ia Ma] I
Output		Ex ia Ga, Ex ia Da, Ex ia Ma
Voltage	$U_o$	25.2 V
Current	$I_o$	93 mA
Power	$P_o$	586 mW
Supply		
Maximum safe voltage	$U_m$	253 V AC (Attention! $U_m$ is no rated voltage.)
Certificate		KIWA 15 ATEX 0036 X
Marking		Ⓜ 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
<b>International approvals</b>		
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
<b>General information</b>		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .

## Assembly

### Front view



**Configuration**



**Switch settings**

Switches for channel I	S1	S2	S3	S4	S5	S6	S7	S8
<b>Function</b>								
• 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	S6
<b>Function</b>	
Filter disable	OFF
Filter enable	ON

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

**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.



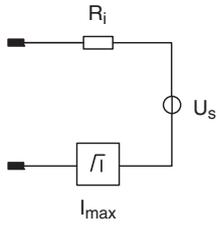
The pins for this device are trimmed to polarize it according to its safety parameter. Do not change! For further information see system description.

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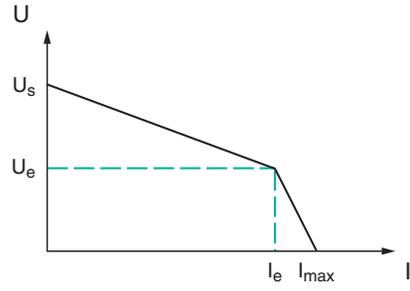
# Characteristic Curve

## Output characteristics

Output circuit diagram



Output characteristic



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