



## Solenoid Driver

### HiD2872

- 2-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)
- Up to SIL 2 acc. to IEC/EN 61508 (bus powered)
- Up to SIL 3 acc. to IEC/EN 61508 (loop powered)



# SIL 3



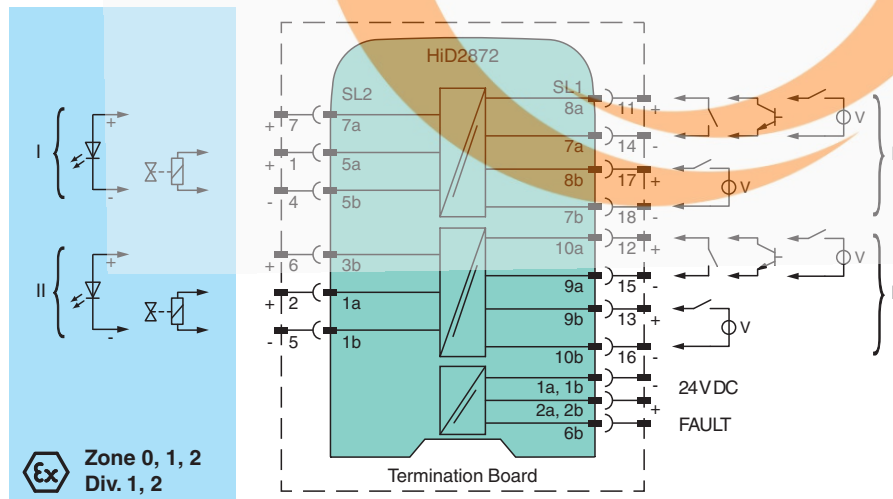
### Function

This isolated barrier is used for intrinsic safety applications. It supplies power to solenoids, LEDs, and audible alarms, located in a hazardous area. 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. An alternative low current output is available for driving a single LED without installing an external current limiting resistor. 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 HiD Termination Board.

### Application

When both channels of the solenoid driver are operated in normally energised condition, either the load must be reduced or increased spacing/ventilation be applied to reduce the temperature rise. Contact Pepperl+Fuchs for guidance.

### 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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#### Supply

Connection	SL1: 1a(-), 1b(-); 2a(+), 2b(+)
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## Technical Data

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 (per channel)
Power dissipation		1 W at 24 V, 300 $\Omega$ load (per channel)
<b>Input</b>		
Connection side		control side
Connection		SL1: 8a(+), 7a(-); 10a(+), 9a(-) bus powered SL1: 8b(+), 7b(-); 9b(+), 10b(-) loop 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 k $\Omega$ pull-up) 0-signal: 0...5 V DC or contact open
Power dissipation		1 W at 24 V, 300 $\Omega$ load (per channel) for loop powered
Inrush current		0.2 A, 15 ms loop powered
<b>Output</b>		
Connection side		field side
Connection		SL2: 5a(+), 5b(-), 7a(+); 1a(+), 1b(-), 3b(+)
Internal resistor	$R_i$	approx. 240 $\Omega$
Current	$I_e$	$\leq 40$ mA
Voltage	$U_e$	$\geq 12$ V
Current limit	$I_{max}$	55 mA
Open loop voltage	$U_s$	approx. 22.5 V
Load		nominal 0.1 ... 5 k $\Omega$
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 $\Omega$ load)
<b>Fault indication output</b>		
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 $< 25$ $\Omega$ lead breakage detection at $> 100$ k $\Omega$ typical
<b>Galvanic isolation</b>		
Output/Output		safe electrical isolation acc. to EN 60079-11: 2007, voltage peak value 60 V
Output/power supply, inputs, and collective error		safe electrical isolation acc. to EN 60079-11: 2007, voltage peak value 375 V
<b>Indicators/settings</b>		
Display elements		LEDs
Control elements		DIP switch
Configuration		via DIP switches
Labeling		space for labeling at the front
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
<b>Conformity</b>		
Electromagnetic compatibility		NE 21:2006 For further information see system description.
Degree of protection		IEC 60529:2001
<b>Ambient conditions</b>		
Ambient temperature		-20 ... 60 $^{\circ}$ C (-4 ... 140 $^{\circ}$ F)
Relative humidity		5 ... 90 %, non-condensing up to 35 $^{\circ}$ C (95 $^{\circ}$ F)
<b>Mechanical specifications</b>		
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)

## Technical Data

Mounting	on termination board	
Coding		pin 1 and 4 trimmed For further information see system description.
<b>Data for application in connection with hazardous areas</b>		
EU-type examination certificate		CESI 10 ATEX 036
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	$U_o$	26 V
Current	$I_o$	110 mA
Power	$P_o$	715 mW
Supply		
Maximum safe voltage	$U_m$	253 V AC (Attention! $U_m$ is no rated voltage.)
Certificate		PF 10 CERT 1729 X
Marking		Ⓜ II 3G Ex nA IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>		
CSA approval		
Control drawing		366-005CS-12B (cCSAus)
IECEX approval		
IECEX certificate		IECEX CES 10.0013
IECEX marking		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
<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

LED green:  
Power supply channel 2

LED yellow:  
Status output channel 2

LED red:  
Fault channel 2

Switch 1 ... 8  
channel 2

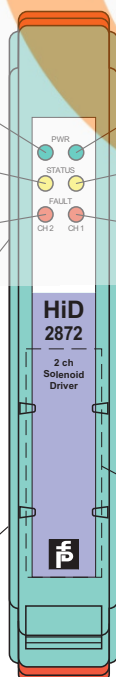
Switch 1 ... 8  
channel 1

LED green:  
Power supply channel 1

LED yellow:  
Status output channel 1

LED red:  
Fault channel 1

Place for  
labeling



## Configuration

Configure the device in the following way:

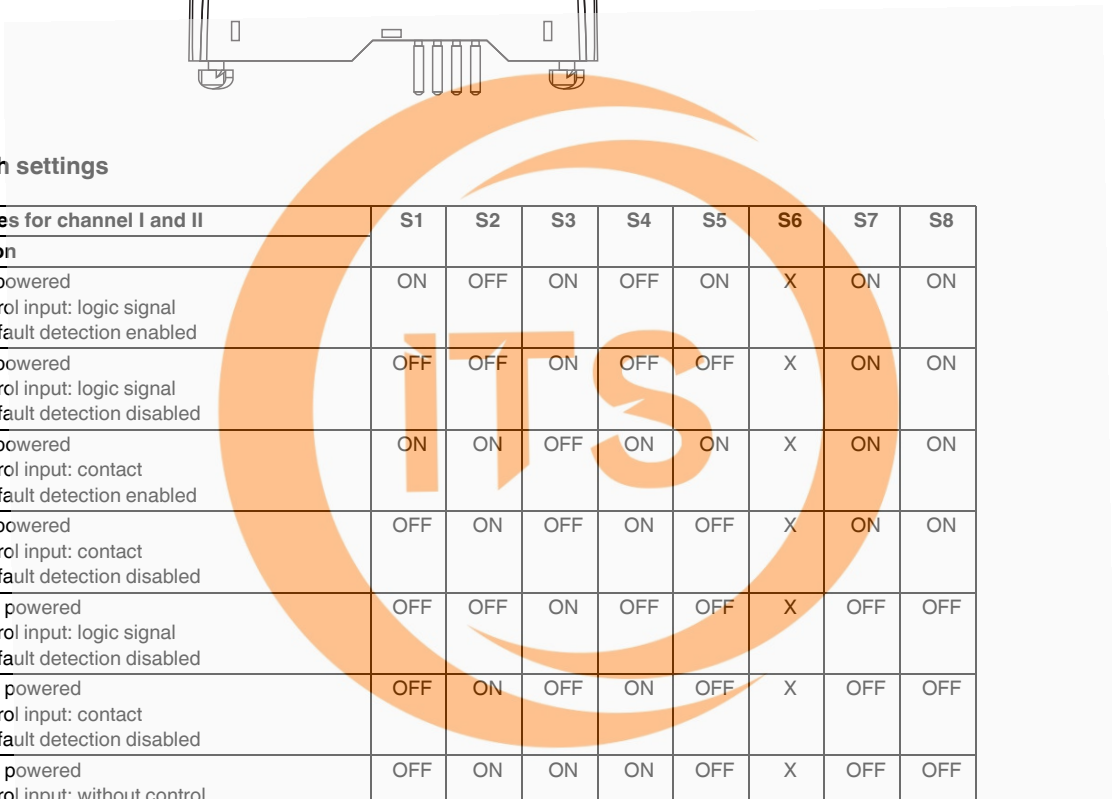
- Push the red Quick Lok Bars on each side of the device in the upper position.
- Remove the device from termination board.
- Set the switches according to the figure in the **Configuration** section.

### 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.



## Characteristic Curve



<b>Switches for channel I and II</b>		<b>S6</b>
<b>Function</b>		
Filter disable		OFF
Filter enable		ON

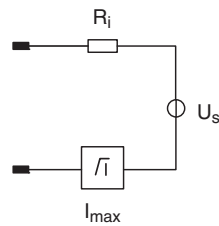
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*To reduce the power consumption of the device, we recommend to set the DIP switches of channel II in the OFF condition, when channel II is not used (single channel application).*

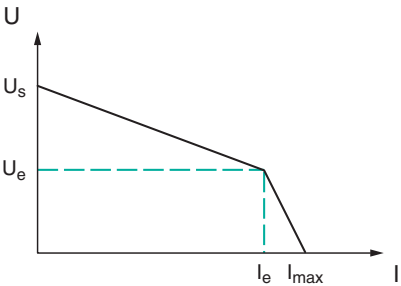
### Output characteristics

### Output characteristics

Output circuit diagram



Output characteristic



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