# Solenoid Driver

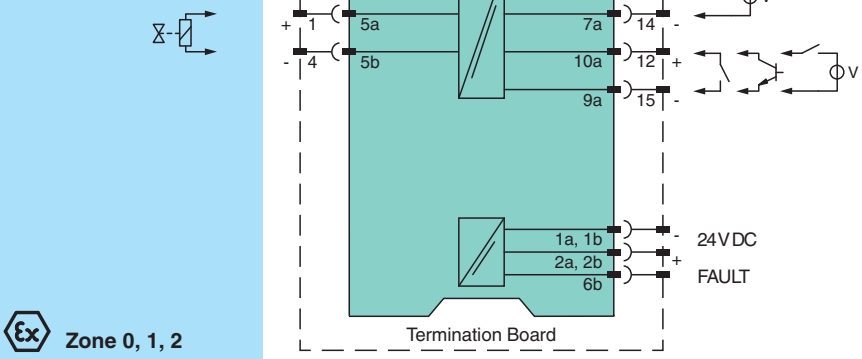
# HiC2873

- 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<br>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

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|---|---|---|
| Connection side | | control side |
| Connection | | SL1: 8a(+), 7a(-) loop powered<br>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)<br>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<br>- loop powered: max. 10 Hz |
| Energized/De-energized delay | | - bus powered: filter OFF: 1 ms, filter ON: 10 ms<br>- 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<br>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<br>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<br>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<br>⟨Ex⟩ II (1)D [Ex ia Da] IIIC<br>⟨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<br>IECEx KIWA 15.0018X |
| IECEx marking | | [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I<br>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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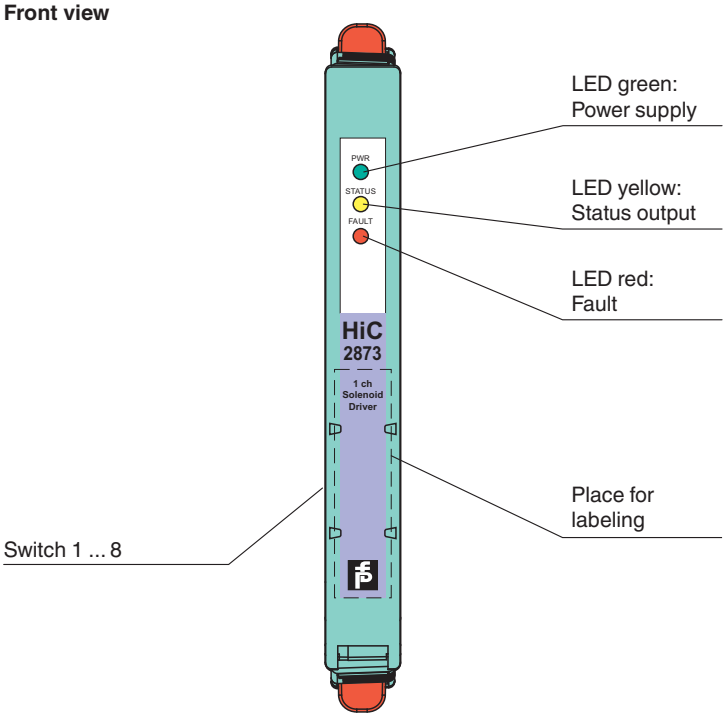
## Assembly

**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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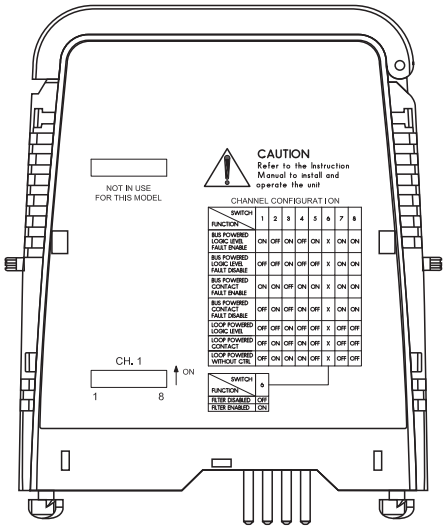
## Configuration




### Switch settings

| Switches for channel I | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 |
|---|---|---|---|---|---|---|---|---|
| **Function** | | | | | | | | |
| • Bus powered<br>• Control input: logic signal<br>• Line fault detection enabled | ON | OFF | ON | OFF | ON | X | ON | ON |
| • Bus powered<br>• Control input: logic signal<br>• Line fault detection disabled | OFF | OFF | ON | OFF | OFF | X | ON | ON |
| • Bus powered<br>• Control input: contact<br>• Line fault detection enabled | ON | ON | OFF | ON | ON | X | ON | ON |
| • Bus powered<br>• Control input: contact<br>• Line fault detection disabled | OFF | ON | OFF | ON | OFF | X | ON | ON |
| • Loop powered<br>• Control input: logic signal<br>• Line fault detection disabled | OFF | OFF | ON | OFF | OFF | X | OFF | OFF |
| • Loop powered<br>• Control input: contact<br>• Line fault detection disabled | OFF | ON | OFF | ON | OFF | X | OFF | OFF |
| • Loop powered<br>• Control input: without control<br>• 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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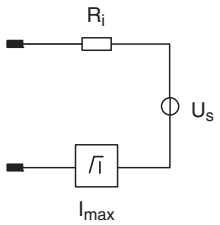
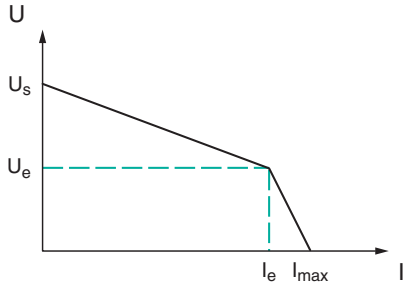
**Output circuit diagram**




**Output characteristic**

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