



## SMART Current Driver

### HiD2038

- 2-channel isolated barrier
- 24 V DC supply (bus powered)
- Current output up to 650  $\Omega$  load
- SMART I/P and valve positioners
- Line fault detection (LFD)
- Accuracy 0.1%
- Up to SIL 2 acc. to IEC/EN 61508



# SIL 2



# HART<sup>®</sup> COMMUNICATION PROTOCOL

## Function

This isolated barrier is used for intrinsic safety applications.

The device repeats the input signal from a control system to drive HART I/P converters, electrical valves, and positioners located in a hazardous area.

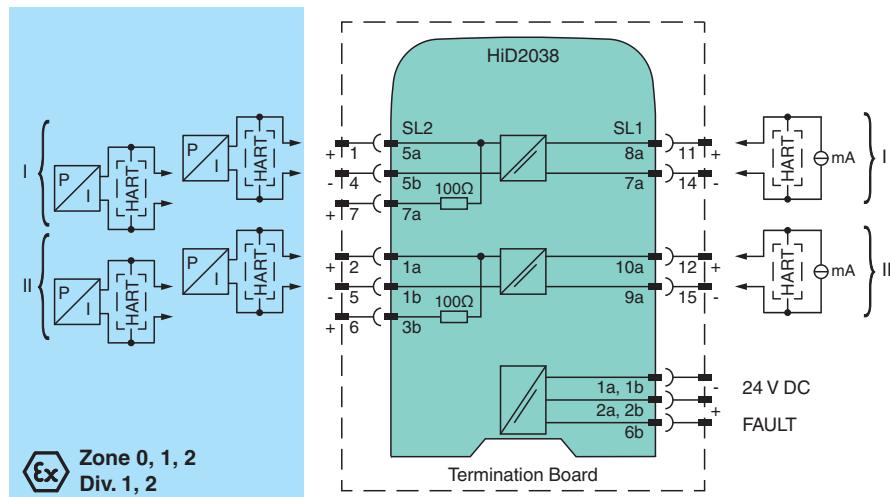
Digital signals are superimposed on the analog values at the field side or control side and are transferred bi-directionally.

Current transferred across the DC/DC converter is repeated at the terminals 5a, 5b (1a, 1b). The terminals 5b, 7a (1b, 3b) are used when no short-circuit detection is required.

An open or short field circuit presents a high impedance to the control side to allow alarm conditions to be monitored by the control system. Line fault detection of the field circuit is indicated by a red LED and an output on the fault bus. The fault conditions are monitored via a Fault Indication Board.

This device mounts on a HiD Termination Board.

## Connection



## Technical Data

Release date: 2023-06-05 Date of issue: 2023-06-05 Filename: 322869\_eng.pdf

### General specifications

Signal type	Analog output	
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### Functional safety related parameters

Safety Integrity Level (SIL)	SIL 2	
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### Supply

Connection	SL1: 1a(-), 1b(-); 2a(+), 2b(+)	
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Rated voltage	$U_r$	19 ... 30 V DC bus powered via Termination Board
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Ripple	$\leq 10\%$	
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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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 PEPPERL+FUCHS

## Technical Data

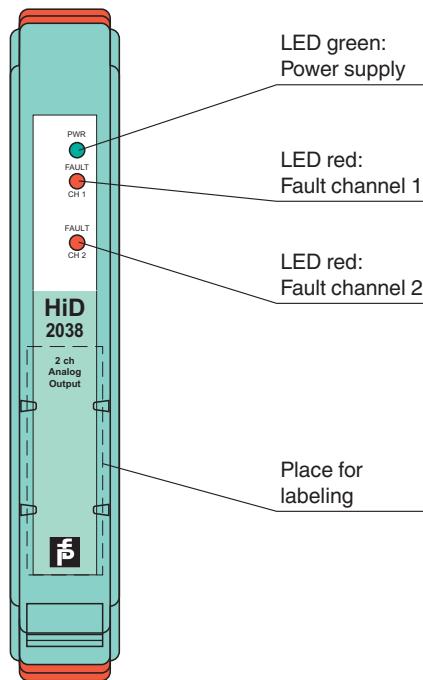
Rated current	I <sub>r</sub>	≤ 40 mA at 24 V
Power dissipation		≤ 1 W at 20 mA and 500 Ω load
Power consumption		≤ 1 W
<b>Input</b>		
Connection side		control side
Connection		SL1: 8a(+), 7a(-); 10a(+), 9a(-)
Input signal		4 ... 20 mA, limited to approx. 30 mA
Input voltage		open loop voltage of the control system ≤ 30 V
Voltage drop		approx. 6 V at 20 mA
Input resistance		field wiring open circuit : > 100 kΩ field wiring < 50 Ω : > 100 kΩ when using terminals 5a, 5b; 1a, 1b
<b>Output</b>		
Connection side		field side
Connection		SL2: 5a(+), 5b(-); 1a(+), 1b(-) SL2: 5b(-), 7a(+); 1b(-), 3b(+)
Voltage		≥ 13 V at 20 mA
Current		4 ... 20 mA
Load		100 ... 650 Ω, for terminals 1a, 1b; 5a, 5b 0 ... 550 Ω, for terminals 1b, 3b; 5b, 7a
Ripple		20 mV rms
Line fault detection		breakage, load > 100 kΩ, short-circuit, load < 50 Ω
<b>Fault indication output</b>		
Connection		SL1: 6b
Output type		open collector transistor (internal fault bus)
<b>Transfer characteristics</b>		
Deviation		at 20 °C (68 °F), 4 ... 20 mA < 0.1 % of full scale, incl. non-linearity and hysteresis
Influence of ambient temperature		< 2 μA/K (-20 ... 70 °C (-4 ... 158 °F)); < 4 μA/K (-40 ... -20 °C (-40 ... -4 °F))
Frequency range		field side into the control side: bandwidth with 0.5 V <sub>pp</sub> signal 0 ... 3 kHz (-3 dB) control side into the field side: bandwidth with 0.5 V <sub>pp</sub> signal 0 ... 3 kHz (-3 dB)
Rise time		10 to 90 % ≤ 10 ms
<b>Galvanic isolation</b>		
Input/Output		basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Input/power supply		basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V <sub>eff</sub>
Output/power supply		basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Input/input		functional insulation, rated insulation voltage 50 V AC
<b>Indicators/settings</b>		
Display elements		LEDs
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 21:2017 EN 61326-3-2:2018 For further information see system description.
Degree of protection		IEC 60529
Protection against electrical shock		UL 61010-1:2012
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °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)
Mounting		on termination board

## Technical Data

Coding	pin 1 and 3 trimmed For further information see system description.	
<b>Data for application in connection with hazardous areas</b>		
EU-type examination certificate	DEMKO 20 ATEX 2378 X	
Marking	<input checked="" type="checkbox"/> II (1)G [Ex ia Ga] IIC <input checked="" type="checkbox"/> II (1)D [Ex ia Da] IIIC <input checked="" type="checkbox"/> I (M1) [Ex ia Ma] I	
Output	Ex ia, Ex iaD	
Voltage	$U_o$	25.2 V
Current	$I_o$	93 mA
Power	$P_o$	585.3 mW
Internal capacitance	$C_i$	1.05 nF
Internal inductance	$L_i$	0
Supply		
Maximum safe voltage	$U_m$	250 V <sub>rms</sub> (Attention! The rated voltage can be lower.)
Input		
Maximum safe voltage	$U_m$	250 V <sub>rms</sub> (Attention! The rated voltage can be lower.)
Certificate	DEMKO 20 ATEX 2379 X	
Marking	<input checked="" type="checkbox"/> II 3G Ex ec IIC T4 Gc	
Galvanic isolation		
Input/Output	safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V	
Output/power supply	safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V	
Directive conformity		
Directive 2014/34/EU	EN IEC 60079-0:2018 , EN 60079-11:2012 , EN 60079-7:2015+A1:2018	
<b>International approvals</b>		
UL approval	E106378	
Control drawing	116-0475 (cULus)	
IECEx approval		
IECEx certificate	IECEx ULD 20.0012X	
IECEx marking	<input checked="" type="checkbox"/> [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I <input checked="" type="checkbox"/> 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



## Safety Information

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

## Configuration

No user configuration available for this device.