



SMART Current Driver HiD2038

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



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.

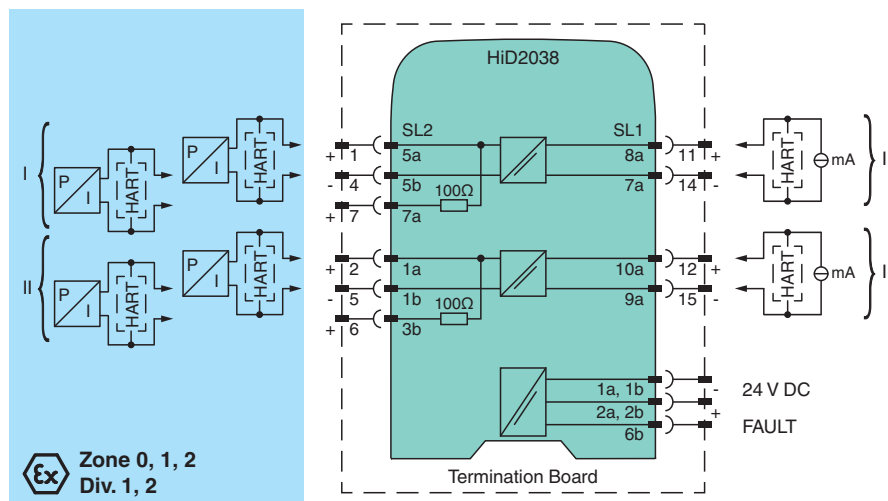
Digital signals are superimposed on the analog values at the field side or control side and are transferred bi-directionally.

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

General specifications	
Signal type	Analog output
Functional safety related parameters	
Safety Integrity Level (SIL)	SIL 2
Supply	
Connection	SL1: 1a(-), 1b(-); 2a(+), 2b(+)
Rated voltage	U _r 19 ... 30 V DC bus powered via Termination Board
Ripple	≤ 10 %

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

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Technical Data

Rated current	I_r	$\leq 40 \text{ mA at } 24 \text{ V}$
Power dissipation		$\leq 1 \text{ W at } 20 \text{ mA and } 500 \Omega \text{ load}$
Power consumption		$\leq 1 \text{ W}$
Input		
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 $\leq 30 \text{ V}$
Voltage drop		approx. 6 V at 20 mA
Input resistance		field wiring open circuit : $> 100 \text{ k}\Omega$ field wiring $< 50 \Omega$: $> 100 \text{ k}\Omega$ when using terminals 5a, 5b; 1a, 1b
Output		
Connection side		field side
Connection		SL2: 5a(+), 5b(-); 1a(+), 1b(-) SL2: 5b(-), 7a(+); 1b(-), 3b(+) (no short circuit detection)
Voltage		$\geq 13 \text{ V at } 20 \text{ mA}$
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 $> 100 \text{ k}\Omega$, short-circuit, load $< 50 \Omega$
Fault indication output		
Connection		SL1: 6b
Output type		open collector transistor (internal fault bus)
Transfer characteristics		
Deviation		at 20 °C (68 °F), 4 ... 20 mA $< 0.1 \%$ of full scale, incl. non-linearity and hysteresis
Influence of ambient temperature		$< 2 \mu\text{A/K}$ (-20 ... 70 °C (-4 ... 158 °F)); $< 4 \mu\text{A/K}$ (-40 ... -20 °C (-40 ... -4 °F))
Frequency range		field side into the control side: bandwidth with 0.5 V _{pp} signal 0 ... 3 kHz (-3 dB) control side into the field side: bandwidth with 0.5 V _{pp} signal 0 ... 3 kHz (-3 dB)
Rise time		10 to 90 % $\leq 10 \text{ ms}$
Galvanic isolation		
Input/Output		basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Input/power supply		basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V _{eff}
Output/power supply		basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Input/input		functional insulation, rated insulation voltage 50 V AC
Indicators/settings		
Display elements		LEDs
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 21:2017 EN 61326-3-2:2018 For further information see system description.
Degree of protection		IEC 60529
Protection against electrical shock		UL 61010-1:2012
Ambient conditions		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Mechanical specifications		
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

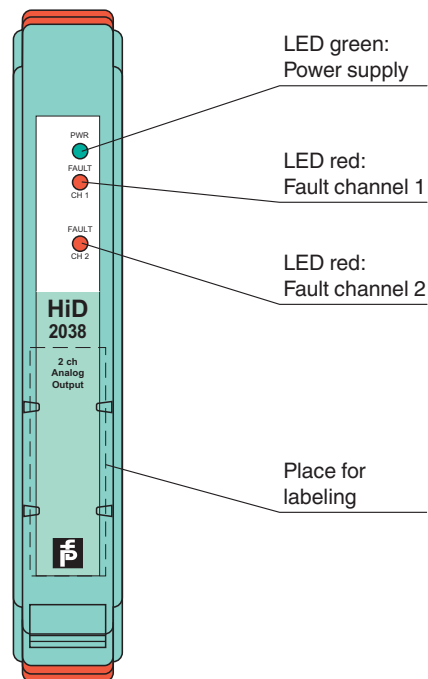
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Technical Data

Coding		pin 1 and 3 trimmed For further information see system description.
Data for application in connection with hazardous areas		
EU-type examination certificate		DEMKO 20 ATEX 2378 X
Marking		Ⓜ II (1)G [Ex ia Ga] IIC Ⓜ II (1)D [Ex ia Da] IIIC Ⓜ 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 _{rms} (Attention! The rated voltage can be lower.)
Input		
Maximum safe voltage	U_m	250 V _{rms} (Attention! The rated voltage can be lower.)
Certificate		DEMKO 20 ATEX 2379 X
Marking		Ⓜ 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
International approvals		
UL approval		E106378
Control drawing		116-0475 (cULus)
IECEx approval		
IECEx certificate		IECEx ULD 20.0012X
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 .

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.