



SMART Transmitter Power Supply HiD2030

- 2-channel isolated barrier
- 24 V DC supply (bus powered)
- 2-wire SMART transmitters or current sources
- Usable as signal splitter (1 input and 2 outputs)
- Dual output 4 mA ... 20 mA or 1 V ... 5 V
- Line fault detection (LFD)
- Up to SIL 2 (SC 3) acc. to IEC/EN 61508



Function

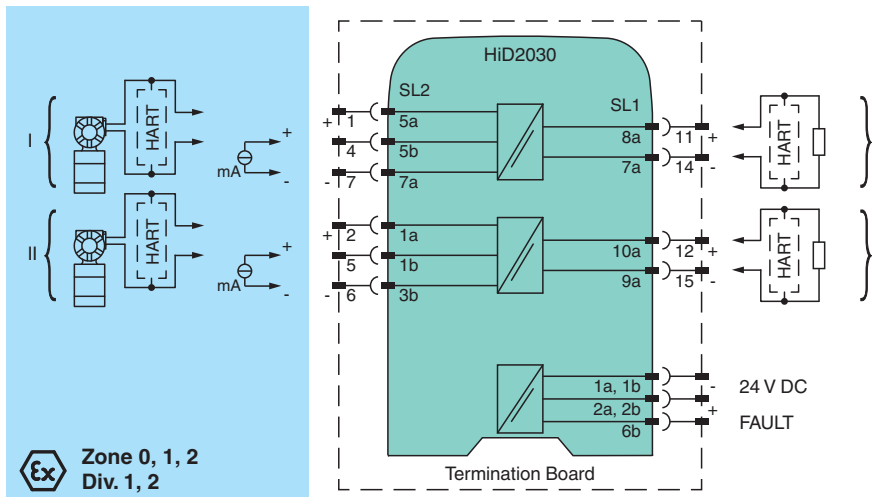
This isolated barrier is used for intrinsic safety applications. It provides a fully floating supply to power 2-wire SMART transmitters in the hazardous area, and repeats the current to drive a safe area load. It is also used with 2-wire current sources. Digital signals may be superimposed on the analog values in the hazardous or safe area, which are transferred bidirectionally. A separate fault output on the bus is signaled if the input signal is outside the range 0.2 mA ... 24 mA. The fault conditions can be monitored via a Fault Indication Board. This module mounts on a HiD Termination Board.

Application

The device supports the following SMART protocols:

- HART
- BRAIN

Connection



Technical Data

General specifications	
Signal type	Analog input
Functional safety related parameters	
Safety Integrity Level (SIL)	SIL 2
Systematic capability (SC)	SC 3
Supply	

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

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Technical Data

Connection		SL1: 1a(-), 1b(-); 2a(+), 2b(+)
Rated voltage	U_r	19 ... 30 V DC bus powered via Termination Board
Rated current	I_r	37 mA at 24 V, 250 Ω load, 20 mA output (per channel)
Power dissipation		800 mW at 24 V, 250 Ω load, 20 mA output (per channel)
Input		
Connection side		field side
Connection		SL2: 5a(+), 5b, 7a(-); 1a(+), 1b, 3b(-)
Input current		4 ... 20 mA, current limit approx. 26 mA typ.
Input resistance		< 40 Ω , for current source
Ripple		10 mV _{eff}
Voltage		min. 15.5 V at 20 mA
Communication		pass-through of HART signal to safe area The current sink terminals 4, 7 and 5, 6 do not pass HART signal to safe area.
Output		
Connection side		control side
Connection		SL1: 8a(+), 7a(-); 10a(+), 9a(-)
Load		0 ... 650 Ω
Output signal		4 ... 20 mA or 1 ... 5 V (on 250 Ω , 0.1 % internal shunt)
Ripple		10 mV _{eff} on a load of 250 Ω
Response time		70 ms, 10 ... 90 % step change
Signal level		no fault: 1 mA ... 23.5 mA input current fault detection: < 0.2 mA or > 24 mA input current
Fault indication output		
Connection		SL1: 6b
Output type		open collector transistor (common to both channels) fault bus signal, collective error message
Transfer characteristics		
Deviation		at 20 °C (68 °F), 0/4 ... 20 mA $\leq 20 \mu\text{A}$ incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature		$\leq 2 \mu\text{A/K}$
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)
Galvanic isolation		
Input/Output		basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Input/power supply		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Output/power supply		basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Output/Output		functional insulation, rated insulation voltage 50 V AC
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 21:2017 EN 61326-3-2:2018
Degree of protection		IEC 60529:2001
Protection against electrical shock		UL 61010-1:2012
Ambient conditions		
Ambient temperature		-40 ... 60 °C (-40 ... 140 °F)
Relative humidity		5 ... 90 %, non-condensing up to 35 °C (95 °F)
Mechanical specifications		
Degree of protection		IP20

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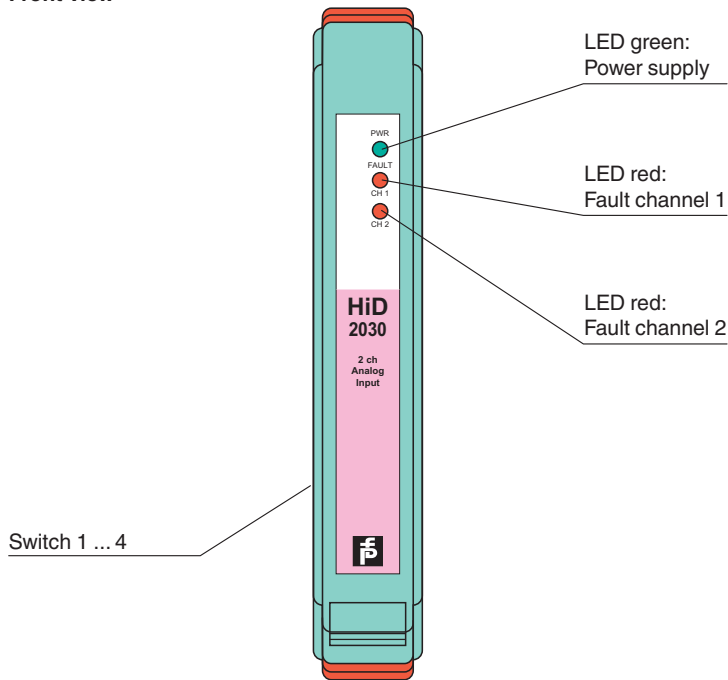
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Technical Data

Mass		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
Coding		pin 1 and 3 trimmed For further information see system description.
Data for application in connection with hazardous areas		
EU-type examination certificate		CSANe 21 ATEX 2149 X
Marking		Ⓜ II (1)G [Ex ia Ga] IIC Ⓜ II (1)D [Ex ia Da] IIIC Ⓜ I (M1) [Ex ia Ma] I
Input		Ex ia, Ex iaD
Voltage	U _o	26 V
Current	I _o	93 mA
Power	P _o	605 mW
Supply		
Maximum safe voltage	U _m	250 V AC (Attention! U _m is no rated voltage.)
Galvanic isolation		
Input/input		safe electrical isolation acc. to EN 60079-11:2007, voltage peak value 60 V
Input/Output		safe electrical isolation acc. to IEC 60079-11:2007, voltage peak value 375 V
Input/power supply		safe electrical isolation acc. to IEC 60079-11:2007, voltage peak value 375 V
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018 , EN 60079-11:2012
International approvals		
CSA approval		CoC 80072560 (cCSAus)
Control drawing		116-0486
IECEX approval		
IECEX certificate		IECEX CSAE 21.0010X
IECEX marking		[Ex ia Ga] IIC , [Ex ia Da] IIIC , [Ex ia Ma] I
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



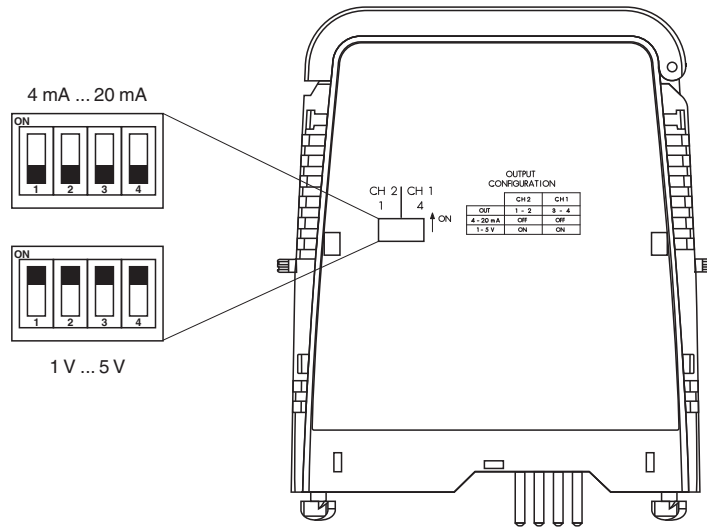
Configuration

- 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



The outputs can be configured as:

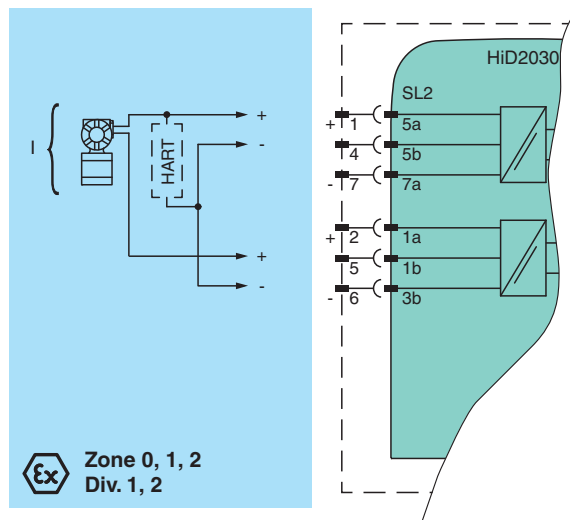
- Current output 4 mA ... 20 mA
- Voltage output 1 V ... 5 V

Switch position

Output	CH 2		CH 1	
	SW1	SW2	SW3	SW4
4 mA ... 20 mA	OFF	OFF	OFF	OFF
1 V ... 5 V	ON	ON	ON	ON

Application

Connection for signal splitter function: 1 input → 2 outputs



Note:

- Communication for SMART transmitter is provided only on output channel 1.
- Minimum supply voltage available for field transmitters is 14.7 V at 20 mA.
- Safety parameters are now:
 - $U_o = 27.2 \text{ V}$
 - $I_o = 93 \text{ mA}$
 - $P_o = 633 \text{ mW}$
- See operating instructions for other connection options and for more details.

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