



SMART Transmitter Power Supply/Current Driver

HiD2024

- 4-channel isolated barrier
- 24 V DC supply (bus powered)
- Analog in or analog out signals
- Sink and source mode outputs
- SMART pass-through
- Up to SIL 2 acc. to IEC/EN 61508



Function

This isolated barrier is used for intrinsic safety applications. It operates as a SMART transmitter power supply or as a repeater. Bi-directional communication is supported for SMART transmitters that use current modulation to transmit data and voltage modulation to receive data.

The outputs are fully isolated from the inputs, the power supply, and each other.

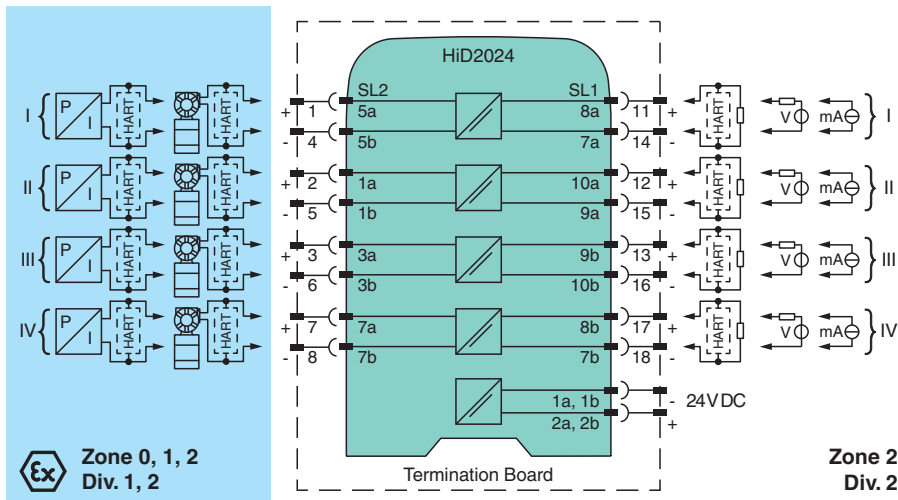
An open field circuit presents a high impedance to the control side to allow alarm conditions to be monitored by control systems. This module mounts on a HiD Termination Board.

Application

The device operates as a SMART transmitter power supply or as a repeater:

- As a SMART transmitter power supply, it provides a fully floating supply to power up to four 2-wire transmitters in a explosion-hazardous area, repeating the current to drive a non-explosion-hazardous area source or sink mode output.
- As a repeater, it transmits a 4 ... 20 mA input signal from a control system to drive HART I/P converters, valve actuators, and displays in a explosion-hazardous area.

Connection



Technical Data

General specifications

Signal type Analog input/analog output

Functional safety related parameters

Safety Integrity Level (SIL) SIL 2

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	20.4 ... 30 V DC bus powered via Termination Board
Ripple		$\leq 10 \%$
Rated current	I_r	140 mA at 24 V and 20 mA
Power dissipation		$\leq 1.8 \text{ W}$ at 20 mA
Power consumption		$\leq 3.3 \text{ W}$ at 20 mA
Control circuit		
Connection		SL1: 8a(+), 7a(-); 10a(+), 9a(-); 9b(+), 10b(-); 8b(+), 7b(-)
Voltage drop		approx. 6 V or internal resistance 300 Ω at 20 mA
Ripple		200 mV _{eff}
Input		
Signal		4 ... 20 mA
Resistor		> 100 k Ω at max. 23 V, with field wiring open
Output		
Signal		4 ... 20 mA or 1 ... 5 V (on 250 Ω , 0.1 % internal shunt) 4 ... 20 mA (sink mode), operating voltage 15 ... 26 V
Load		0 ... 300 Ω (source mode)
Field circuit		
Connection		SL2: 5a(+), 5b(-); 1a(+), 1b(-); 3a(+), 3b(-); 7a(+), 7b(-)
Voltage		$\geq 15 \text{ V}$ at 20 mA
Input		
Signal		4 ... 20 mA, limited to approx. 30 mA
Output		
Signal		4 ... 20 mA
Load		0 ... 650 Ω
Transfer characteristics		
Deviation		at 20 °C (68 °F) $\leq \pm 0.1 \%$ incl. non-linearity and hysteresis (source mode 4 ... 20 mA) $\leq \pm 0.2 \%$ incl. non-linearity and hysteresis (sink mode 4 ... 20 mA) $\leq \pm 0.2 \%$ incl. non-linearity and hysteresis (source mode 1 ... 5 V) $\leq \pm 0.2 \%$ incl. non-linearity and hysteresis (analog output mode 4 ... 20 mA)
Influence of ambient temperature		< 2 $\mu\text{A/K}$ (0 ... 60 °C (32 ... 140 °F)); < 4 $\mu\text{A/K}$ (-20 ... 0 °C (-4 ... 32 °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 % $\leq 20 \text{ ms}$
Galvanic isolation		
Output/power supply		basic insulation according to IEC 62103, rated insulation voltage 50 V _{eff}
Indicators/settings		
Display elements		LED
Control elements		DIP switch potentiometer
Configuration		via DIP switches via potentiometer
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 For further information see system description.
Degree of protection		IEC 60529
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 140 g

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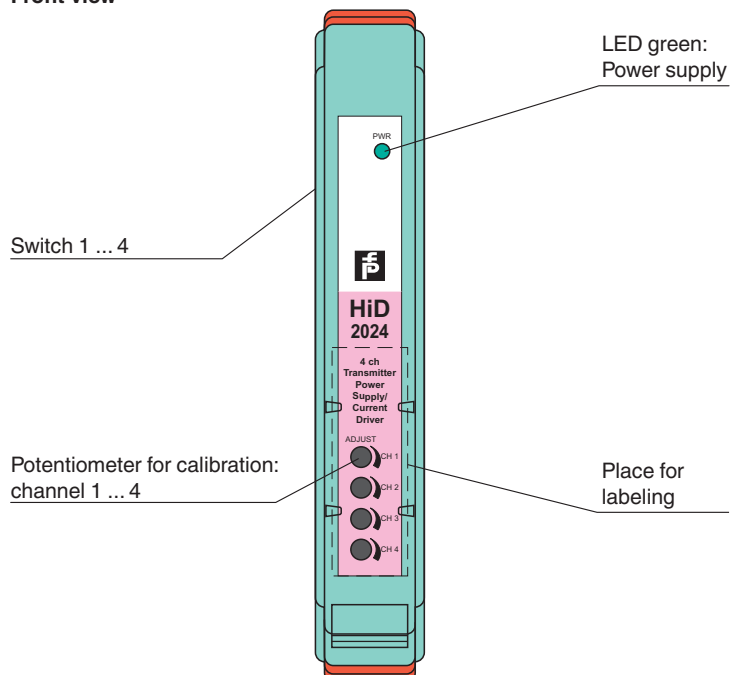
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Technical Data

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		CESI 02 ATEX 086
Marking		Ⓜ II (1)G [Ex ia Ga] IIC , Ⓜ II (1)D [Ex ia Da] IIIC
Input		Ex ia, Ex iaD
Supply		
Maximum safe voltage	U_m	250 V AC (Attention! U_m is no rated voltage.)
Equipment		
Voltage	U_o	25.2 V
Current	I_o	93 mA
Power	P_o	586 mW
Internal capacitance	C_i	1.2 nF
Internal inductance	L_i	negligible
Certificate		PF 11 CERT 2109 X
Marking		Ⓜ II 3G Ex nA IIC T4 Gc
Galvanic isolation		
Input/Output		safe electrical isolation acc. to EN 60079-11: 2007, voltage peak value 375 V
Input/power supply		safe electrical isolation acc. to EN 60079-11: 2007, voltage peak value 375 V
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010
International approvals		
IECEx approval		
IECEx certificate		IECEx TUN 04.0012
IECEx marking		[Ex ia] IIC
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:

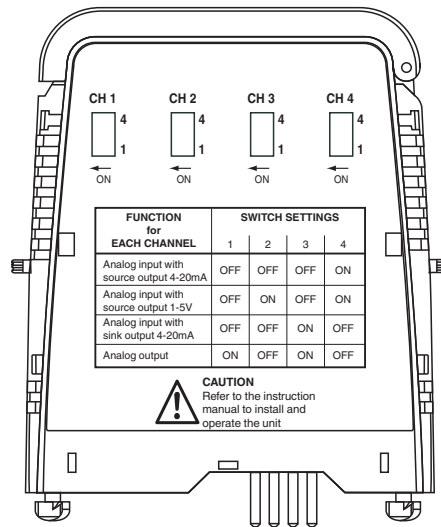
- Push the red Quick Lok Bars on each side of the device in the upper position.
- Remove the device from termination board.
- Set the switches according to the figure in the **Configuration** section.

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.

Configuration

Switches 1 ... 4



Potentiometer 1 ... 4

The front-mounted potentiometers are used for fine adjustment of current transfer. The factory-setting of the device is calibrated to the function transmitter power supply. If using the device as current driver, the Offset of the output stage can be calibrated via the potentiometers.

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