



SMART Transmitter Power Supply/Current Driver

SIL 2

HiD2024

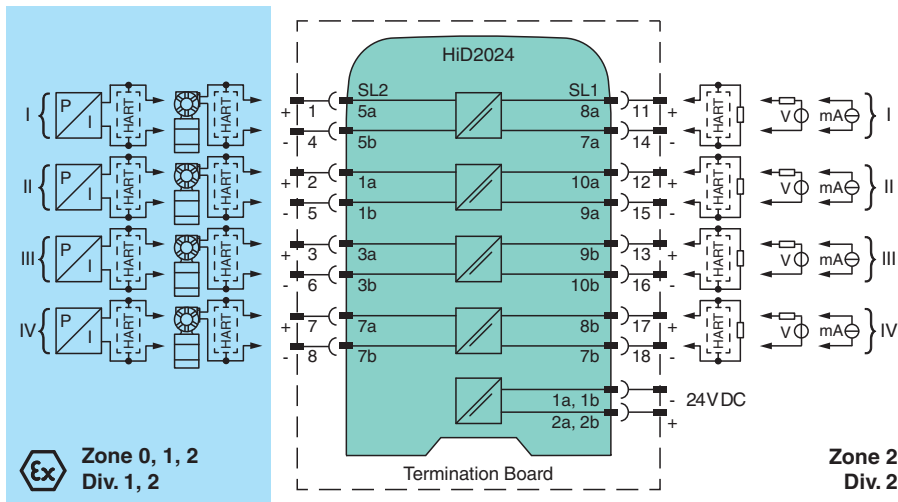
- 4-channel isolated barrier
- 24 V DC supply (bus powered)
- Analog in or analog out signals
- Sink and source mode outputs
- SMART pass-through
- Up to SIL 2 acc. to IEC 61508



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.

Connection



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

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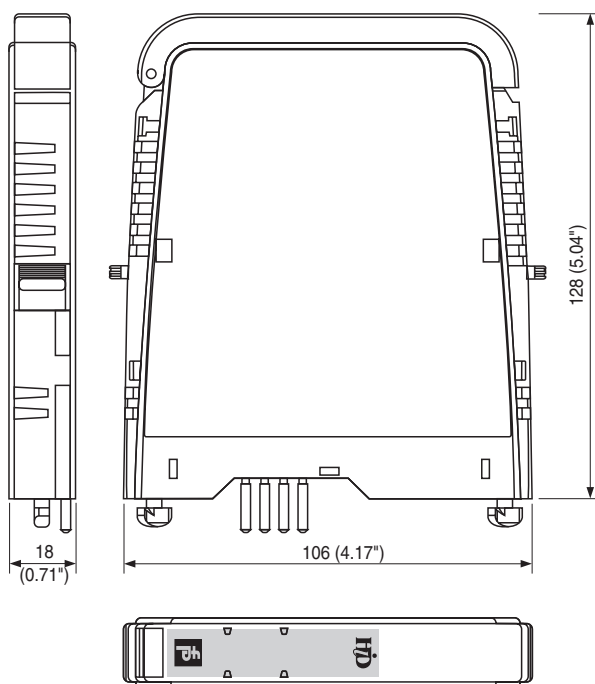
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Dimensions



Technical Data

General specifications

Signal type	Analog input/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(+)
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

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Technical Data

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 % ≤ 20 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
Dimensions	18 x 106 x 128 mm (0.7 x 4.2 x 5 inch)
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
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 TUN 04.0012
Approved for	[Ex ia] IIC

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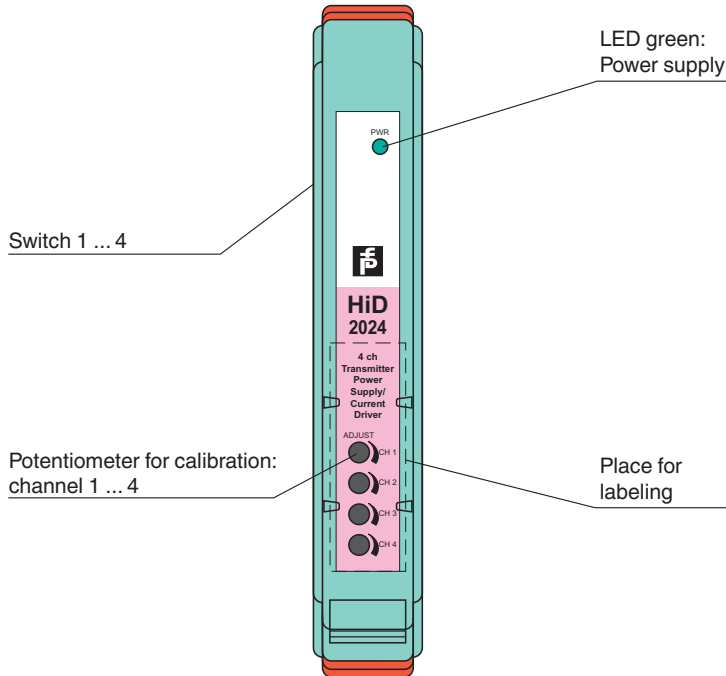
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Technical Data

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



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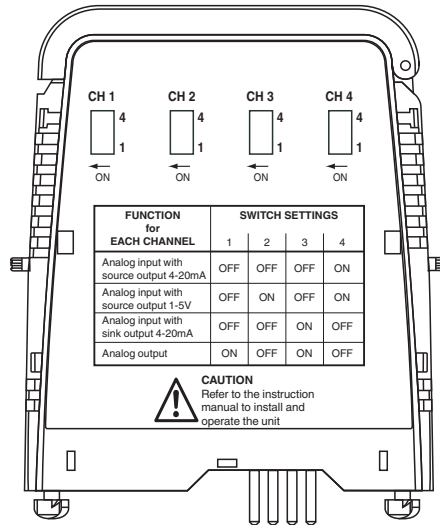
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Configuration

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.

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 DIP switches according to the figure.



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

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 hazardous area, repeating the current to drive a safe area source or sink mode output.
- As a repeater, it transmits a 4 mA ... 20 mA input signal from a control system to drive HART I/P converters, valve actuators, and displays in a hazardous area.

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