



SMART Transmitter Power Supply/Current Driver

HiD2024

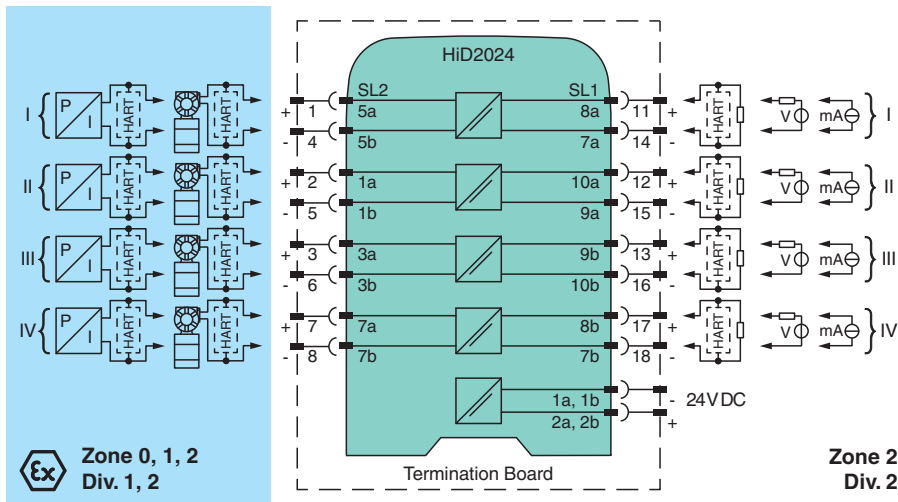
- 4-channel isolated barrier
- 24 V DC supply (bus powered)
- Analog in or analog out signals
- Sink and source mode outputs
- SMART pass-through
- Up to SIL 2 acc. to IEC/EN 61508



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.

Connection



Technical Data

General specifications	
Signal type	Analog input/analog output
Functional safety related parameters	
Safety Integrity Level (SIL)	SIL 2
Supply	
Connection	SL1: 1a(-), 1b(-); 2a(+), 2b(+)
Rated voltage	U_r 20.4 ... 30 V DC bus powered via Termination Board
Ripple	≤ 10 %
Rated current	I_r 140 mA at 24 V and 20 mA
Power dissipation	≤ 1.8 W at 20 mA

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

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Technical Data

Power consumption	≤ 3.3 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 kΩ 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	≥ 15 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) ≤ ± 0.1 % incl. non-linearity and hysteresis (source mode 4 ... 20 mA) ≤ ± 0.2 % incl. non-linearity and hysteresis (sink mode 4 ... 20 mA) ≤ ± 0.2 % incl. non-linearity and hysteresis (source mode 1 ... 5 V) ≤ ± 0.2 % incl. non-linearity and hysteresis (analog output mode 4 ... 20 mA)
Influence of ambient temperature	< 2 μA/K (0 ... 60 °C (32 ... 140 °F)); < 4 μA/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 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.

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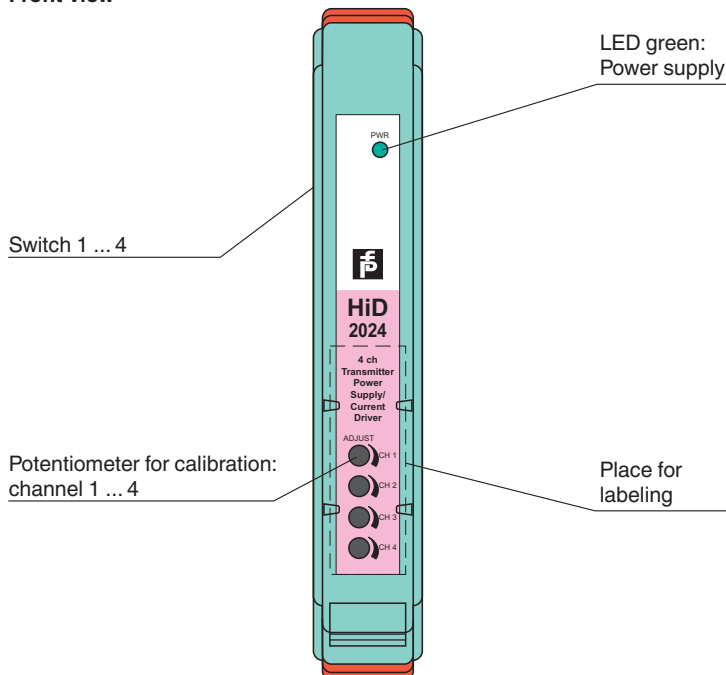
Technical Data

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 .

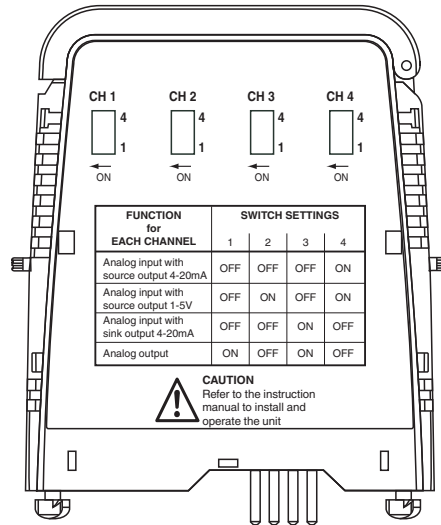
Assembly

Front view



Configuration

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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