

Features

- 2-channel isolated barrier
- 24 V DC supply (bus powered)
- 2-wire SMART transmitters or current sources
- Output 4 mA ... 20 mA or 1 V ... 5 V
- Usable as signal splitter
- Line fault detection (LFD)
- Up to SIL2 acc. to IEC 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.

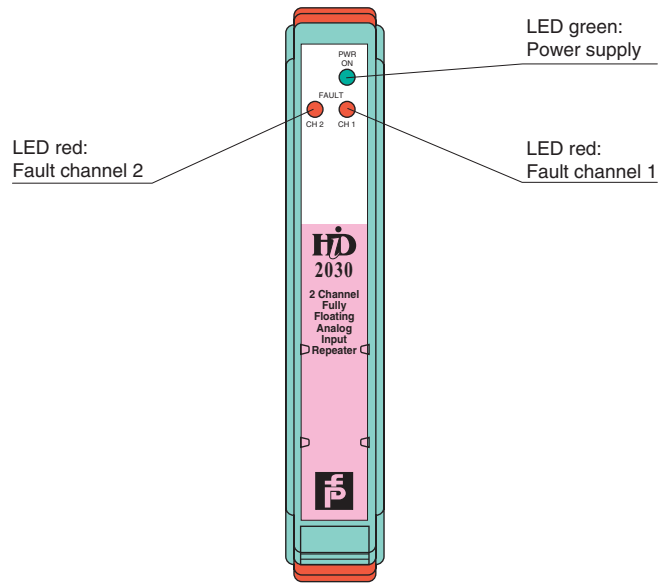
Digital signals may be superimposed on the analog values in the hazardous or safe area, which are transferred bi-directionally.

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.

Assembly

Front view



Application

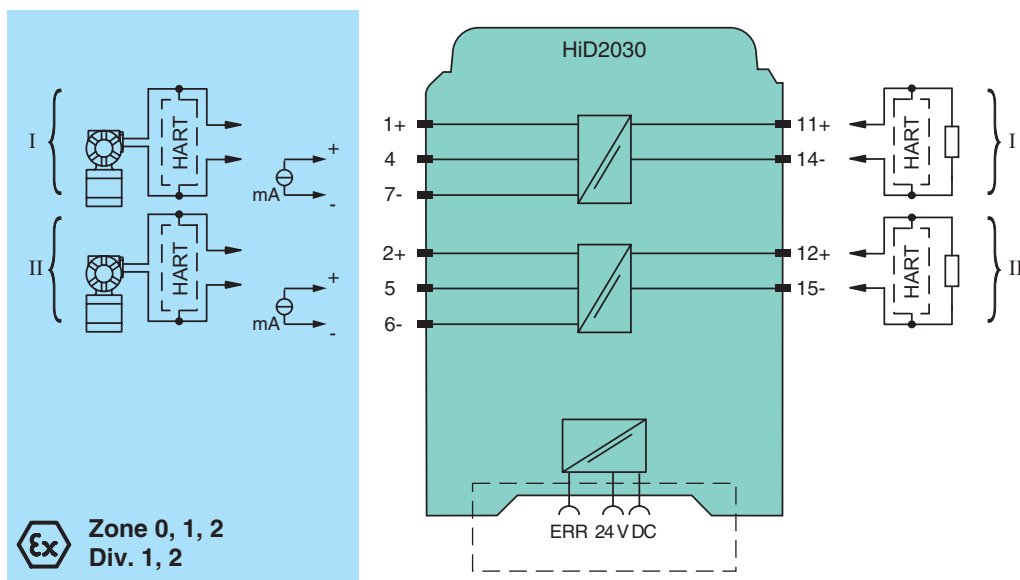
The device supports the following SMART protocols:


- HART
- BRAIN
- Bailey (only SST-02 communication, e. g. BCN series)
- Foxboro



SIL2

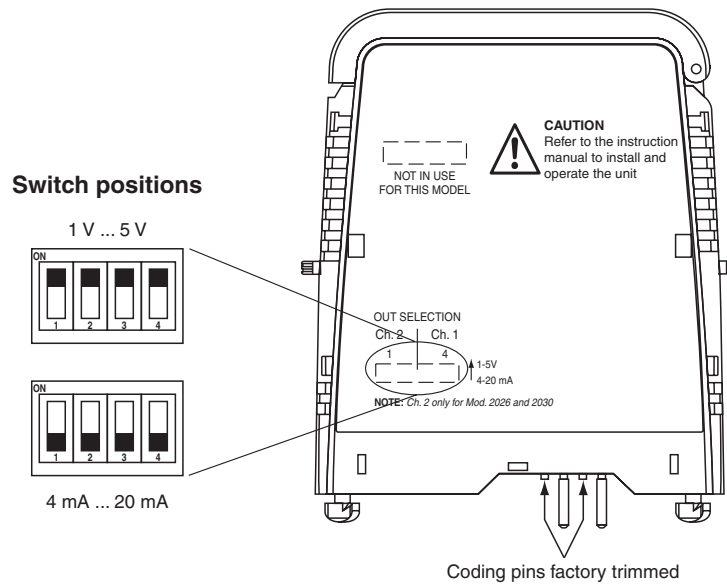
Connection



General specifications	
Signal type	Analog input
Supply	
Connection	via Termination Board
Rated voltage	20.4 ... 30 V via Termination Board
Rated current	60 mA at 24 V, 20 mA output (per channel)
Power loss	1.05 W at 24 V (per channel)
Input	
Connection	terminals 1+, 4, 7-; 2+, 5; 6-
Input current	4 ... 20 mA , Current limit 26 mA
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 the HART signal to safe area.
Output	
Connection	terminals 11+, 14-; 12+, 15-
Load	0 ... 650 Ω
Output signal	4 ... 20 mA or 1 ... 5 V (on 250 Ω 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
Error output	
Output type	open collector transistor (common to both channels) fault bus signal, collective error message
Transfer characteristics	
Calibrated accuracy	< ± 0.1 % of full-scale value (current output)
Influence of temperature	< ± 0.01 %/ K
Frequency range	communication channel: 0.5 ... 40 kHz within 3 db, (-6 db at 100 kHz), Tx to output and output to Tx, suitable for use with SMART transmitters using HART or similar protocol
Influence of load	< ± 0.1 % of full-scale value from 0 ... 650 Ω
Linearity	< ± 0.05 % of full-scale value
Indicators/settings	
Controls	DIP switches at the housing side for output 4 ... 20 mA or 1 ... 5 V, (on 250 Ω , 0.1 % internal shunt)
Factory setting	4 ... 20 mA
Directive conformity	
Electromagnetic compatibility	
Directive 2004/108/EC	EN 61326-1:2006
Conformity	
Protection degree	IEC 60529
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Relative humidity	5 ... 90 %, non-condensing up to 35 °C (308 K)
Mechanical specifications	
Protection degree	IP20
Material	Polycarbonate
Mass	approx. 140 g
Dimensions	18 x 106 x 128 mm (0.7 x 4.2 x 5 in)
Data for application in connection with Ex-areas	
EC-Type Examination Certificate	CESI 02 ATEX 086 , for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection	 II (1)G [EEx ia] IIC [circuit(s) in zone 0/1/2]
Input	EEx ia IIC
Voltage U _o	26 V
Current I _o	93 mA
Power P _o	605 mW
Supply	
Maximum safe voltage U _m	250 V AC / 375 V DC (Attention! U _m is no rated voltage.)
Electrical isolation	
Input/input	safe galvanic isolation acc. to EN 50020, 500 V _{rms}
Input/Output	safe galvanic isolation acc. to EN 50020, 1500 V _{rms}
Input/power supply	safe galvanic isolation acc. to EN 50020, 1500 V _{rms}
Directive conformity	
Directive 94/9/EC	EN 50014, EN 50020, EN 50284

International approvals	
CSA approval	
Control drawing	366-005CS-12B (cCSAus)
General information	
Supplementary information	EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see www.pepperl-fuchs.com .

Configuration



The outputs can be configured as:

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

Output	Ch. 1		Ch. 2 (only for HiD2030)	
	SW4	SW3	SW2	SW1
4 mA ... 20 mA	OFF	OFF	OFF	OFF
1 V ... 5 V	ON	ON	ON	ON

The configuration is performed in the following way:

- Remove the module from termination board, pulling-up the tab on each side of the module.
- Set the DIP switches according to the figure and to the tables.

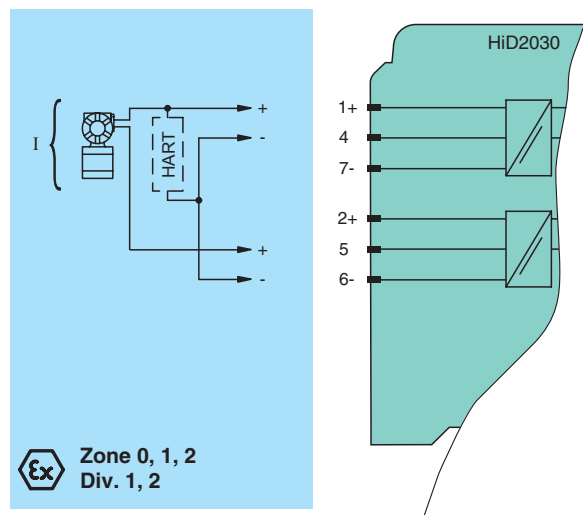


The coding pins for this device are trimmed to polarise it according to it's safety parameter. Do not change!



Channel 2 only for HiD2030.

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:
 - $U_o = 27.2 \text{ V}$
 - $I_o = 93 \text{ mA}$
 - $P_o = 640 \text{ mW}$
- See operating instructions for other connection options and for more details.