

Features

- 2-channel isolated barrier
- 24 V DC supply (bus powered)
- Thermocouple, RTD or potentiometer input
- Usable as signal splitter (1 input and 2 outputs)
- Linearized output 4 mA ... 20 mA, sink/source or 1 V ... 5 V
- Sensor breakage detection
- Configurable by **PACTware**
- Line fault detection (LFD)
- Up to SIL 2 acc. to IEC 61508/IEC 61511

Function

This isolated barrier is used for intrinsic safety applications.

This device accepts thermocouples (TC), millivolts, potentiometers, or resistance temperature detectors (RTD) from a hazardous area and converts them to an isolated, linearized analog output in the safe area.

The outputs can be selected as a current source, current sink, or voltage source with DIP switches on the side panel.

The device can also be configured as a signal splitter.

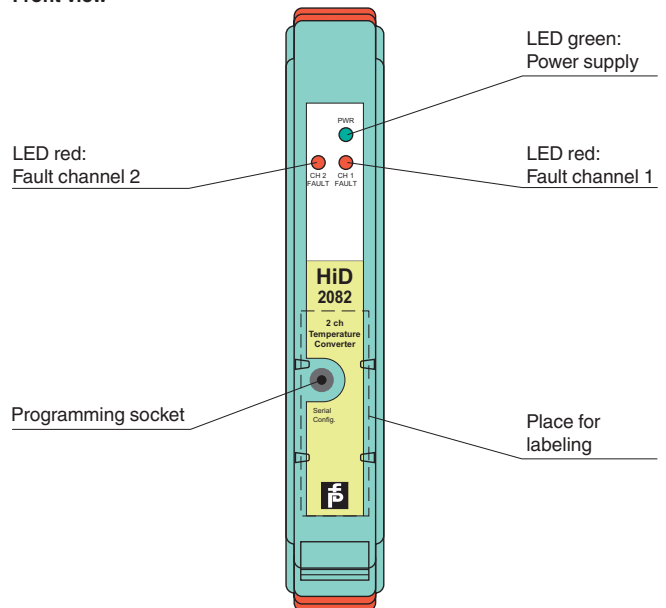
Line fault detection of the field circuit is indicated by a red LED and an output on the fault bus. The fault conditions are monitored via a Fault Indication Board.

The device is easily configured by the use of the PACTware configuration software.

This device mounts on a HiD Termination Board.

Assembly

Front view



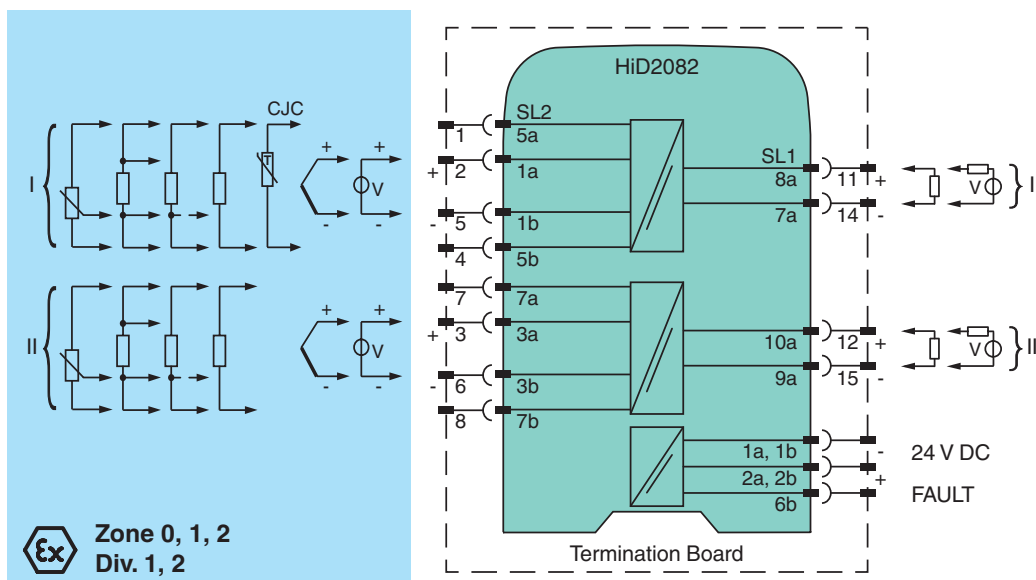
Application

The resistance thermometer for cold junction compensation H-CJC-**-8 is available as an accessory for temperature measurements with thermocouples.



SIL2

Connection



General specifications	
Signal type	Analog input
Supply	
Connection	SL1: 1a(-), 1b(-); 2a(+), 2b(+)
Rated voltage	U_r 20.4 ... 30 V via Termination Board
Ripple	within the supply tolerance
Current	≤ 95 mA at 20.4 V and ≤ 63 mA at 30 V
Power consumption	≤ 1.95 W
Input	
Connection	SL2: 5a(+), 1a(+), 1b(-), 5b(-); 7a(+), 3a(+), 3b(-), 7b(-)
RTD	type Cu10, Cu50, Cu100, Pt10, Pt50, Pt100, Pt500, Pt1000, Ni100 (EN 60751: 1995) type Pt10GOST, Pt50GOST, Pt100GOST, Pt50GOST, Pt1000GOST (P50353-92)
Measuring current	approx. 200 μ A with RTD
Types of measuring	2-, 3-, 4-wire connection
Lead resistance	≤ 50 Ω per line
Measurement loop monitoring	sensor breakage, sensor short-circuit
Thermocouples	type B, E, J, K, N, R, S, T (IEC 584-1: 1995) type L (DIN 43710: 1985) type TXK, TXKH, TXA (P8.585-2001)
Cold junction compensation	at field terminals
Measurement loop monitoring	sensor breakage
Potentiometer	0.1 ... 20 k Ω
Types of measuring	3-wire connection
Voltage	selectable within the range -100 ... 100 mV
Input resistance	≥ 1 M Ω (-100 ... 100 mV)
Output	
Connection	SL1: 8a(+), 7a(-); 10a(+), 9a(-)
Output I, II	analog, current or voltage output
Current range	0/4 ... 20 mA
Voltage range	0 ... 5 V or 1 ... 5 V (on 250 Ω , 0.1 % internal shunt)
Fault signal	downscale 0 or 2 mA, upscale 21.5 mA (acc. NAMUR NE43)
Source	load 0 ... 550 Ω , open-circuit voltage ≤ 18 V
Sink	Voltage across terminals 7 ... 30 V. If the current is supplied from a source > 20 V, series resistance of $\geq (V - 20)/0.0215$ Ω is needed, where V is the source voltage. The maximum value of the resistance is $(V - 7)/0.0215$ Ω .
Fault indication output	
Connection	SL1: 6b
Output type	open collector transistor (internal fault bus)
Transfer characteristics	
Deviation	
After calibration	<u>Pt100</u> : $\pm (0.05 \%$ of measurement value in $^{\circ}\text{C} + 0.05 \%$ of span + 0.1 K (4-wire connection)) <u>thermocouple</u> : $\pm (0.05 \%$ of measurement value in $^{\circ}\text{C} + 0.05 \%$ of span + 1 K (1.2 K for types R and S)) This includes ± 0.8 K error of the cold junction compensation
Influence of ambient temperature	current output (deviation of CJC included): <u>Pt100</u> : $\pm (0.0015 \%$ of measurement value in K + 0.006 % of span)/K $\Delta T_{\text{amb}}^{*)}$ <u>thermocouple</u> : $\pm (0.02 \text{ K} + 0.01 \%$ of measurement value in K + 0.006 % of span)/K $\Delta T_{\text{amb}}^{*)}$ $^{*)} \Delta T_{\text{amb}} = \text{ambient temperature change referenced to } 23^{\circ}\text{C} (296 \text{ K})$
Influence of supply voltage	$< 0.01 \%$ of span
Influence of load	$\leq 0.1 \%$ of full scale from 0 ... 550 Ω
Reaction time	worst case value (sensor breakage and/or sensor short circuit detection enabled) mV: 1.2 s, thermocouples with CJC: 1.4 s, thermocouples with fixed ref. temp: 1.4 s, 3- or 4-wire RTD: 1.1 s, 2-wire RTD: 920 ms
Galvanic isolation	
Power supply/programming input	There is no electrical isolation between the programming input and the supply. The programming cable provides galvanic isolation so that ground loops are avoided.
Directive conformity	
Electromagnetic compatibility	
Directive 2004/108/EC	EN 61326-1:2006
Conformity	
Electromagnetic compatibility	NE 21:2006 For further information see system description.
Degree of protection	IEC 60529:2001
Ambient conditions	
Ambient temperature	-20 ... 60 $^{\circ}\text{C}$ (-4 ... 140 $^{\circ}\text{F}$)
Relative humidity	5 ... 90 %, non-condensing up to 35 $^{\circ}\text{C}$ (95 $^{\circ}\text{F}$)
Mechanical specifications	

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

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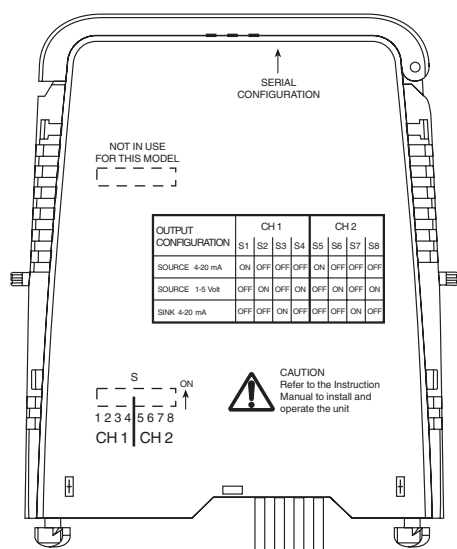
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Degree of protection	IP20	
Mass	approx. 140 g	
Dimensions	18 x 106 x 128 mm (0.7 x 4.2 x 5 inch)	
Mounting	on Termination Board	
Coding	pin 2 and 4 trimmed For further information see system description.	
Data for application in connection with hazardous areas		
EU-Type Examination Certificate	CESI 02 ATEX 086 , for additional certificates see www.pepperl-fuchs.com	
Marking	 II (1)G [Ex ia Ga] IIC ,  II (1)D [Ex ia Da] IIIC , (-20 °C ≤ T _{amb} ≤ 60 °C)	
Input	[Ex ia Ga] IIC, [Ex ia Da] IIIC	
Voltage	U _o	10 V
Current	I _o	15 mA
Power	P _o	38 mW
Analog outputs, power supply, collective error		
Maximum safe voltage	U _m	250 V (Attention! This is not the rated voltage.)
Interface		
Maximum safe voltage	U _m	250 V (Attention! The rated voltage is lower.), RS 232
Galvanic isolation		
Input/input	125 V AC max. common voltage between isolated channels (mV or thermocouple inputs only)	
Input/Output	safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V	
Input/power supply	safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V	
Input/Programming input	safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V	
Directive conformity		
Directive 94/9/EC	EN 60079-0:2009, EN 60079-11:2007, EN 60079-26:2007, EN 61241-11:2006	
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 .	
Accessories		
Designation	optional accessories: - resistance thermometer for cold junction compensation H-CJC-SP-8 - adapter with USB Interface K-ADP-USB	

Configuration



Switch position

Channel	Switch	Function		
		Source 4 mA ... 20 mA	Source 1 V ... 5 V	Sink 4 mA ... 20 mA
I	S1	ON	OFF	OFF
	S2	OFF	ON	OFF
	S3	OFF	OFF	ON
	S4	OFF	ON	OFF
II	S5	ON	OFF	OFF
	S6	OFF	ON	OFF
	S7	OFF	OFF	ON
	S8	OFF	ON	OFF

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.*