



# Temperature Converter HiD2082

- 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/EN 61508 / IEC/EN 61511



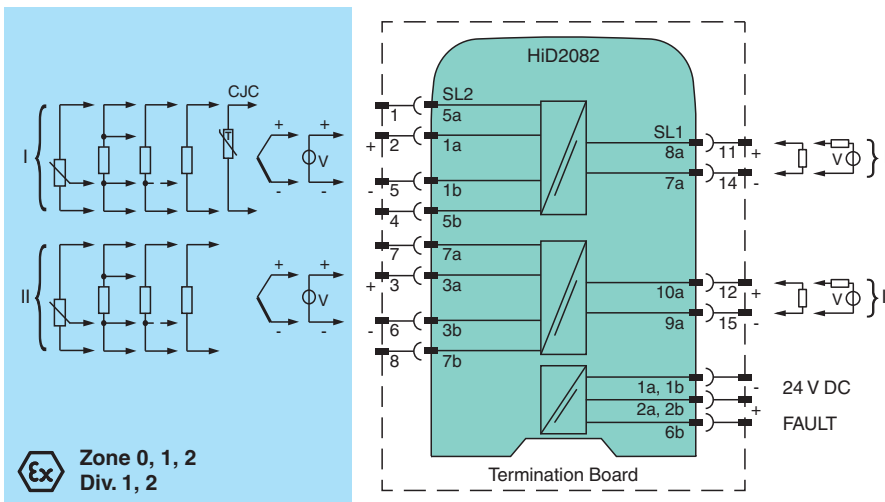
## Function

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.

## Application

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

## Connection



## Technical Data

### General specifications

Signal type Analog input

### 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 <sub>r</sub>	20.4 ... 30 V DC bus powered 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
<b>Interface</b>		
Programming interface		programming socket
<b>Input</b>		
Connection side		field side
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 μA with RTD
Types of measuring		2-, 3-, 4-wire connection
Lead resistance		max. 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 kΩ
Types of measuring		3-wire connection
Voltage		selectable within the range -100 ... 100 mV
Input resistance		min. 1 MΩ (-100 ... 100 mV)
<b>Output</b>		
Connection side		control side
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 ≥ (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.
<b>Fault indication output</b>		
Connection		SL1: 6b
Output type		open collector transistor (internal fault bus)
<b>Transfer characteristics</b>		
Deviation		
After calibration		Pt100: ± (0.05 % of measurement value in °C + 0.05 % of span + 0.1 K (4-wire connection)) thermocouple: ± (0.05 % of measurement value in °C + 0.05 % of span + 1 K (1.2 K for types R and S)) This includes ± 0.8 K fault of the cold junction compensation (CJC)
Influence of ambient temperature		current output (deviation of CJC included): Pt100: ± (0.0015 % of measurement value in K + 0.006 % of span)/K ΔT <sub>amb</sub> <sup>1)</sup> thermocouple: ± (0.02 K + 0.01 % of measurement value in K + 0.006 % of span)/K ΔT <sub>amb</sub> <sup>1)</sup> <sup>1)</sup> ΔT <sub>amb</sub> = ambient temperature change referenced to 23 °C (296 K)
Influence of supply voltage		< 0.01 % of span
Influence of load		≤ 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
<b>Galvanic isolation</b>		
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.

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## Technical Data

<b>Indicators/settings</b>		
Display elements		LEDs
Control elements		DIP switch
Factory setting		output: current source 4 ... 20 mA input: Pt100, 4-wire, temperature range -200 ... 850 °C (73 ... 1123 K)
Configuration		via DIP switches via PACTware
Labeling		space for labeling at the front
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
<b>Conformity</b>		
Electromagnetic compatibility		
		NE 21:2006 For further information see system description.
Degree of protection		IEC 60529:2001
<b>Ambient conditions</b>		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Relative humidity		5 ... 90 %, non-condensing up to 35 °C (95 °F)
<b>Mechanical specifications</b>		
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 2 and 4 trimmed For further information see system description.
<b>Data for application in connection with hazardous areas</b>		
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 Ga] IIC, [Ex ia Da] IIIC
Voltage	U <sub>o</sub>	10 V
Current	I <sub>o</sub>	15 mA
Power	P <sub>o</sub>	38 mW
Analog outputs, power supply, collective error		
Maximum safe voltage	U <sub>m</sub>	250 V (Attention! This is not the rated voltage.)
Interface		
Maximum safe voltage	U <sub>m</sub>	250 V (Attention! The rated voltage is lower.), RS 232
Certificate		
Marking		⊕ II 3G Ex nA IIC T4 Gc
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 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>		
CSA approval		
Control drawing		366-017CS-12 (cCSAus)
IECEx approval		
IECEx certificate		IECEx TUN 04.0012
IECEx marking		[Ex ia] IIC
<b>General information</b>		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .

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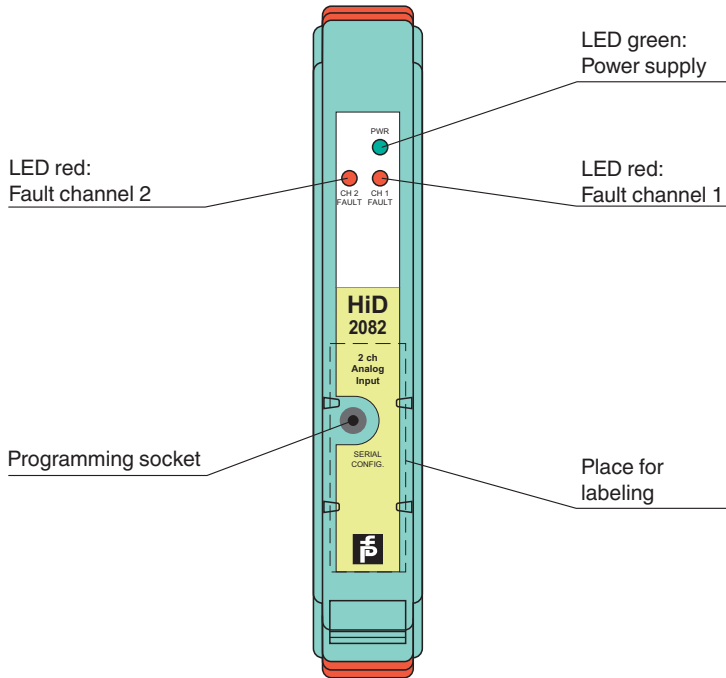
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**Assembly**

**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.

**Matching System Components**

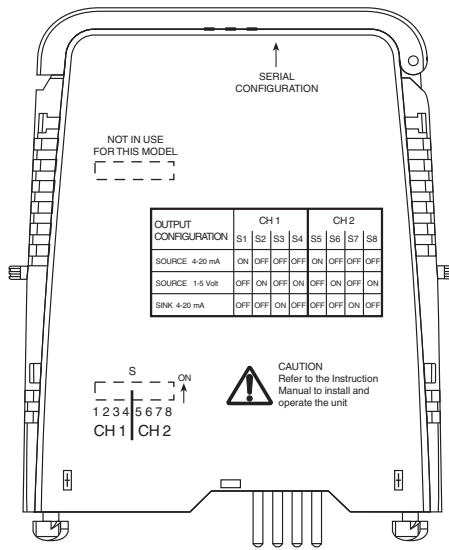
	<b>DTM Interface Technology</b>	Device type manager (DTM) for interface technology
	<b>PACTware 5.0</b>	FDT Framework
	<b>K-ADP-USB</b>	Programming adapter with USB interface

**Accessories**

	<b>H-CJC-SP-8</b>	Resistance thermometer for cold junction compensation for H-System termination boards
	<b>H-CJC-SC-8</b>	Resistance thermometer for cold junction compensation for H-System termination boards

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**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

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