



SMART Transmitter Power Supply HiC2025

- 1-channel isolated barrier
- 24 V DC supply (bus powered)
- Input for 2-wire SMART transmitters and current sources
- Output for 4 mA ... 20 mA or 1 V ... 5 V
- Low power dissipation
- Up to SIL 2 (SC 3) acc. to IEC/EN 61508



Function

This isolated barrier is used for intrinsic safety applications.

The device supplies 2-wire transmitters in the hazardous area, and can also be used with current sources.

It transfers the analog input signal to the safe area as an isolated current value.

Bi-directional communication is supported for SMART transmitters that use current modulation to transmit data and voltage modulation to receive data.

The output is selected as a current source, current sink, or voltage source via DIP switches.

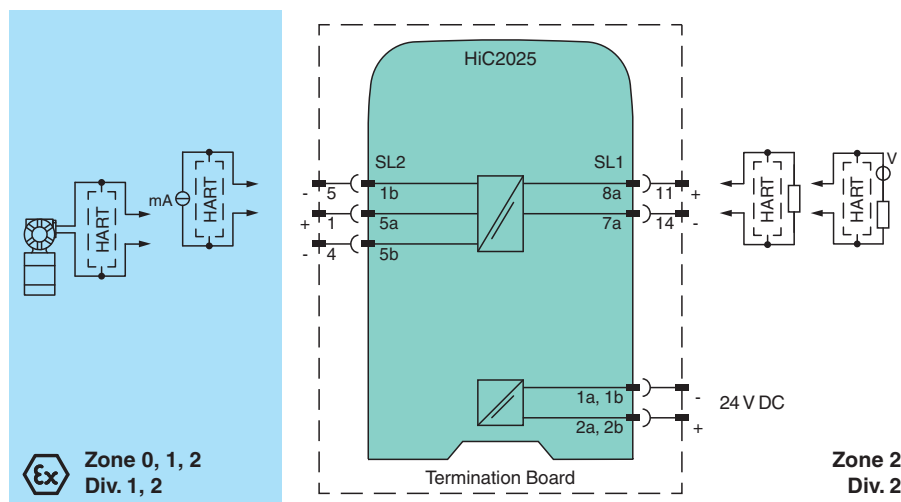
This device mounts on a HiC Termination Board.

Application

The device supports the following SMART protocols:

- HART
- BRAIN

Connection



Technical Data

General specifications

Signal type

Analog input

Technical Data

Functional safety related parameters

Safety Integrity Level (SIL)	SIL 2
Systematic capability (SC)	SC 3

Supply

Connection		SL1: 1a, 1b(-); 2a, 2b(+)
Rated voltage	U_r	19 ... 30 V DC bus powered via Termination Board
Ripple		$\leq 10 \%$
Rated current	I_r	$\leq 45 \text{ mA}$ at 24 V and 20 mA source mode output
Power dissipation		$\leq 800 \text{ mW}$
Power consumption		$\leq 1.1 \text{ W}$

Input

Connection side	field side
Connection	SL2: 5a(+), 1b(-); 5a(+), 5b(-)
Input signal	4 ... 20 mA limited to approx. 26 mA
Voltage drop	approx. 5 V on SL2: 5a(+), 1b(-)
Available voltage	$\geq 15 \text{ V}$ at 20 mA, $\geq 18 \text{ V}$ at 4 mA on SL2: 5a(+), 5b(-)

Output

Connection side	control side
Connection	SL1: 8a(+), 7a(-)
Load	0 ... 350 Ω (source mode)
Output signal	source mode: 4 ... 20 mA or 1 ... 5 V (internal resistor: 250 Ω , 0.1 %) sink mode: 4 ... 20 mA, operating voltage 10 ... 30 V For additional internal or external loads the voltage drop has to be considered, e. g. 250 Ω x 20 mA = 5 V.
Ripple	20 mV _{rms}

Transfer characteristics

Deviation	at 20 °C (68 °F) $< 0.1 \%$ of full scale, incl. non-linearity and hysteresis (source mode and sink mode 4 ... 20 mA) $\leq \pm 0.2 \%$ incl. non-linearity and hysteresis (source mode 1 ... 5 V)
Influence of ambient temperature	$< 2 \mu\text{A/K}$ (-20 ... 70 °C (-4 ... 158 °F)); $< 4 \mu\text{A/K}$ (-40 ... -20 °C (-40 ... -4 °F)) (source mode and sink mode 4 ... 20mA) $< 0.5 \text{ mV/K}$ (-20 ... 70 °C (-4 ... 158 °F)); $< 1 \text{ mV/K}$ (-40 ... -20 °C (-40 ... -4 °F)) (source mode 1...5 V)
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)
Settling time	$\leq 50 \text{ ms}$
Rise time/fall time	$\leq 10 \text{ ms}$

Galvanic isolation

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
Output/power supply	basic insulation according to IEC/EN 61010-1, rated insulation voltage 60 V _{eff}

Indicators/settings

Display elements	LED
Control elements	DIP switch
Configuration	via DIP switches
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 21:2017 EN 61326-3-2:2018 For further information see system description.
Degree of protection	IEC 60529:2001
Protection against electrical shock	UL 61010-1:2012

Ambient conditions

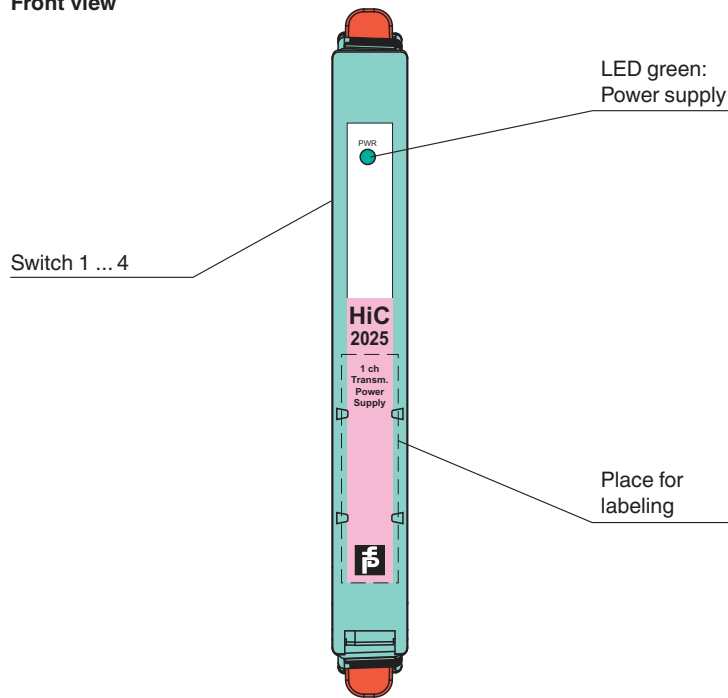
Technical Data

Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)	
Mechanical specifications			
Degree of protection		IP20	
Mass		approx. 100 g	
Dimensions		12.5 x 106 x 128 mm (0.5 x 4.2 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.	
Data for application in connection with hazardous areas			
EU-type examination certificate		CESI 06 ATEX 017	
Marking		Ⓢ II (1)G [Ex ia Ga] IIC Ⓢ II (1)D [Ex ia Da] IIIC Ⓢ I (M1) [Ex ia Ma] I	
Input		Ex ia	
Supply			
Maximum safe voltage		U _m	250 V AC (Attention! U _m is no rated voltage.)
Equipment		SL2: 5a(+), 5b(-)	
Voltage		U _o	25.2 V
Current		I _o	100 mA
Power		P _o	630 mW
Internal capacitance		C _i	5.7 nF
Internal inductance		L _i	negligible
Equipment		SL2: 5a(+), 1b(-)	
Voltage		U _i	30 V
Current		I _i	128 mA
Voltage		U _o	7.2 V
Current		I _o	100 mA
Power		P _o	25 mW
Internal capacitance		C _i	5.7 nF
Internal inductance		L _i	negligible
Certificate		CESI 19 ATEX 027 X	
Marking		Ⓢ II 3G Ex ec IIC T4 Gc	
Directive conformity			
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-7:2015	
International approvals			
FM approval			
FM certificate		FM 19 US 0122 X , FM 19 CA 0065 X	
Control drawing		116-0470 (cFMus)	
UL approval		E106378	
Control drawing		116-0458 (cULus)	
IECEX approval			
IECEX certificate		IECEX CES 06.0002X	
IECEX marking		[Ex ia Ga] IIC , [Ex ia Da] IIIC , [Ex ia Ma] I Ex ec IIC T4 Gc	
General information			
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com .	

Release date: 2023-06-01 Date of issue: 2023-06-01 Filename: 321423_eng.pdf

Assembly

Front view



Configuration

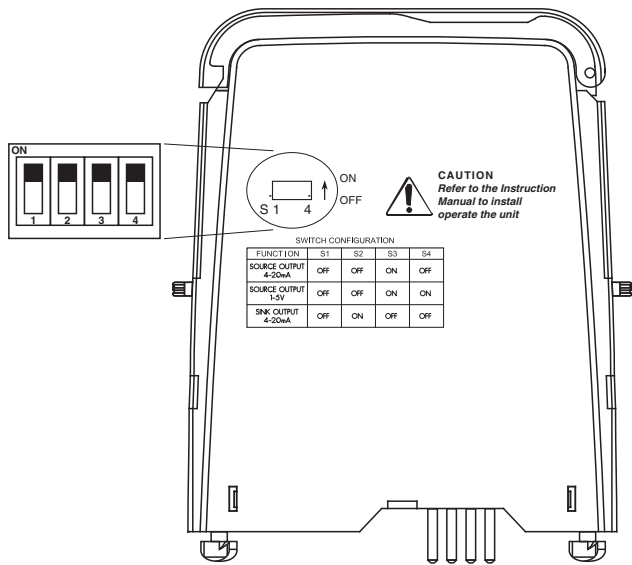
Configure the device in the following way:

- 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.

Configuration



Switch position

Function	S1	S2	S3	S4
Current source 4 mA ... 20 mA	OFF	OFF	ON	OFF
Voltage source 1 V ... 5 V	OFF	OFF	ON	ON
Current sink 4 mA ... 20 mA	OFF	ON	OFF	OFF

Factory setting: current source 4 mA ... 20 mA