



SMART Transmitter Power Supply HiC2027

- 1-channel isolated barrier
- 24 V DC supply (bus powered)
- Input for 2-wire SMART transmitters and current sources
- Signal splitter (1 input and 2 outputs)
- Dual output 0/4 mA ... 20 mA or 0/1 V ... 5 V
- 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 two isolated output signals.

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 switches.

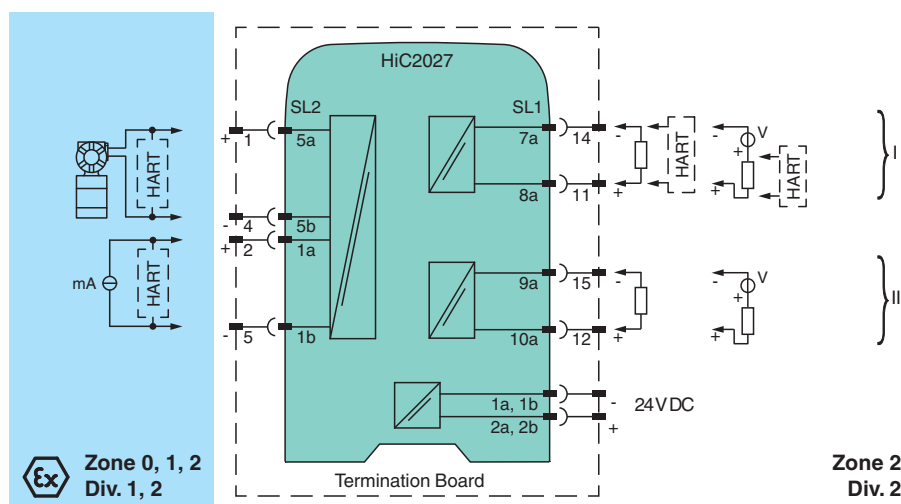
This device mounts on a HiC Termination Board.

Application

The device supports the following SMART protocols:

- HART
- BRAIN

Connection



Technical Data

General specifications

Signal type	Analog input
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Functional safety related parameters

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

Supply

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

Pepperl+Fuchs Group
www.pepperl-fuchs.com

USA: +1 330 486 0002
pa-info@us.pepperl-fuchs.com

Germany: +49 621 776 2222
pa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091
pa-info@sg.pepperl-fuchs.com

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Technical Data

Connection		SL1: 1a, 1b(-); 2a, 2b(+)
Rated voltage	U_r	20 ... 30 V DC bus powered via Termination Board
Ripple		within the supply tolerance
Rated current	I_r	≤ 90 mA
Power dissipation		approx. 1.4 W at 20 mA transfer current, 250 Ω in both outputs
Power consumption		2 W
Input		
Connection side		field side
Connection		SL2: 5a(+), 5b(-): sink SL2: 1a(+), 1b(-), 7a(-): source
Input signal		0/4 ... 20 mA
Voltage drop		SL2: 1a(+), 1b(-), 7a(-): ≤ 6.1 V at 20 mA
Short-circuit current		SL2: 5a(+), 5b(-): 25 mA
Input resistance		SL2: 5a(+), 5b(-): max. 500 Ω (BRAIN) (250 Ω load)
Available voltage		SL2: 5a(+), 5b(-): ≥ 16 V at 20 mA , ≥ 18.5 V at 4 mA
Output		
Connection side		control side
Connection		SL1: 8a(+), 7a(-), channel 1: source and sink SL1: 10a(+), 9a(-), channel 2: source and sink
Load		channel 1: 0 ... 500 Ω (20 mA)/> 1 MΩ (5 V) channel 2: 0 ... 500 Ω (20 mA)/> 1 MΩ (5 V)
Output signal		0/4 ... 20 mA or 0/1 ... 5 V
Ripple		max. 50 μA _{rms}
Transfer characteristics		
Deviation		$I_{out} < 20 \mu A$ (0.1 %); $V_{out} < 10 \text{ mV}$ (0.2 %) incl. calibration, linearity, hysteresis and fluctuation of supply voltage, at 20 °C (68 °F), 0/4 ... 20 mA, 0/1 ... 5 V
Influence of ambient temperature		current output: 0.25 μA/K voltage output: 80 μV/K
Frequency range		field side into the control side: bandwidth with 0.5 V _{pp} signal 0 ... 6 kHz (-3 dB) control side into the field side: bandwidth with 0.5 V _{pp} signal 0.3 ... 6 kHz (-3 dB)
Settling time		6 ms
Rise time/fall time		2 ms
Galvanic isolation		
Output/power supply		functional insulation, rated insulation voltage 50 V AC
Output/Output		functional insulation, rated insulation voltage 50 V AC
Indicators/settings		
Display elements		LED
Control elements		DIP switch
Factory setting		output: current source
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 21:2012 EN 61326-3-2:2008
Degree of protection		IEC 60529:2001
Protection against electrical shock		UL 61010-1:2012
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 105 g
Dimensions		12.5 x 106 x 128 mm (0.5 x 4.2 x 5.1 inch) (W x H x D)

Release date: 2023-08-07 Date of issue: 2023-08-07 Filename: 272951_eng.pdf

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

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USA: +1 330 486 0002
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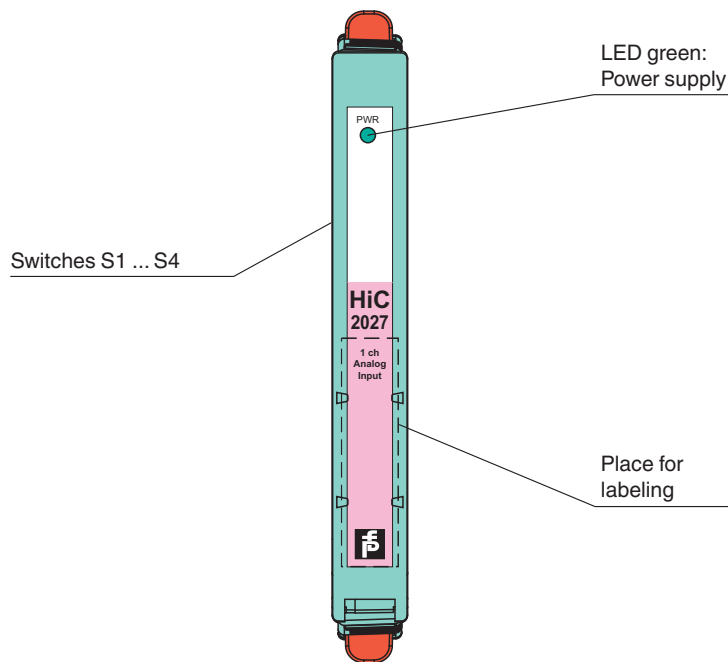
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Technical Data

Mounting		on termination board
Coding		pin 2 and 3 trimmed For further information see system description.
Data for application in connection with hazardous areas		
EU-type examination certificate		BASEEFA 13 ATEX 0075 X
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 (Attention! The rated voltage can be lower.)
Equipment		SL2: 5a(+), 5b(-)
Voltage	U_o	25.2 V
Voltage	U_q	28.2 V
Current	I_o	93 mA
Power	P_o	656 mW
Internal capacitance	C_i	12 nF
Internal inductance	L_i	0 mH
Equipment		SL2: 1a(+), 1b(-), 7a(-)
Voltage	U_i	30 V
Current	I_i	115 mA
Power	P_i	700 mW
Voltage	U_o	5 V
Current	I_o	6.8 mA
Power	P_o	1.6 mW
Internal capacitance	C_i	12 nF
Internal inductance	L_i	0 mH
Output		
Maximum safe voltage	U_m	250 V (Attention! The rated voltage can be lower.)
Certificate		BASEEFA 13 ATEX 0076 X
Marking		Ⓔ II 3G Ex nA IIC T4 Gc
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
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012 , EN 60079-15:2010
International approvals		
UL approval		E106378
Control drawing		116-0349 (cULus)
IECEx approval		
IECEx certificate		IECEx BAS 13.0042X
IECEx marking		[Ex ia Ga] IIC , [Ex ia Da] IIIC , [Ex ia Ma] I
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



Safety Information

The pins for this device are trimmed to polarize it according to its safety parameter. Do not change this setting!
For further information see system manual.

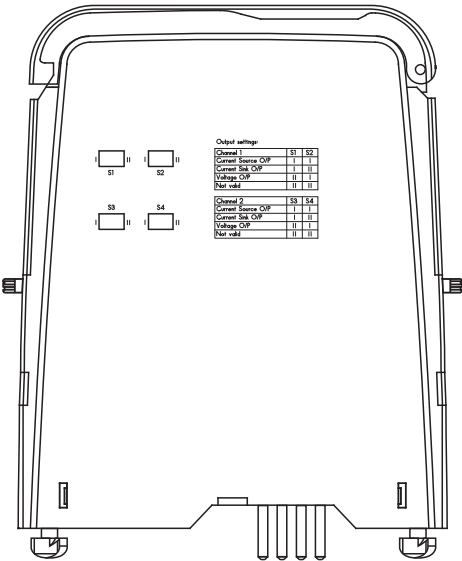
Both output loads must be connected to ensure complete and correct operation within the technical specification.

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.

Configuration



Output switch settings

Channel 1	S1	S2
Current source output	I	I
Current sink output	I	II
Voltage output	II	I
Not valid	II	II

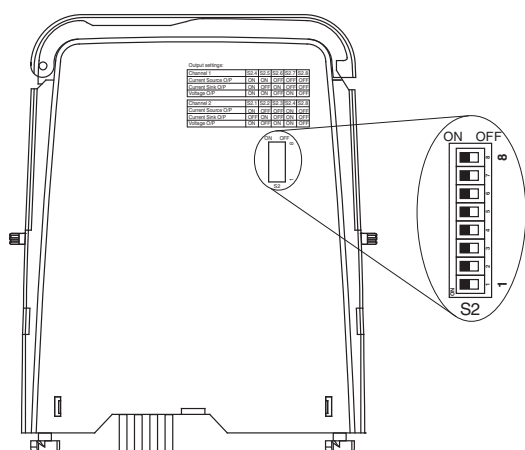
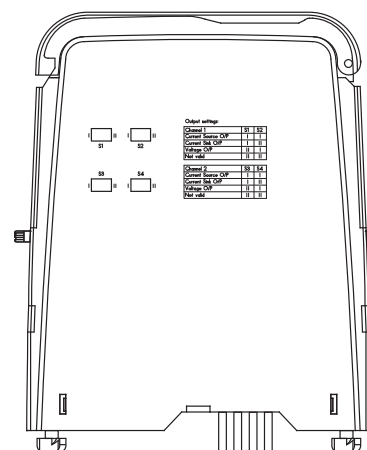
Channel 2	S3	S4
Current source output	I	I
Current sink output	I	II
Voltage output	II	I
Not valid	II	II

Factory settings: current source output, for both channels.

Product Versions

Release date: 2023-08-07 Date of issue: 2023-08-07 Filename: 272951_eng.pdf

The device has a predecessor which has other position and function of the switches. The differences between the switches and their function can be seen in the following table.

Previous device							New device						
HiC2027, part number 206327							HiC2027, part number 272951						
													
Switch S2 settings							Output switch settings						
Channel 1		S2.4	S2.5	S2.6	S2.7	S2.8	Channel 1		S1	S2			
Current source output		ON	ON	OFF	OFF	OFF	Current source output		I	I			
Current sink output		ON	OFF	ON	OFF	OFF	Current sink output		I	II			
Voltage output		ON	ON	OFF	ON	OFF	Voltage output		II	I			
–							Not valid		II	II			
Channel 2		S2.1	S2.2	S2.3	S2.4	S2.8	Channel 2		S3	S4			
Current source output		ON	OFF	OFF	ON	OFF	Current source output		I	I			
Current sink output		OFF	ON	OFF	ON	OFF	Current sink output		I	II			
Voltage output		ON	OFF	ON	ON	OFF	Voltage output		II	I			
–							Not valid		II	II			

Factory settings: current source output, for both channels.