



SMART Transmitter Power Supply HiC2027ES

- 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 3 acc. to IEC 61508



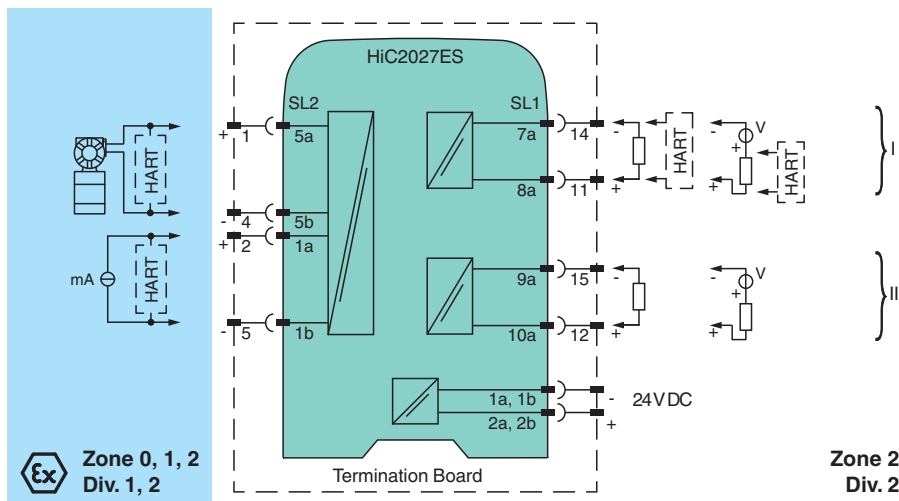
SIL 3



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.

Connection



Release date: 2021-08-18 Date of issue: 2021-08-18 Filename: 286744_eng.pdf

Technical Data

General specifications	
Signal type	Analog input
Functional safety related parameters	
Safety Integrity Level (SIL)	SIL 3
Supply	
Connection	SL1: 1a, 1b(-); 2a, 2b(+)
Rated voltage	U_r 20 ... 30 V DC bus powered via Termination Board
Ripple	within the supply tolerance
Power dissipation	approx. 1.4 W at 20 mA transfer current, 250 Ω in both outputs
Power consumption	2 W

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

Technical Data

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 M Ω (5 V) channel 2: 0 ... 500 Ω (20 mA)/ > 1 M Ω (5 V)
Output signal	0/4 ... 20 mA or 0/1 ... 5 V
Ripple	max. 50 μ A _{rms}
Transfer characteristics	
Deviation	$I_{out} < 20$ μ A (0.1 %); $V_{out} < 10$ 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 μ A/K voltage output: 80 μ V/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
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. 100 g
Dimensions	12.5 x 128 x 106 mm (0.5 x 5.1 x 4.2 inch)
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

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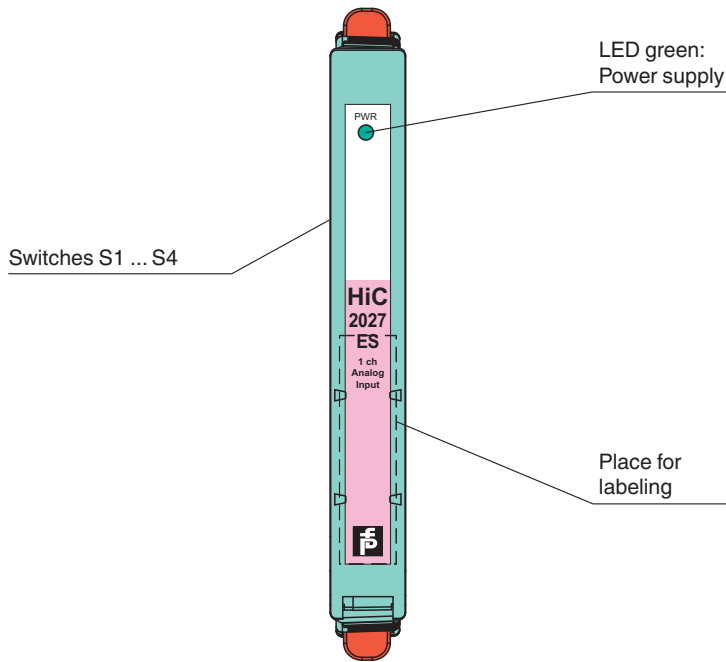
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 PEPPERL+FUCHS

Technical Data

Input		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
Supply		
Maximum safe voltage	U_m	250 V (Attention! The rated voltage can be lower.)
Equipment		terminals 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		terminals 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
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 II T4 Gc [device in zone 2]
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 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010
International approvals		
UL approval		
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		
Note		Both output loads must be connected to ensure complete and correct operation within the technical specification.
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com .

Assembly

Front view



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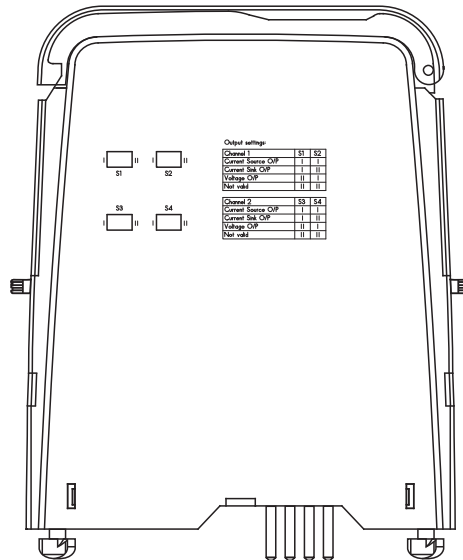
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Application

The device supports the following SMART protocols:

- HART
- BRAIN

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.

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 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.*