



SMART Transmitter Power Supply HiC2025ES

- 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
- Sink or source mode
- Line fault detection (LFD)
- Up to SIL 3 acc. to IEC/EN 61508



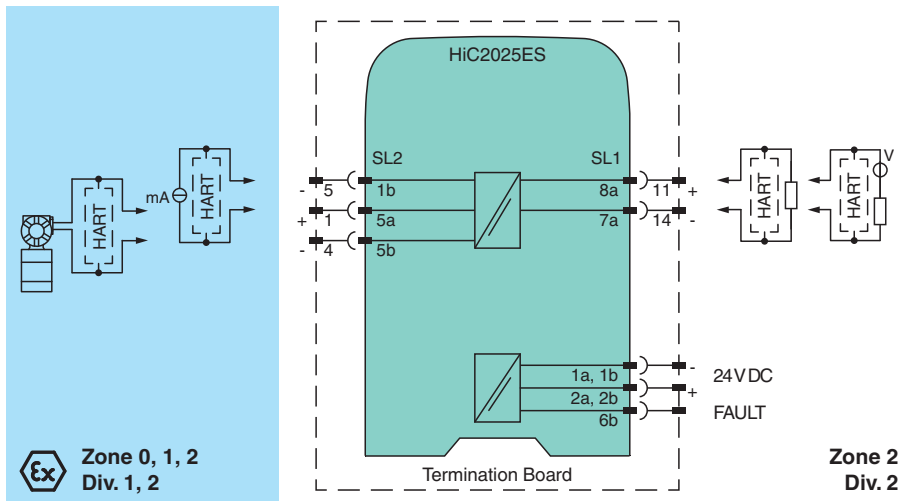
SIL 3



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. The device transfers the analog input signal to the non-hazardous 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. A separate fault output on the bus is signaled, if the input signal is outside the range of 3 mA ... 22 mA. This device mounts on a HiC termination board.

Connection



Technical Data

General specifications		
Signal type	Analog input	
Functional safety related parameters		
Safety Integrity Level (SIL)	SIL 3	
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	$\leq 50 \text{ mA}$

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

Technical Data

Power dissipation	≤ 800 mW
Power consumption	≤ 1.2 W
Input	
Connection side	field side
Connection	SL2: 5a(+), 1b(-); 5a(+), 5b(-)
Input signal	4 ... 20 mA , limited to approx. 27 mA reverse polarity protected
Line fault detection	downscaling ≤ 3 mA ; upscaling ≥ 22 mA
Voltage drop	approx. 5 V on SL2: 5a(+), 1b(-)
Available voltage	≥ 15 V at 20 mA on SL2: 5a(+), 5b(-)
Output	
Connection side	control side
Connection	SL1: 8a(+), 7a(-)
Load	0 ... 300 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 16 ... 28 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}
Fault indication output	
Connection	SL1: 6b
Output type	open collector transistor (internal fault bus)
Transfer characteristics	
Deviation	at 20 °C (68 °F) ≤ ± 20 μA incl. calibration, linearity, hysteresis, loads and supply voltage fluctuations (source mode and sink mode 4 ... 20 mA) ≤ 10 mV incl. calibration, linearity, hysteresis and fluctuations of supply voltage (source mode 1 ... 5 V)
Influence of ambient temperature	< 2 μA/K (0 ... 70 °C (32 ... 158 °F)); < 4 μA/K (-20 ... 0 °C (-4 ... 32 °F)) (source mode and sink mode 4 ... 20 mA) < 0.5 mV/K (0 ... 70 °C (32 ... 158 °F)); < 1 mV/K (-20 ... 0 °C (-4 ... 32 °F)) (source mode 1 ... 5 V)
Frequency range	field side into the control side: bandwidth with 1 mA _{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	≤ 200 ms
Rise time/fall time	≤ 20 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 isolation acc. to EN 61010-1 rated insulation voltage ≤ 50 V
Indicators/settings	
Display elements	LEDs
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 For further information see system description.
Degree of protection	IEC 60529:2001
Ambient conditions	
Ambient temperature	-20 ... 70 °C (-4 ... 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)

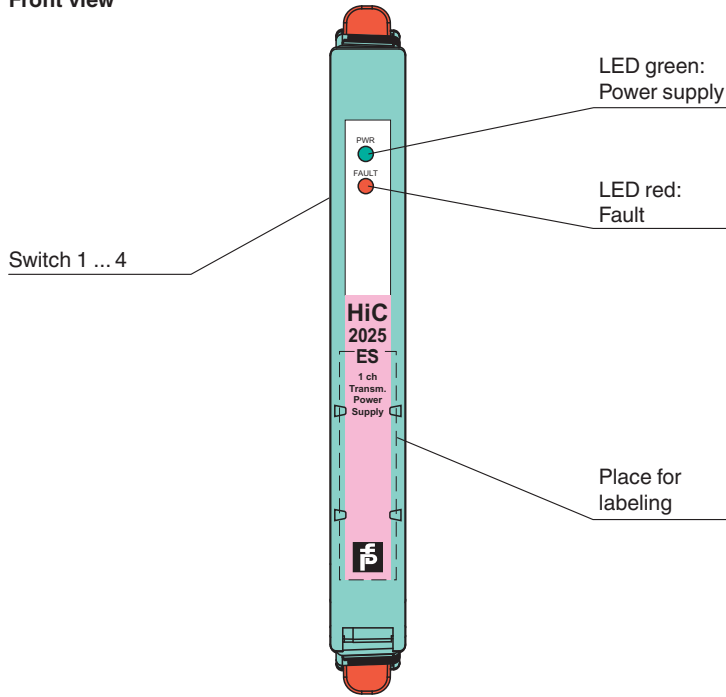
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Technical Data

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 10 ATEX 063	
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	253 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 016 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		
UL approval	E106378	
Control drawing	116-0376 (cULus)	
IECEx approval		
IECEx certificate	IECEx CES 10.0021X	
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 .	

Assembly

Front view



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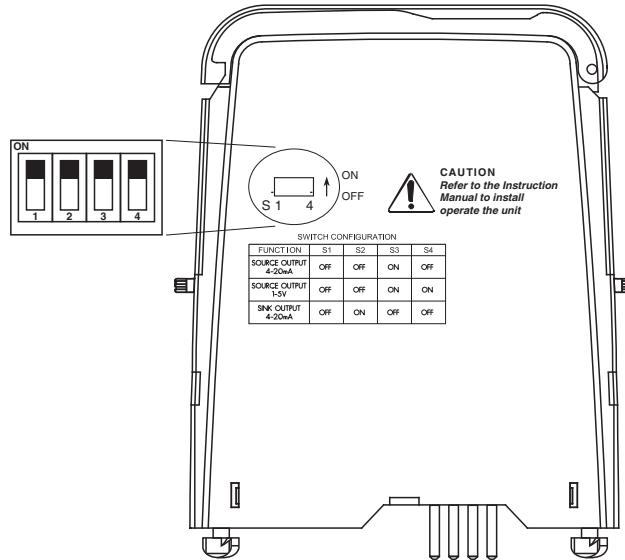
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Application

- The device supports the following SMART protocols:
- HART

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

Configuration

Configure the device in the following way:

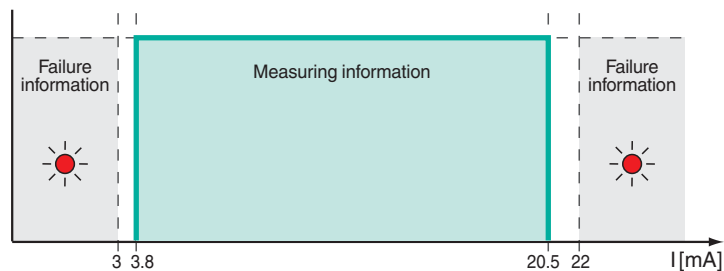
- Push the red Quick Lok Bars on each side of the device in the upper position.
- Remove the device from Termination Board.
- Set the DIP switches according to the figure.



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

Characteristic Curve

Transfer characteristic



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