

Features

- 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
- Line fault detection (LFD)
- Up to SIL 3 acc. to IEC 61508

Function

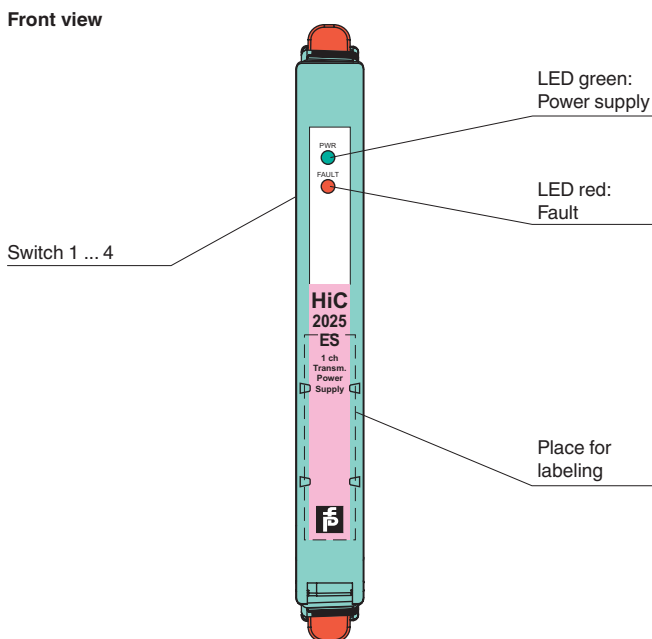
This isolated barrier is used for intrinsic safety applications. The device supplies 2-wire transmitters in the hazardous area, and can also be used with current sources. It transfers the analog input signal to the safe area as an isolated current value. Bi-directional communication is supported for 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. 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.

Application

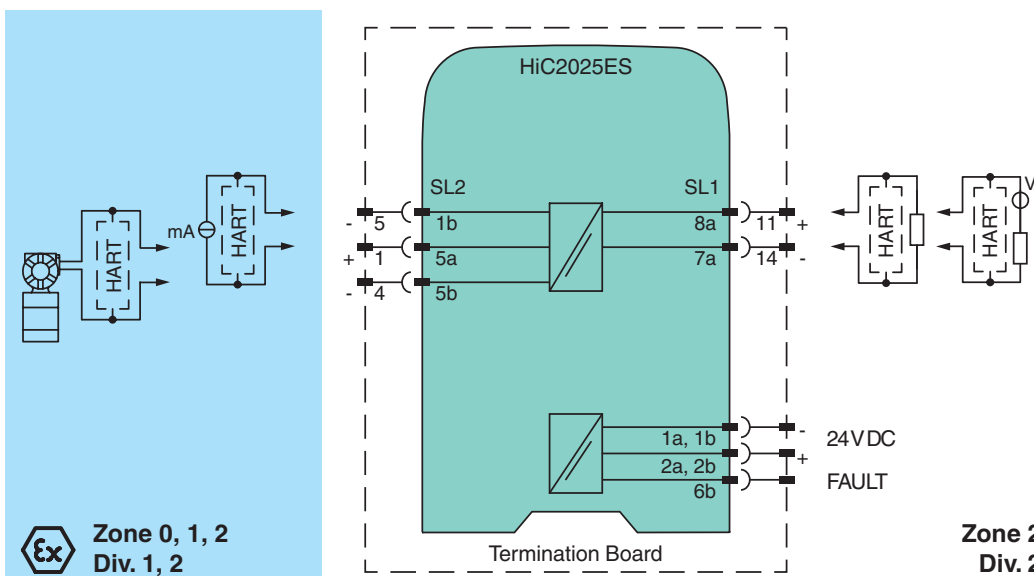
The device supports the following SMART protocol:

- HART

Assembly



Connection



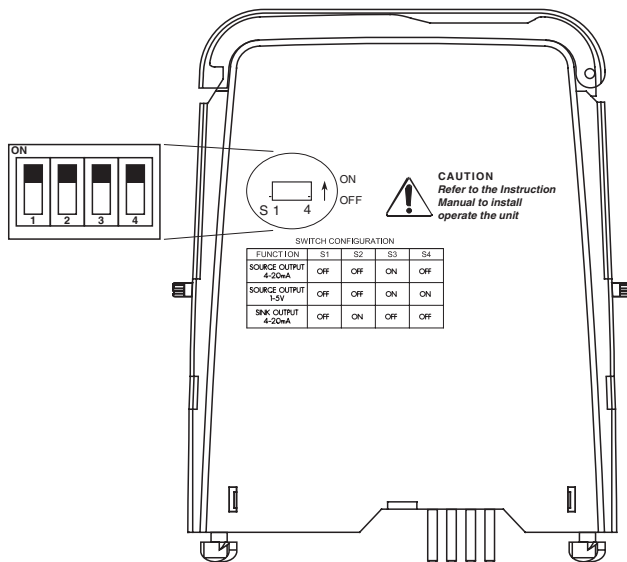
Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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	19 ... 30 V DC bus powered via Termination Board
Ripple	$\leq 10 \%$
Rated current I_r	$\leq 50 \text{ mA}$
Power dissipation	$\leq 800 \text{ mW}$
Power consumption	$\leq 1.2 \text{ W}$
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 $\leq 3 \text{ mA}$; upscaling $\geq 22 \text{ mA}$
Voltage drop	approx. 5 V on SL2: 5a(+), 1b(-)
Available voltage	$\geq 15 \text{ V}$ at 20 mA on SL2: 5a(+), 5b(-)
Output	
Connection side	control side
Connection	SL1: 8a(+), 7a(-)
Load	0 ... 300 Ω (source mode)
Output signal	4 ... 20 mA or 1 ... 5 V (on 250 Ω , 0.1 % internal shunt) 4 ... 20 mA (sink mode), operating voltage 16 ... 28 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) $\leq \pm 20 \mu\text{A}$ incl. calibration, linearity, hysteresis, loads and supply voltage fluctuations (source mode and sink mode 4 ... 20 mA) $\leq 10 \text{ mV}$ incl. calibration, linearity, hysteresis and fluctuations of supply voltage (source mode 1 ... 5 V)
Influence of ambient temperature	$< 2 \mu\text{A/K}$ (0 ... 70 °C (32 ... 158 °F)); $< 4 \mu\text{A/K}$ (-20 ... 0 °C (-4 ... 32 °F)) (source mode and sink mode 4 ... 20 mA) $< 0.5 \text{ mV/K}$ (0 ... 70 °C (32 ... 158 °F)); $< 1 \text{ mV/K}$ (-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	$\leq 200 \text{ ms}$
Rise time/fall time	$\leq 20 \text{ ms}$
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 isolation acc. to EN 61010-1 rated insulation voltage $\leq 50 \text{ V}$
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 21:2006 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 128 x 106 mm (0.5 x 5.1 x 4.2 inch)
Mounting	on Termination Board
Coding	pin 1 and 3 trimmed For further information see system description.

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Data for application in connection with hazardous areas		
EU-Type Examination Certificate		CESI 10 ATEX 063
Marking		Ⓔ II (1)GD [Ex ia] IIC, [Ex iaD] [circuit(s) in zone 0/1/2/20/21/22] Ⓔ I (M1) [Ex ia] I
Input		Ex ia, Ex iaD
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
Permissible connection values [EEx ia]		
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
Permissible connection values [EEx ia]		
Certificate		PF 10 CERT 1748 X
Marking		Ⓔ II 3G Ex nA IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010 , EN 50303:2000
International approvals		
UL approval		
Control drawing		116-0376 (cULus)
IECEX approval		IECEX CES 10.0021
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com .

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 settings: current source 4 mA ... 20 mA

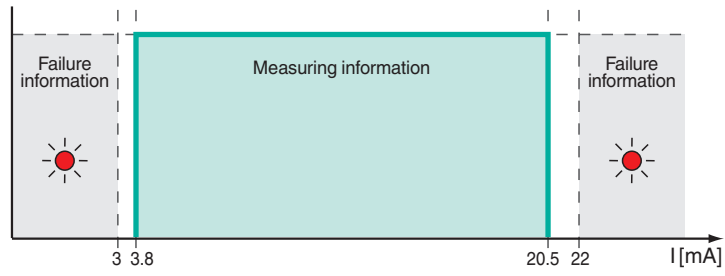
Configure the device in the following way:

- 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.

Transfer characteristic



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