



# 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



## Function

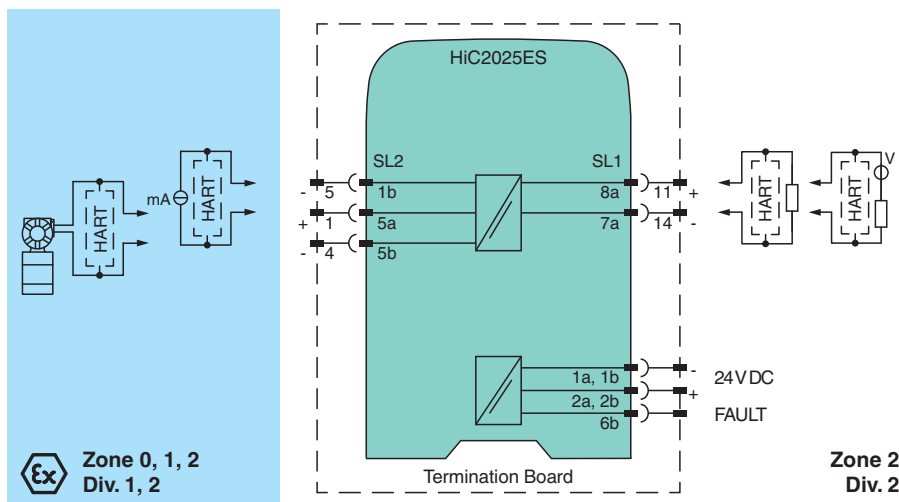
This isolated barrier is used for intrinsic safety applications. The device supplies 2-wire transmitters in the hazardous area, and can also be used with current sources. The device transfers the analog input signal to the non-hazardous area as an isolated current value. Bi-directional communication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

## Application

The device supports the following SMART protocols:

- HART

## 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	

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## Technical Data

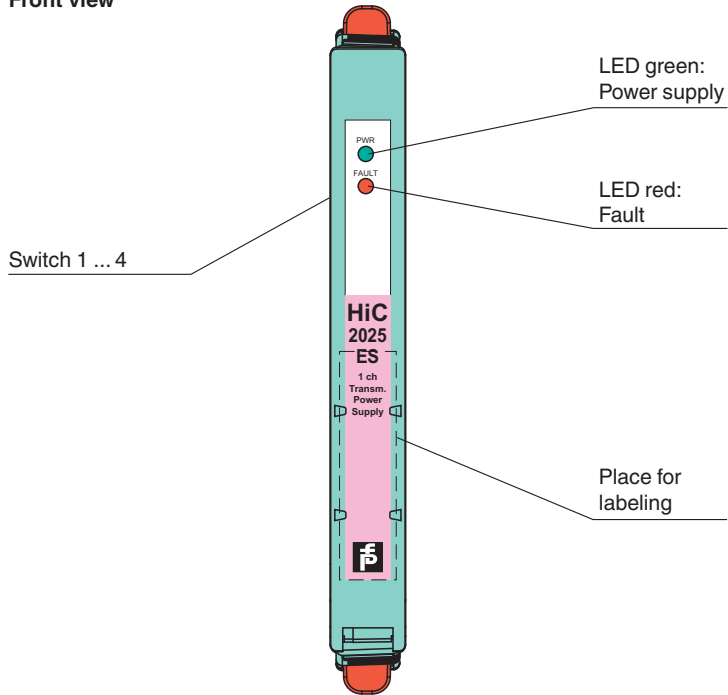
Connection		SL1: 1a(-), 1b(-); 2a(+), 2b(+)
Rated voltage	$U_r$	19 ... 30 V DC bus powered via Termination Board
Ripple		$\leq 10 \%$
Rated current	$I_r$	$\leq 50 \text{ mA}$
Power dissipation		$\leq 800 \text{ mW}$
Power consumption		$\leq 1.2 \text{ W}$
<b>Input</b>		
Connection side		field side
Connection		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(-)
<b>Output</b>		
Connection side		control side
Connection		SL1: 8a(+), 7a(-)
Load		0 ... 300 $\Omega$ (source mode)
Output signal		source mode: 4 ... 20 mA or 1 ... 5 V (internal resistor: 250 $\Omega$ , 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 $\Omega$ x 20 mA = 5 V.
Ripple		20 mV <sub>rms</sub>
<b>Fault indication output</b>		
Connection		SL1: 6b
Output type		open collector transistor (internal fault bus)
<b>Transfer characteristics</b>		
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 <sub>pp</sub> signal 0 ... 3 kHz (-3 dB) control side into the field side: bandwidth with 0.5 V <sub>pp</sub> signal 0 ... 3 kHz (-3 dB)
Settling time		$\leq 200 \text{ ms}$
Rise time/fall time		$\leq 20 \text{ ms}$
<b>Galvanic isolation</b>		
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 $\leq 50 \text{ V}$
<b>Indicators/settings</b>		
Display elements		LEDs
Control elements		DIP switch
Configuration		via DIP switches
Labeling		space for labeling at the front
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
<b>Conformity</b>		
Electromagnetic compatibility		NE 21:2017 For further information see system description.
Degree of protection		IEC 60529:2001
<b>Ambient conditions</b>		
Ambient temperature		-20 ... 70 °C (-4 ... 158 °F)

## Technical Data

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 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 <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .

## Assembly

### Front view



## Configuration

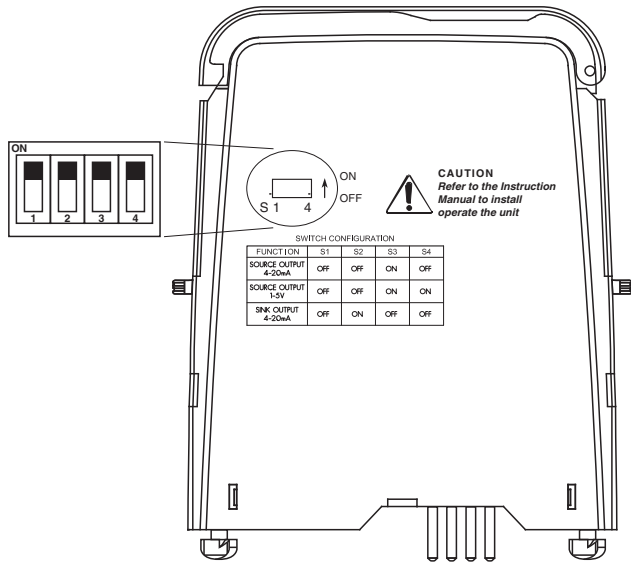
Configure the device in the following way:

- 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**



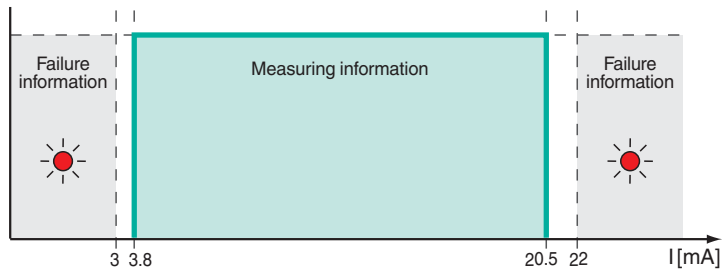
**Switch position**

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

**Characteristic Curve**

**Transfer characteristic**



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