SMART Transmitter Power Supply/SMART Current Driver

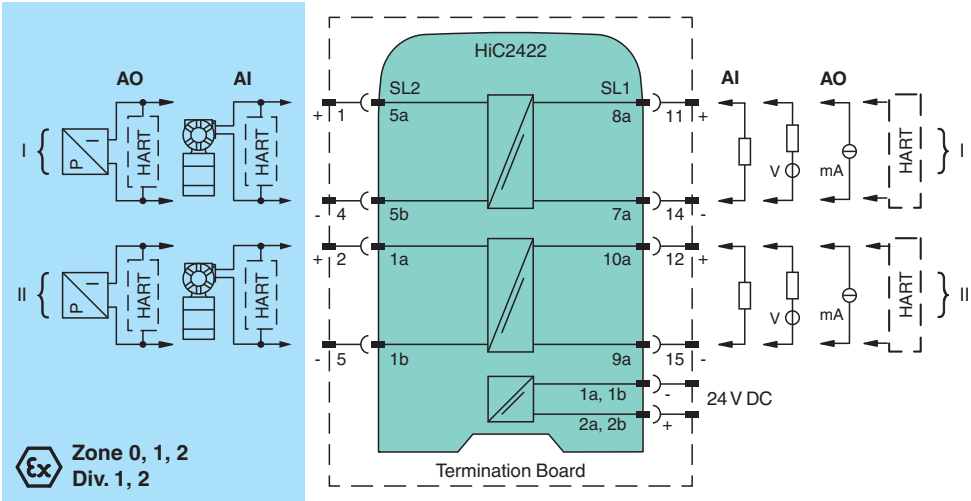
HiC2422

- 2-channel isolated barrier
- 24 V DC supply (bus powered)
- Analog input (AI), Analog output (AO)
- Operates as transmitter power supply or current driver
- Up to SIL 2 (SC 3) acc. to IEC/EN 61508

Function

This isolated barrier is used for intrinsic safety applications.
Each device channel works as a transmitter power supply or a current driver.
The device transfers data by using a current signal.
The device supports a bi-directional communication for SMART devices that use current modulation to transmit data and voltage modulation to receive data.
For current driver operation, an open field circuit presents a high impedance to the control side to allow lead breakage to be monitored by control systems.
This device mounts on a HiC termination board.

Connection



Technical Data

General specifications		
Signal type		Analog input/analog output
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Systematic capability (SC)		SC 3
Supply		
Connection		SL1: 1a(-), 1b(-); 2a(+), 2b(+)
Rated voltage	U_r	19 ... 30 V DC via Termination Board
Ripple		max. 10 %
Rated current	I_r	max. 88 mA at 24 V

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Power dissipation	max. 1.4 W
Power consumption	max. 2.1 W
Analog input	
Number of channels	2
Suitable field devices	2-wire SMART transmitters
Signal	0/4 ... 20 mA , limited to approx. 30 mA
Field circuit	SL2: 5a(+), 5b(-); 1a(+), 1b(-)
Available voltage	min. 15 V at 20 mA min. 18 V at 4 mA
Control circuit	SL1: 8a(+), 7a(-); 10a(+), 9a(-)
Input voltage	Voltage across terminals 10 ... 30 V. If the current is supplied from a source > 24 V, series resistance of ≥ (V - 24)/0.02 Ω is needed, where V is the source voltage. The maximum value of the resistance is (V - 10)/0.02 Ω. (sink output)
Load	max. 350 Ω (source output)
Ripple	20 mV_{eff}
Analog output	
Number of channels	2
Suitable field devices	SMART I/P converters (positioner), on-site-displays
Signal	0/4 ... 20 mA , limited to approx. 30 mA
Field circuit	SL2: 5a(+), 5b(-); 1a(+), 1b(-)
Load	max. 650 Ω
Voltage	min. 13 V at 20 mA
Ripple	20 mV_{eff} , on all signal terminals
Control circuit	SL1: 8a(+), 7a(-); 10a(+), 9a(-)
Voltage drop	max. 6 V
Line fault detection	> 100 kΩ at max. 30 V, with field wiring open
Transfer characteristics	
Deviation	max. 20 µA incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature	< 2 µA/K (-40 ... 70 °C (-40 ... 158 °F))
Frequency range	field side into the control side: bandwidth with 0.5 V_{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	max. 200 ms
Rise time/fall time	max. 100 ms (10 ... 90 %)
Galvanic isolation	
Field circuit/control circuit	basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Control circuit/control circuit	channel I/channel II : functional isolation, rated voltage: 50 V
Field circuit/power supply	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Control circuit/power supply	basic insulation according to IEC/EN 61010-1, rated insulation voltage 60 V_{eff}
Indicators/settings	
Display elements	LED
Factory setting	analog input with source output
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 EN 61326-3-2:2018 For further information see system description.
Degree of protection	IEC 60529:2001
Protection against electrical shock	UL 61010-1:2012
Functional safety	IEC 61508:2010
Ambient conditions	
Ambient temperature	-40 ... 70 °C (-40 ... 158 °F)

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Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		95 % non-condensing
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)
Height		106 mm
Width		12.5 mm
Depth		128 mm
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		UL 23 ATEX 3091 X
Marking		Ex II (1)G [Ex ia Ga] IIC Ex II (1)D [Ex ia Da] IIIC Ex I (M1) [Ex ia Ma] I
Output		Ex ia, Ex iaD
Voltage	U_o	25.2 V
Current	I_o	100 mA
Power	P_o	630 mW
Internal capacitance	C_i	1.05 nF
Internal inductance	L_i	0
Supply		
Maximum safe voltage	U_m	250 V_{rms} (Attention! The rated voltage can be lower.)
Input		
Maximum safe voltage	U_m	250 V_{rms} (Attention! The rated voltage can be lower.)
Certificate		UL 23 ATEX 3092 X
Marking		Ex II 3G Ex ec IIC T4 Gc
Galvanic isolation		
Field circuit/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 , EN 60079-11:2012 , EN IEC 60079-7:2015+A1:2018
International approvals		
UL approval		E106378
Control drawing		116-0500 (cULus)
IECEx approval		
IECEx certificate		IECEx ULD 23.0026X
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.

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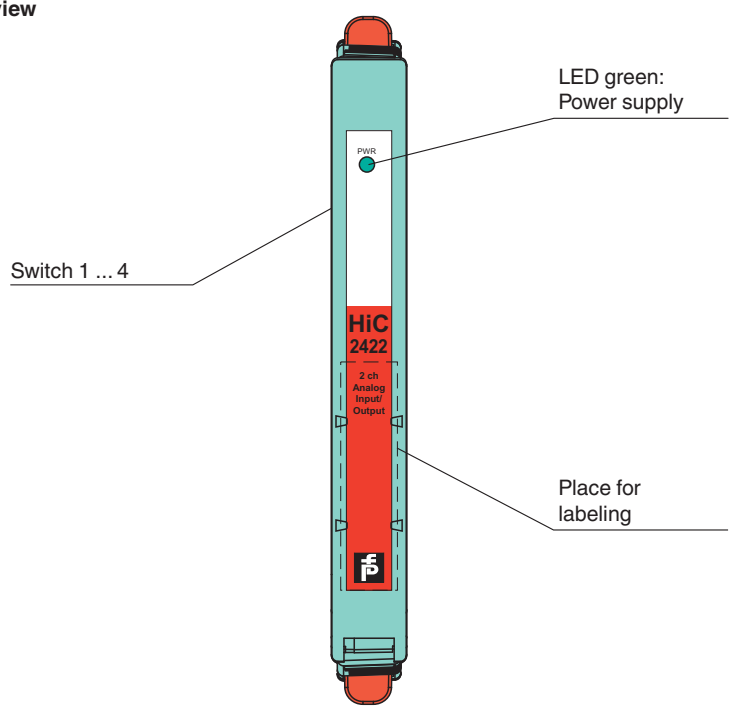
Assembly

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.

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.

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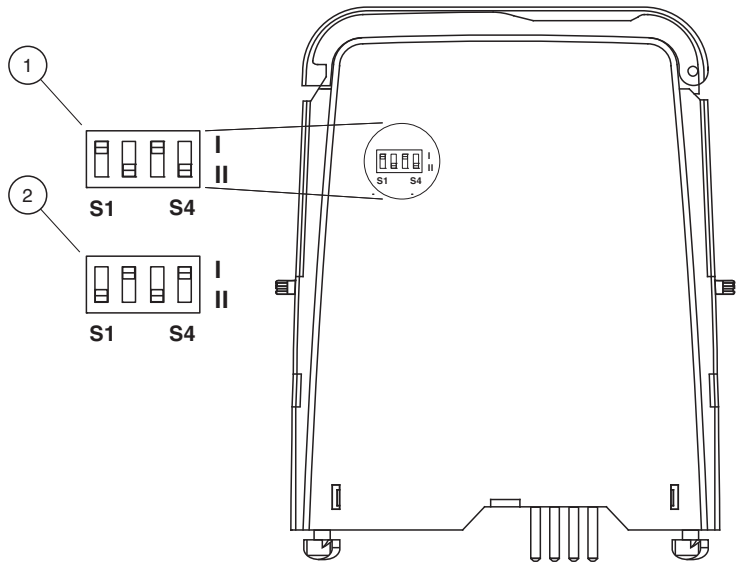
Configuration



1 Analog input with current source output
2 Analog input with current sink output, analog output

Switch position

Function		Switch			
		Channel 1		Channel 2	
Field side	**Control side**	**S1**	**S2**	**S3**	**S4**
Analog input	Current source	I	II	I	II
Analog input	Current sink	II	I	II	I
Analog output		II	I	II	I

Factory setting: analog input with current source output

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