SMART Current Driver

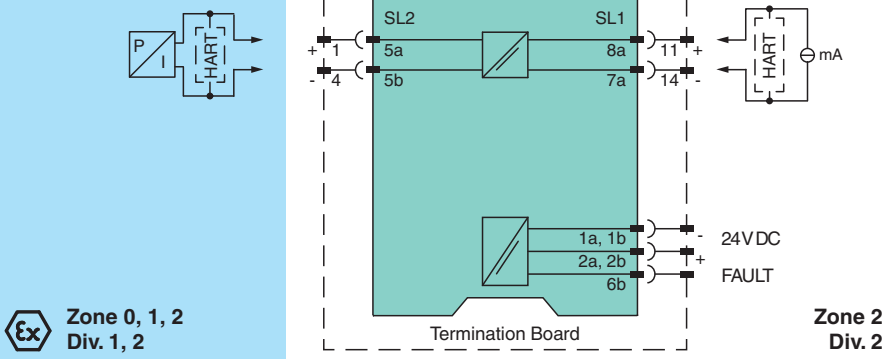
HiC2031ES

- 1-channel isolated barrier
- 24 V DC supply (bus powered)
- Current output up to 650 Ω load
- HART-IP and valve positioner
- Low power dissipation
- 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 repeats the input signal from a control system to drive HART I/P converters, electrical valves, and positioners located in a hazardous area.
Digital signals are superimposed on the analog values at the field side or control side and are transferred bi-directionally.
An open or short field circuit presents a high impedance to the control side to allow alarm conditions to be monitored by the control system.
Line fault detection of the field circuit is indicated by a red LED and an output on the fault bus.
This device mounts on a HiC termination board.

Connection



Technical Data

General specifications		
Signal type		Analog output
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		≤ 10 %
Rated current	I_r	≤ 33 mA at 24 V
Power dissipation		≤ 700 mW at 20 mA and 500 Ω load

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Technical Data

Power consumption		≤ 800 mW
Input		
Connection side		control side
Connection		SL1: 8a(+), 7a(-)
Input signal		4 ... 20 mA , limited to approx. 25 mA
Input voltage		open loop voltage of the control system < 30 V
Voltage drop		approx. 6 V at 20 mA
Input resistance		> 100 kΩ, with field wiring open or < 50 Ω
Output		
Connection side		field side
Connection		SL2: 5a(+), 5b(-)
Voltage		≥ 13 V at 20 mA
Current		4 ... 20 mA
Load		100 ... 650 Ω
Ripple		20 mV rms
Line fault detection		field wiring open or < 50 Ω and test current < 2 mA
Fault indication output		
Connection		SL1: 6b
Output type		open collector transistor (internal fault bus)
Transfer characteristics		
Deviation		at 20 °C (68 °F), 4 ... 20 mA < 0.1 % of full scale, incl. non-linearity and hysteresis
Influence of ambient temperature		< 2 µA/K (-20 ... 70 °C (-4 ... 158 °F)); < 4 µA/K (-40 ... -20 °C (-40 ... -4 °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 1 mA_{pp} signal 0 ... 3 kHz (-3 dB)
Rise time		10 to 90 % ≤ 10 ms
Galvanic isolation		
Input/Output		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Input/power supply		basic insulation according to IEC/EN 61010-1, rated insulation voltage 60 V_{eff}
Output/power supply		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Indicators/settings		
Display elements		LEDs
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
Ambient conditions		
Ambient temperature		-40 ... 70 °C (-40 ... 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)
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 20 ATEX 007 X
Marking		Ⓔx II (1)G [Ex ia Ga] IIC Ⓔx II (1)D [Ex ia Da] IIIC Ⓔx I (M1) [Ex ia Ma] I

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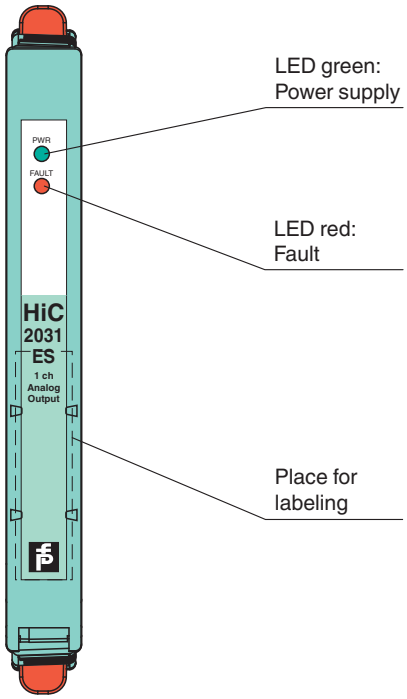
Technical Data

Output		Ex ia
Supply		
Maximum safe voltage	U_m	250 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
Certificate		CESI 20 ATEX 008 X
Marking		Ex II 3G Ex ec IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018 , EN 60079-11:2012 , EN 60079-7:2015
International approvals		
UL approval		E106378
Control drawing		116-0472 (cULus)
IECEx approval		
IECEx certificate		IECEx CES 20.0008X
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



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.

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