



Switch Amplifier

HiC2831R3

- 1-channel isolated barrier
- 24 V DC supply (bus powered)
- Dry contact or NAMUR input
- Application-specific outputs
- Usable as signal splitter (1 input and 2 outputs)
- 2 passive transistor outputs (resistive)
- Line fault detection (LFD)
- Line fault transparency (LFT)
- Reversible mode of operation
- Up to SIL 2 (SC 3) acc. to IEC/EN 61508



Function

This isolated barrier is used for intrinsic safety applications.

The device transfers digital signals (NAMUR sensors/mechanical contacts) from the explosion-hazardous area to the non-explosion-hazardous area.

The input controls two passive transistor outputs with a resistive output characteristic.

The outputs have three defined states: 1-signal = 100 Ω to 600 Ω , 0-signal = 19 k Ω and fault > 100 k Ω .

This output characteristic offers line fault transparency on the signal lines.

Via switches the mode of operation can be reversed and the line fault detection can be switched off.

During a fault state, the passive transistor outputs switch to their fault state and LEDs indicate the fault according to NAMUR NE 44. A separate fault bus is available. This fault bus can be monitored if the termination board supports a module fault detection.

This device mounts on a HiC termination board.

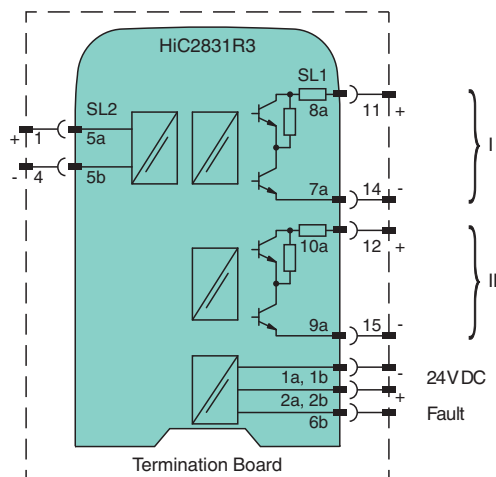
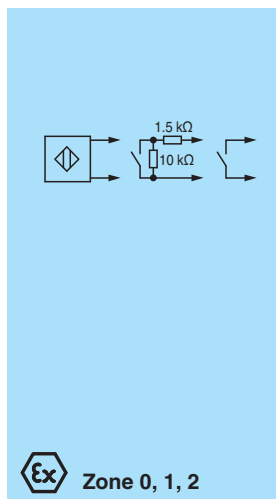
Application

This device is compatible to the control:

- Honeywell CC-PDIL01

Compatibility check to other ESD/ DCS systems on request.

Connection



Zone 2

Technical Data

General specifications

Signal type

Digital Input

Functional safety related parameters

Technical Data

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 bus powered via Termination Board
Ripple		$\leq 10 \%$
Rated current	I_r	$\leq 25 \text{ mA}$
Power dissipation		$\leq 500 \text{ mW}$
Power consumption		$\leq 600 \text{ mW}$
Input		
Connection side		field side
Connection		SL2: 5a(+), 5b(-)
Rated values		acc. to EN 60947-5-6 (NAMUR), see manual for electrical data
Open circuit voltage/short-circuit current		approx. 10 V DC / approx. 8 mA
Switching point/switching hysteresis		1.2 ... 2.1 mA / approx. 0.2 mA
Line fault detection		breakage $I \leq 0.1 \text{ mA}$, short-circuit $I \geq 6.5 \text{ mA}$
Pulse/Pause ratio		min. 100 μs / min. 100 μs
Output		
Connection side		control side
Connection		SL1: 8a(+), 7a(-); 10a(+), 9a(-)
Rated voltage	U_r	20 ... 28 V DC with external resistance $> 2 \text{ k}\Omega$
Response time		$\leq 200 \mu\text{s}$
Output I, II		signal or fault message, passive transistor output (resistive) 0-signal: $19 \text{ k}\Omega \pm 5 \%$ 1-signal: $100 \Omega \dots 600 \Omega$ fault: $> 100 \text{ k}\Omega$
Fault indication output		
Connection		SL1: 6b
Output type		open collector transistor (internal fault bus)
Transfer characteristics		
Switching frequency		$\leq 5 \text{ kHz}$
Galvanic isolation		
Output/power supply		basic insulation according to IEC/EN 61010-1, rated insulation voltage $60 \text{ V}_{\text{eff}}$
Output/Output		basic insulation according to IEC/EN 61010-1, rated insulation voltage $60 \text{ V}_{\text{eff}}$
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		EN IEC 61326-3-2:2018, NE 21:2017 For further information see system description.
Degree of protection		IEC 60529:2001
Protection against electrical shock		IEC 61010-1
Ambient conditions		
Ambient temperature		$-40 \dots 70 \text{ }^\circ\text{C}$ ($-40 \dots 158 \text{ }^\circ\text{F}$)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 90 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

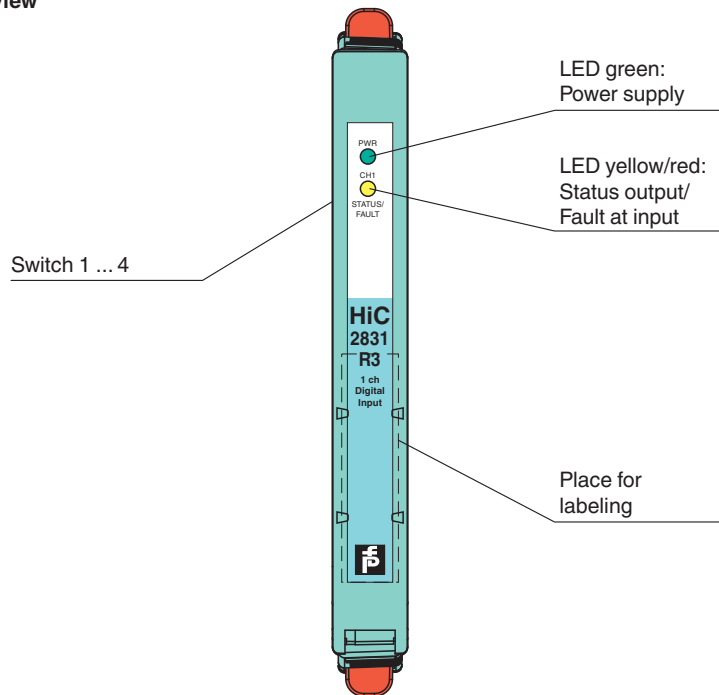
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Technical Data

Coding		pin 1 and 2 trimmed For further information see system description.	
Data for application in connection with hazardous areas			
EU-type examination certificate		BVS 11 ATEX E 026	
Marking		Ⓢ II (1)G [Ex ia Ga] IIC Ⓢ II (1)D [Ex ia Da] IIIC Ⓢ I (M1) [Ex ia Ma] I	
Input		Ex ia	
Voltage	U _o	10.5 V	
Current	I _o	17.1 mA	
Power	P _o	45 mW (linear characteristic)	
Supply			
Maximum safe voltage	U _m	253 V AC (Attention! U _m is no rated voltage.)	
Output			
Maximum safe voltage	U _m	253 V AC (Attention! U _m is no rated voltage.)	
Certificate		KIWA 15 ATEX 0037 X	
Marking		Ⓢ II 3G Ex ec IIC T4 Gc	
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	
Directive conformity			
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012 , EN 60079-7:2015+A1:2018 , EN 50303:2000	
International approvals			
FM approval			
Control drawing		116-0430 (cFMus)	
UL approval		E106378	
Control drawing		116-0331	
IECEx approval			
IECEx certificate		IECEx BVS 11.0040 IECEx KIWA 15.0019X	
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



Configuration

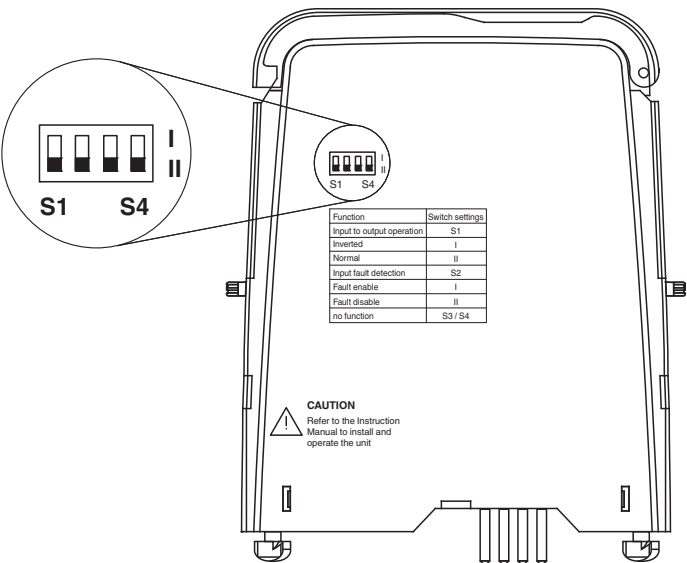
Configure the device in the following way:

- 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

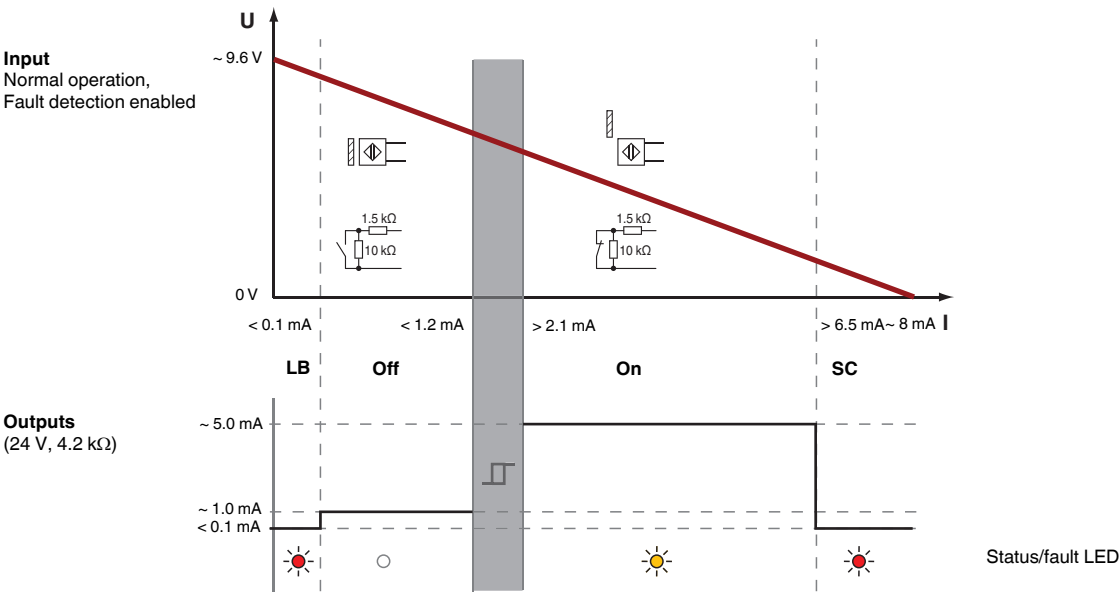


Switch settings

S	Function	Position
1	Mode of operation	Inverted
		Normal
2	Input line fault detection	ON
		OFF
3	no function	
4	no function	

Characteristic Curve

Switch points



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