

Switch Amplifier

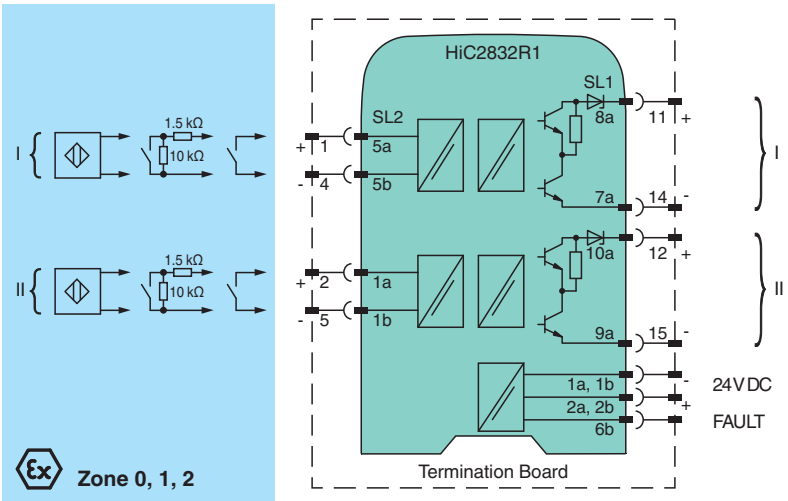
HiC2832R1

- 2-channel isolated barrier
- 24 V DC supply (bus powered)
- Dry contact or NAMUR inputs
- Application-specific outputs
- 2 passive transistor outputs (resistive)
- Line fault transparency (LFT)
- SIL 2 (SC 3) acc. to IEC/EN 61508

Function

This isolated barrier is used for intrinsic safety applications.
The device transfers digital signals from NAMUR sensors or dry contacts from the hazardous area to the non-hazardous area.
Each input controls a passive transistor output with a resistive output characteristic.
The outputs have three defined states: 1-signal = 6.5 V voltage drop, 0-signal = 33 kΩ and 6.5 V voltage drop and fault > 100 kΩ.
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.
This device mounts on a HiC termination board.

Connection



Technical Data

General specifications		
Signal type		Digital Input
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 bus powered via Termination Board
Ripple		≤ 10 %
Rated current	I_r	≤ 30 mA

Release date: 2022-01-10 Date of issue: 2022-01-10 Filename: 230983_eng.pdf

Technical Data

Power dissipation		≤ 600 mW
Power consumption		≤ 700 mW
Input		
Connection side		field side
Connection		SL2: 5a(+), 5b(-); 1a(+), 1b(-)
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 ≤ 0.1 mA , short-circuit I ≥ 6.5 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	19 ... 30 V DC with external resistance > 2 kΩ, e. g. 16-channel ProSafe DI card SDV144 from Yokogawa
Response time		≤ 200 µs
Output I, II		signal or error message, passive transistor output (resistive) 0-signal: 33 kΩ ± 5 % + voltage drop 6.5 V ± 0.5 V 1-signal: voltage drop 6.5 V ± 0.5 V fault: > 100 kΩ
Fault indication output		
Connection		SL1: 6b
Output type		open collector transistor (internal fault bus)
Transfer characteristics		
Switching frequency		≤ 5 kHz
Galvanic isolation		
Output/power supply		basic insulation according to IEC/EN 61010-1, rated insulation voltage 60 V_{eff}
Output/Output		basic insulation according to IEC/EN 61010-1, rated insulation voltage 60 V_{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		-20 ... 60 °C (-4 ... 140 °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 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		⟨Ex⟩ II (1) G [Ex ia] IIC ⟨Ex⟩ II (1) D [Ex ia] IIIC ⟨Ex⟩ I (M1) [Ex ia] I
Input		Ex ia

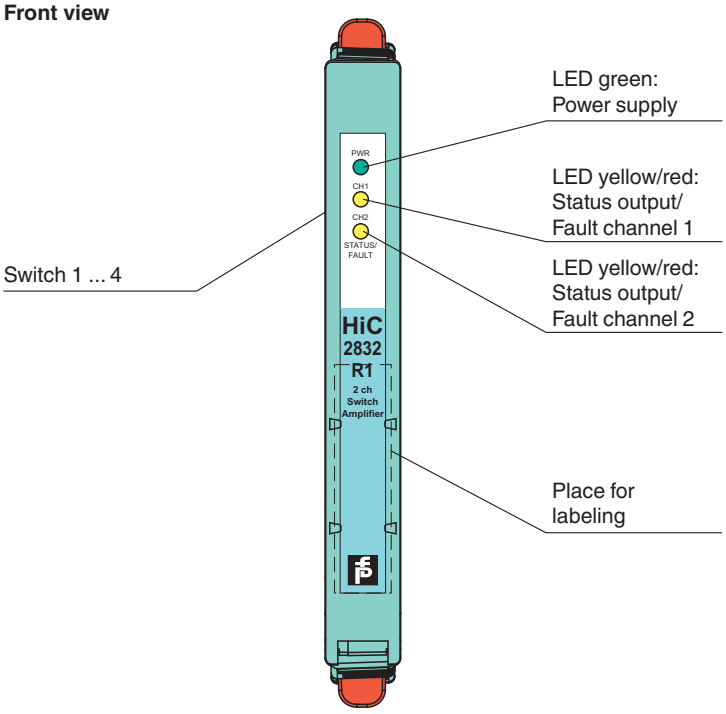
Release date: 2022-01-10 Date of issue: 2022-01-10 Filename: 230983_eng.pdf

Technical Data

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		Ex 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 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-7:2015+A1:2018 , EN 50303:2000
International approvals		
FM approval		
Control drawing		116-0430 (cFMus)
UL approval		
Control drawing		116-0331
IECEx approval		
IECEx certificate		IECEx BVS 11.0040 IECEx KIWA 15.0019X
IECEx marking		[Ex ia Ga] IIC, [Ex ia] IIIC , [Ex ia] 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



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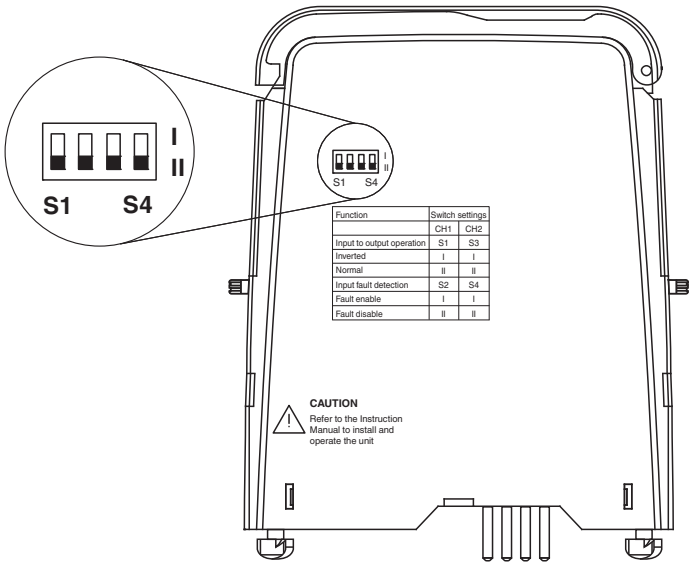
Application

This device is compatible to the control:

- Yokogawa ProSafe DI card SDV144

Compatibility check to other ESD/DCS systems on request.

Configuration



Switch settings

S	Channel	Function		Position
1	I	Mode of operation	Inverted	I
			Normal	II
2	I	Input line fault detection	ON	I
			OFF	II
3	II	Mode of operation	Inverted	I
			Normal	II
4	II	Input line fault detection	ON	I
			OFF	II

Configuration

Configure the device in the following way:

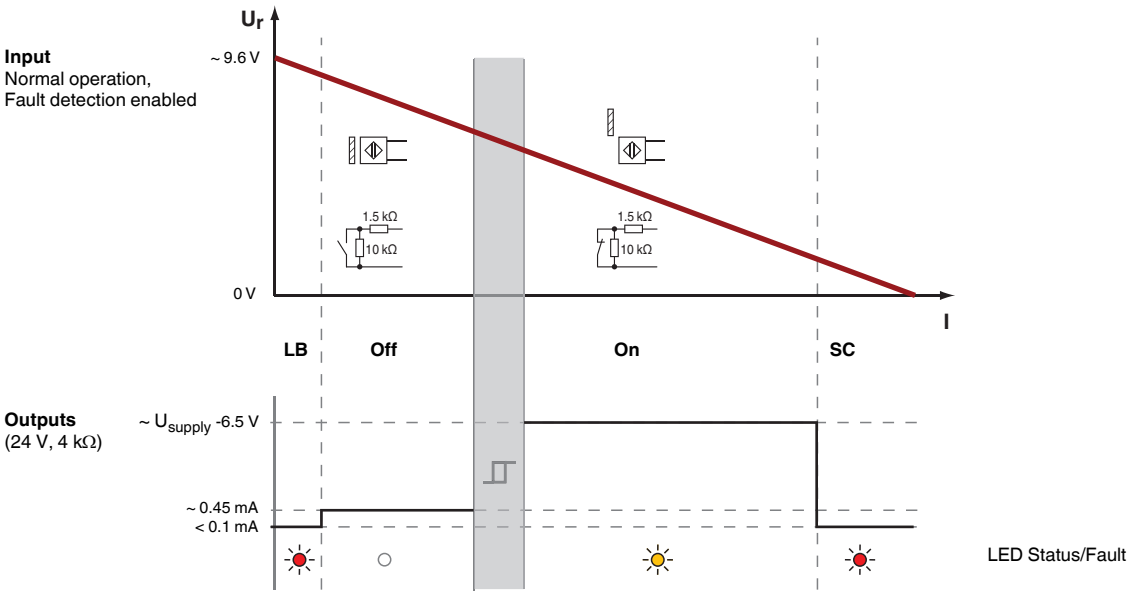
- Push the red Quick Lok Bars on each side of the device in the upper position.
- Remove the device from Termination Board.
- Set the DIP switches according to the figure.

The pins for this device are trimmed to polarize it according to its safety parameter. Do not change! For further information see system description.

Characteristic Curve

Switching points

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