- 1-channel isolated barrier
- 24 V DC supply (bus powered)
- Dry contact or NAMUR input
- Usable as signal splitter (1 input and 2 outputs)
- · 2 passive transistor outputs
- Line fault detection (LFD)
- · Reversible mode of operation
- Up to SIL2 acc. to IEC 61508

Function

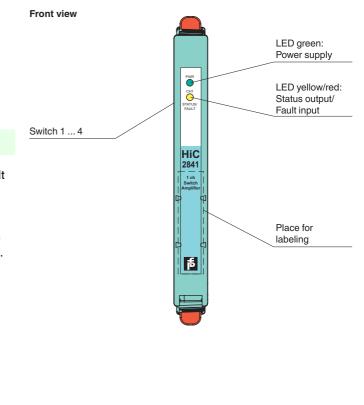
This isolated barrier is used for intrinsic safety applications. It transfers digital signals (NAMUR sensors/mechanical contacts) from a hazardous area to a safe area.

The proximity sensor or switch controls two passive transistors for the safe area load. Both transistor outputs are isolated from each other and isolated from the power supply.

The mode of operation can be reversed using switch S1. Switch S3 allows output II to be switched between a signal output and an error message output. Switch S2 enables or disables line fault detection of the field circuit.

During an error condition, the transistors revert to their deenergized state and LEDs indicate the fault according to NAMUR NE44. A separate output bus is available. The fault conditions can be monitored via a Fault Indication Board.

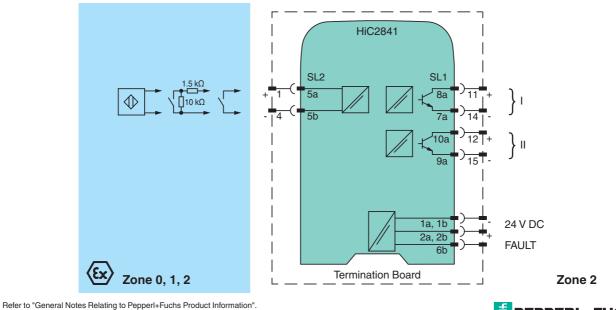
This module mounts on a HiC Termination Board.





SIL2

Connection



Release date 2014-06-17 14:11 Date of issue 2014-06-17 214233_eng.xml

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Assembly

SupplyIConnectionSRated voltageSRippleSRated currentSPower lossSPower consumptionSInputSConnectionSRated valuesSOpen circuit voltage/short-circuit currentSSwitching point/switching hysteresisSLine fault detectionSPulse/Pause ratioSConnectionSRated voltageSRated voltageSSpaneetineSSignal levelS	Digital Input Digital Input SL1: 1a(-), 1b(-); 2a(+), 2b(+) 19 30 V DC via Termination Board \leq 10 % \leq 25 mA \leq 500 mW \leq 600 mW SL2: 5a(+), 5b(-) acc. to EN 60947-5-6 (NAMUR), see system description for electrical data approx. 10 V DC / approx. 8 mA 1.2 2.1 mA / approx. 0.2 mA breakage I \leq 0.1 mA , short-circuit I \geq 6.5 mA \geq 100 µs / \geq 100 µs SL1: 8a(+), 7a(-); 10a(+), 9a(-) 30 V DC 50 mA \leq 200 µs 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) O-signal: blocked output (off-state current \leq 10 µA) signal or error message; Transistor
SupplyIConnectionIRated voltageIRippleIRated currentIPower lossIPower consumptionIInputIConnectionIRated valuesIOpen circuit voltage/short-circuit currentISwitching point/switching hysteresisILine fault detectionIPulse/Pause ratioIConnectionIRated voltageIRated voltageISwitching point/switching hysteresisILine fault detectionIPulse/Pause ratioISignal evelISignal levelI	SL1: 1a(-), 1b(-); 2a(+), 2b(+) 19 30 V DC via Termination Board \leq 10 % \leq 25 mA \leq 500 mW \leq 600 mW SL2: 5a(+), 5b(-) acc. to EN 60947-5-6 (NAMUR), see system description for electrical data approx. 10 V DC / approx. 8 mA 1.2 2.1 mA / approx. 0.2 mA breakage I \leq 0.1 mA, short-circuit I \geq 6.5 mA \geq 100 µs / \geq 100 µs SL1: 8a(+), 7a(-); 10a(+), 9a(-) 30 V DC 50 mA \leq 200 µs 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current \leq 10 µA) signal ; Transistor
ConnectionSRated voltageSRippleSRated currentSPower lossSPower consumptionSInputSConnectionSRated valuesSOpen circuit voltage/short-circuit currentSSwitching point/switching hysteresisSLine fault detectionSPulse/Pause ratioSConnectionSRated voltageSRated voltageSRated voltageSSignal levelS	19 30 V DC via Termination Board $\leq 10 \%$ $\leq 25 mA$ $\leq 500 mW$ $\leq 600 mW$ SL2: 5a(+), 5b(-) acc. to EN 60947-5-6 (NAMUR), see system description for electrical data approx. 10 V DC / approx. 8 mA 1.2 2.1 mA / approx. 0.2 mA breakage I $\leq 0.1 mA$, short-circuit I $\geq 6.5 mA$ $\geq 100 \mu s / \geq 100 \mu s$ SL1: 8a(+), 7a(-); 10a(+), 9a(-) 30 V DC 50 mA $\leq 200 \mu s$ 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current $\leq 10 \mu A$) signal ; Transistor
Rated voltageRippleRated currentPower lossPower consumptionInputConnectionRated valuesOpen circuit voltage/short-circuit currentSwitching point/switching hysteresisLine fault detectionPulse/Pause ratioOutputConnectionRated voltageRated voltageRated voltageRated currentSignal level	19 30 V DC via Termination Board $\leq 10 \%$ $\leq 25 mA$ $\leq 500 mW$ $\leq 600 mW$ SL2: 5a(+), 5b(-) acc. to EN 60947-5-6 (NAMUR), see system description for electrical data approx. 10 V DC / approx. 8 mA 1.2 2.1 mA / approx. 0.2 mA breakage I $\leq 0.1 mA$, short-circuit I $\geq 6.5 mA$ $\geq 100 \mu s / \geq 100 \mu s$ SL1: 8a(+), 7a(-); 10a(+), 9a(-) 30 V DC 50 mA $\leq 200 \mu s$ 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current $\leq 10 \mu A$) signal ; Transistor
Ripple s Rated current s Power loss s Power consumption s Input s Connection s Rated values s Open circuit voltage/short-circuit current s Switching point/switching hysteresis s Line fault detection s Pulse/Pause ratio s Output s Connection s Rated voltage s Rated voltage s Rated voltage s Rated current s Signal level s	$ \leq 10 % $ $ \leq 25 mA $ $ \leq 500 mW $ $ \leq 600 mW $ SL2: 5a(+), 5b(-) acc. to EN 60947-5-6 (NAMUR), see system description for electrical data approx. 10 V DC / approx. 8 mA 1.2 2.1 mA / approx. 0.2 mA breakage I \leq 0.1 mA , short-circuit I \geq 6.5 mA $ \geq 100 \ \mu s / \geq 100 \ \mu s $ SL1: 8a(+), 7a(-); 10a(+), 9a(-) 30 V DC 50 mA $ \leq 220 \ \mu s $ 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current $\leq 10 \ \mu A$) signal ; Transistor
Rated current s Power loss s Power consumption s Input s Connection s Rated values s Open circuit voltage/short-circuit current s Switching point/switching hysteresis s Line fault detection s Pulse/Pause ratio s Output s Connection s Rated voltage s Rated current s Signal level s	$ \leq 25 \text{ mA} $ $ \leq 500 \text{ mW} $ $ \leq 600 \text{ mW} $ SL2: 5a(+), 5b(-) acc. to EN 60947-5-6 (NAMUR), see system description for electrical data approx. 10 V DC / approx. 8 mA 1.2 2.1 mA / approx. 0.2 mA breakage I \leq 0.1 mA, short-circuit I \geq 6.5 mA $ \geq 100 \text{ µs} / \geq 100 \text{ µs} $ SL1: 8a(+), 7a(-); 10a(+), 9a(-) 30 V DC 50 mA $ \leq 200 \text{ µs} $ 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current \leq 10 µA) signal ; Transistor
Power lossSPower consumptionSInputSConnectionSRated valuesSOpen circuit voltage/short-circuit currentSSwitching point/switching hysteresisSLine fault detectionSPulse/Pause ratioSOutputSConnectionSRated voltageSRated currentSRated currentSSignal levelS	≤ 500 mW ≤ 600 mW SL2: 5a(+), 5b(-) acc. to EN 60947-5-6 (NAMUR), see system description for electrical data approx. 10 V DC / approx. 8 mA 1.2 2.1 mA / approx. 0.2 mA breakage I ≤ 0.1 mA , short-circuit I ≥ 6.5 mA ≥ 100 μ s /≥ 100 μ s SL1: 8a(+), 7a(-); 10a(+), 9a(-) 30 V DC 50 mA ≤ 200 μ s 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current ≤ 10 μ A) signal ; Transistor
Power consumption a Input a Connection a Rated values a Open circuit voltage/short-circuit current a Switching point/switching hysteresis a Line fault detection a Pulse/Pause ratio a Connection a Rated voltage a Rated voltage a Rated current a Signal level a	$\leq 600 \text{ mW}$ SL2: 5a(+), 5b(-) acc. to EN 60947-5-6 (NAMUR), see system description for electrical data approx. 10 V DC / approx. 8 mA 1.2 2.1 mA / approx. 0.2 mA breakage I \leq 0.1 mA , short-circuit I \geq 6.5 mA \geq 100 µs / \geq 100 µs SL1: 8a(+), 7a(-); 10a(+), 9a(-) 30 V DC 50 mA \leq 200 µs 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current \leq 10 µA) signal ; Transistor
InputImputConnectionSRated valuesSOpen circuit voltage/short-circuit currentSSwitching point/switching hysteresisSLine fault detectionSPulse/Pause ratioSOutputSConnectionSRated voltageSRated currentSResponse timeSSignal levelS	SL2: 5a(+), 5b(-) acc. to EN 60947-5-6 (NAMUR), see system description for electrical data approx. 10 V DC / approx. 8 mA $1.2 \dots 2.1 \text{ mA} / \text{approx} . 0.2 \text{ mA}$ breakage I $\leq 0.1 \text{ mA}$, short-circuit I $\geq 6.5 \text{ mA}$ $\geq 100 \mu \text{s} / \geq 100 \mu \text{s}$ SL1: 8a(+), 7a(-); 10a(+), 9a(-) 30 V DC 50 mA $\leq 200 \mu \text{s}$ 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current $\leq 10 \mu \text{A}$) signal ; Transistor
ConnectionSRated valuesAOpen circuit voltage/short-circuit currentASwitching point/switching hysteresisALine fault detectionAPulse/Pause ratioAOutputCConnectionARated voltageARated currentAResponse timeASignal levelA	acc. to EN 60947-5-6 (NAMUR), see system description for electrical data approx. 10 V DC / approx. 8 mA 1.2 2.1 mA / approx. 0.2 mA breakage I \leq 0.1 mA , short-circuit I \geq 6.5 mA \geq 100 μ s / \geq 100 μ s SL1: 8a(+), 7a(-); 10a(+), 9a(-) 30 V DC 50 mA \leq 200 μ s 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current \leq 10 μ A) signal ; Transistor
Rated valuesaOpen circuit voltage/short-circuit currentaSwitching point/switching hysteresisaLine fault detectionaPulse/Pause ratioaOutputaConnectionaRated voltageaRated voltageaResponse timeaSignal levela	acc. to EN 60947-5-6 (NAMUR), see system description for electrical data approx. 10 V DC / approx. 8 mA 1.2 2.1 mA / approx. 0.2 mA breakage I \leq 0.1 mA , short-circuit I \geq 6.5 mA \geq 100 μ s / \geq 100 μ s SL1: 8a(+), 7a(-); 10a(+), 9a(-) 30 V DC 50 mA \leq 200 μ s 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current \leq 10 μ A) signal ; Transistor
Open circuit voltage/short-circuit currentaSwitching point/switching hysteresisaLine fault detectionaPulse/Pause ratioaOutputaConnectionaRated voltageaRated currentaResponse timeaSignal levela	approx. 10 V DC / approx. 8 mA 1.2 2.1 mA / approx. 0.2 mA breakage I \leq 0.1 mA , short-circuit I \geq 6.5 mA \geq 100 μ s / \geq 100 μ s SL1: 8a(+), 7a(-); 10a(+), 9a(-) 30 V DC 50 mA \leq 200 μ s 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current \leq 10 μ A) signal ; Transistor
Switching point/switching hysteresisILine fault detectionIPulse/Pause ratioIOutputIConnectionIRated voltageIRated currentIResponse timeISignal levelI	1.2 2.1 mA / approx. 0.2 mA breakage I \leq 0.1 mA , short-circuit I \geq 6.5 mA \geq 100 μ s / \geq 100 μ s SL1: 8a(+), 7a(-); 10a(+), 9a(-) 30 V DC 50 mA \leq 200 μ s 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current \leq 10 μ A) signal ; Transistor
Line fault detection I Pulse/Pause ratio I Output I Connection I Rated voltage I Rated current I Response time I Signal level I	breakage I \leq 0.1 mA , short-circuit I \geq 6.5 mA \geq 100 µs / \geq 100 µs SL1: 8a(+), 7a(-); 10a(+), 9a(-) 30 V DC 50 mA \leq 200 µs 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current \leq 10 µA) signal ; Transistor
Pulse/Pause ratio 2 Output 2 Connection 3 Rated voltage 3 Rated current 3 Response time 3 Signal level 3	$\geq 100 \ \mu s / \geq 100 \ \mu s$ SL1: 8a(+), 7a(-); 10a(+), 9a(-) 30 V DC 50 mA $\leq 200 \ \mu s$ 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current $\leq 10 \ \mu$ A) signal ; Transistor
Output S Connection S Rated voltage S Rated current S Response time S Signal level S	SL1: 8a(+), 7a(-); 10a(+), 9a(-) 30 V DC 50 mA \leq 200 µs 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current \leq 10 µA) signal ; Transistor
ConnectionSRated voltageSRated currentSResponse timeSSignal levelS	$\begin{array}{l} 30 \ V \ DC \\ 50 \ mA \\ \leq 200 \ \mu s \\ 1 \ \text{-signal: (external voltage) - 1 \ V \ max. for 50 \ mA \ (T_{amb} = 25 \ ^{\circ}C \ (77 \ ^{\circ}F)) \\ 0 \ \text{-signal: blocked output (off-state current \leq 10 \ \mu A)} \\ signal \ ; \ Transistor \end{array}$
Rated voltage 3 Rated current 3 Response time 3 Signal level 3	$\begin{array}{l} 30 \ V \ DC \\ 50 \ mA \\ \leq 200 \ \mu s \\ 1 \ \text{-signal: (external voltage) - 1 \ V \ max. for 50 \ mA \ (T_{amb} = 25 \ ^{\circ}C \ (77 \ ^{\circ}F)) \\ 0 \ \text{-signal: blocked output (off-state current \leq 10 \ \mu A)} \\ signal \ ; \ Transistor \end{array}$
Rated current Signal level	
Response time Signal level	\leq 200 μs 1-signal: (external voltage) - 1 V max. for 50 mA (T _{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current \leq 10 μA) signal ; Transistor
Signal level	1-signal: (external voltage) - 1 V max. for 50 mA (T_{amb} = 25 °C (77 °F)) 0-signal: blocked output (off-state current \le 10 μ A) signal ; Transistor
(0-signal: blocked output (off-state current \leq 10 $\mu A)$ signal ; Transistor
(0-signal: blocked output (off-state current \leq 10 $\mu A)$ signal ; Transistor
Output I	
- apprenting and a second se	signal or error message : Transistor
Output II s	
Error message output	
Connection	SL1: 6b
Output type	open collector transistor (internal fault bus)
Transfer characteristics	
Switching frequency	≤5 kHz
Electrical isolation	
Output/power supply	basic insulation acc. to EN 50178, rated insulation voltage of 50 V AC
Output/Output I	basic insulation acc. to EN 50178, rated insulation voltage of 50 V AC
Directive conformity	
Electromagnetic compatibility	
	EN 61326-1:2006
Conformity	
•	EN 50178:1997
	NE 21:2006
с і ў	For further information see system description.
Degree of protection	IEC 60529
Protection against electrical shock	IEC 61140
Ambient conditions	
Ambient temperature	-20 60 °C (-4 140 °F)
	≤ 90 %, non-condensing
Mechanical specifications	
_	IP20
0 1	approx. 100 g
	12.5 x 128 x 106 mm (0.5 x 5.1 x 4.2 in)
	on Termination Board
-	pin 1 and 2 trimmed
	For further information see system description.
Data for application in connection	
with Ex-areas	
EC-Type Examination Certificate	BVS 09 ATEX E 157 , for additional certificates see www.pepperl-fuchs.com
	(Ex) II (1)GD [Ex ia] IIC, [Ex iaD] [circuit(s) in zone 0/1/2/20/21/22]
	🐼 I (M1) [Ex ia] I
	Ex ia, Ex iaD
Voltage U _o	10.5 V
Current I _o	17.1 mA
Power Po	45 mW (linear characteristic)
Supply	
Maximum safe voltage U _m 2	253 V AC (Attention! U _m is no rated voltage.)
Output	
Maximum safe voltage U _m 2	253 V AC (Attention! The rated voltage can be lower.)

 Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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 Ge

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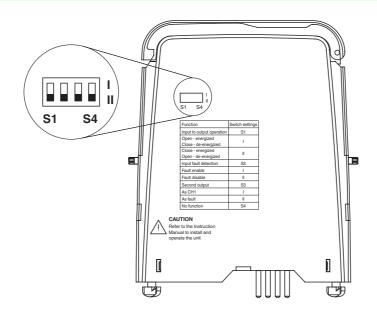
330 486 0002 Germany: +49 621 776 2222 pa-info@de.pepperl-fuchs.com

2222 Singapore: +65 6779 9091 s.com pa-info@sg.pepperl-fuchs.com



Electrical 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 94/9/EC	EN 60079-0:2006, EN 60079-11:2007, EN 61241-11:2006, EN 61241-0:2006, EN 60079-26:2007
International approvals	
UL approval	
Control drawing	116-0331
IECEx approval	IECEx BVS 09.0060
Approved for	[Ex ia Ga] IIC, [Ex ia] I , [Ex iaD]
General information	
Supplementary information	EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see www.pepperl-fuchs.com.

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.

