

Isolator Barriers

Switching repeater

Ex i field circuit

9170/11-12-11s Art. No. 203285



- Can be used up to SIL 2 (IEC/EN 61508)
- Wire-breakage and short-circuit monitoring system, which can be disconnected and issues alerts
- Optional line error transparency: The device notifies the control system directly of any field-side line faults via the signal output.

WebCode 9170A



9170 series Ex i switching repeaters can be used for operating contacts, NAMUR proximity sensors or optocouplers. Models are available with one or two channels. The intrinsically safe digital input is always galvanically separated from the output and auxiliary power. The channels in the two-channel devices are galvanically separated. The devices transmit frequencies of up to 10 kHz, and the output signal can be inverted.

Technical Data

Explosion Protection

Ex interface zone	0 1 2 20 21 22
IECEX certificate Gas	IECEX BVS 09.0041 X
IECEX gas explosion protection	Ex [Ex ia Ga] IIC
IECEX dust certificate	IECEX BVS 09.0041 X
IECEX dust explosion protection	[Ex ia Da] IIIC
ATEX gas certificate	DMT 02 ATEX E 195 X
ATEX gas explosion protection	⊕ II (1) G Ex [Ex ia Ga] IIC
ATEX dust certificate	DMT 02 ATEX E 195 X
ATEX dust explosion protection	⊕ II (1) D [Ex ia Da] IIIC
EAC certificate	EAEU RU S-DE.HA91.B.00100/20
EAC certificate valid until	2025-01-26
EAC gas explosion protection	⊕ [Ex ia Ga] IIC X
EAC dust explosion protection	⊕ [Ex ia Da] IIIC X
Certificates	ATEX (BVS), Brazil (ULB), Canada (FM), EAC (ENDCE), IECEX (BVS), India (PESO), Korea (KGS), SIL (exida), USA (FM)
Ship approval	CCS, EU RO MR
Installation	in safe area
Further information	see respective certificate and operating instructions

Safety Data

Max. voltage U_o/V_{oc}	9.6 V
Max. current I_o/I_{sc}	10 mA

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Safety Data

Max. power P_o	24 mW
Max. permissible external capacitance C_o/C_a for IIC	3.6 μ F
Max. permissible external capacitance C_o/C_a for IIB	26 μ F
Max. permissible external inductance L_o/L_a for IIC	350 mH
Max. permissible external inductance L_o/L_a for IIB	1000 mH
Internal capacitance C_i	2.42 nF
Internal inductance L_i	Negligible
Safety-related maximum voltage	253 V

Functional Safety

SIL	2
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Electrical Data

Signal types	Digital input
Number of channels	1
LFD relay	Yes

Auxiliary Power

Auxiliary power	24 V DC
Auxiliary power voltage range	18 ... 31.2 V
Voltage range residual ripple	$\leq 3,6 V_{SS}$
Nominal current	33 mA
Power consumption	0.8 W
Power dissipation max.	0.8 W
Polarity reversal protection	Yes
Undervoltage monitoring	Yes
Operation indication	Green "PWR" LED

Galvanic Isolation

Test voltage according to standard	IEC EN 60079-11
Galvanic isolation Ex i input to output	1.5 kV AC
Galvanic isolation Ex i input to auxiliary power	1.5 kV AC
Galvanic isolation Ex i input to fault message contact	1,5 kV AC
Test voltage according to standard 2	EN 50178
Galvanic isolation output to auxiliary power	1,1 kV AC
Galvanic isolation output to output	1,1 kV AC
Galvanic isolation fault message contact to auxiliary power	350 V AC
Galvanic isolation fault message contact to output	1,1 kV AC

Input

Input signal	In accordance with EN 60947-5-6 (NAMUR)
Input current for ON	$\geq 2,1$ mA

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Input

Input current for OFF	≤ 1,2 mA
Hysteresis	ca. 0,2 mA
Input internal resistance Ri	1000 Ω
Input for open-circuit voltage Ua	8,2 V
Short-circuit current	≤ 8,2 mA

Output

Output version (control)	Power relay (250 V / 4 A)
Output per channel	1 change over - power relay
Output	1 change-over contact - power relay
Output min. load	12 V / 0.1 mA
Output max. load DC	250 V / 2 A
Output max. load AC	250 V / 4 A
Output switching capacity	50 W / 1000 VA
Output electrical service life	1 x 10 ⁵ operating cycles at 250 V / 4 A
Output mechanical service life	15 x 10 ⁶ operating cycles
Recommended back-up fuse	≤ F 4 A AC/2 A DC
Output switching frequency	6 Hz
Switching delay ON/OFF	10 ms
Switching delay ON/OFF	10 ms
Switch user adjustment inverting	Activated / deactivated
Switching state indication	Yellow LED "OUT"
Switching capacity fault message contact	30 V / 100 mA
Switch user adjustment line fault	Activated / deactivated
Indication of line fault	"LF" LED, red
Error detection wire breakage	I _E < 0.05 ... 0.35 mA
Short circuit error detection	RE < 100 ... 360 ohms
Line fault and loss of power signalization	Contact (30 V / 100 mA) closed to ground in case of fault pac-Bus, floating contact (30 V / 100 mA)

Ambient Conditions

Ambient temperature °C	-20 °C ... +70 °C (Single device) -20 °C ... +60 °C (Group assembly)
Ambient temperature °F	-4 °F ... +158 °F (Single device) -4 °F ... +140 °F (Group assembly)
Storage temperature °C	-40 °C ... +80 °C
Storage temperature °F	-40 °F ... +176 °F
Max. relative humidity	95%
Use at the height of	< 2000 m
Electromagnetic compatibility	Tested to the following standards and regulations: EN 61326-1 Use in industrial environment; NAMUR NE 21

Mechanical Data

Degree of protection (IP)	IP30
Terminal degree of protection (IP)	IP20
Fire resistance (UL 94)	V0
Enclosure material	Polyamide
Clamping range AWG	16 – 12

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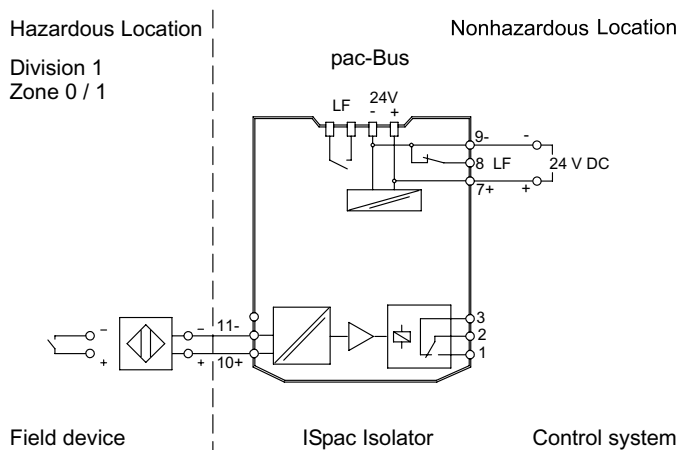
Mechanical Data

Connection cross-section AWG	16 ... 12
Grid dimension	17.6 mm
Width inches	0.69 in
Length inches	4.25 in
Mounting depth inches	4.51 in
Weight	0.18 kg
Weight	0.4 lb

Mounting / Installation

Mounting type	NS35/15, NS35/7.5 DIN rail
Mounting position	Vertical Horizontal
Connection type	Screw terminal
Conductor cross-section solid min.	0.2 mm ²
Conductor cross-section solid max.	2.5 mm ²
Conductor cross-section flexible min.	0.2 mm ²
Conductor cross-section flexible max.	2.5 mm ²

Technical Drawings – Subject to Alterations



Connection diagram 9170/11-12-11

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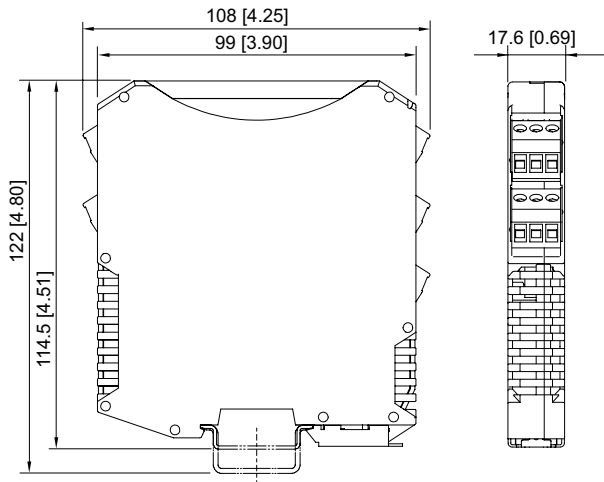
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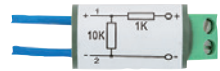
Dimensional Drawings (All Dimensions in mm [inches]) – Subject to Alterations



ISpac Series 9146, 9147, 9160, 9162, 9163, 9165, 9167, 9170, 9172, 9175, 9176, 9180, 9182, 9193, ISbus Series 9412 with screw terminal

Accessories

Resistance coupling element



Connection of additional contacts in the Ex area as well, in order to enable short circuit and open circuit detection.

Art. No.

105944

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