

# Isolator Barriers

Isolating repeater Without auxiliary power

Ex i field circuit ISpac

9167/13-11-00k Art. No. 160245



- Compact, loop-powered one- and two- channel Ex i output isolating repeater
- Suitable for fire and gas detectors
- Can be used up to SIL 3 (IEC 61508)

WebCode 9167A



9167 series Ex i isolating repeaters operate without auxiliary power and can be used for the intrinsically safe operation of control valves, I/P transducers, analogue indicators and fire or gas detectors, for example. They have one or two channels. They transmit superimposed HART communication signals in both directions.

## Technical Data

Explosion Protection	
Application range (Zones)	2
Ex interface zone	0 1 2 20 21 22
IECEX gas certificate	IECEX BVS 11.0089 X
IECEX gas explosion protection	Ex nA [ia Ga] IIC T4 Gc
IECEX dust certificate	IECEX BVS 11.0089 X
IECEX dust explosion protection	[Ex ia Da] IIIC
ATEX gas certificate	BVS 04 ATEX E 082 X
ATEX gas explosion protection	II 3 (1) G Ex nA [ia Ga] IIC T4 Gc
ATEX dust certificate	BVS 04 ATEX E 082 X
ATEX dust explosion protection	II (1) D [Ex ia Da] IIIC
FMus certificate	FM16US0122X
cFM certificate	FM16CA0067X
Marking cFMus	Class I, Div. 2, Groups A,B,C,D; Class I, Zone 2, Group IIC AIS Class I,II,III, Div. 1, Groups A,B,C,D,E,F,G; Class I, Zone 0, [AEx ia]/[Ex ia] IIC T4 at Ta = 70°C See Doc. 91 676 01 31 1
USA UL gas certificate	E81680V1S7
Marking ULus	providing intrinsically safe circuits for use in Class I,II,III, GROUPS A,B,C,D,E,F,G; See Doc. 91 676 01 31 3
EAC certificate	TS RU S-DE.GB04.B.00353

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## Explosion Protection

EAC gas explosion protection	Ex 2 Ex nA [ia Ga] IIC T4 Gc X
EAC dust explosion protection	[Ex ia Da] IIC
Certificates	ATEX (BVS), Canada (FM), EAC (ENDCE), IECEx (BVS), India (PESO), Russia (Meteorological certificate), SIL (exida), USA (FM), USA (UL)
Ship approval	CCS, EU RO MR (DNV GL)

## Safety Data

Max. voltage $U_o/V_{oc}$	25 V
Max. current $I_o/I_{sc}$	99 mA
Max. power $P_o$	613 mW
Max. permissible external capacitance $C_o/C_a$ for IIC	0.11 $\mu$ F
Max. permissible external capacitance $C_o/C_a$ for IIB	0.84 $\mu$ F
Max. permissible external inductance $L_o/L_a$ for IIC	2.5 mH
Max. permissible external inductance $L_o/L_a$ for IIB	11 mH
Internal capacitance	Negligible
Internal inductance	Negligible
Safety-related max. voltage	253 V

## Functional Safety

SIL	3
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## Electrical Data

Number of channels	1
LFD relay	No
Communication signal	HART

## Auxiliary Power

Auxiliary power	without
Nominal voltage $V_{nom}$	Loop-powered
Polarity reversal protection	Yes

## Galvanic Isolation

Test voltage as per standard	IEC EN 60079-11
Galvanic separation Ex i OFF to ON	1.5 kV AC

## Input

Input	0/4 to 20 mA with HART
Input signal	0/4 to 20 mA with HART
Function range input	0 – 40 mA
Internal resistance $R_i$ at 20 mA	380 $\Omega$
Internal resistance $R_i$ at 40 mA	330 $\Omega$
Additional voltage drop	1 V
Internal consumption	$\leq 10 \mu$ A
Input voltage UE	$\leq 31.2$ V
Behaviour of the input at wire breakage	$\leq 1$ mA

## Output

Output	0/4 to 20 mA with HART
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Output	
Output signal	0/4 to 20 mA with HART
Function range output	0 – 40 mA
Max. load resistance $R_L$	800 $\Omega$
Current residual ripple	$\leq 0.5\%$
Open-circuit voltage $U_a$	25 V
Settling time 10-90%	$\leq 1$ ms
Output short-circuit current	$\leq 60$ mA
Average measurement fault	0,35%
Temperature influence error limits	$\leq 0.1\%/10$ K

Ambient Conditions	
Ambient temperature $^{\circ}\text{C}$	-20 $^{\circ}\text{C}$ ... +70 $^{\circ}\text{C}$ (Single device) -20 $^{\circ}\text{C}$ ... +60 $^{\circ}\text{C}$ (Group assembly)
Ambient temperature $^{\circ}\text{F}$	-4 $^{\circ}\text{F}$ ... +158 $^{\circ}\text{F}$ (Single device) (Group assembly)
Storage temperature $^{\circ}\text{C}$	-40 $^{\circ}\text{C}$ ... +80 $^{\circ}\text{C}$
Storage temperature $^{\circ}\text{F}$	-40 $^{\circ}\text{F}$ ... +176 $^{\circ}\text{F}$
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 prot. (IP)	IP20
Fire resistance (UL 94)	V0
Enclosure material	Polyamide
Grid dimension	17.6 mm
Width	17.6 mm
Width, inches	0.69 in
Height	114.5 mm
Height, inches	4.51 in
Length	128 mm
Length, inches	5.04 in
Weight	0.161 kg
Weight	0.35 lb

Mounting / Installation	
Mounting type	DIN rail NS35/15, NS35/7.5
Mounting orientation	Horizontal Vertical
Connection type	Spring clamp terminal
Min. rigid conductor cross section	0.2 mm <sup>2</sup>
Max. rigid conductor cross section	2.5 mm <sup>2</sup>
Min. flex conductor cross section	0.2 mm <sup>2</sup>
Max. flex conductor cross section	2.5 mm <sup>2</sup>
Connection cross-section AWG	24 – 13

# Isolator Barriers

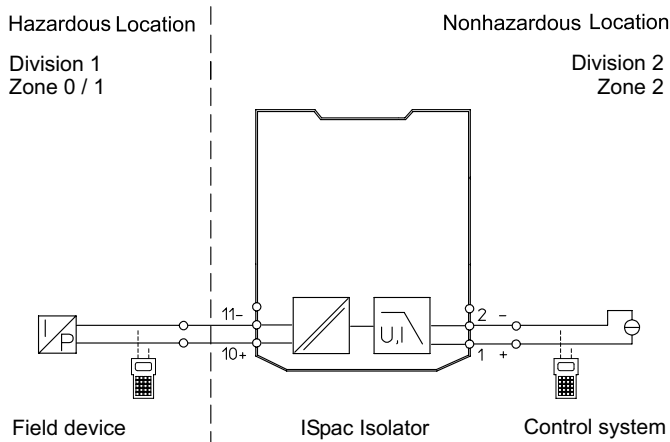


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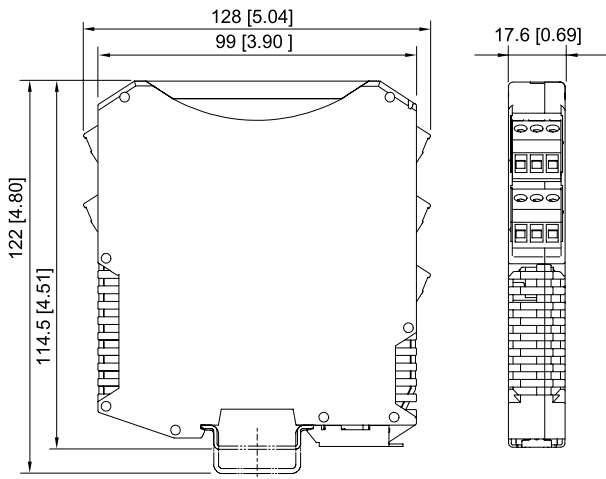
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## Technical Drawings – Subject to Alterations



Connection diagram 9167/1

## 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, Fieldbus Power Supply Series 9412 with spring clamp terminal

## Accessories

### Front cover

### Art. No.



for ISpac modules 91xx  
yellow, transparent  
Clear marking of the device for SIL applications.  
(Packaging unit: 10 pieces)

200914

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