

# Isolators

Isolating repeater Without auxiliary power

Ex i field circuit ISpac

9167/23-11-00k Art. No. 160248



- Compact, loop-powered single- and dual- 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 isolating repeaters are loop-powered and can be used for the intrinsically safe operation of control valves, I/P transducers, analogue indicators and fire or gas detectors, for example. Offered in single or dual 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

#### Explosion Protection

EAC gas explosion protection	Ex 2 Ex nA [ia Ga] IIC T4 Gc X
EAC dust explosion protection	Ex [Ex ia Da] IIIC
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)
Notes	CCC, UKCA certificate available from 2022 onward

#### Safety Data

Max. voltage $U_o$	25 V
Max. current $I_o$	99 mA
Max. power $P_o$	613 mW
Max. permissible external capacity $C_o$ for IIC	0.11 $\mu$ F
Max. permissible external capacity $C_o$ for IIB	0.84 $\mu$ F
Max. permissible external inductance $L_o$ for IIC	2.5 mH
Max. permissible external inductance $L_o$ 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	2
LFD relay	No
Communication signal	HART

#### Auxiliary Power

Auxiliary power	without
Nominal voltage	Loop-powered
Polarity reversal protection	Yes

#### Galvanic Isolation

Test voltage as per standard	IEC EN 60079-11
Ex i output to input	1.5 kV AC
Ex i output to Ex i output	500 V AC
Test voltage as per standard	EN 50178
Galv. sep. input to input	350 V 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

Input voltage UE	≤ 31.2 V
Behaviour of the input with DB	≤ 1 mA

#### Output

Output	0/4 to 20 mA with HART
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	≤ 0.5%
Open-circuit voltage $U_a$	25 V
Settling time 10-90%	≤ 1 ms
Output short-circuit current	≤ 60 mA
Average measurement fault	0,35%
Temperature influence error limits	≤ 0.1%/10 K

#### Ambient Conditions

Ambient temperature	-20 °C ... +70 °C (Single device) -20 °C ... +60 °C (Group assembly)
Ambient temperature	-4 °F ... +158 °F (Single device) -4 °F ... +140 °F (Group assembly)
Storage temperature	-40 °C ... +80 °C
Storage temperature	-40 °F ... +176 °F
Maximum 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
Degree of protection (IP) terminals	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	0.182 kg
Weight	0.4 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>

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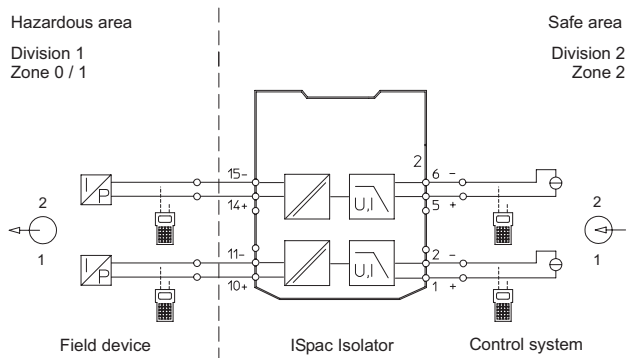
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## Mounting / Installation

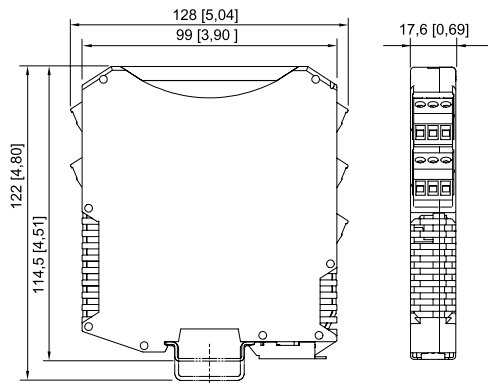
Min. flex conductor cross section	0.2 mm <sup>2</sup>
Max. flex conductor cross section	2.5 mm <sup>2</sup>
Connection cross-section AWG	24 – 13

## Technical Drawings – Subject to Alterations



Connection diagram 9167/2

## 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 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

We reserve the right to make alterations to the technical data, dimensions, weights, designs and products available without notice. The illustrations cannot be considered binding.