

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)

MY R. STAHL 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 |
| Certificate ULus | 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 |
| Certificates | ATEX (BVS), Canada (FM), IECEX (BVS), SIL (exida), USA (FM), USA (UL) |
| Ship approval | CCS, EU RO MR (DNV) |
| Declaration of Conformity | ATEX (EUK) |
| Installation | In Zone 2, Division 2 and safe areas |
| Further information | See relevant certificate and operating instructions |

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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 μ F |
| Max. permissible external inductance L_o/L_a for IIC | 2.5 mH |
| Max. permissible external capacitance C_o/C_a for IIB | 0.84 μ F |
| Max. permissible external inductance L_o/L_a for IIB | 11 mH |
| Max. permissible external capacity C_o for IIIC | 0.84 μ F |
| Max. permissible external inductance L_o for IIIC | 11 mH |
| Internal capacitance | Negligible |
| Internal inductance | Negligible |
| Safety-related max. voltage | 253 V |

Functional Safety

| | |
|--|-----------------|
| SIL | 3 |
| HFT | 0 |
| SFF | 92,27% |
| Lambda SD | 0 FIT |
| Lambda SU | 43 FIT |
| Lambda DD | 0 FIT |
| Lambda DU | 3 FIT |
| PFD _{avg} at T _{proof} 1 year | 2,23E-04 |
| PFD _{avg} at T _{proof} 3 years | 4,34E-04 |
| PFD _{avg} at T _{proof} 5 years | 6,46E-04 |
| PFDavg at Tproof 10 years | 1,17E-03 |
| Further information | See test report |

Electrical Data

| | |
|----------------------|------|
| Number of channels | 1 |
| LFD relay | No |
| Communication signal | HART |

Auxiliary Power

| | |
|---------------------------------|--------------|
| Auxiliary power | without |
| Nominal voltage V_{nom} | Loop-powered |
| Auxiliary power voltage range | Loop-powered |
| Max. power dissipation at 20 mA | 0.2 W |
| Max. power dissipation at 40 mA | 0.6 W |
| Polarity reversal protection | Yes |

Galvanic Isolation

| | |
|------------------------------|-----------------|
| Test voltage as per standard | EN IEC 60079-11 |
| Ex i output to input | 1.5 kV AC |
| Ex i output to Ex i output | 350 V AC |

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Galvanic Isolation

| | |
|------------------------------|----------|
| Test voltage as per standard | EN 50178 |
| Input to input | 500 V AC |

Input

| | |
|------------------------------------|-------------------------|
| Input | 0/4 ... 20 mA with HART |
| Input signal | 0/4 to 20 mA with HART |
| Function range input | 0 – 40 mA |
| Input voltage UE | ≤ 31.2 V |
| Max. effective voltage | 23.6 V |
| Internal resistance R_i at 20 mA | 380 Ω |
| Internal resistance R_i at 40 mA | 330 Ω |
| Additional voltage drop | 1 V |
| Internal consumption | ≤ 10 μ A |
| 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 |
| Output short-circuit current | ≤ 60 mA |
| Open-circuit voltage U_o | 25 V |
| Current residual ripple | ≤ 0.5% |
| Load resistance R_L | 0 ... 800 Ω |
| Settling time 10-90% | ≤ 1 ms |
| Cross-talk channel 1 / channel 2 | Not measurable |
| Wire break. err detection OFF | IA = 0 mA |
| Deviations / error note | Information in % of the measuring range (20 mA) at U_N , 23 °C |
| Average measurement fault | 0,35% |
| Temperature influence error limits | ≤ 0.1%/10 K |

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) |
| Note | The installation conditions affect the ambient temperature. Observe the "Cabinet installation guide". |
| 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 For use in industrial areas; NAMUR NE 21 |

Mechanical Data

| | |
|-------------------------------------|-----------|
| Degree of protection (IP) | IP30 |
| Degree of protection (IP) terminals | IP20 |
| Fire resistance (UL 94) | V0 |
| Enclosure material | Polyamide |

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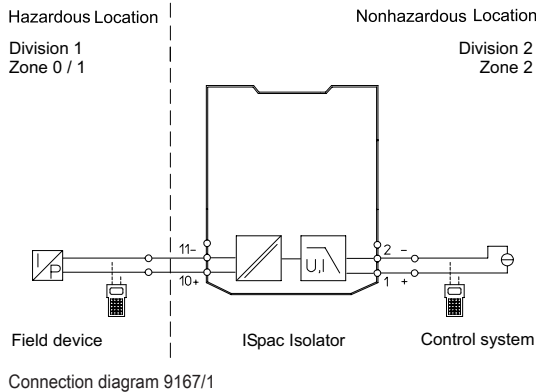
Mechanical Data

| | |
|------------------|----------|
| Grid dimension | 17.6 mm |
| Width | 17.6 mm |
| Width, inches | 0.69 in |
| Height | 114.5 mm |
| Height in inches | 4.51 in |
| Length | 128 mm |
| Length in inches | 5.04 in |
| Weight | 161 g |
| Weight | 0.35 lb |

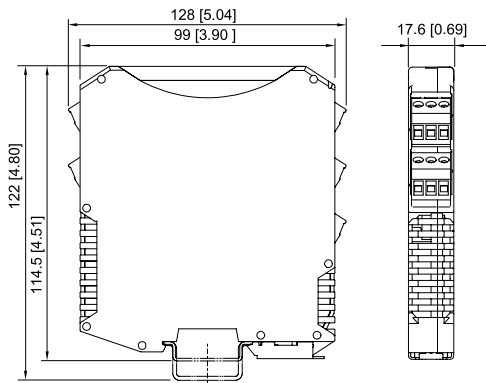
Mounting / Installation

| | |
|------------------------------------|----------------------------|
| 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 ² |
| Max. rigid conductor cross section | 2.5 mm ² |
| Min. flex conductor cross section | 0.2 mm ² |
| Max. flex conductor cross section | 2.5 mm ² |
| Connection cross-section AWG | 24 ... 14 |

Technical Drawings – Subject to Alterations



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

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Accessories

Transparent cover

Art. No.



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

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