

Isolators

Ex i relay modules

Ex i field circuit

9172/20-11-00k Art. No. 160364



- Binary input or output with two channels
- For separating intrinsically safe and non-intrinsically safe signal and control circuits
- For use up to SIL 2 (IEC/EN 61508)

MY R. STAHL 9172A



The Series 9172 relay module separates intrinsically safe and non-intrinsically safe binary signal and control circuits. To do this, it makes intrinsically safe binary inputs and outputs with two channels available. Depending on the version, the device has either an intrinsically safe control system or an intrinsically safe output contact, and can therefore be used as an output or input isolator.

Technical Data

Explosion Protection

| | |
|---------------------------------|--|
| Application range (zones) | 2 |
| Ex interface zone | 0, 1, 2, 20, 21, 22 |
| IECEX gas certificate | IECEX BVS 09.0002 X |
| IECEX gas certificate | IECEX BVS 09.0002 X |
| IECEX gas explosion protection | Ex ec nC [ia Ga] IIC T4 Gc |
| IECEX dust certificate | IECEX BVS 09.0002 X |
| IECEX dust explosion protection | [Ex ia Da] IIIC |
| ATEX gas certificate | BVS 04 ATEX E 097 X |
| ATEX gas explosion protection | Ex II (1) G Ex ec nC [ia Ga] IIC T4 Gc |
| ATEX dust certificate | BVS 04 ATEX E 097 X |
| ATEX dust explosion protection | Ex 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. 91 726 01 31 1 |
| Certificates | ATEX (BVS), Canada (FM), China (NEPSI), IECEX (BVS), India (PESO), SIL (exida), USA (FM) |
| Ship approval | CCS, EU RO MR (DNV) |
| Declaration of Conformity | ATEX (EUK), China (CCC) |
| Installation | In Zone 2, Division 2 and safe areas |
| Further information | See relevant certificate and operating instructions |

Safety Data

| | |
|-----------------------------|------|
| Max. voltage U _i | 30 V |
|-----------------------------|------|

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Safety Data

| | |
|-----------------------------|------------|
| Max. current I_i | 150 mA |
| Max. power P_i | 1.3 W |
| Internal capacitance | Negligible |
| Internal inductance | Negligible |
| Safety-related max. voltage | 253 V |

Functional Safety

| | |
|--|----------|
| SIL | 2 |
| HFT | 0 |
| SFF | 62% |
| Lambda SD | 0 FIT |
| Lambda SU | 41 FIT |
| Lambda DD | 0 FIT |
| Lambda DU | 25 FIT |
| PFD _{avg} at T _{proof} 1 year | 1,17E-04 |
| PFD _{avg} at T _{proof} 2 years | 2,23E-04 |
| PFD _{avg} at T _{proof} 5 years | 5,42E-04 |

Electrical Data

| | |
|--------------------|---|
| Number of channels | 2 |
|--------------------|---|

Auxiliary Power

| | |
|-------------------------------|--------------|
| Auxiliary power | without |
| Auxiliary power voltage range | Loop-powered |
| Max. power dissipation | 0.4 W |
| Polarity reversal protection | Yes |
| Undervoltage monitoring | No |

Galvanic Isolation

| | |
|------------------------------|-----------------|
| Test voltage as per standard | EN IEC 60079-11 |
| Ex i input to output | 1.5 kV AC |
| Ex i input to Ex i input | 500 V AC |
| Test voltage as per standard | EN 50178 |
| Output to output | 1,1 kV AC |

Input

| | |
|--------------------------------|---|
| Input signal | Ex i |
| Switching signal input | 14 – 30 V |
| Current consumption at 12 V | < 16 mA |
| Current consumption at 24–30 V | < 11 mA |
| Notes | Digital output with electronic limitation requires a minimum output current of 20 mA. |

Output

| | |
|-------------------------------|---|
| Output per channel | 1 change-over contact |
| Output | Change-over contact – power relay |
| Min. output load condition | 1 V / 1 mA |
| Max. output DC load condition | 125 V / 0.25 A 220 V / 0.1 A 30 V / 4 A 60 V / 0.3 A |
| Output maximum load DC Note | Max. 125 V AC/DC when installed in Zone 2 |

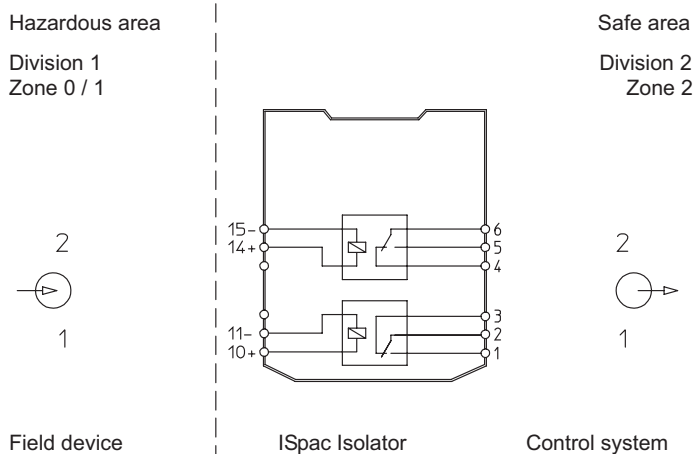
| Output | |
|--------------------------------|---------------------------------------|
| Max. output AC load condition | 250 V / 4 A $\cos \phi > 0.7$ |
| Output switching capacity | 100 W / 100 VA |
| Output switching frequency | ≤ 15 Hz |
| Switching delay ON/OFF | ≤ 10 ms |
| Switching delay OFF/ON | ≤ 10 ms |
| Output electrical service life | $\geq 1 \times 10^5$ operating cycles |
| Electrical service life note | Resistive load |
| Output mechanical service life | $\geq 1 \times 10^7$ operating cycles |
| Switching state indication | LED |

| 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) |
| Note | Installation conditions influence the ambient temperature. Please observe the "Cabinet installation guide". |
| 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 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 |
| 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 | 190 g |
| Weight | 0.42 lb |

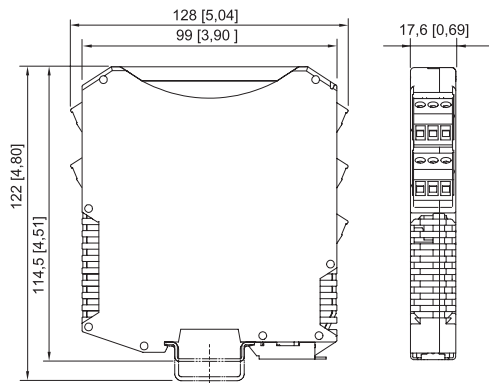
| Mounting / Installation | |
|------------------------------------|----------------------------|
| Mounting type | DIN rail NS35/15, NS35/7.5 |
| Mounting orientation | Vertical Horizontal |
| Connection type | Spring clamp terminal |
| Min. rigid conductor cross section | 0.2 mm ² |
| Max. rigid conductor 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



Connection diagram 9172/20-11-00

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

Transparent cover



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

Art. No.

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.