

Isolator Barriers

Loop-powered binary output

Ex i field circuit

9176/10-16-00s Art. No. 222182



- Comprehensive portfolio to cater for all characteristics
- Two-channel variants reduce the amount of space required
- Can be used up to SIL 3 (IEC/EN 61508)

MY R. STAHL 9176A



9176 series binary outputs issue binary signals for the intrinsically safe operation of Ex i solenoid valves, indicator lamps or horns. The devices do not require a separate auxiliary power supply as they are powered by the control circuit. The intrinsically safe outputs are galvanically separated from the inputs. The two-channel variants are characterised by galvanically separated channels.

Technical Data

| Explosion Protection | |
|---------------------------------|---|
| Application range (zones) | 2 |
| Ex interface zone | 0, 1, 2, 20, 21, 22 |
| IECEX gas certificate | IECEX BVS 13.0012 X |
| IECEX gas certificate | IECEX BVS 13.0012 X |
| IECEX gas explosion protection | Ex nA [ia Ga] IIC T4 Gc |
| IECEX dust certificate | IECEX BVS 13.0012 X |
| IECEX dust explosion protection | [Ex ia Da] IIIC |
| ATEX gas certificate | BVS 04 ATEX E 075 X |
| ATEX gas certificate | BVS 04 ATEX E 075 X |
| ATEX gas explosion protection | ⊕ II 3 (1) G Ex nA [ia Ga] IIC T4 Gc |
| ATEX dust certificate | BVS 04 ATEX E 075 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 Mounting vert. at Ta = 70°C , or horizontal Ta = 60°C See Doc. 91 766 01 31 1 |
| Certificates | ATEX (BVS), Brazil (ULB), Canada (FM), China (NEPSI), IECEX (BVS), Korea (KTL), SIL (exida), USA (FM) |
| Ship approval | CCS, EU RO MR (DNV) |
| Declaration of Conformity | ATEX (EUK), China (CCC) |
| Safety Data | |
| Max. voltage U_o/V_{oc} | 27.6 V |
| Max. current I_o (Ex ia) | 110 mA |

Isolator Barriers

Loop-powered binary output

Ex i field circuit

9176/10-16-00s Art. No. 222182



Safety Data

| | |
|---|---------------|
| Max. current I_o (Ex ib) | 50 mA |
| Max. power P_o | 760 mW |
| Max. permissible external capacitance C_o/C_a for IIC | 0.085 μ F |
| Max. permissible external inductance L_o/L_a for IIC | 1.2 mH |
| Max. permissible external capacitance C_o/C_a for IIB | 0.667 μ F |
| Max. permissible external inductance L_o/L_a for IIB | 9 mH |
| Internal capacitance | 1.1 nF |
| Internal inductance | Negligible |
| Max. voltage U_o parallel | 27.6 V |
| Max. current I_o (Ex ia) paral. | 220 mA |
| Safety-related max. voltage | 253 V |

Functional Safety

| | |
|-----------|---------|
| SIL | 3 |
| HFT | 0 |
| SFF | 100% |
| Lambda SD | 0 FIT |
| Lambda SU | 364 FIT |
| Lambda DD | 0 FIT |
| Lambda DU | 0 FIT |

Electrical Data

| | |
|--------------------|---|
| Number of channels | 1 |
|--------------------|---|

Auxiliary Power

| | |
|------------------------------|-----------------------------|
| Auxiliary power | without |
| Auxiliary power consumption | 0.5 W + (I_a x 37 mW/mA) |
| Polarity reversal protection | Yes |

Galvanic Isolation

| | |
|------------------------------|-----------------|
| Test voltage as per standard | EN IEC 60079-11 |
| Test voltage as per standard | EN 50178 |
| Input to input | 350 V AC |

Input

| | |
|-----------------------|---|
| Input | In accordance with EN 61131-2 |
| Input voltage for ON | 18 – 31.2 V |
| Input voltage for OFF | 0 – 5 V |
| Control Power P_E | 0.5 W+ (I_A x 37 mW/mA) (with I_A = max. required output current) |

Output

| | |
|-----------------------------------|--------------|
| Output open-circuit voltage U_a | 25 V |
| Max. output current $I_{a,max}$ | 35 mA |
| Output internal resistance R_i | 250 Ω |
| Output residual ripple | < 100 mV |
| Output switching frequency | \leq 10 Hz |
| Switching delay ON/OFF | \leq 50 ms |

Isolator Barriers

Loop-powered binary output

Ex i field circuit

9176/10-16-00s Art. No. 222182



Output

| | |
|----------------------------|---------|
| Switching delay OFF/ON | ≤ 18 ms |
| Switching state indication | LED |

| | |
|--|---|
| 9175/0-16-11; 9176/0-16-00 output characteristic | <p>At U_N; -20 to +60 °C X axis (I [mA]) A: Characteristic curve for each channel B: Characteristic curve for channel 1, parallel channel 2 (only types 9176/20-...-...)</p> |
|--|---|

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 |
| 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 | 108 mm |
| Length in inches | 4.25 in |
| Weight | 170 g |
| Weight | 0.37 lb |

Mounting / Installation

| | |
|------------------------------------|----------------------------|
| Mounting type | DIN rail NS35/15, NS35/7.5 |
| Mounting orientation | Horizontal Vertical |
| Connection type | Screw 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 |

Isolator Barriers

Loop-powered binary output

Ex i field circuit

9176/10-16-00s Art. No. 222182

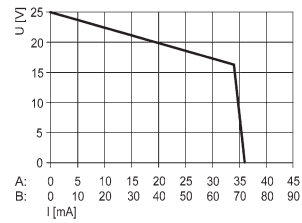


Mounting / Installation

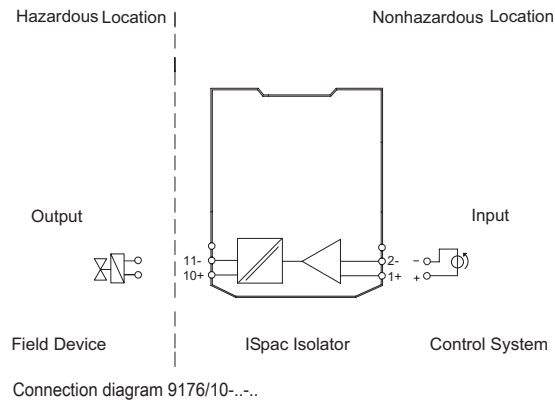
Connection cross-section AWG

24 ... 14

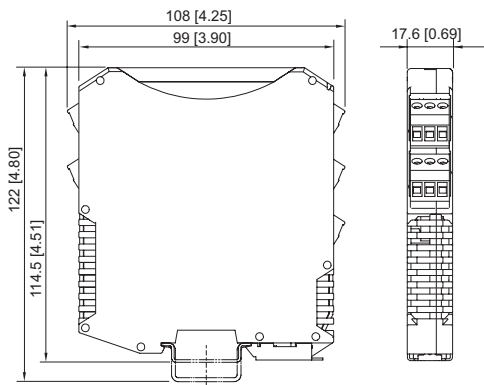
Technical Drawings – Subject to Alterations



9175/0-16-11; 9176/0-16-00 output characteristic



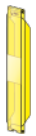
Dimensional Drawings (All Dimensions in mm [inches]) – Subject to Alterations



ISpac Series 9143, 9146, 9147, 9160, 9162, 9163, 9165, 9167, 9170, 9172, 9175, 9176, 9180, 9182, 9193, ISbus Series 9412 with screw 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

Spare Parts

Screw terminal



3-pole plug, screw connector
thread: M3
stripping length: 7 mm
color: green

Art. No.

112817

Isolator Barriers

Loop-powered binary output

Ex i field circuit

9176/10-16-00s Art. No. 222182



| | | |
|--|---|-----------------|
|  | 3-pole plug, screw connector thread: M3 stripping length: 7 mm color: black | 112816 |
|  | 3-pole plug, screw connector thread: M3 stripping length: 7 mm color: blue | 112818 |
| Screw terminal with test tap | | Art. No. |
|  | 3-pole plug with test tap, screw connector thread: M3 stripping length: 7 mm colour: black | 113005 |
|  | 3-pole plug with test tap, screw connector thread: M3 stripping length: 7 mm colour: blue | 113004 |
| Spring clamp terminal | | Art. No. |
|  | 3-pole plug with test tap, spring clamp connection stripping length: 10 mm color: green | 112825 |
|  | 3-pole plug with test tap, spring clamp connection stripping length: 10 mm color: black | 112824 |
|  | 3-pole plug with test tap, spring clamp connection stripping length: 10 mm color: blue | 112826 |

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.