

# Isolators

Loop-powered binary output

Ex i field circuit

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



- Suitable for solenoid valves and signalling devices
- Two-channel variants reduce the amount of space required
- No need for a separate auxiliary power supply

MY R. STAHL 9176A



The Series 9176 binary outputs transmit binary signals for the intrinsically safe operation of Ex i solenoid valves, indicator lamps and 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 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 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;<br>Class I, Zone 2, Group IIC<br>AIS Class I,II,III, Div. 1, Groups A,B,C,D,E,F,G;<br>Class I, Zone 0, [AEx ia]/[Ex ia] IIC<br>T4 Mounting vert. at Ta = 70°C , or horizontal Ta = 60°C<br>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 $U_o$              | 27.6 V                                                                                                                                                                                                                                              |
| Max. current $I_o$ (Ex ia)      | 110 mA                                                                                                                                                                                                                                              |
| Max. current $I_o$ (Ex ib)      | 50 mA                                                                                                                                                                                                                                               |
| Max. power $P_o$                | 760 mW                                                                                                                                                                                                                                              |

Safety Data

|                                                             |            |
|-------------------------------------------------------------|------------|
| Max. permissible external capacity C <sub>o</sub> for IIC   | 0.085 µF   |
| Max. permissible external inductance L <sub>o</sub> for IIC | 1.2 mH     |
| Max. permissible external capacity C <sub>o</sub> for IIB   | 0.667 µF   |
| Max. permissible external inductance L <sub>o</sub> for IIB | 9 mH       |
| Internal capacitance                                        | 1.1 nF     |
| Internal inductance                                         | Negligible |
| Max. voltage U <sub>o</sub> parallel                        | 27.6 V     |
| Max. current I <sub>o</sub> (Ex ia) paral.                  | 220 mA     |
| Safety-related max. voltage                                 | 253 V      |

Electrical Data

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

Auxiliary Power

|                              |                                     |
|------------------------------|-------------------------------------|
| Auxiliary power              | without                             |
| Auxiliary power consumption  | 0.5 W + (I <sub>a</sub> 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        |

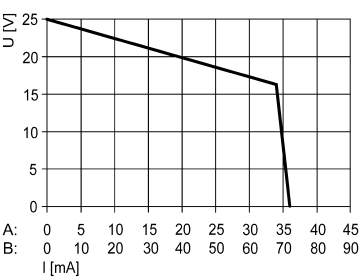
Input

|                              |                                                                                            |
|------------------------------|--------------------------------------------------------------------------------------------|
| 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 <sub>E</sub> | 0.5 W+ (I <sub>A</sub> x 37 mW/mA)<br>(with I <sub>A</sub> = max. required output current) |

Output

|                                            |                  |
|--------------------------------------------|------------------|
| Output open-circuit voltage U <sub>a</sub> | 25 V             |
| Max. output current I <sub>a max</sub>     | 35 mA            |
| Output internal resistance R <sub>i</sub>  | 250 Ω            |
| Output residual ripple                     | < 100 mV         |
| Output switching frequency                 | ≤ 10 Hz          |
| Switching delay ON/OFF                     | ≤ 50 ms          |
| Switching delay OFF/ON                     | ≤ 18 ms          |
| Switching state indication                 | Yellow "OUT" LED |

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



At U<sub>N</sub>; -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-...-...)

### Ambient Conditions

|                               |                                                                                                                |
|-------------------------------|----------------------------------------------------------------------------------------------------------------|
| Ambient temperature           | -20 °C ... 70 °C (Single device)<br>-20 °C ... 60 °C (Group assembly)                                          |
| Ambient temperature           | -4 °F ... +158 °F (Single device)<br>-4 °F ... +140 °F (Group assembly)                                        |
| Note                          | Installation conditions influence the ambient temperature.<br>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;<br>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                               | 17.6 mm   |
| Width, inches                       | 0.69 in   |
| Height                              | 114.5 mm  |
| 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<br>Vertical     |
| Connection type                    | Screw 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 ... 14                  |

Isolators

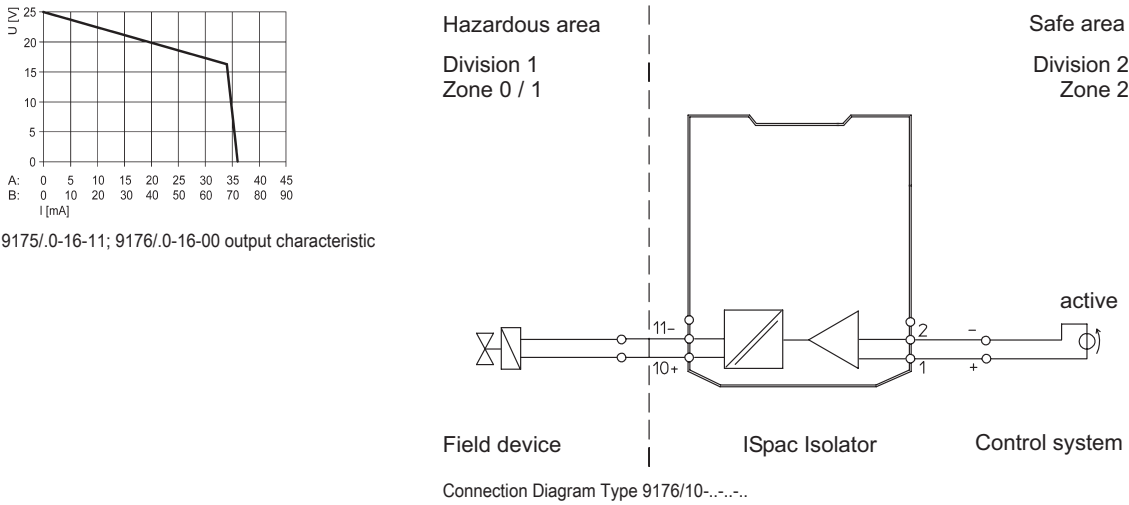
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Ex i field circuit

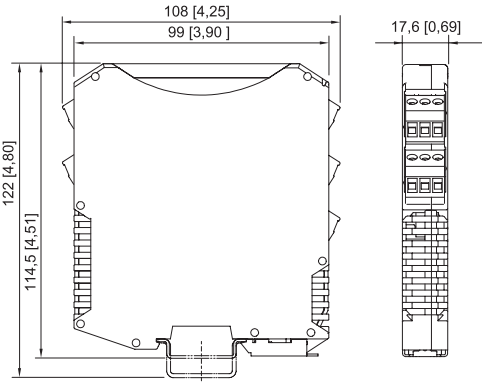
9176/10-16-00s Art. No. 222182



Technical Drawings – Subject to Alterations



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 |                                                                                                                                          | Art. No. |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------|
|                   | For 91xx ISpac modules<br>Yellow, transparent<br>Clear identification of the device for SIL applications.<br>(Packaging unit: 10 pieces) | 200914   |

Spare Parts

| Screw terminal |                                                                                       | Art. No. |
|----------------|---------------------------------------------------------------------------------------|----------|
|                | 3-pole plug, screw connector<br>thread: M3<br>stripping length: 7 mm<br>colour: green | 112817   |
|                | 3-pole plug, screw connector<br>thread: M3<br>stripping length: 7 mm<br>colour: black | 112816   |

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STAHL

## Screw terminal

## Art. No.



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

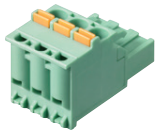


3-pole plug with test tap, screw connector  
thread: M3  
stripping length: 7 mm  
colour: blue

113004

## Spring clamp terminal

## Art. No.



3-pole plug with test tap, spring clamp connection  
stripping length: 10 mm  
colour: green

112825



3-pole plug with test tap, spring clamp connection  
stripping length: 10 mm  
colour: black

112824



3-pole plug with test tap, spring clamp connection  
stripping length: 10 mm  
colour: 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.