

# Zener Barriers

## Two-channel safety barrier



9002/11-280-186-001 Art. No. 158848



- For the intrinsically safe operation of a wide range of devices, such as HART transmitters, solenoid valves, sensors, zero-potential contacts and many more
- Compact, space-saving devices that are easy to install on a DIN rail
- Quick and efficient installation as barriers can be simultaneously snapped onto DIN rail and connected to ground (ISA - RPI12.06)

MY R. STAHL 9002A



The 9002 series INTRINSPAK two-channel zener barriers enable the intrinsically safe operation of virtually all field devices. The comprehensive portfolio and the combination of zener barriers cover a wide variety of signals. The devices are incredibly robust and require very little space. The back-up fuse is a convenient feature as it is standardized for all variants.

### Technical Data

| Explosion Protection            |  |
|---------------------------------|--|
| Application range (zones)       | 2  |
| Ex interface zone               | 0, 1, 2, 20, 21, 22  |
| IECEX gas certificate           | IECEX PTB 08.0057X   |
| IECEX gas explosion protection  | Ex ec [ia Ga] IIB T4 Gc  |
| IECEX dust certificate          | IECEX PTB 08.0057X   |
| IECEX dust explosion protection | [Ex ia Da] IIIC  |
| ATEX gas certificate            | PTB 01 ATEX 2053 X   |
| ATEX gas explosion protection   | ⊕ II 3 (1) G Ex ec [ia Ga] IIB T4 Gc   |
| ATEX dust certificate           | PTB 01 ATEX 2053 X   |
| ATEX dust explosion protection  | ⊕ II (1) D [Ex ia Da] IIIC   |
| FMus certificate                | 3010778  |
| Marking FMus                    | NONINCENDIVE FOR, Class I, Div. 2, Groups A,B,C,D; T4;<br>Class I, Zone 2, Group IIC T4<br>IS connections for Class I,II,III, Div. 1, Groups C,D,F,G;<br>Class I, Zone 0, Group IIB<br>Hazardous location when inst. per doc. 90 026 11 31 1 |
| Certificate ULus                | E81680V1S3   |
| Marking ULus                    | For use in Hazardous location, Class I, Div. 2, Groups A,B,C,D; T4<br>Providing IS circuits for<br>Class I,II,III, GROUPS C,D,E,F,G;<br>per doc. 90 026 11 31 3  |
| cCSA certificate                | 1284580  |
| Marking cCSA                    | Associated equipment [Ex ia], Class I, Div. 2, Groups A,B,C,D;<br>Provides IS circuits for Class I,II,III,<br>Class I, Zone 0, Group IIB<br>For applicable grps per inst. doc. 90 026 11 31 2  |
| Inmetro gas certificate         | UL-BR 12.0354  |
| Inmetro dust certificate        | UL-BR 12.0354  |

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### Explosion Protection

|                           |  |
|---------------------------|--|
| Certificates              | ATEX (PTB), Brazil (ULB), Canada (CSA), Canada (FM), China (CQST), IECEx (PTB), India (PESO), Japan (CML), Korea (KGS), USA (FM), USA (UL) |
| Declaration of Conformity | ATEX (EUK), China (CCC)  |
| Installation              | in Zone 2, Division 2 and in safe area   |
| Further information       | see respective certificate and operating instructions  |

### Safety Data

|  |   |                  |                |                |              |
|--|---|------------------|----------------|----------------|--------------|
| Max. voltage $U_o/V_{oc}$  | 28 V  |                  |                |                |              |
| Max. current $I_o/I_{sc}$  | 93 mA   |                  |                |                |              |
| Max. power $P_o$   | 650 mW  |                  |                |                |              |
| Max. permissible external capacitance $C_o/C_a$ for IIC                | 0.083 $\mu$ F   |                  |                |                |              |
| Max. permissible external inductance $L_o/L_a$ for IIC                 | 2 mH  |                  |                |                |              |
| Max. permissible external capacitance $C_o/C_a$ for IIB                | 0.65 $\mu$ F  |                  |                |                |              |
| Max. permissible external inductance $L_o/L_a$ for IIB                 | 13 mH   |                  |                |                |              |
| Intrinsically safe limiting values Inductance $L_o$ /capacitance $C_o$ | Jointly connectable inductance $L_o$ /capacitance $C_o$ |                  |                |                |              |
| Channel 1  | IIC   | $L_o$ [mH]       | 1 mH           | 0.100 mH       |              |
|  |   | $C_o$ [ $\mu$ F] | 0.0520 $\mu$ F | 0.0830 $\mu$ F |              |
|  | IIB   | $L_o$ [mH]       | 10 mH          | 1 mH           | 0.1 mH       |
|  |   | $C_o$ [ $\mu$ F] | 0.25 $\mu$ F   | 0.35 $\mu$ F   | 0.65 $\mu$ F |
| Channel 2  | IIC   | $L_o$ [mH]       | 1 mH           | 0.1 mH         |              |
|  |   | $C_o$ [ $\mu$ F] | 0.052 $\mu$ F  | 0.083 $\mu$ F  |              |
|  | IIB   | $L_o$ [mH]       | 10 mH          | 1 mH           | 0.1 mH       |
|  |   | $C_o$ [ $\mu$ F] | 0.25 $\mu$ F   | 0.35 $\mu$ F   | 0.65 $\mu$ F |
| Channels 1 + 2   | IIC   | $L_o$ [mH]       |                |                |              |
|  |   | $C_o$ [ $\mu$ F] |                |                |              |
|  | IIB   | $L_o$ [mH]       | 1 mH           | 0.1 mH         |              |
|  |   | $C_o$ [ $\mu$ F] | 0.34 $\mu$ F   | 0.551 $\mu$ F  |              |

### Electrical Data

|                                      |                  |  |
|--------------------------------------|------------------|--|
| Number of channels                   | 2                |  |
| Maximum resistance $R_{max}$         | 359 $\Omega$     |  |
| Min. resistance $R_{min}$            | 322 $\Omega$     |  |
| Maximum output current $I_{max}$     | 69 mA            |  |
| Potential channel 1                  | Positive         |  |
| Potential channel 2                  | Positive         |  |
| Transmission frequency channel 1     | $\leq$ 100 kHz   |  |
| Type of voltage                      | DC               |  |
| $I_{leak}$ leakage current for $U_n$ | $\leq$ 2 $\mu$ A |  |

| Chan-nel | $V_{nom}$  | $I_{max}$ | $R_{min}$    | $R_{max}$    | $U_o/V_{oc}$ | $I_o/I_{sc}$ | $P_o$   |
|----------|------------|-----------|--------------|--------------|--------------|--------------|---------|
| 1        | 25.00 V DC | 69 mA     | 322 $\Omega$ | 359 $\Omega$ | 28 V         | 93 mA        | 650 mW  |
| 2        | 25 V       | 69 mA     | 322 $\Omega$ | 359 $\Omega$ | 28 V         | 93 mA        | 650 mW  |
| 1 + 2    |            |           |              |              | 28 V         | 186 mA       | 1300 mW |

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### Auxiliary Power

Power supply Controlled

### Output

Temperature influence  $\leq 0,25\%/10K$

### Ambient Conditions

Ambient temperature °C -20 °C ... 60 °C

Ambient temperature °F -4°F ... +140°F

Storage temperature °C -20 °C ... 75 °C

Storage temperature °F -4°F ... +167°F

Max. relative humidity 95% average, no condensation

### Mechanical Data

Degree of protection (IP) IP40

Degree of protection (IP) terminals IP20

Enclosure material Polyamide 6GF

Number of connection terminals 4

Connection cross-section max. 1.5 mm<sup>2</sup>

Connection cross-section AWG 16 AWG

Type of connection cable Solid  
Finely stranded

Width 103 mm

Width, inches 4.09 in

Length 12 mm

Length in inches 0.48 in

Depth of cut-out 72 mm

Mounting depth in inches 2.76 in

Weight 110 g

Weight 0.24 lb

### Mounting / Installation

Earthing connection cross-section 4 mm<sup>2</sup>

Earthing conductor cross-section AWG 12 AWG

Connection type 2 PA

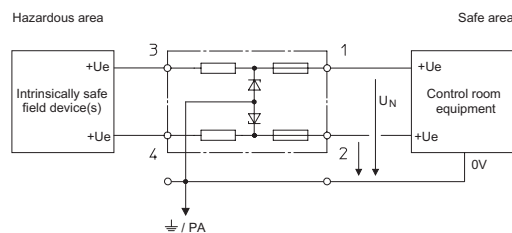
Min. torque, Nm 0.5 Nm

Min. torque, lb/in 4.43 lb/in

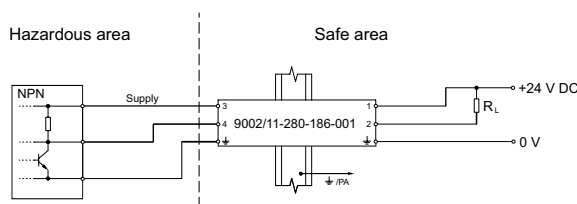
Max. torque, Nm 0.6 Nm

Max. torque, lb/in 5.31 lb/in

### Technical Drawings – Subject to Alterations



Dual-channel safety barriers, potential: + / +



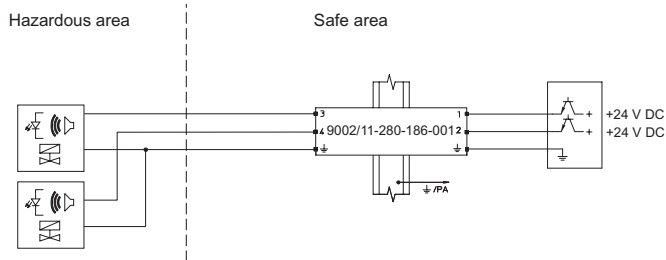
Application: 3-wire NPN inputs (negative switching) of proximity switches, photocells and encoders

# Zener Barriers

## Two-channel safety barrier

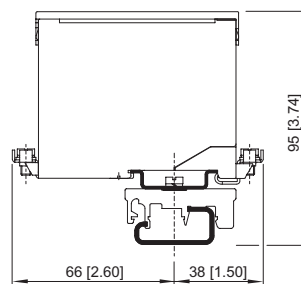
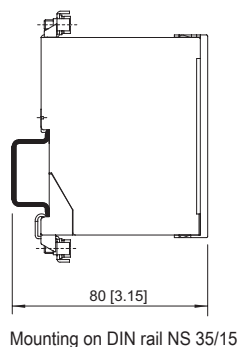
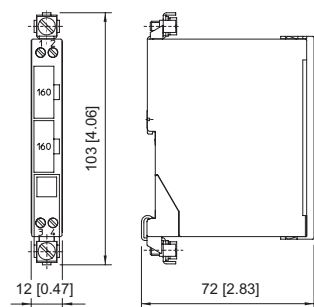


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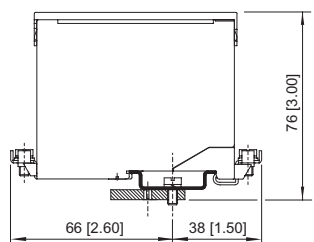


Application: Discrete 2-wire output for solenoid valves, LEDs and signalling devices

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



Mounting on DIN rail NS 32 by means of adaptor and mounting attachment, moulded plastic



Mounting on mounting plate by means of adaptor

## Accessories

### Terminal block

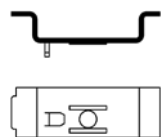


Phoenix Contact terminal block UT 4-PE  
Phoenix Contact terminal block UT 6-PE

### Art. No.

113057  
113058

### Adaptor

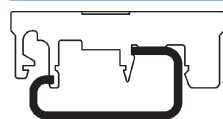


Adaptor allows installation of a zener barrier Series 900x on a mounting plate of a previous series.

### Art. No.

158826

### Clamping base, moulded material



Enables mounting of zener barrier on a G-rail.

### Art. No.

165283

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### Fuse holder

Art. No.



Fuse holder is snapped onto the side of the zener barrier and can be equipped with up to 5 back-up fuses (replacement).

158834



### Spare Parts

#### Back-up fuse

Art. No.



For all zener barriers Series 9001, 9002 and 9004  
unit: 5 pcs.

158964

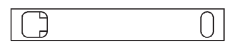
#### Label carrier

Art. No.



Transparent cover for the label

158977



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