

# Zener Barriers

## Two-channel safety barrier



9002/10-187-020-001 Art. No. 158937



- 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] IIC 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] IIC 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; Class I, Zone 2, Group IIC T4 IS connections for Class I,II,III, Div. 1, Groups A,B,C,D,E,F,G; Class I, Zone 0, Groups IIC/IIB 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 Providing IS circuits for Class I,II,III, GROUPS A,B,C,D,E,F,G; per doc. 90 026 11 31 3
Inmetro gas certificate	UL-BR 12.0354
Inmetro dust certificate	UL-BR 12.0354
Certificates	ATEX (PTB), Brazil (ULB), Canada (FM), 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

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**Safety Data**

Max. voltage $U_o/V_{oc}$			9.3 V		
Max. current $I_o/I_{sc}$			20 mA		
Max. power $P_o$			50 mW		
Max. permissible external capacitance $C_o/C_a$ for IIC			3.9 $\mu$ F		
Max. permissible external inductance $L_o/L_a$ for IIC			90 mH		
Max. permissible external capacitance $C_o/C_a$ for IIB			29 $\mu$ F		
Max. permissible external inductance $L_o/L_a$ for IIB			330 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]	50 mH	1 mH	0.100 mH
		$C_o$ [ $\mu$ F]	0.480 $\mu$ F	1 $\mu$ F	1.8000 $\mu$ F
	IIB	$L_o$ [mH]	50 mH	1 mH	0.1 mH
		$C_o$ [ $\mu$ F]	2.80 $\mu$ F	5.70 $\mu$ F	11 $\mu$ F
Channel 2	IIC	$L_o$ [mH]	50 mH	1 mH	0.1 mH
		$C_o$ [ $\mu$ F]	0.480 $\mu$ F	1 $\mu$ F	1.800 $\mu$ F
	IIB	$L_o$ [mH]	50 mH	1 mH	0.1 mH
		$C_o$ [ $\mu$ F]	2.80 $\mu$ F	5.70 $\mu$ F	11 $\mu$ F
Channels 1 + 2	IIC	$L_o$ [mH]	50 mH	1 mH	0.10 mH
		$C_o$ [ $\mu$ F]	0.480 $\mu$ F	0.210 $\mu$ F	0.250 $\mu$ F
	IIB	$L_o$ [mH]	50 mH	1 mH	0.1 mH
		$C_o$ [ $\mu$ F]	0.690 $\mu$ F	1.30 $\mu$ F	1.500 $\mu$ F

**Electrical Data**

Number of channels	2
Type of voltage	DC
Maximum resistance $R_{max}$	543 $\Omega$
Min. resistance $R_{min}$	490 $\Omega$
Maximum output current $I_{max}$	11 mA
Potential channel 1	Positive
Potential channel 2	Negative
Transmission frequency channel 1	$\leq$ 50 kHz
$I_{leak}$ 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	6.00 V	11 mA	490 $\Omega$	543 $\Omega$	9.30 V	20 mA	50 mW
2	-6 V	11 mA	490 $\Omega$	543 $\Omega$	9.30 V	20 mA	50 mW
1 + 2					18.70 V	20 mA	90 mW

**Auxiliary Power**

Power supply	Controlled
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**Output**

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

Ambient temperature $^{\circ}$ C	-20 $^{\circ}$ C ... 60 $^{\circ}$ C
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### Ambient Conditions

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

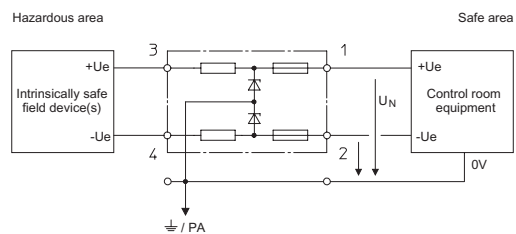
### Mechanical Data

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
Mounting depth	72 mm
Mounting depth in inches	2.76 in
Weight	110 g
Weight	0.24 lb

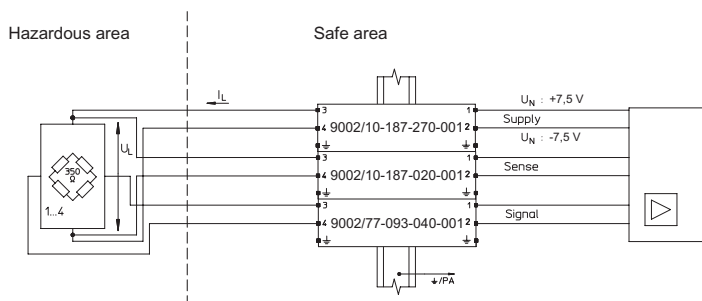
### Mounting / Installation

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 N · m
Min. torque, lb/in	4.43 lb/in
Max. torque, Nm	0.6 N · m
Max. torque, lb/in	5.31 lb/in

### Technical Drawings – Subject to Alterations



Dual-channel safety barriers, potential: + / -



Application: Load cell (DMS) 350 Ω or 700 Ω  
6-wire ± 7.5 V (15 V) field circuit unearthed

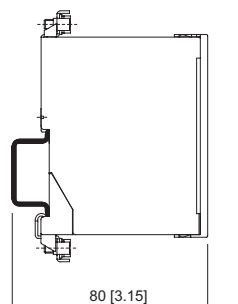
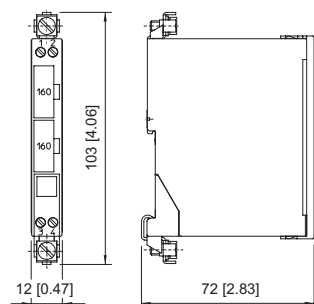
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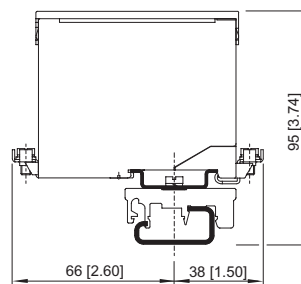


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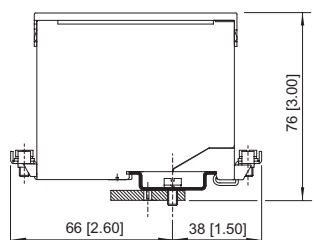
### Dimensional Drawings (All Dimensions in mm [inches]) – Subject to Alterations



Mounting on DIN rail NS 35/15



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

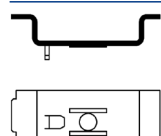


Phoenix Contact terminal block UT 4-PE  
Phoenix Contact terminal block UT 6-PE

### Art. No.

113057  
113058

### Adaptor

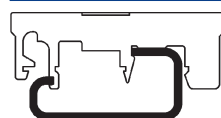


The adaptor enables a zener barrier to be installed on a clamping base (Art. No. 165283) or mounting plate from a previous series.

### Art. No.

158826

### Clamping base, moulded material

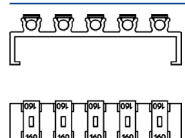


Enables mounting of zener barrier on a G-rail. The safety barrier is mounted using the adaptor (Art. No. 158826).

### Art. No.

165283

### Fuse holder



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

### Art. No.

158834

## Spare Parts

### Back-up fuse



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

### Art. No.

158964

9002/10-187-020-001 Art. No. 158937

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Label carrier		Art. No.
	Transparent cover for the label	158977

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