

# Zener Barriers

## Dual-channel safety barrier



9002/22-240-024-001 Art. No. 158950



- 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 - RP12.06)

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
cCSA certificate	1284580

9002/22-240-024-001 Art. No. 158950

### Explosion Protection

Marking cCSA	Associated equipment [Ex ia], Class I, Div. 2, Groups A,B,C,D; Provides IS circuits for Class I,II,III, Class I, Zone 0, Groups IIC/IIB For applicable grps per inst. doc. 90 016 11 31 2
Inmetro gas certificate	UL-BR 12.0354
Inmetro dust certificate	UL-BR 12.0354
Certificates	ATEX (PTB), Brazil (ULB), Canada (CSA), China (CQST), IECEx (PTB), India (PESO), Japan (CML), Korea (KGS), USA (FM), USA (UL)
Declaration of Conformity	ATEX (EUK)
Installation	in Zone 2, Division 2 and in safe area
Further information	see respective certificate and operating instructions

### Safety Data

Max. voltage $U_o/V_{oc}$	12 V				
Max. current $I_o/I_{sc}$	12 mA				
Max. power $P_o$	40 mW				
Max. permissible external capacitance $C_o/C_a$ for IIC	1.41 $\mu$ F				
Max. permissible external capacitance $C_o/C_a$ for IIB	9 $\mu$ F				
Max. permissible external inductance $L_o/L_a$ for IIC	240 mH				
Max. permissible external inductance $L_o/L_a$ for IIB	850 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]	0.340 $\mu$ F	0.6300 $\mu$ F	1.1000 $\mu$ F
	IIB	$L_o$ [mH]	50 mH	1 mH	0.1 mH
		$C_o$ [ $\mu$ F]	1.80 $\mu$ F	3.50 $\mu$ F	6.60 $\mu$ F
Channel 2	IIC	$L_o$ [mH]	50 mH	1 mH	0.1 mH
		$C_o$ [ $\mu$ F]	0.340 $\mu$ F	0.630 $\mu$ F	1.100 $\mu$ F
	IIB	$L_o$ [mH]	50 mH	1 mH	0.1 mH
		$C_o$ [ $\mu$ F]	1.80 $\mu$ F	3.50 $\mu$ F	6.60 $\mu$ F
Channels 1 + 2	IIC	$L_o$ [mH]	50 mH	1 mH	0.10 mH
		$C_o$ [ $\mu$ F]	0.260 $\mu$ F	0.620 $\mu$ F	1.100 $\mu$ F
	IIB	$L_o$ [mH]	50 mH	1 mH	0.1 mH
		$C_o$ [ $\mu$ F]	1.600 $\mu$ F	3.40 $\mu$ F	6.600 $\mu$ F

### Electrical Data

Number of channels	2
Maximum resistance $R_{max}$	1164 $\Omega$
Min. resistance $R_{min}$	1051 $\Omega$
Maximum output current $I_{max}$	7.7 mA
Potential channel 1	alternating
Potential channel 2	alternating
Transmission frequency channel 1	$\leq$ 50 kHz
Type of voltage	AC/DC

# Zener Barriers

## Dual-channel safety barrier



9002/22-240-024-001 Art. No. 158950

### Electrical Data

$I_{leak}$ 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	9.00 V AC+DC	7.7 mA	1051 $\Omega$	1164 $\Omega$	12 V	12 mA	40 mW
2	9 V	7.7 mA	1051 $\Omega$	1164 $\Omega$	12 V	12 mA	40 mW
1 + 2	18 V				24 V	24 mA	80 mW

### Auxiliary Power

Power supply	Controlled
--------------	------------

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

### 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, inches	0.48 in
Depth of cut-out	72 mm
Mounting depth, 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

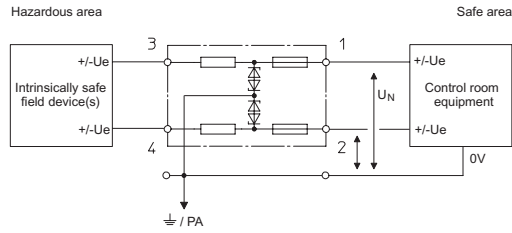
# Zener Barriers

## Dual-channel safety barrier



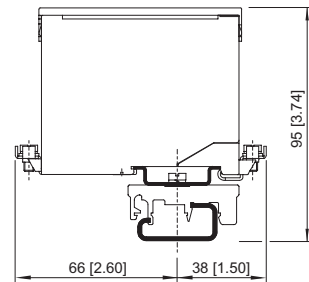
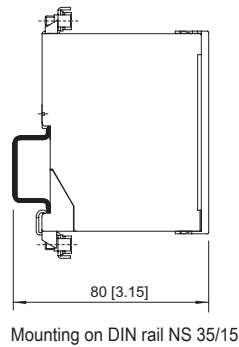
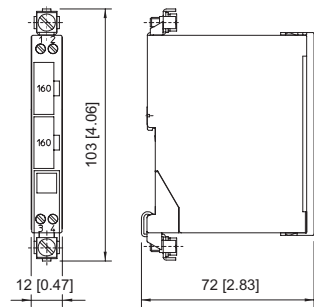
9002/22-240-024-001 Art. No. 158950

### Technical Drawings – Subject to Alterations

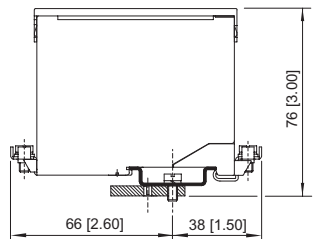


Dual-channel safety barriers, potential: ~ / ~

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



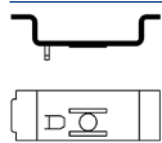
Mounting on DIN rail NS 32 by means of adaptor and mounting attachment, moulded plastic



Mounting on mounting plate by means of adaptor

## Accessories

### Adaptor

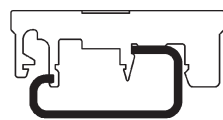


Adaptor allows installation of a zener barrier Series 900x on a mounting plate of a previous series.

Art. No.

158826

### Clamping base, moulded material

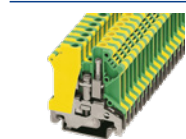


Enables mounting of zener barrier on a G-rail.

Art. No.

165283

### Protective conductor terminal



USLKG 5 (wire range AWG 12 / 4 mm<sup>2</sup>)  
Terminal enables connection of protective conductors to DIN rail. Color green-yellow.

Art. No.

112760

# Zener Barriers

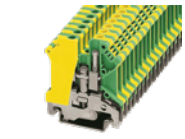
## Dual-channel safety barrier



9002/22-240-024-001 Art. No. 158950

### Ground terminal

Art. No.

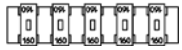


USLKG 6 N (wire range AWG 10 / 6 mm<sup>2</sup>)  
Terminal enables connection of protective /Ground conductors to DIN rail. Color green-yellow.

112599

### Fuse holder

Art. No.

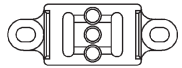


Fuse holder is snapped onto the side of the zener barrier and can be equipped with up to 5 back-up fuses (replacement).

158834

### Insulation and fastening material

Art. No.



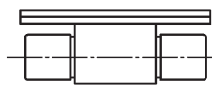
Suitable for the NS 35/15 DIN rail, makes it possible to install the DIN rail such that it is electrically insulated from the mounting plate.

158828

## Spare Parts

### Back-up fuse

Art. No.

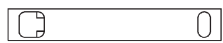


For all zener barriers Series 9001, 9002 and 9004  
unit: 5 pcs.

158964

### Label carrier

Art. No.



Transparent cover for the label

158977

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.