

# Zener Barriers

## Two-channel safety barrier



9002/77-100-400-001 Art. No. 158893



- 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
cCSA certificate	1284580
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

# Zener Barriers

## Two-channel safety barrier



9002/77-100-400-001 Art. No. 158893

### 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 $U_o/V_{oc}$	10 V			
Max. current $I_o/I_{sc}$	200 mA			
Max. power $P_o$	500 mW			
Max. permissible external capacitance $C_o/C_a$ for IIC	3 $\mu$ F			
Max. permissible external inductance $L_o/L_a$ for IIC	0.5 mH			
Max. permissible external capacitance $C_o/C_a$ for IIB	20.2 $\mu$ F			
Max. permissible external inductance $L_o/L_a$ for IIB	4 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]	0.6200 $\mu$ F	1.5000 $\mu$ F
	IIB	$L_o$ [mH]	5 mH	0.1 mH
		$C_o$ [ $\mu$ F]	2.30 $\mu$ F	9.40 $\mu$ F
Channel 2	IIC	$L_o$ [mH]	1 mH	0.1 mH
		$C_o$ [ $\mu$ F]	0.620 $\mu$ F	1.500 $\mu$ F
	IIB	$L_o$ [mH]	5 mH	0.1 mH
		$C_o$ [ $\mu$ F]	2.30 $\mu$ F	9.40 $\mu$ F
Channels 1 + 2	IIC	$L_o$ [mH]	0.2 mH	0.10 mH
		$C_o$ [ $\mu$ F]	1 $\mu$ F	1.400 $\mu$ F
	IIB	$L_o$ [mH]	1 mH	0.1 mH
		$C_o$ [ $\mu$ F]	3.70 $\mu$ F	9.200 $\mu$ F

### Electrical Data

Number of channels	2	
Maximum resistance $R_{max}$	68.9 $\Omega$	
Min. resistance $R_{min}$	60.3 $\Omega$	
Potential channel 1	Star barrier (positive)	
Potential channel 2	Star barrier (negative)	
Transmission frequency channel 1	$\leq 50$ kHz	
Type of voltage	AC/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			60.30 $\Omega$	68.90 $\Omega$	10 V	200 mA	500 mW
2			60.30 $\Omega$	68.90 $\Omega$	10 V	200 mA	500 mW
1 + 2	6 V				10 V	400 mA	1000 mW

# Zener Barriers

## Two-channel safety barrier



9002/77-100-400-001 Art. No. 158893

### 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

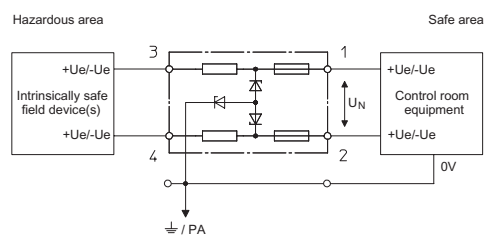
### Mechanical Data

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	Finely stranded Solid
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, star barrier/star barrier

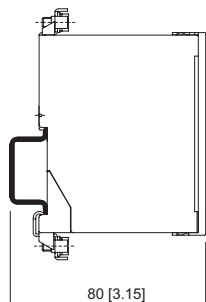
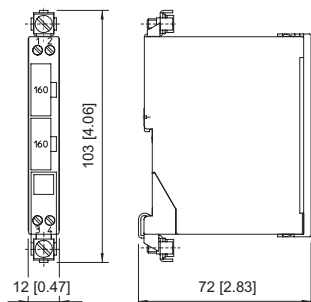
# Zener Barriers

## Two-channel safety barrier

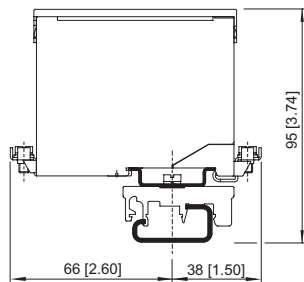


9002/77-100-400-001 Art. No. 158893

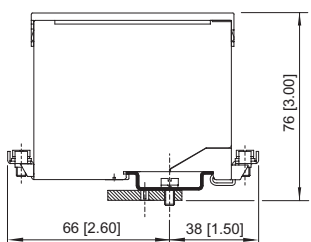
### Dimensional Drawings (All Dimensions in mm [inches]) – Subject to Alterations



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

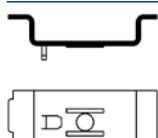
## Accessories

### Terminal block



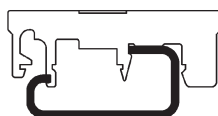
	Art. No.
Phoenix Contact terminal block UT 4-PE	113057
Phoenix Contact terminal block UT 6-PE	113058

### Adaptor



	Art. No.
Adaptor allows installation of a zener barrier Series 900x on a mounting plate of a previous series.	158826

### Clamping base, moulded material



	Art. No.
Enables mounting of zener barrier on a G-rail.	165283

### 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

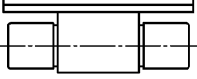


Art. No.

# Zener Barriers

## Two-channel safety barrier



9002/77-100-400-001 Art. No. 158893

	For all zener barriers Series 9001, 9002 and 9004 unit: 5 pcs.	158964
<b>Label carrier</b>		<b>Art. No.</b>
 	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.