- 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)

WebCode **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.

	IECEx / ATEX					
Zone	0	1	2	20	21	22
Ex interface	•	•	•	•	•	•
Installation in			•			

	NEC 500 CEC Appendix J					
	Class I		Class II		Class III	
Division	1	2	1	2	1	2
Ex interface	•	•	•	•	•	•
Installation in		•				

	CEC Section 18 NEC® 505			NEC® 506		
	Class I					
Zone	0	1	2	20	21	22
Ex interface	•	•	•			
Installation in			•			

Selection Table

Channel	Nominal voltage U_N	Minimum resistance R_{min}	Maximum resistance R_{max}	Maximum voltage U_o	Maximum current I_o	Maximum power P_o	Product Type	Art. No.
Product variant	Series 9002/00, Potential: negative / negative							
1 2 1 + 2	22.5 V 17.5 V	321 Ω 417 Ω	359 Ω 464 Ω	26 V 20 V 26 V	87 mA 51 mA 138 mA	540 mW 245 mW 785 mW	9002/00-260-138-001	158867
1 2 1 + 2	25 V 25 V	322 Ω 322 Ω	359 Ω 359 Ω	28 V 28 V 28 V	93 mA 93 mA 186 mA	650 mW 650 mW 1300 mW	9002/00-280-186-001	158845
Product variant	Series 9002/10, Potential: positive / negative							
Channel	Nominal voltage U_N	Minimum resistance R_{min}	Maximum resistance R_{max}	Maximum voltage U_o	Maximum current I_o	Maximum power P_o	Product Type	Art. No.
1 2 1 + 2	6 V 6 V	490 Ω 490 Ω	543 Ω 543 Ω	9.3 V 9.3 V 18.7 V	20 mA 20 mA 20 mA	50 mW 50 mW 90 mW	9002/10-187-020-001	158937 ▲
1 2 1 + 2	6 V 6 V	43 Ω 43 Ω	49 Ω 49 Ω	9.3 V 9.3 V 18.7 V	270 mA 270 mA 270 mA	630 mW 630 mW 1260 mW	9002/10-187-270-001	158933 ▲
Product variant	Series 9002/11; Potential: positive / positive							
Channel	Nominal voltage U_N	Minimum resistance R_{min}	Maximum resistance R_{max}	Maximum voltage U_o	Maximum current I_o	Maximum power P_o	Product Type	Art. No.
1 2 1 + 2	9 V 25 V	1052 Ω 1052 Ω	1165 Ω 1165 Ω	12 V 12 V 12 V	12 mA 12 mA 24 mA	40 mW 40 mW 70 mW	9002/11-120-024-001	158943
1 2 1 + 2	10 V 1 V	46 Ω 46 Ω	52 Ω 52 Ω	13 V 1.6 V 13 V	321 mA 39 mA 360 mA	1040 mW 16 mW 1170 mW	9002/11-130-360-001	158958

Dual-Channel Safety Barriers
Series 9002

Selection Table

Channel	Nominal voltage U_N	Minimum resistance R_{min}	Maximum resistance R_{max}	Maximum voltage U_o	Maximum current I_o	Maximum power P_o	Product Type	Art. No.
Product variant			**Series 9002/11; Potential: positive / positive**					
1	10 V	953 Ω	978 Ω	13.7 V	14.5 mA	50 mW	9002/11-137-029-001	158940
2	10 V	953 Ω	978 Ω	13.7 V	14.5 mA	50 mW		
1 + 2	–	–	–	13.7 V	29 mA	100 mW		
1	16 V	1435 Ω	1590 Ω	19.9 V	15 mA	75 mW	9002/11-199-030-001	158929 ▲
2	16 V	1435 Ω	1590 Ω	19.9 V	15 mA	75 mW		
1 + 2				19.9 V	30 mA	150 mW		
1	25 V	322 Ω	359 Ω	28 V	89 mA	630 mW	9002/11-280-293-001	158864
2	6 V	60 Ω	68 Ω	9.6 V	180 mA	430 mW		
1 + 2				28 V	269 mA	1050 mW		
1	25 V	322 Ω	359 Ω	28 V	93 mA	650 mW	9002/11-280-186-001	158848 ▲
2	25 V	322 Ω	359 Ω	28 V	93 mA	650 mW		
1 + 2				28 V	186 mA	1300 mW		
Product variant			**Series 9002/13, Safety barriere potential: positive / diode return barrier potential: positive**					
Channel	Nominal voltage U_N	Minimum resistance R_{min}	Maximum resistance R_{max}	Maximum voltage U_o	Maximum current I_o	Maximum power P_o	Product Type	Art. No.
1	16 V	96 Ω	109 Ω	19.9 V	222 mA	1100 mW	9002/13-199-225-001	158921 ▲
2	16 V	–	–	19.9 V	3 mA	15 mW		
1 + 2				19.9 V	225 mA	1120 mW		
1	20-35 V	217 Ω	244 Ω	25.2 V	118 mA	740 mW	9002/13-252-121-041	158830 ▲
2	22 V	–	–	25.2 V	0 mA	20 mW		
1 + 2				25.2 V	121 mA	760 mW		
1	24 V	322 Ω	359 Ω	28 V	90 mA	630 mW	9002/13-280-093-001	158852 ▲
2	24 V	–	–	28 V	3 mA	21 mW		
1 + 2				28 V	93 mA	651 mW		
1	24 V	270 Ω	296 Ω	28 V	107 mA	749 mW	9002/13-280-110-001	158857 ▲
2	24 V	–	–	28 V	3 mA	21 mW		
1 + 2				28 V	110 mA	770 mW		
Product variant			**Series 9002/22, Potential: alternating / alternating**					
Channel	Nominal voltage U_N	Minimum resistance R_{min}	Maximum resistance R_{max}	Maximum voltage U_o	Maximum current I_o	Maximum power P_o	Product Type	Art. No.
1	0.7 V	21.6 Ω	23.8 Ω	1.6 V	150 mA	60 mW	9002/22-032-300-111	158954 ▲
2	0.7 V	21.6 Ω	23.8 Ω	1.6 V	150 mA	60 mW		
1 + 2	1.4 V			3.2 V	300 mA	120 mW		
1	5.5 V	84 Ω	95 Ω	7.9 V	100 mA	198 mW	9002/22-158-200-001	158952
2	5.5 V	84 Ω	95 Ω	7.9 V	100 mA	198 mW		
1 + 2	11 V			15.8 V	200 mA	395 mW		
1	9 V	1051 Ω	1164 Ω	12 V	12 mA	40 mW	9002/22-240-024-001	158950
2	9 V	1051 Ω	1164 Ω	12 V	12 mA	40 mW		
1 + 2	18 V			24 V	24 mA	80 mW		
1	9 V	158 Ω	177 Ω	12 V	80 mA	240 mW	9002/22-240-160-001	158948
2	9 V	158 Ω	177 Ω	12 V	80 mA	240 mW		
1 + 2	18 V			24 V	160 mA	480 mW		
Product variant			**Series 9002/33, Diode return barrier potential: positive / diode return barrier potential: positive**					
Channel	Nominal voltage U_N	Minimum resistance R_{min}	Maximum resistance R_{max}	Maximum voltage U_o	Maximum current I_o	Maximum power P_o	Product Type	Art. No.
1	25.5 V	0	0	28 V	0 mA	0	9002/33-280-000-001	158913
2	25.5 V			28 V	0 mA	0		
1 + 2				28 V	0 mA	0		
Product variant			**Series 9002/77, Star barrier / star barrier**					
Channel	Nominal voltage U_N	Minimum resistance R_{min}	Maximum resistance R_{max}	Maximum voltage U_o	Maximum current I_o	Maximum power P_o	Product Type	Art. No.
1	–	492 Ω	546 Ω	9.3 V	20 mA	50 mW	9002/77-093-040-001	158905 ▲
2	–	492 Ω	546 Ω	9.3 V	20 mA	50 mW		
1 + 2	6 V	–	–	9.3 V	40 mA	90 mW		
1	–	71.7 Ω	81.5 Ω	9.3 V	150 mA	350 mW	9002/77-093-300-001	158897 ▲
2	–	71.7 Ω	81.5 Ω	9.3 V	150 mA	350 mW		
1 + 2	6 V	–	–	9.3 V	300 mA	700 mW		
1	–	60.3 Ω	68.9 Ω	10 V	200 mA	500 mW	9002/77-100-400-001	158893
2	–	60.3 Ω	68.9 Ω	10 V	200 mA	500 mW		
1 + 2	6 V	–	–	10 V	400 mA	1000 mW		

▲ Preferred products – in stock or available at short notice

Selection Table

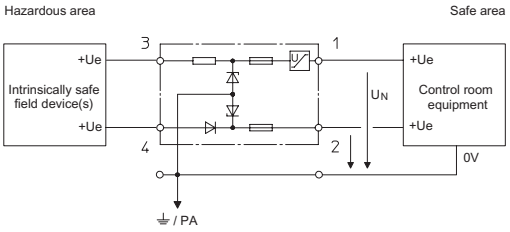
Product variant		Series 9002/77, Star barrier / star barrier						
Channel	Nominal voltage U_N	Minimum resistance R_{min}	Maximum resistance R_{max}	Maximum voltage U_o	Maximum current I_o	Maximum power P_o	Product Type	Art. No.
1 2 1 + 2	– – 12 V	112 Ω 112 Ω –	126 Ω 126 Ω –	15 V 15 V 15 V	150 mA 150 mA 300 mA	560 mW 560 mW 1130 mW	9002/77-150-300-001	158889 ▲
1 2 1 + 2	– – 18 V	322 Ω 322 Ω –	359 Ω 359 Ω –	22 V 22 V 22 V	73 mA 73 mA 296 mA	400 mW 400 mW 800 mW	9002/77-220-146-001	158885
1 2 1 + 2	– – 24 V	657 Ω 657 Ω –	731 Ω 731 Ω –	28 V 28 V 28 V	94 mA 47 mA 94 mA	330 mW 330 mW 660 mW	9002/77-280-094-001	158877

Schematics of the safety barriers on the Internet r-stahl.com

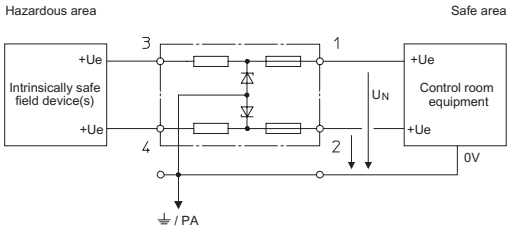
Technical Data

Explosion Protection	
IECEx gas explosion protection	Ex nA [ia Ga] IIC/IIB T4 Gc
IECEx dust explosion protection	[Ex ia Da] IIIC
ATEX gas explosion protection	Ⓔx II 3 (1) G Ex nA [ia Ga] IIC/IIB T4 Gc
ATEX dust explosion protection	Ⓔx II (1) D [Ex ia Da] IIIC
EAC gas explosion protection	2 Ex nA [ia Ga] IIC T4 Gc X
EAC dust explosion protection	[Ex ia Da] IIIC
Certificates	ATEX (PTB), Brazil (ULB), Canada (CSA), China (CQST), EAC (STV), IECEx (PTB), India (PESO), Japan (CML), Korea (KGS), USA (FM), USA (UL)
Further information	see respective certificate and operating instructions
Ambient Conditions	
Ambient temperature	-20 °C ... +60 °C
Storage temperature	-20 °C ... +75 °C
Mechanical Data	
Degree of protection (IP)	IP40
Terminal degree of protection (IP)	IP20
Enclosure material	Polyamide 6GF
Number of connection terminals	4
Connection cross section max.	1.5 mm²
Type of connection cable	Solid Finely stranded
Weight	0.11 kg

Technical Drawings – Subject to Alterations

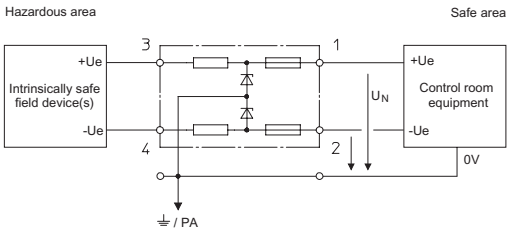


Two-channel safety barriers, safety barrier potential: + / evaluation barrier potential: +

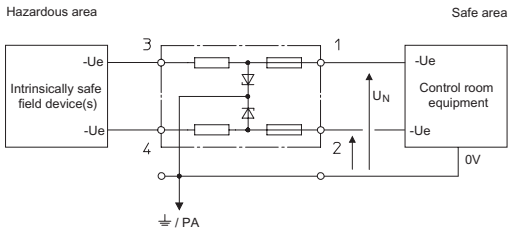


Two-channel safety barriers, potential: + / +

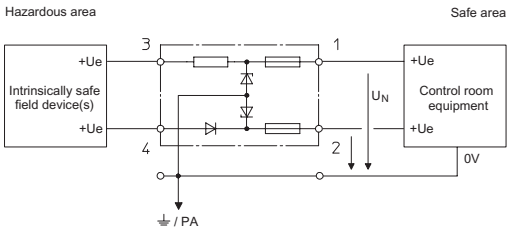
A2



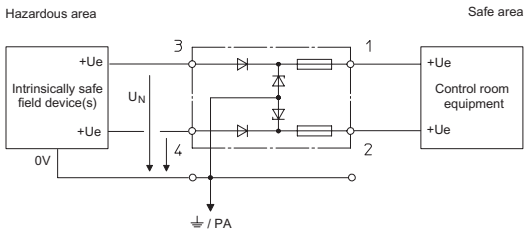
Two-channel safety barriers, potential: + / -



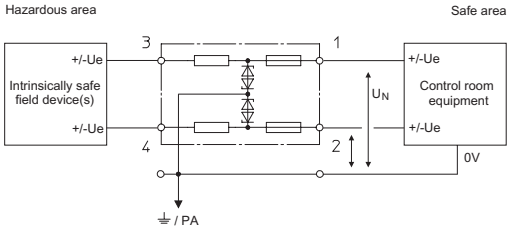
Two-channel safety barriers, potential: - / -



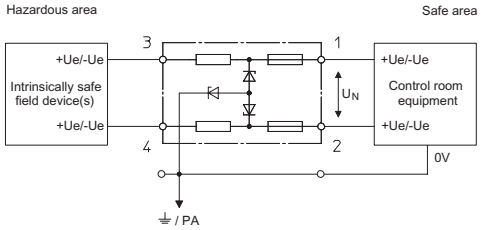
Two-channel safety barriers, safety barrier potential: + / evaluation barrier potential: +



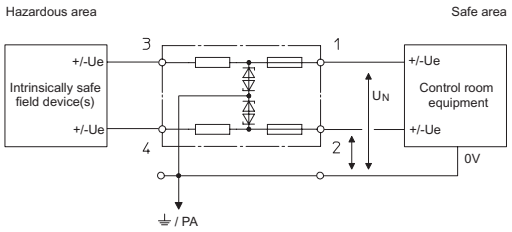
Two-channel safety barriers, evaluation barrier potential: + / evaluation barrier potential: +



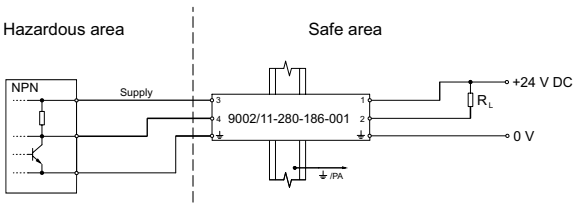
Two-channel safety barriers, potential: ~ / ~



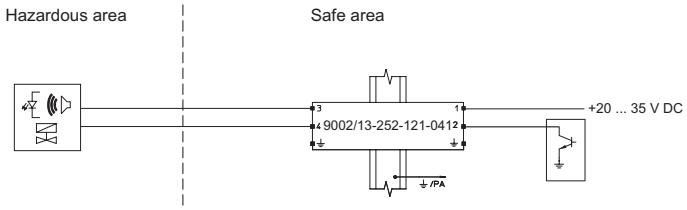
Two-channel safety barriers, star barrier / star barrier



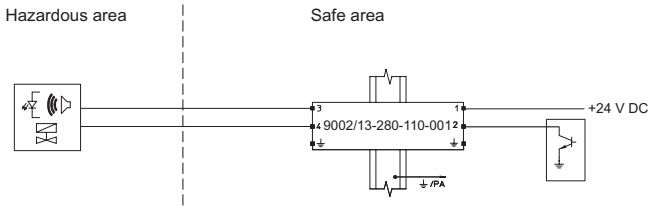
Two-channel safety barriers, potential: ~ / ~



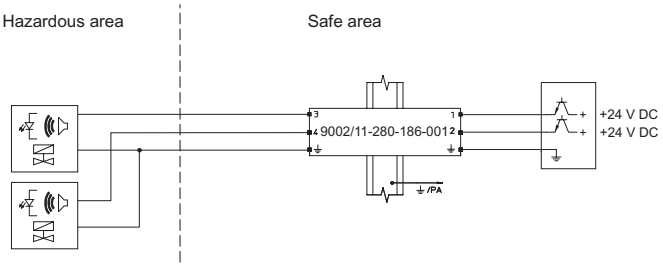
Application: 3-wire NPN inputs (negative switching) of proximity switches, photocells and encoders



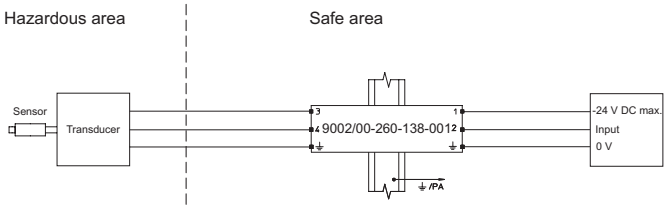
Application: Analog output (current source) for I/P converter etc., field circuit unearthed



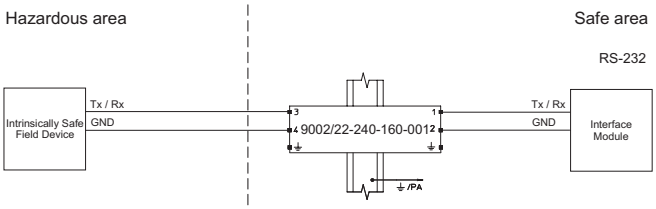
Application: Discrete 2-wire output for solenoid valves, LEDs and signalling devices



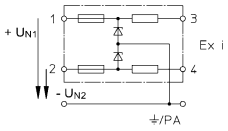
Application: Discrete 2-wire output for solenoid valves, LEDs and signalling devices



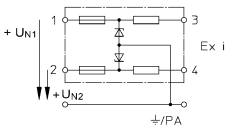
Application: Vibration sensor



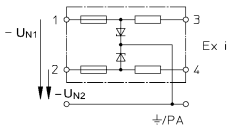
Application with RS 232



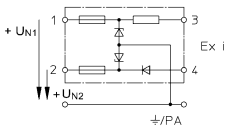
Picture A



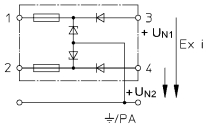
Picture B



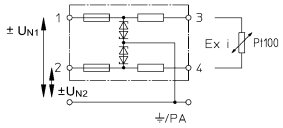
Picture C



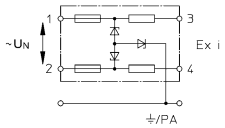
Picture F



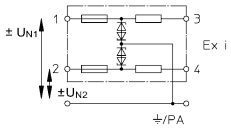
Picture I



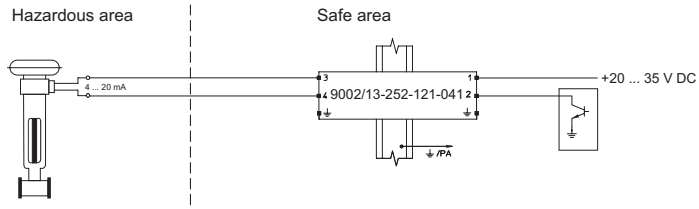
Picture J



Picture K

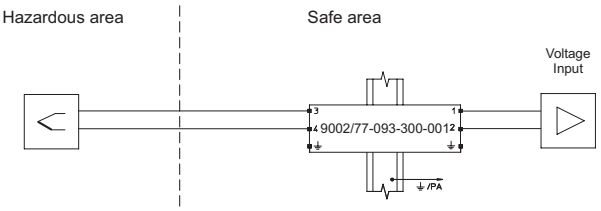


Picture M

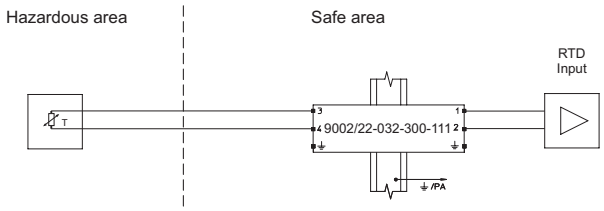


Application: Analog output (current source) for I/P converter etc., field circuit unearthed

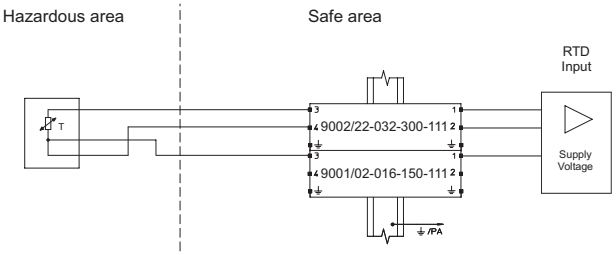
A2



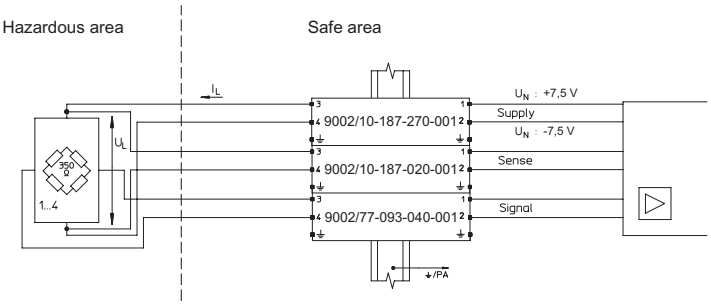
Application: Thermocouples



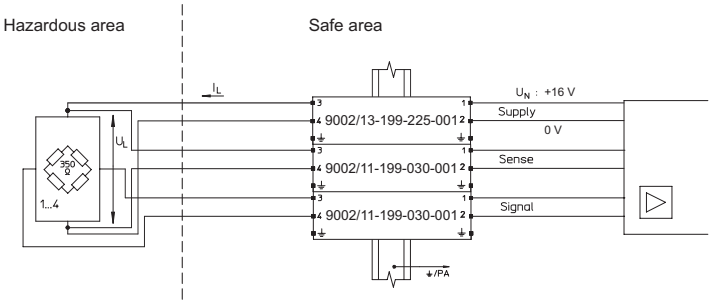
Application: Pt100, 2-wire circuit, field circuit unearthed

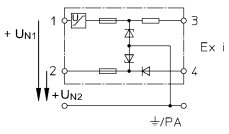


Application: Pt100, 3-wire circuit field circuit unearthed



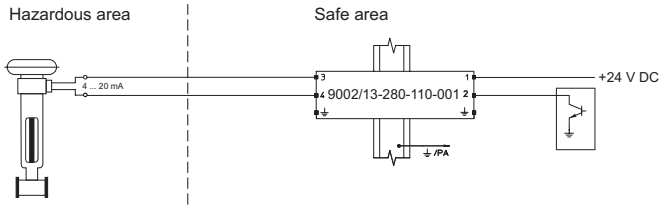
Application: Load cell (DMS) 350 Ω or 700 Ω
6 conductors +/- 7.5 V (15 V), field circuit unearthed



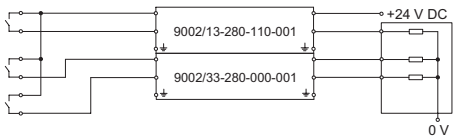


Picture N

Application: Load cell (DMS) 350 Ω or 700 Ω
6 conductors + 16 V, field circuit unearthed

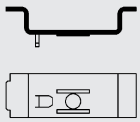
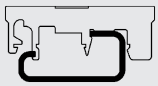
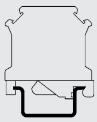
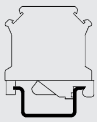
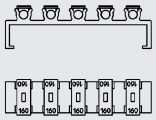
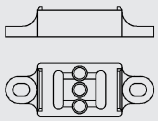


Application: 2-wire 4/20 mA I/P converters and control valves - standard and HART, 4/20 mA indicators

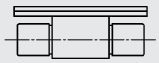
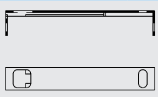


Application: Combination of potential-free contacts

Accessories

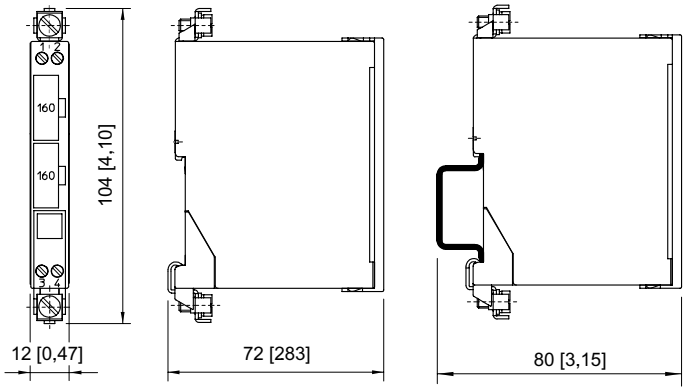
Figure	Description	Art. No.	Weight kg
Adaptor			
	Adaptor allows installation of a safety barrier Series 900x on a mounting plate of a previous series.	158826	0.006
Mounting attachment moulded plastic			
	Enables mounting of safety barrier on a G-rail.	165283	0.004
Protective conductor terminal			
	USLKG 5 (wire range 4 mm²) Terminal enables connection of protective conductors to DIN rail. Colour green-yellow.	112760	0.012
Earth terminal			
	USLKG 6 N (wire range 6 mm²) Terminal enables connection of protective / earthing conductors to DIN rail. Colour green-yellow.	112599	0.030
Fuse holder			
	Fuse holder is snapped onto the side of the safety barrier and can be equipped with up to 5 back-up fuses (replacement).	158834	0.020
Insulating stand off			
	Suitable for DIN rail NS35/15, allows electrically insulated mounting of DIN rail from mounting plate.	158828	0.023

Spare Parts

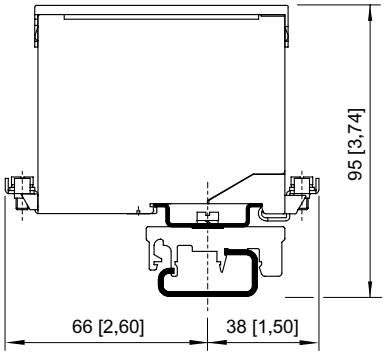
Figure	Description	Art. No.	Weight kg
Back-up fuse			
	For all safety barriers Series 9001, 9002 and 9004 Packaging unit: 5 pcs.	158964	0.008
Holder for label			
	Transparent cover for labelling	158977	0.002

A2

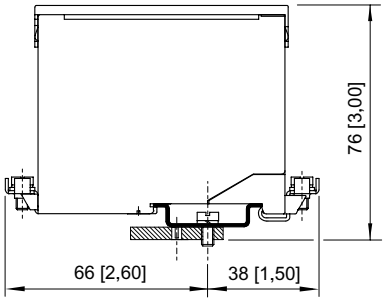
Dimensional Drawings (All Dimensions in mm [inches]) – Subject to Alterations



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