



FEATURES

- Two-piece measuring system with active electronic for evaluation and passive IR receiver(sensing head)
- The sensing head can be installed as passive element in hazardous areas
- Energy limitation with appropriate zener barriers(STAHL) with approval for zone 1
(PTB 01 ATEX 2053/ E II (1/2) GD [Ex ia/ib] IIC/IIB)

Concept

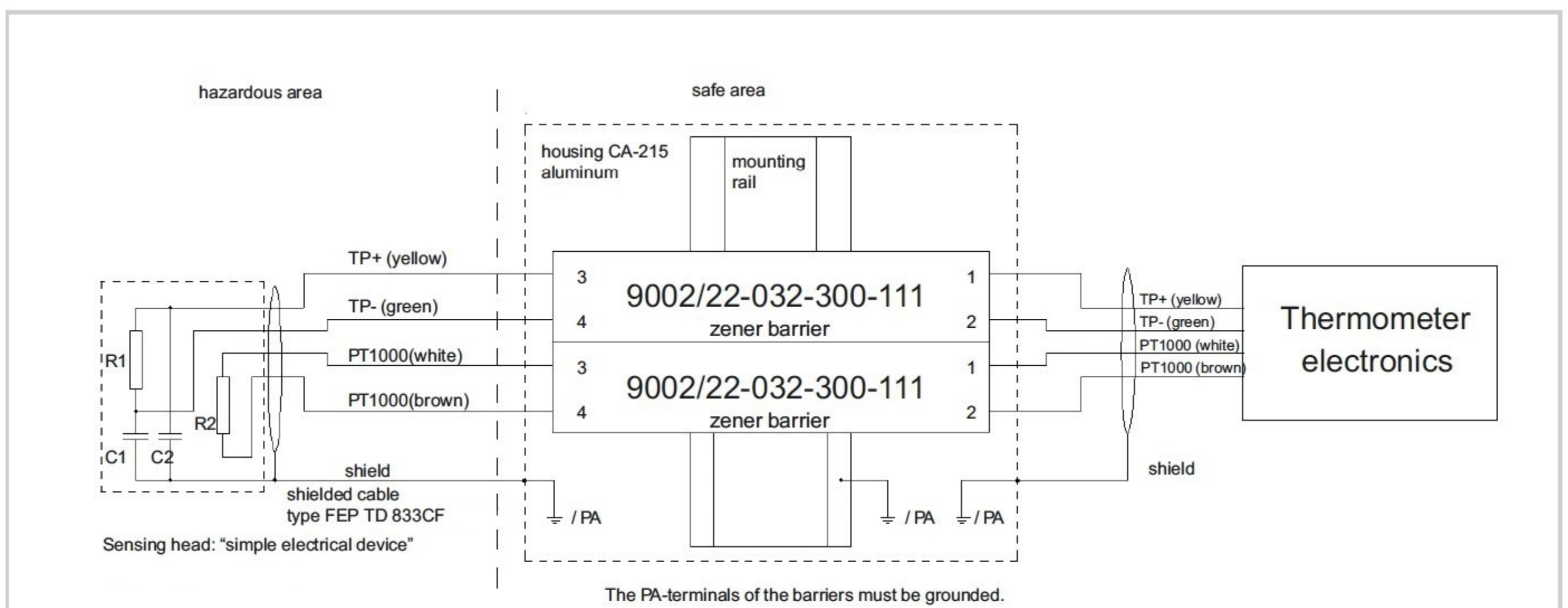
Classification of the Rayomatic14 sensing heads according to EN60079-0/ EN 60079-11 (category of simple electrical devices)

Intrinsically safe by limitation of the energy with two double zener barriers,type 9002/22-032-300-111(R. STAHL AG)

Scope of delivery

Rayomatic14 - Sensor (optics 2:1, 15:1,22:1)
with cable length 3 m, 8 m or 15 m (selectable)
Aluminum housing with mounting appliance for two zener barriers and
Rayomatic14 electronics
2 zener barriers, type 9002/22-032-300-111 (R. STAHL AG)

NOTE: The functionality and correct reading of the Rayomatic14 sensor can only be guaranteed if the recommended barriers are used



Manufacturer's declaration for the Rayomatic14 measurement system

To verify that the Rayomatic14 sensing head is a simple electrical device according to EN 60079-11 item 5.7 we hereby confirm the following technical data:

• **Inductance (available for the sensor cable only):**

Inductance of the loops
min. 0.55 mH/ km max. 0.56 mH/ km

• In relation to a cable length of 15 m:

Inductance of the loops
min. $0.825 \cdot 10^{-3}$ mH max. $0.84 \cdot 10^{-3}$ mH

• **Capacitance:**

Capacitance of the sensor cable:

Capacitance lead/lead	min. 16.5 nF/ km	max. 17.9 nF/ km
Capacitance lead/rest	min. 101.0 nF/ km	max. 103.4 nF/ km

In relation to a cable length of 15 m:

Capacitance lead/lead	min. 0.2475 nF	max. 0.2685 nF
Capacitance lead/rest	min. 1.515 nF	max. 1.551 nF

Capacitance in the sensing head:

C1 = Ceramic SMD Capacitor 6.8 nF $\pm$ 20 %

C2 = Ceramic SMD Capacitor 6.8 nF $\pm$ 20 %

Technical data (zener barriers)¹⁾

Approvals:
Type 9002/22-032-300-111

Europe (CENELEC):
for zone 1: PTB 01 ATEX 2053X
for zone 2: PTB 01 ATEX 2054X
IECEx PTB 08.0057X

USA:
UL E81680V1S3

Canada:
CSA 1284580 (LR 43394)

Explosion protection

Europe (CENELEC):
for zone 1: E II (1/2) GD [EEx ia/ib] IIC/IIB
for zone 2: E II 3 GD EEx nA II T4

USA:
I.S. circuits for: class I, II, III,
division 1, groups A, B, C, D, E, F, G
I.S. circuits for: class I, zone 0, group IIC
class I, division 2, groups A, B, C, D
class I, zone 2, group IIC

Canada:
I.S. circuits for: class I, groups A, B, C, D;
class II, groups E, F, G
class III
class I, division 2, groups A, B, C, D
class I, zone 2, groups IIC

Installation

in zone 2, division 2 and in safe area

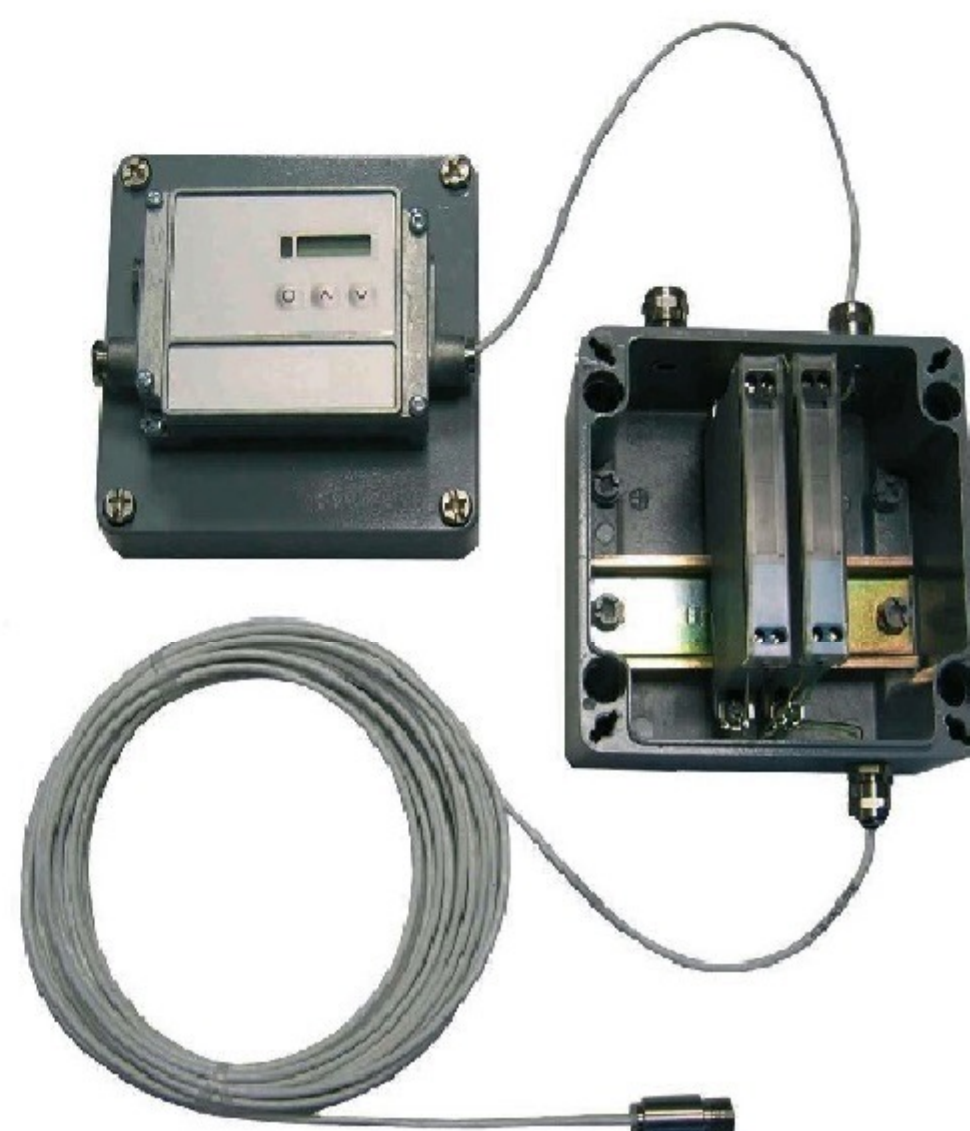
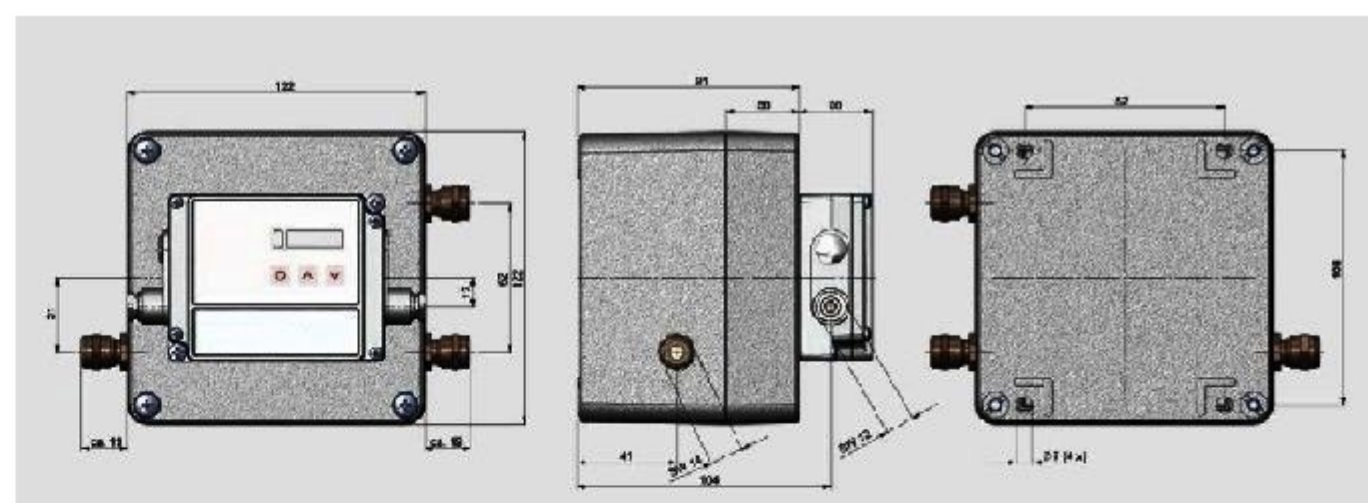
Environmental rating

acc. to IEC 60529/ clamping carrier IP 20/
housing IP 40

Ambient temperature

-20 °C ... 60 °C

Dimensions



Safety Barriers
Dual-channel safety barrier



9002/22-032-300-111 Art. No. 158954



- 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 to install as barriers can be simultaneously snapped onto rail and connected to PE

WebCode 9002A



The 9002 series INTRINSPAK two-channel safety barriers enable the intrinsically safe operation of virtually all field devices. The comprehensive portfolio and the combination of safety 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 standardised for all variants.

Technical Data

Table with 2 columns: Parameter and Value. Sections include Explosion Protection (Application range, Ex interface zone, Certificates, Gas explosion protection, Dust explosion protection, EAC certificate, Installation) and Safety Data (Max. voltage, Max. current, Max. power, Max. permissible external capacitance).

Safety Barriers
Dual-channel safety barrier



9002/22-032-300-111 Art. No. 158954

Safety Data						
Max. permissible external capacitance C _o for IIB		1000 µF				
Max. permissible external inductance L _o for IIC		1.3 mH				
Max. permissible external inductance L _o for IIB		7 mH				
Further information		see respective certificate and operating instructions				
Electrical Data						
Number of channels		2				
Channel		1 2 1 + 2				
Nominal voltage U _N		0,7 V 0.7 V 1.4 V				
Min. resistance R _{min}		19.9 Ω 19.9 Ω				
Max. resistance R _{max}		20.1 Ω 20.1 Ω				
Max. current I _o		150 mA 150 mA 300 mA				
Max. power P _o		60 mW 60 mW 120 mW				
DC rated operational voltage		0.7 V				
Power supply		Controlled, nominal voltage				
Nominal voltage		0,7 V				
Maximum resistance Rmax		20.1 Ω				
Minimum resistance Rmin		19.9 Ω				
Maximum output current Imax		33 mA				
Potential		Alternative potential				
Potential Ch 1		Alternative potential				
Potential Ch 2		Alternative potential				
Ohm.curr.lim.usingfreq.>= 50mA		≤ 100 kHz				
Ohm.curr.lim.usingfreq<= 50 mA		≤ 50 kHz				
Ileak leakage current for Un		≤ 2 µA				
Ileak leakage current for Un 2		(Unless specified otherwise)				
Channel	Nominal voltage U _N	Min. resistance R _{min}	Max. resistance R _{max}	Max. voltage U _o	Max. current I _o	Max. power P _o
1	0,70 V	19.90 Ω	20.10 Ω	1.60 V	150.0 mA	60.000 mW
2	0.70 V	19.90 Ω	20.10 Ω	1.60 V	150.0 mA	60.000 mW
1 + 2	1.40 V			3.20 V	300.0 mA	120.000 mW
Ambient Conditions						
Min. ambient temperature		-20 °C				
Max. ambient temperature		+60 °C				

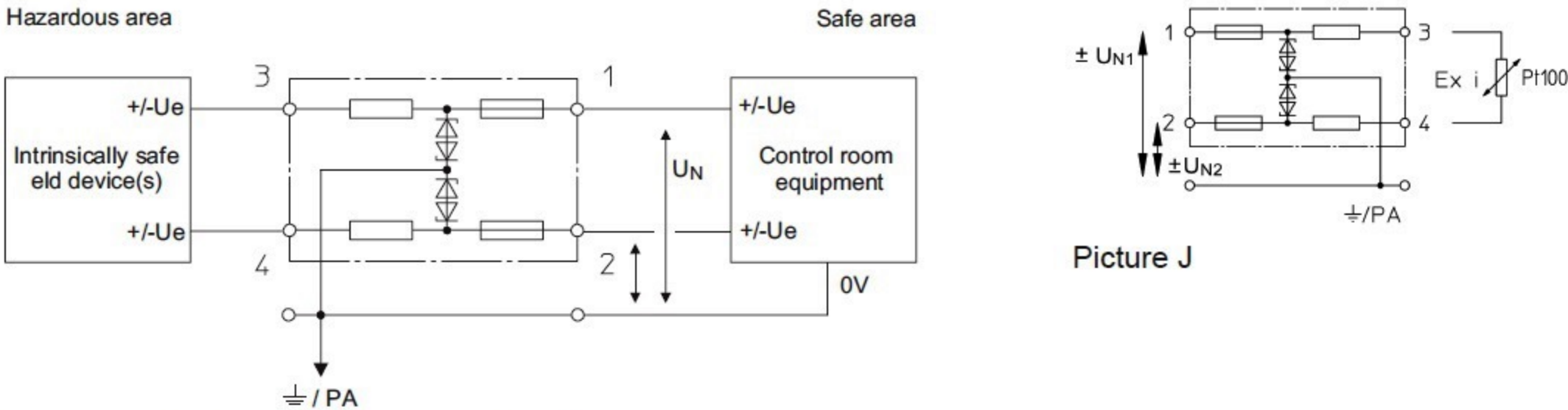
Safety Barriers
Dual-channel safety barrier



9002/22-032-300-111 Art. No. 158954

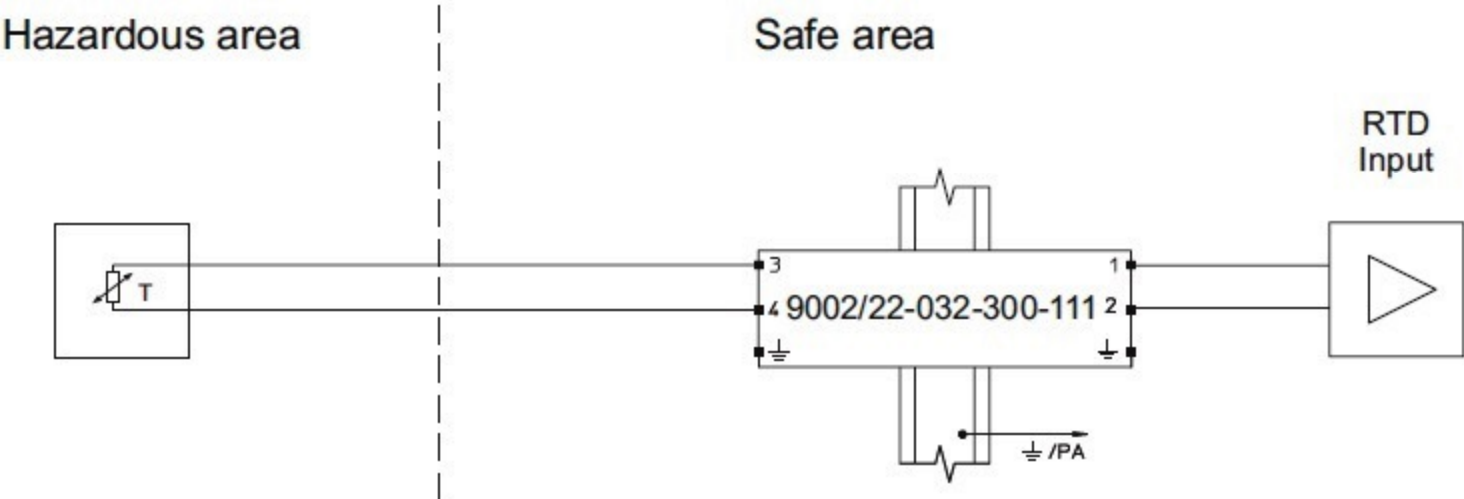
Ambient Conditions	
Ambient temperature	-20 °C ... +60 °C
Min. storage temperature	-20 °C
Max. storage temperature	+75 °C
Storage temperature	-20 °C ... +75 °C
Maximum relative humidity	95% on av., no condensation
Temperature influence	≤ 0,25 %/10K
Mechanical Data	
Degree of protection (IP)	IP40
Degree of protection (IP) Terminals	IP20
Enclosure material	Polyamide 6GF
Number of connection terminals	4
Max. clamping range	1.5 mm²
Connection cross-section	4 mm²
Type of connection cable	Solid Finely stranded
Width	103 mm
Length	12 mm
Mounting depth	72 mm
Weight	0.11 kg
Mounting / Installation	
Connection type	2 PA

Technical Drawings



Picture J

Two-channel safety barriers, potential: ~ / ~

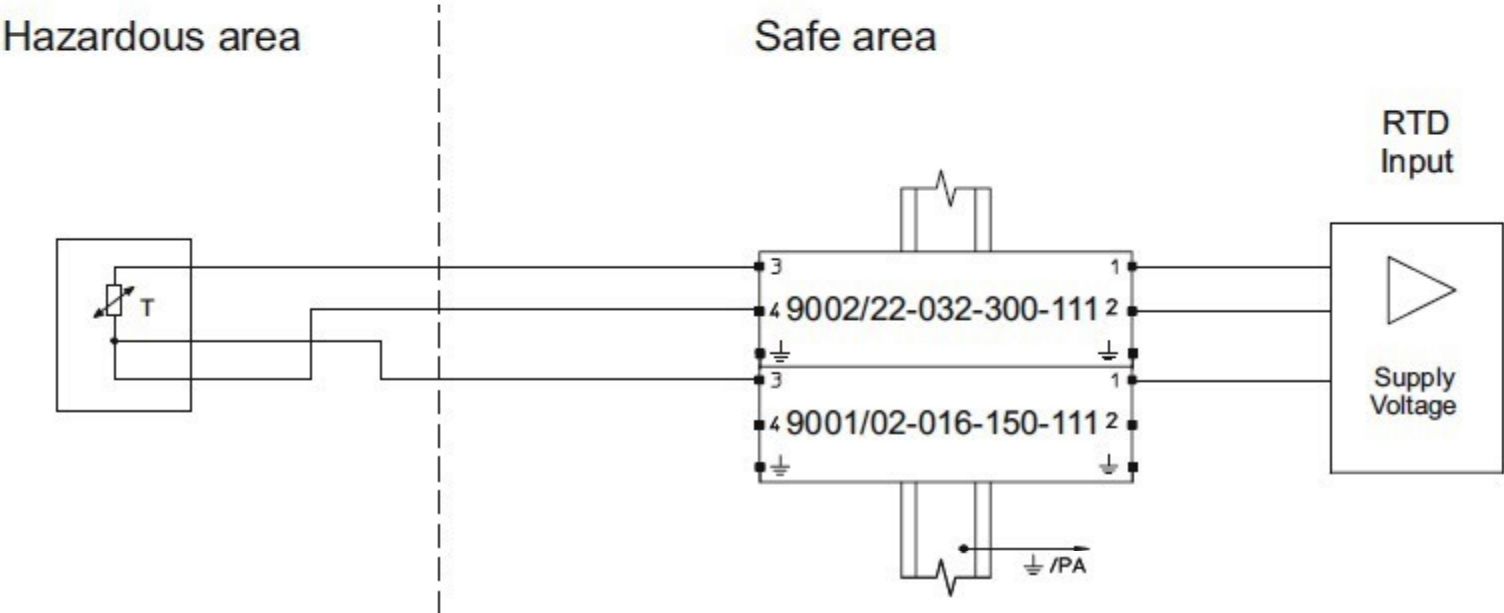


Application: Pt100, 2-wire circuit, field circuit unearthed

Safety Barriers
Dual-channel safety barrier

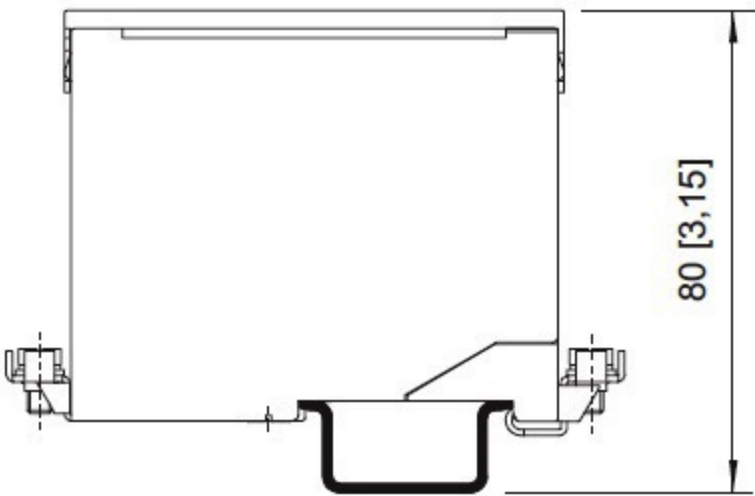
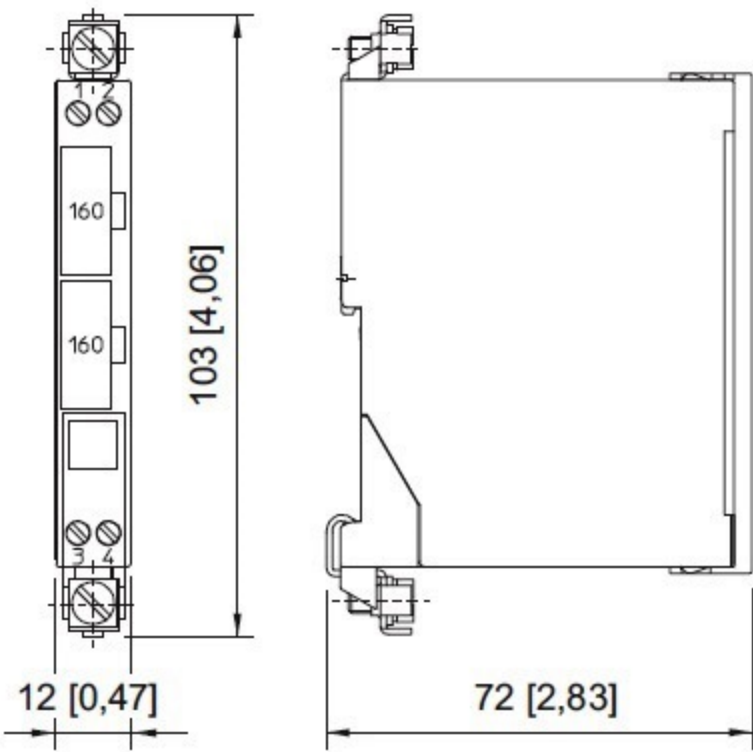


9002/22-032-300-111 Art. No. 158954

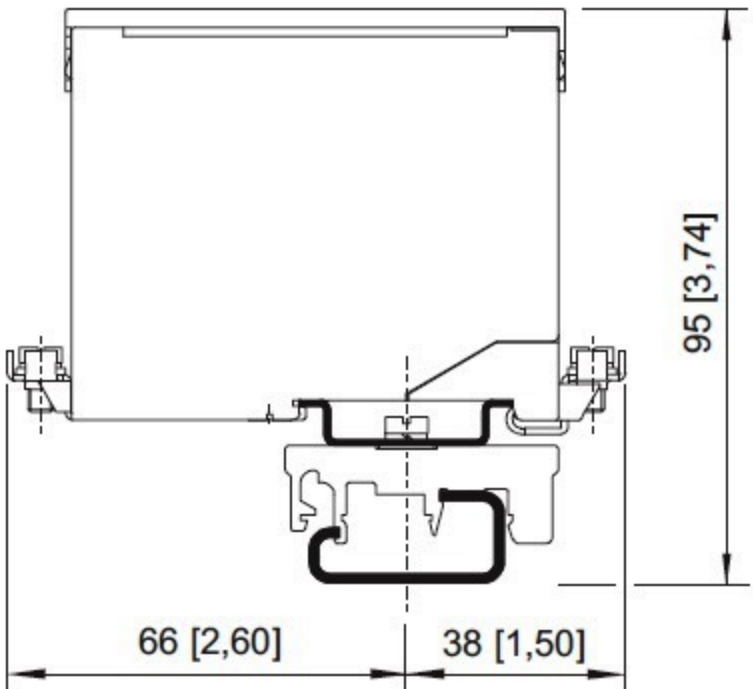


Application: Pt100, 3-wire circuit field circuit unearthed

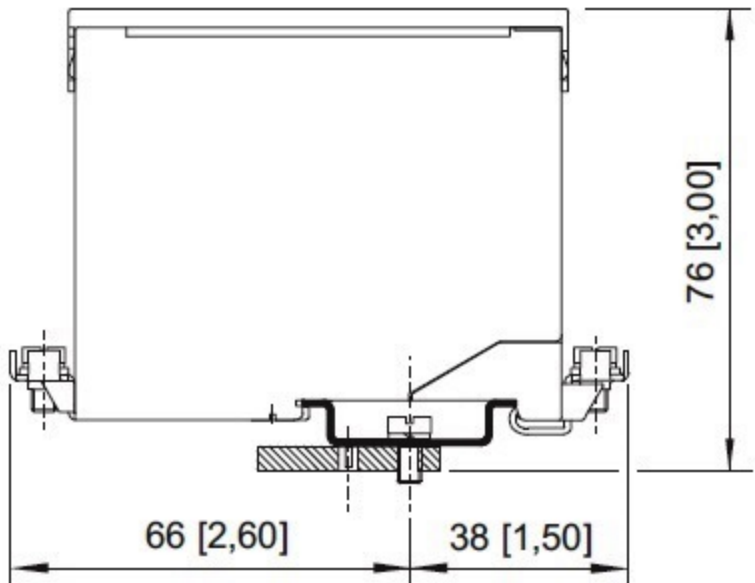
Dimensional Drawings (All Dimensions in mm [inches]) – Subject to Alterations



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

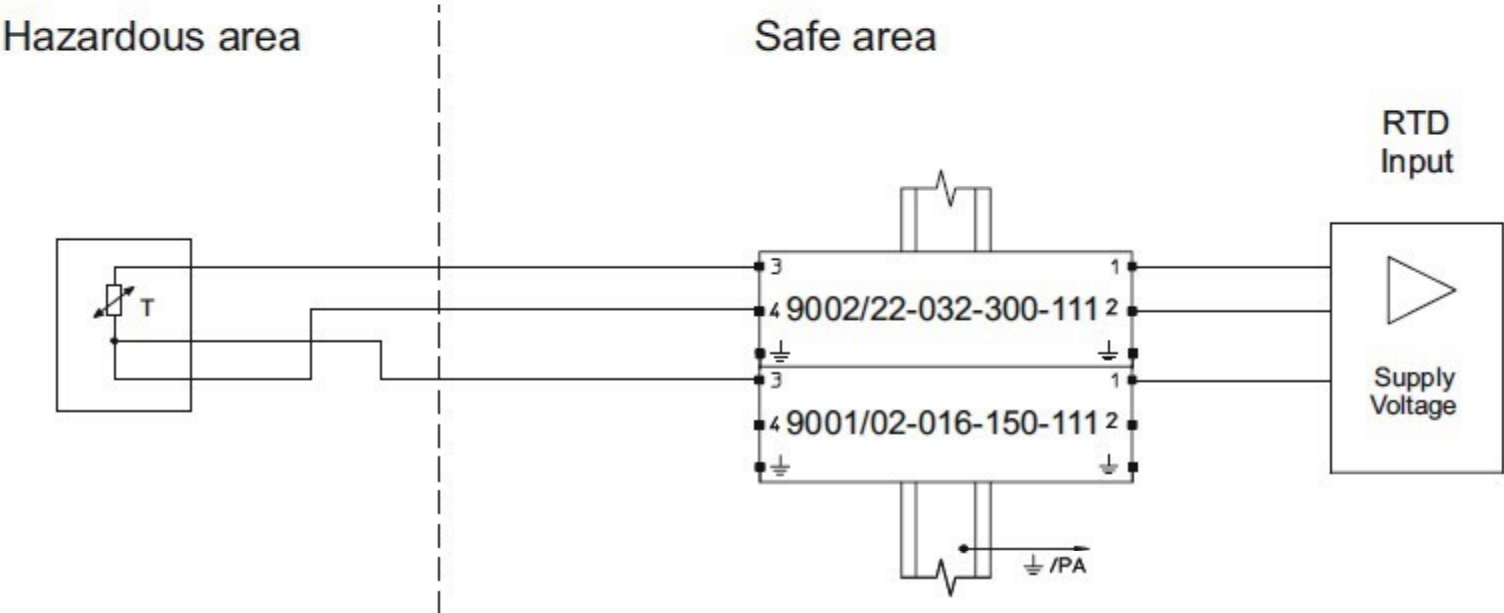
Accessories and Spare Parts

Table with 3 columns: Accessory Name, Description, and Art. No.
Row 1: Back-up fuse, For all safety barriers Series 9001, 9002 and 9004 unit: 5 pcs., 158964
Row 2: Holder for label, Transparent cover for labelling, 158977

Safety Barriers
Dual-channel safety barrier

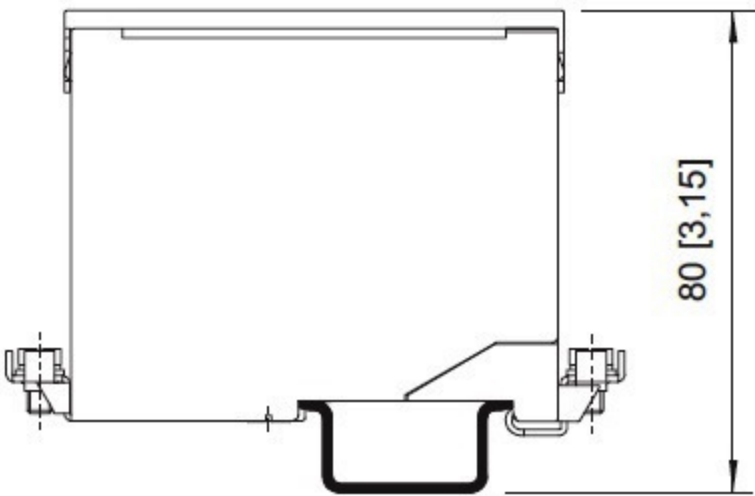
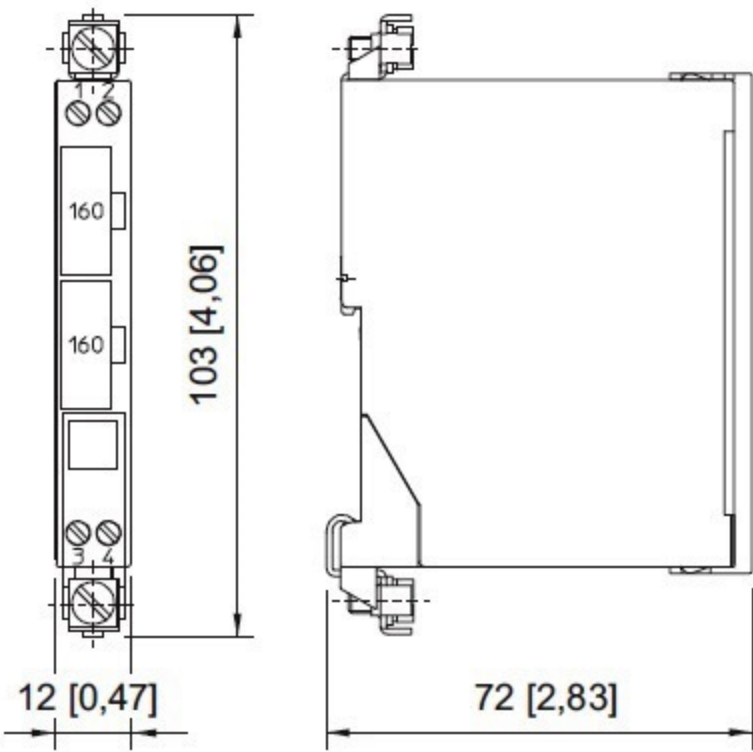


9002/22-032-300-111 Art. No. 158954

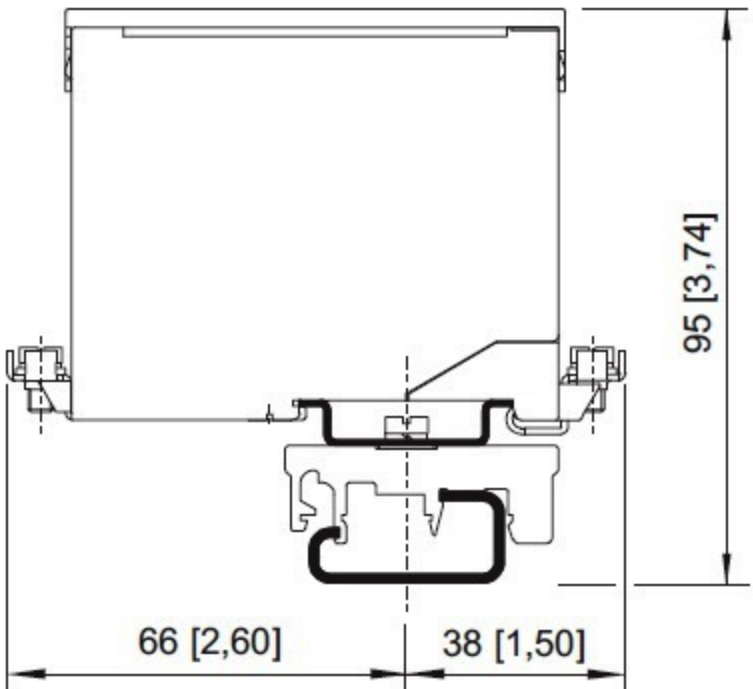


Application: Pt100, 3-wire circuit field circuit unearthed

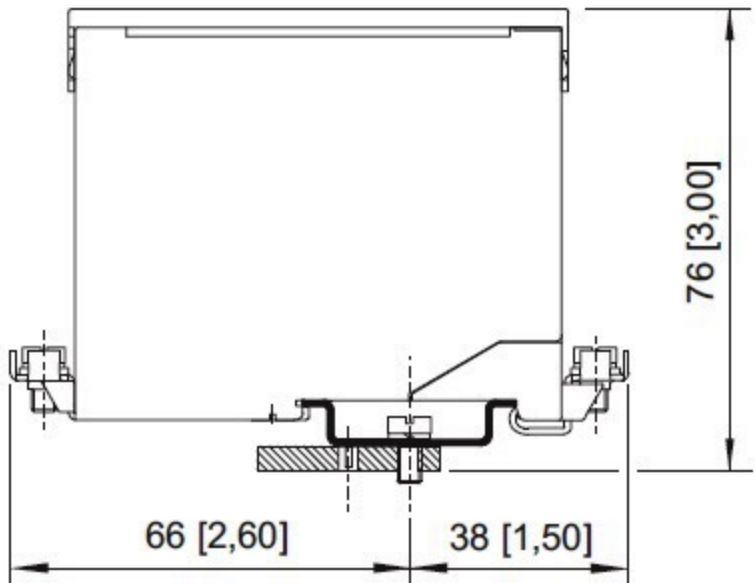
Dimensional Drawings (All Dimensions in mm [inches]) – Subject to Alterations



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 and Spare Parts

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