

Exploded view of a Type 9001 single channel barrier showing 35mm DIN rail, barrier, replaceable fuse, and label holder.



Multiple barriers mounted to 35mm DIN Rail. Each barrier occupies 1/2" of rail space. Once mounted the barrier forms an electrical connection with the rail which now serves as the intrinsic safety ground bus.

Series 9000 INTRINSPAK Intrinsic Safety Barrier

One Step, Snap-On 35mm DIN Rail Mounting and Grounding
... eliminates external ground bars, wiring, tools, and adaptors.

Patented Replaceable 160mA Fuse
... provides overvoltage and reverse polarity protection.

Lowest Internal Resistance
... reduces circuit loading problems.

Common 1/2" Wide Housing for Single and Dual Channel Versions
... easily accessible terminals.

Short-Circuit Proof Connections
... prevents blown fuses when field wiring is shorted.

Approvals to Worldwide Standards
... FM, UL, CSA, PTB (CENELEC), MSHA, SA and others

General Description

First introduced in 1991, the Series 9000 INTRINSPAK has quickly become the industry standard for intrinsic safety barrier design. Within the series the user can choose from the Type 9001 single channel, Type 9002 dual channel, or for applications requiring up to $\frac{3}{4}$ W of power, the Type 9004 single channel with electronic current limitation.

All three types share a common 1/2" wide housing which snaps directly to a 35mm DIN rail. Once mounted, an electrical connection is formed between the barrier and the rail. This rail now serves as the intrinsic safety ground bus when connected to the designated grounding point. Two additional ground lugs are provided and may be used as a redundant grounding method or for terminating shields.

Each barrier also contains a replaceable 160mA fuse cartridge for each channel. This fuse is located within the front faceplate and protects the barrier from pole reversal and voltage spikes at the input side (terminals 1 and 2). Unlike other safety barrier designs, this fuse will not blow should the field wiring be shorted to ground.

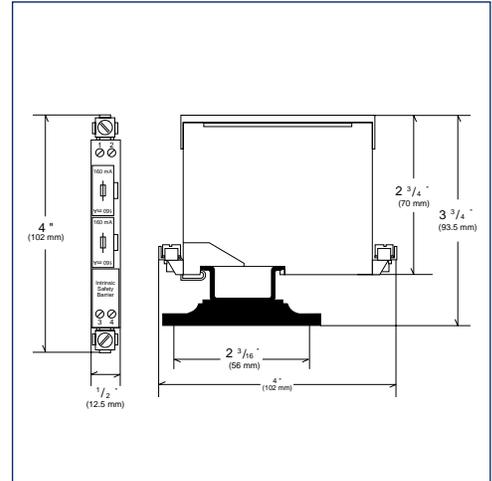
Safety barriers are polarity sensitive devices therefore they are available in +DC, -DC, and AC voltage ratings. They also contain an internal resistance which may cause loading problems in some applications. STAHL safety barriers have been designed to minimize this resistance and offer the lowest available ratings in the industry.

Many voltage and resistance value combinations are available within the Series 9000 INTRINSPAK. However, most instrumentation applications can be handled by no more than four models. Refer to the Program Overview on page 5 for a complete listing.

Electrical Specifications

The following are common characteristics of the Types 9001, 9002, and 9004 safety barriers.

Rated Voltage	Refer to tables
Rated Current	Refer to tables
Replaceable Fuse Rating	160mA per channel
Pole Reversal Protection	Protected by replaceable fuse
Current Limitation	Resistive
Type 9001	Resistive
Type 9002	Resistive
Type 9004	Electronic
Leakage Current	1µA unless stated otherwise <2mA for 9004/5.
Temperature Effect	<0.25%/10K
Short Circuit Proof	Yes, unless stated otherwise
Frequency Range	100kHz @ $I_{sc} > 50mA$ 50kHz @ $I_{sc} \leq 50mA$ 100kHz @ $I_{sc} > 50mA$ 50kHz @ $I_{sc} \leq 50mA$ 10kHz
Grounding Method	Through mounting platform (NS35/15).



Dimensions of the Series 9000 INTRINSPAK intrinsic safety barrier. All types share a common 1/2" wide housing.

Environmental Specifications

Vibration Frequency	55Hz
Vibration Amplitude	± 0.2" (± 5mm)
Shock Resistance	20g
Operating Temp. Range	-4° to +140°F (-20°C to +60°C)
Storage Temp. Range	-40° to +167°F (-40°C to +75°C)
Relative Humidity Range	To 95%, no condensation

Mechanical Specifications

Mounting Method	NS35/15 DIN Rail (Standard) Surface Mount (with adaptor)
Mounting Location	Nonhazardous or Class I, Div. 2 location
Mounting Orientation	any
Housing Material	Polyamide
Degree of Protection	IP40 to IEC 529
Flame Resistance Rating	HB to UL94
Weight	0.22 lbs. (100grams)
Screw Terminal Size	Four #14 AWG (1.5mm ²) captured, self-opening Two #12 AWG (4.0 mm ²) for ground and shield

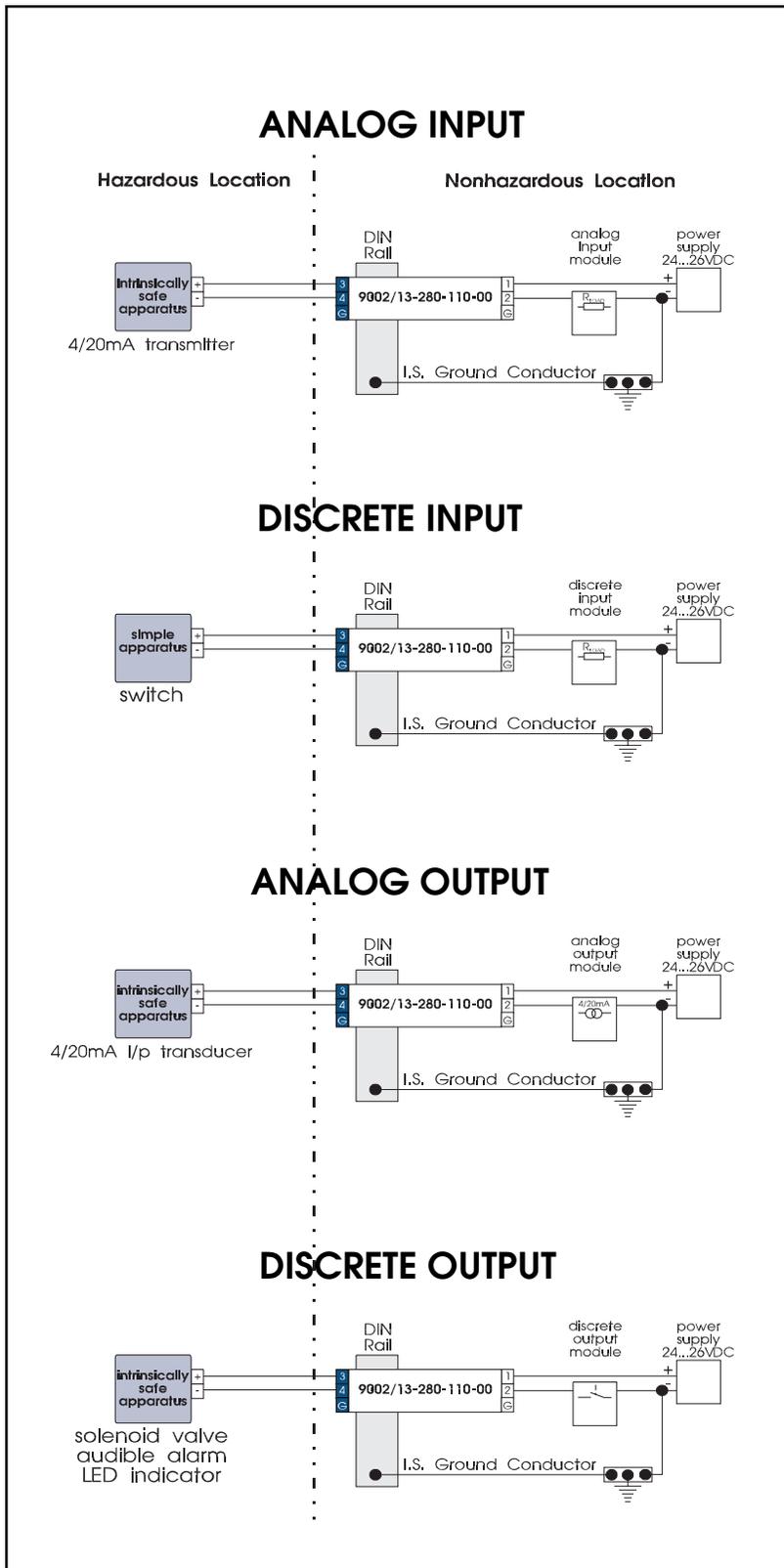
Test Certificates

	<u>FM</u>	<u>UL</u>	<u>CSA</u>	<u>CENELEC</u>
Type 9001	J.I. 3T9A1.AX	E 81680	LR43394	Ex-91.C.2046X
Type 9002	J.I. 3T9A2.AX	E 81680	LR43394	Ex-91.C.2045X
Type 9004	J.I. 3T9A3.AX	E 81680	LR43394	Ex-92.C.2013X

Contact R. STAHL for other agency approval status, i.e. SA, MSHA, JIS, CIS.



Top view of safety barrier showing screw terminal connections for both safe and hazardous area terminations. The replaceable fuses are contained in recessed compartments and are interchangeable with all Series 9000 INTRINSPAK.



**Type 9002/13-280-110-00
Dual Channel 24VDC Barrier**

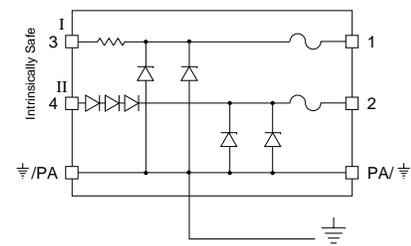
The Type 9002/13-280-110-00 is a dual channel, 24VDC safety barrier which can be used on a wide variety of process measurement and control applications where both leads must be elevated above ground potential.

When used with energy-storing devices such as transmitters, positioners, alarms, and solenoid valves care should be taken to select a device which has been designed for use in an intrinsically safe system.

Application	4/20mA transmitters Smart transmitters i/p positioners Solenoid valves Audible alarms Pilot lights Switches PNP proximity switches
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Internal Specifications	
Number of channels	2
Rated voltage	+24...26VDC per channel
Pole reversal protection	Yes, by replaceable fuse
Replaceable fuse rating	160mA per channel
Internal resistance	280 ohms, channel 1 1V drop, channel 2
Short-circuit proof	yes

Internal schematic



Safety Data, FM

Refer to data tables for other agency values.

Open circuit voltage, V_{OC}	31V
Short circuit current, I_{SC}	109.1mA
Allowable capacitance, C_A	
Gas groups A/B	0.11 μ F
Gas groups C/E	0.33 μ F
Gas groups D/F/G	0.88 μ F
Allowable inductance, L_A	
Gas groups A/B	2.9mH
Gas groups C/E	11.6mH
Gas groups D/F/G	23.6mH