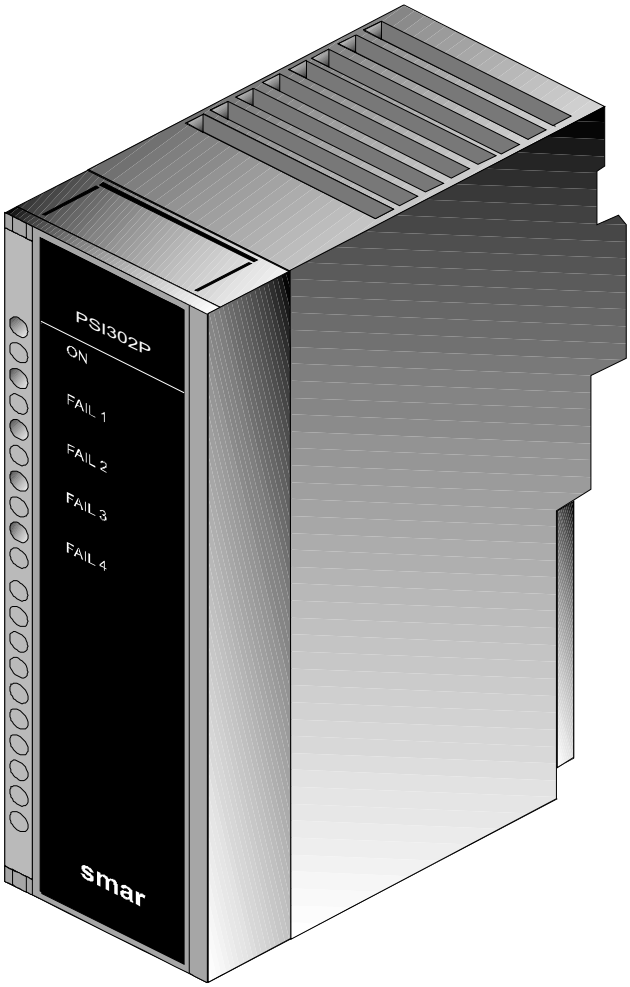
PSI302P - FIELDBUS POWER SUPPLY IMPEDANCE

INSTALLATION MANUAL



smar
FIRST IN FIELDBUS

JUL / 02

PSI302P

VERSION 1

FOUNDATION™

PSI302PME

smar

ISO 9001 : 2000 INMETRO

web: www.smar.com

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INTRODUCTION

The function of impedance in a power supply is to implement a circuit output impedance greater than 3 K wich, in a parallel with the two terminators of 100 ± 2% each, results in a line impedance if about 50. This impedance can be implement in a passive mode (50 resistance in series with a 100 mH inductance) or in an active mode, through a impedance control circuit.

DEFINITION

The fieldbus Power Supply Impedance is a non-isolated, active impedance control device, in accordance with Standard IEC 1158-2. This device presents an output impedance wich, in parallel with the two bus terminators (a 100W resistor in series with a 1 mF capacitor) required by the standard, results in a purely resistive line impedance for a broad frequency range.
The PSI302P, (because of the power supplied, cannot be used directly in areas requiring intrinsic safety specifications.

Figure 1 shows the Device Block Diagram. The PSI302P can be used in redundancy, connecting their output (+ E -) in parallel. When this configuration is used, use external terminator (BT302) to allow PSI302P change in case of failure, without Fieldbus interruption (See fig. 2).

As to its external physical characteristics, the PSI302P presents power supply and overcurrent indication LEDs. The input terminal block has two terminals (1A e 2A), wich are connected to the external 24 Vdc. The power supply indication LED is green and is must be energized while there is external 24 Vdc power supply.

The overcurrent indication LED is red and it must be energized only in case of overcurrent caused by a short circuit in the plant or by an excessive number of connected deviced. Figure 3 and 4 shows a layout of device **PSI302P.**

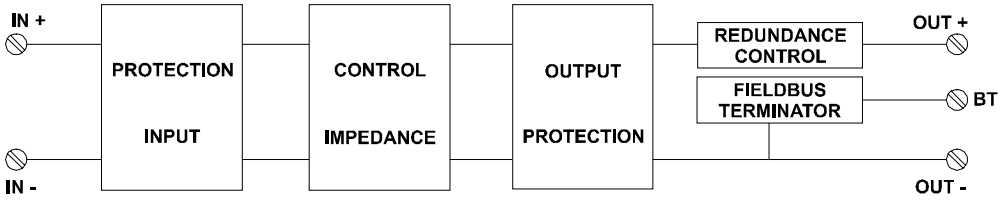

Fig.1 - *PSI302P Block Diagram*

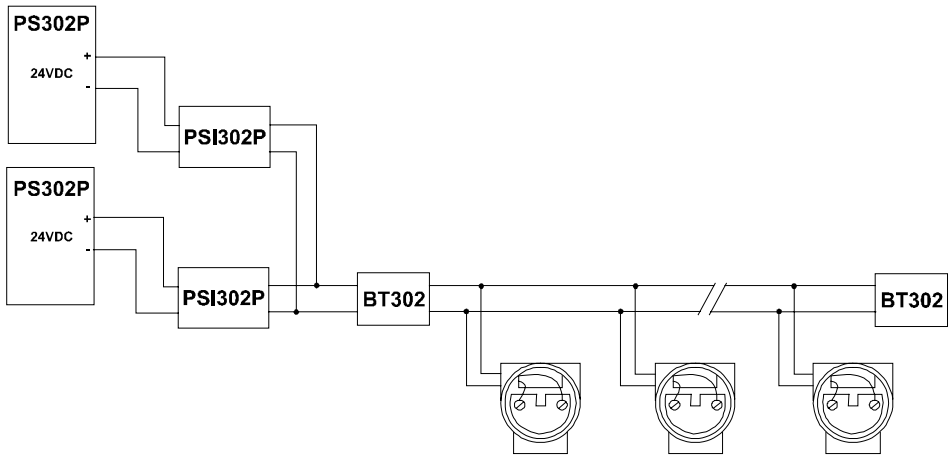

Fig. 2 – *Redundancy of PSI302P*

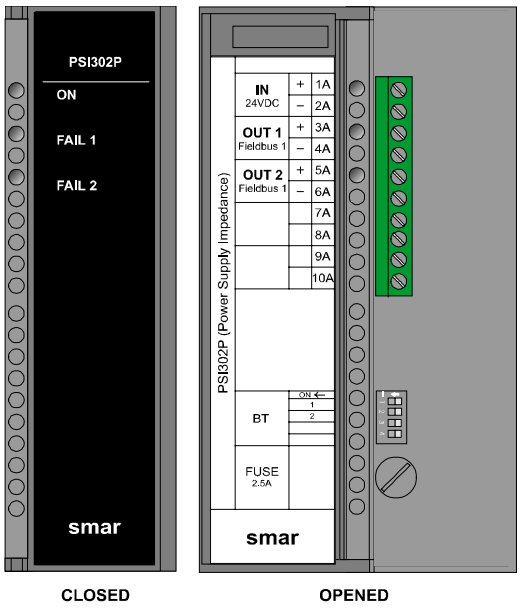

Fig 3 *– Frontal View PSI302P-2*

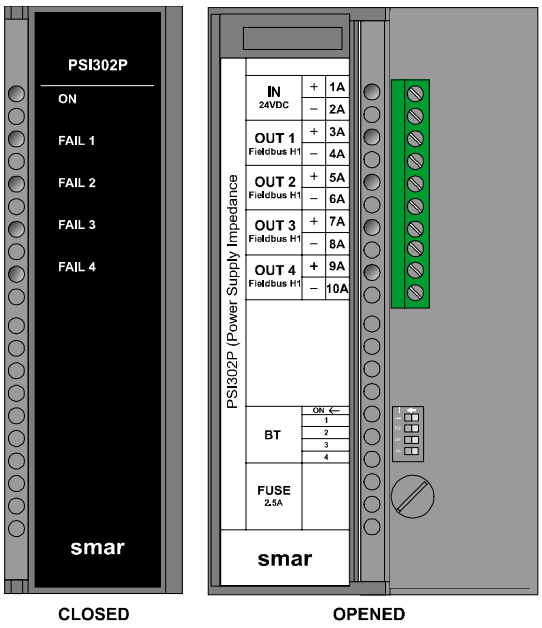

Fig 4 *– Front View PSI302P-4*

PSI302P-4: Eight terminals (3A to 10A) to implementation of 4 independent Fieldbus channels and a Dip Switch with 4 switches for interlinked of the internal terminador of the **PSI302P-4**. The *Figure 4* shows a layout of device; to verify that 4 Leds of flaw exists, one for each **PSI302P**.

PSI302P-4: Eight terminals (3A to 10A) to implementation of 4 independent Fieldbus channels and a Dip Switch with 4 switches for interlinked of the internal terminador of the **PSI302P-4**. The *Figure 4* shows a layout of device; to verify that 4 Leds of flaw exists, one for each **PSI302P**.

PSI302P-2: Four terminals (3A to 6A) to implementation of 2 independent Fieldbus channels and a Dip Switch with 2 switches for interlinked of the internal terminador of the **PSI302P-2**. The *Figure 3* shows a layout of device; to verify that 2 Leds of flaw exists, one for each **PSI302P**.
Obs: So much for the model **PSI302P-2** as for the **PSI302P-4**, the terminals and Dip Switch they are the same, even so for the model PSI302-2 only the connections are enabled for 2 channels. The key 1 in the position ON enables the internal terminator (BT302) for the channel 1.

The energization indication LED is of green color, should be energized while there is external 24 Vdc power supply and the overcurrent indication LED it is red color, being just activated when it happens current excess due to short circuit in the plant or excess of connected equipaments.

INSTALLATION

The **PSI302P –** Fieldbus Power Supply Impedance is a device specially designed for panel installation and it can not be installed in unshetered locations, as it can not be exposed to the weather.

Due to its great thermal dissipation capacity, the device may be installed in environments where the maximum temperature reaches up to 50 °C, without requiring cooloing facilities. Connections to the panel may be done directly by means of screws and nuts, or by means of a DIN rail in supports supplied with the device.

It can be fixed, the **PSI302P** through the rack or for the auxiliary support (optional)(Fig. 5) with the device:

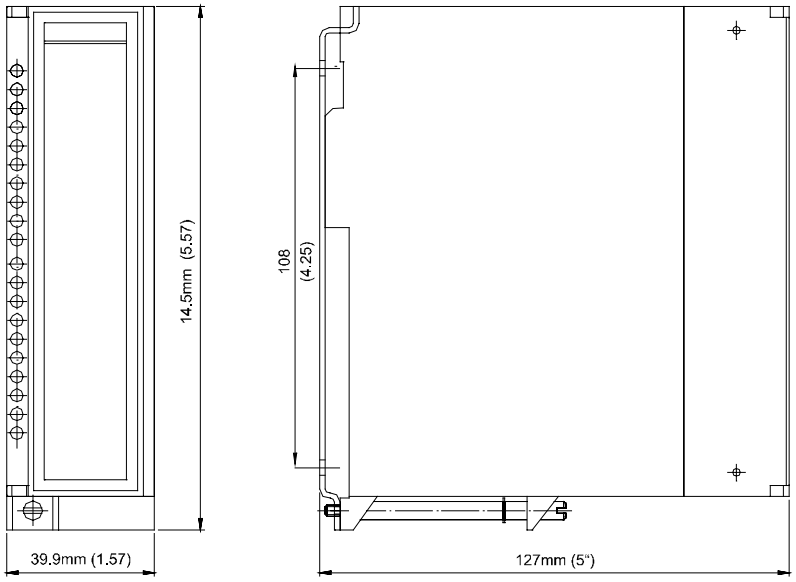

Fig 5 *– Dimensional Drawing*

To fixing the **PSI302P** through the rack::
1- To fix the rack in DIN rail or directly by means of screws;
2- It fits for **PSI302P** in the rack.

To fixing the **PSI302P** through the auxiliary support::
3- To fix the supplied suports directly by means of screws;
4- It fits for **PSI302P** in the auxiliary support.

MAINTENANCE

The **PSI302P -** Fieldbus Power Supply Impedance is a rugged device wich practcally requires no type of preventive maintenace. It is simply recommended to protect it from excessive dust accumulation and from excessively humid environments wich might affects its output impedance.

As for troubleshooting, the **PSI302P** has five indication LEDs and **PSI302P-2** has three indication LEDs wich inform its operation status. A green power supply LED informs that the **PSI302P** is appropriately powered. A red overcurrent LED for each channel, will be lit should any abnormal condition occurs in the field wiring. These LEDs are able to detect most problems wich may occur in a Fieldbus installation. However, other problems which are not detectable by the LEDs may occur. Such problems should be: excessive noise introduced by the external power supply; impedance lower than 20Ω in the communication line (consider that such impedance may not be purely resistive and, therefore not detectable by the overcurrent circuit); and a DC voltage higher than 18 Vdc in the communication line. Such abnormal conditions may be easily detected by measurement instruments.

Because the **PSI302P** is a simply and compact device, it is recommended that repair services be done by replacing faulty modules instead of electronic components. Some eletronic components used in the **PSI302P** are highly accurate and in the state-of-art, being therefore not easily found in ordinary retail stores. This is the reason why the **PSI302P** – Fieldbus Power Supply Impedance ha been designed in modules, in order to simplify repair services and the maintenance of spare parts.

TECHNICAL CHARACTERISTICS

Electrical Characteristics:

Power Supply:
24 to 32 Vdc ±10%
Output Current:
340 mA (máx).

Mechanical Characteristics:

Dimensions (LxPxH): 40x142x126 mm
Enclosure: Metallic box for panel mounting.
Mounting: With screws or by means of DIN rail.
DIN rail: TS35-DIN EN 50022 or TS32-DIN EN50035 or TS15-DIN EN50045.

Ambient Conditions:

Operation:
T_{AMB} -20°C to 50°C @RH 10% a 95%, without condensing.

Storage:
T_{AMB} -50°C to 70°C @RH 5% a 95%, without condensing.

Functional Characteristics:

Input Filter:
Attenuation of 10dB in the input power ripple @60 Hz.
Impedance Control:
Active impedance control.
Terminator:
Fieldbus terminator.

Safety Characteristics:

Output Overcurrente:
Limitated in 500 mA
Input Fuser:
2,5 A.

Atmospherics Discharges:
Inpout and output protected for surge suppressor.
Intrinsic Safety:
Cannot be used directly.

Aproximately Weight: 230g