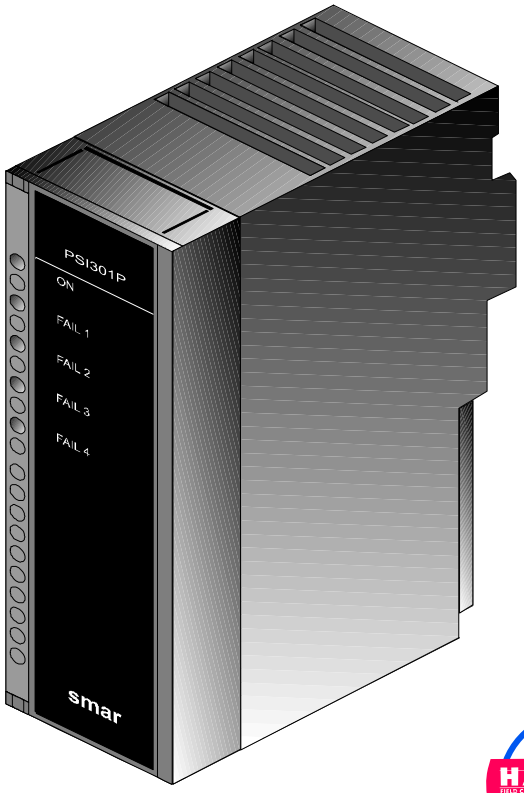
PSI301P - smar

INSTALLATION MANUAL

POWER SUPPLY IMPEDANCE FOR HART® NETWORKS



I'VE GOT HART FIELD COMMUNICATIONS PROTOCOL ABILITY

AUG / 99
PSI301P
VERSION 1

PSI301PME

smar

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web: www.smar.com/contactus.asp

PSI301P – POWER SUPPLY IMPEDANCE FOR HART NETWORK

Description

The PSI301P is a non-isolated, active impedance control device suitable to be used as equivalent impedance of 250 Ω on the HART network connecting various field devices especially in multidrop mode. In this particular case, the total amount of the loop current can reach as high as 60 mA, in case of 15 devices operating as transmitter at fixed current of 4 mA. For its case, the voltage dropped on normal 250 Ω resistor can be 15 V. In case of 15 devices operating as controller where the loop current can reach over 300 mA, this voltage is much higher.

The PSI301P can provide 18 Vdc ± 5% in the case described above, resulting in a low voltage dropped on its device guaranteeing more than the minimum voltage at each device and enabling the usage of standard 24 Vdc power supplies.

The PSI301P has an input terminal block and an output terminal block, power supply and overcurrent indication LEDs, and it has a reasonably large area for thermal dissipation.

The input terminal blocks 1A and 2A has two terminals to be connected to the external 24 Vdc power supply. The output terminal block also has two terminals (3A to 6A – for PS301P-2 and 3A to 10A for PS301P – 4) to be connected to the transmitters. The power supply indication LED is green and it will be energized while in normal operation.

The overcurrent indication LED is red and it will be energized only in case of overcurrent caused by short-circuit in the plant or by excessive number of connected devices. Figure 1 and 2 shows a layout of device PSI301P.

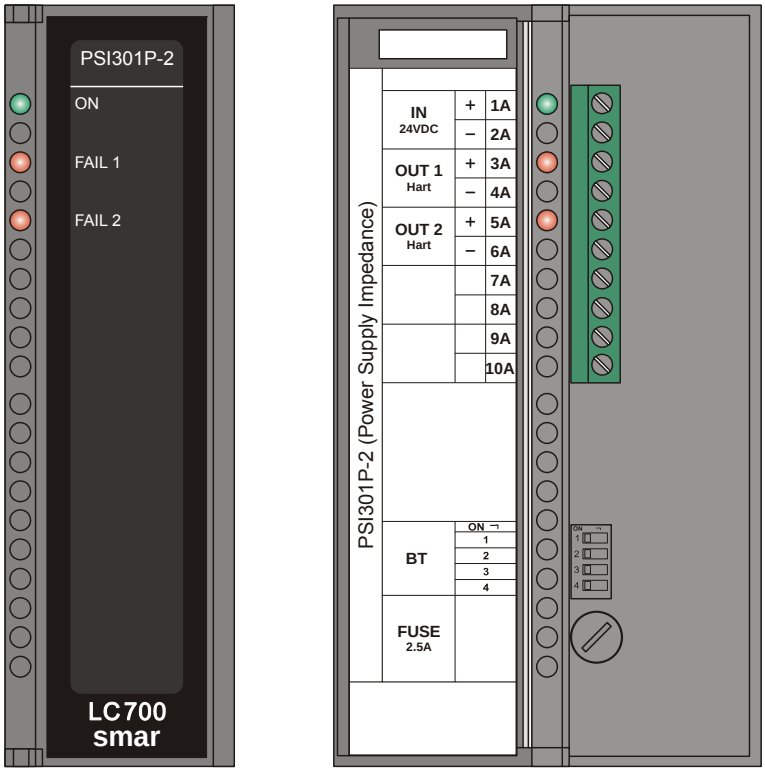


Fig 1 – Frontal View PSI301P-2

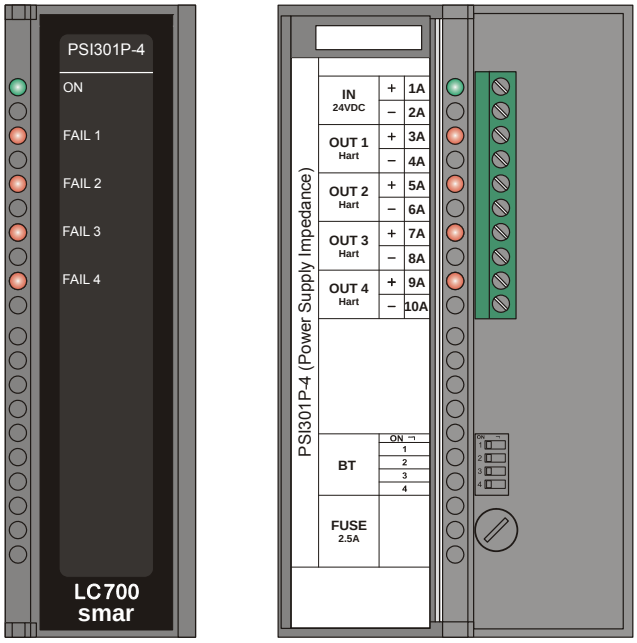


Fig 2 – Frontal View PSI301P-4

PSI301P-2: Four terminals (3A to 6A) to implement 2 independent channels and a DIP Switch with 2 switches to interlink the internal terminator of the **PSI301P-2**. The Figure 1 shows a device's layout; observe that there are 2 failure LEDs, one for each output.

PSI301P-4: Eight terminals (3A to 10A) to implement 4 independent channels and a DIP Switch with 4 switches for interlink the internal terminator of the **PSI301P-4**. The Figure 2 shows a device's layout; observe that there are 4 failure LEDs, one for each output.

NOTE
In both models the terminals and DIP Switch are equals, even so for the model PSI302P-2 the connections are enabled only for 2 channels. The key 1 in the position ON enables the internal terminator for the channel 1.

Technical Characteristics

ELECTRICAL CHARACTERÍSTICS	
Power Supply	24 to 32 Vdc ± 10%
Output Current	320 mA (Maximum)

DIMENSIONS AND WEIGHT	
Dimensions (L x P x H)	40 x 142 x 127 mm
Weight	PSI302-2: 222 g PSI2302-4: 228 g

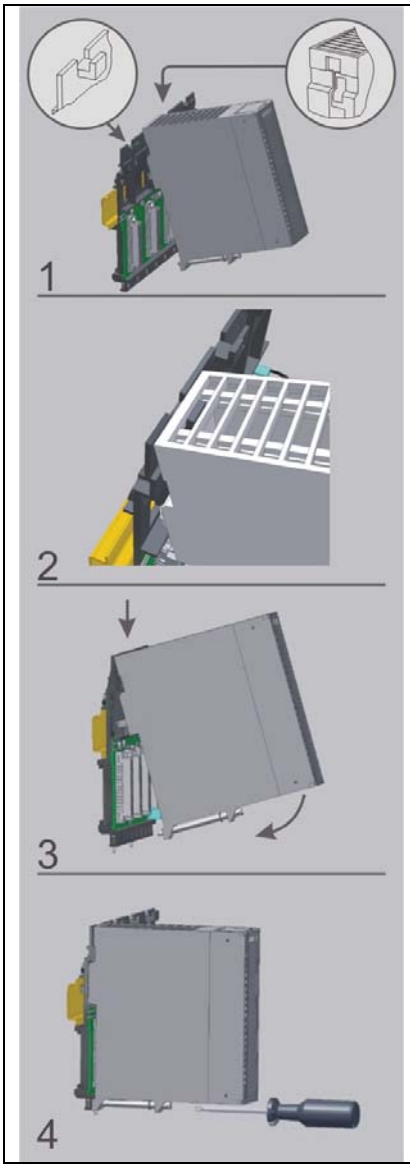
AMBIENT CONDITIONS	
Operation	T_{AMB}: -20 ºC to 50 ºC @ RH 10% to 95% (without condensing)
Storage	T_{AMB}: -50 ºC to 70 ºC @ RH 5% to 95% (without condensing)

SAFETY CHARACTERÍSTICS	
Input Voltage	35 Vdc (Maximum)
Output Overcurrent	490 mA (Maximum)
Atmospheric Discharges	Input and output protected by transient suppressors
Intrinsic Safety	Cannot be used without using intrinsic safety barrier.

Installing Modules in the Rack

The PSI301P – Power Supply Impedance is for HART network a device specially designed for panel installation and it cannot be installed in unsheltered locations, as it cannot 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 cooling facilities. Connections to the panel may be done directly in DIN rail, or by fixation screws in auxiliary support (optional) supplied with the device. Follow the next steps for installing the module in the rack.

	Attach the top of the module (with a 45° inclination) to the module support located on the upper part of the rack. Mounting detail. Push the module fixing it to the module connector. Next, fix the module to the rack using a screwdriver, and fasten the fixation screw at the bottom of the module.

Maintenance

The **PSI301P -** HART Power Supply Impedance is a rugged device which practically requires no type of preventive maintenance. It is simply recommended to protect it from excessive dust accumulation and from excessively humid environments which might affects its output impedance.

As for troubleshooting, the **PSI301P** has five indication LEDs for **PSI302P-4** and three indication LEDs for **PSI301P-2** which inform its operation status. A green power supply LED informs that the **PSI301P** is appropriately powered. A red overcurrent LED for each channel will be lit if any abnormal condition occurs in the field wiring.

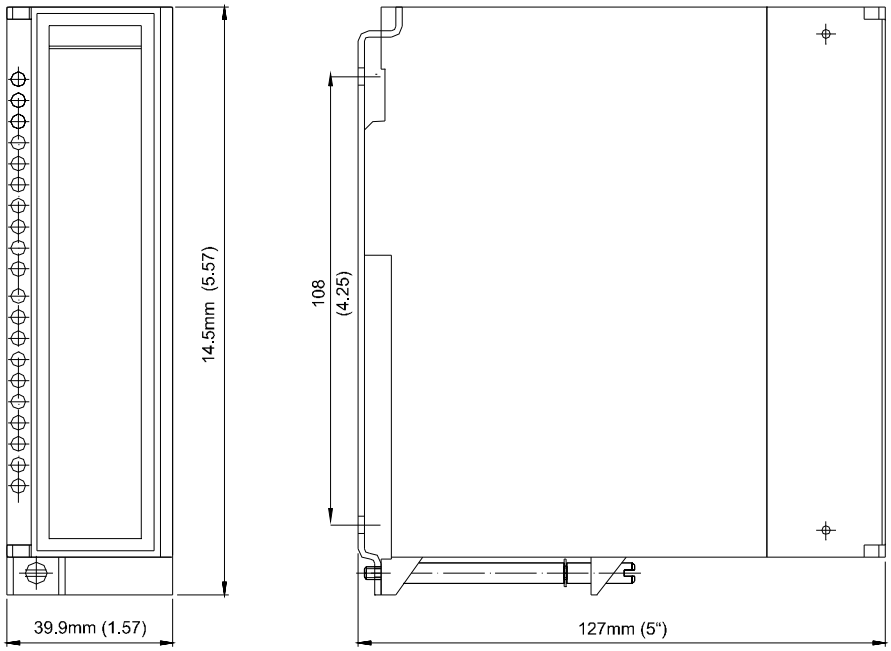
These LEDs are able to detect most problems which may occur in an installation. However, other problems which are not detectable by them may occur. Such problems should be:

- 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);

Such abnormal conditions may be easily detected by measurement instruments.

Because the **PSI301P** is a simply and compact device, it is recommended that repair services be done by replacing faulty modules instead of electronic components.

Dimensional drawing



Appendix A

smar	SRF – SERVICE REQUEST FORM	
	PSI301P – Power Supply Impedance for HART Networks	**Proposal Nº:**

COMPANY INFORMATION

Company: _____
Unit: _____
Invoice: _____

COMMERCIAL CONTACT

Full Name: _____
Phone: _____ _____ _____ _____ **Fax:** _____
E-mail: _____

TECHNICAL CONTACT

Full Name: _____
Phone: _____ _____ _____ _____ **Extension:** _____
E-mail: _____

EQUIPMENT DATA

Model: _____
Serial Number: _____

PROCESS DATA

Process Type (Ex. boiler control)**:** _____
Operation Time: _____
Failure Date: _____

FAILURE DESCRIPTON

(Please, describe the failure. Can the error be reproduced? Is it repetitive?)

_____
_____
_____
_____

OBSERVATIONS

_____
_____
_____
_____

USER INFORMATION

Company: _____
Contact: _____
Section: _____
Title: _____ **Signature:** _____
Phone: _____ _____ _____ _____ **Extension:** _____
E-mail: _____ **Date:** _____/ _____/ _____

For warranty or non-warranty repair, please contact your representative.
Further information about address and contacts can be found on **www.smar.com/contactus.asp**