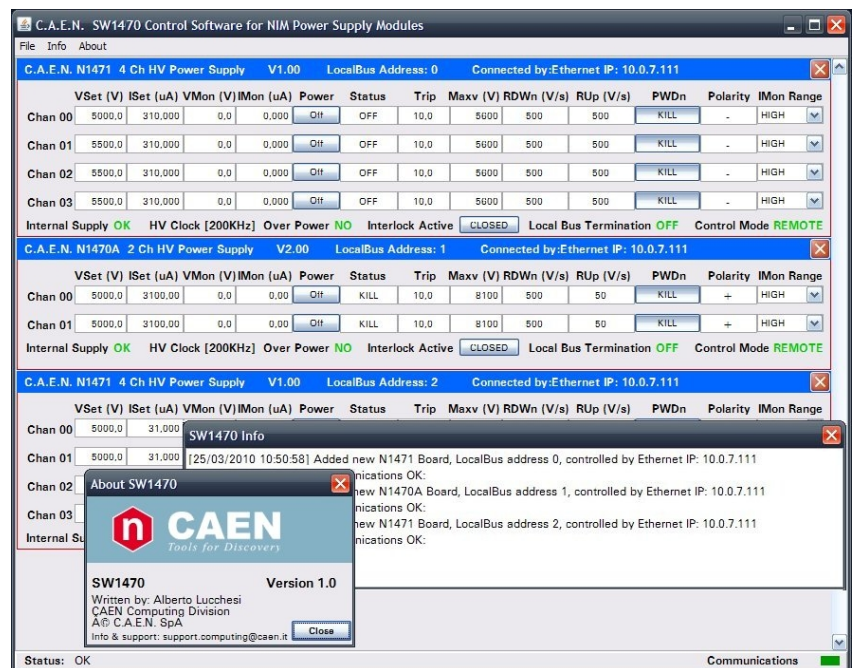
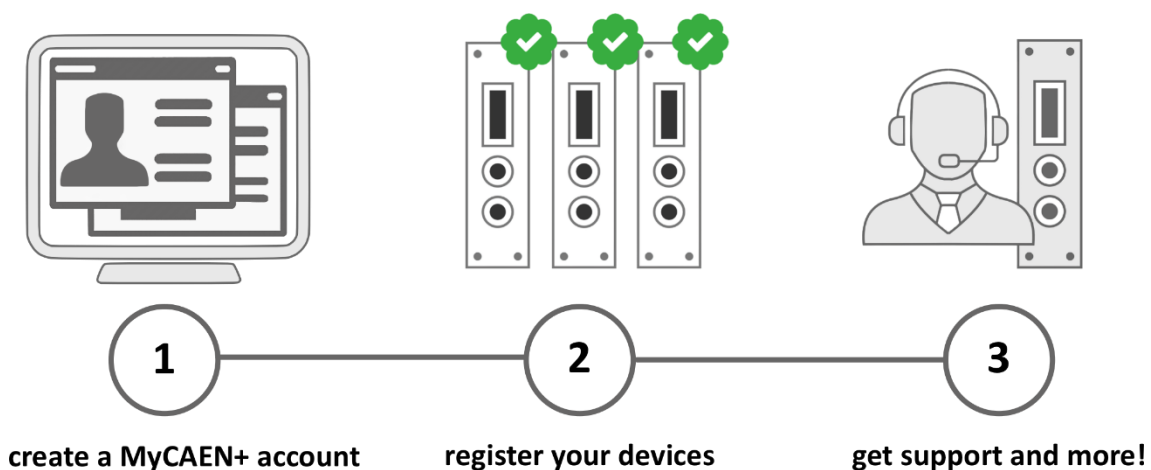




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Technical Information Manual

Revision n. 1

05 March 2010

MOD. SW1470
HV POWER SUPPLY
CONTROL SOFTWARE
MANUAL REV.1

NPO:
00120/09:S1470.MUTx/01

CAEN will repair or replace any product within the guarantee period if the Guarantor declares that the product is defective due to workmanship or materials and has not been caused by mishandling, negligence on behalf of the User, accident or any abnormal conditions or operations.

CAEN declines all responsibility for damages or injuries caused by an improper use of the Modules due to negligence on behalf of the User. It is strongly recommended to read thoroughly the CAEN User's Manual before any kind of operation.



CAEN reserves the right to change partially or entirely the contents of this Manual at any time and without giving any notice.

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1. General description

1.1. Overview

N147x NIM Power Supply Modules control can take place remotely, via USB or RS485; the latter allows to build a N147Xs' daisy chain network, with the first module connected to the PC USB port and the subsequent ones daisy chained via RS485.

The CAEN NIM8301 Crate allows also to communicate with the first module in the chain also via Ethernet. It is therefore possible to build a daisy chain of up to 32 N147x's (up to 128 channels).

SW1470 Control Software is a Java Program supporting Linux and Windows OS that allows a complete and friendly management of the network.

1.1.1. Supported modules

Code	Description
WN1470A08AAC	N1470A - 2 Ch. NIM Programmable HV Power Supply (± 8 kV 3mA max. output ranges)
WN1470B08AAC	N1470B - 1 Ch. NIM Programmable HV Power Supply (± 8 kV 3mA max. output ranges)
WN1470X08AAC	N1470 - 4 Ch. NIM Programmable HV Power Supply (± 8 kV 3mA max. output ranges)
WN1471A05AAC	N1471A - 2 Ch. NIM Programmable HV Power Supply (± 5.5 kV, 300 μ A, 5 nA res.)
WN1471B05AAC	N1471B - 1 Ch. NIM Programmable HV Power Supply (± 5.5 kV, 300 μ A, 5 nA res.)
WN1471X05AAC	N1471 - 4 Ch. NIM Programmable HV Power Supply (± 5.5 kV, 300 μ A, 5 nA res.)

1.1.2. System requirements

- Windows 2003/XP/Vista/7 or Linux
- Java™ Platform, Standard Edition rel.1.5 or newer
- RXTX library for RS232 Java support

1.1.3. References

- N1470 Programmable HV Power Supply User's Manual
- N1471 Programmable HV Power Supply User's Manual
- NIM8303 5U 12 slot 300/600 W Crate User's Manual

Available at: http://www.caen.it/nuclear/technical_documents.php

2. Remote Control

Remote Module control can take place via USB or RS485; the latter allows to build a N147Xs' daisy chain network. The CAEN NIM8301 7U 12 Slot Smart Fan Unit 300/600W Crate allows also to communicate with the module via Ethernet.

2.1. Serial Links

2.1.1. *USB/ RS232 communication*

The N147X modules are provided with a USB2.0 compliant interface. They can be programmed via PC by connecting the PC USB port with the board USB B-type port; the featured controller, the FT232BM chip requires drivers freely available at:

<http://www.ftdichip.com/FTDrivers.htm>

the site also provides installation instructions for all OS's:

<http://www.ftdichip.com/FTDocuments.htm>

The connection can be performed via Terminal Emulator configured as follows:

- baud rate (the same set on the N147x)
- Data bits: 8
- Parity: none
- stop bit: 1
- Flow control: Xon Xoff

It is also possible to build a daisy chain of up to 32 modules, with the first module connected to the PC USB port and the subsequent ones daisy chained through the COMM IN/OUT ports; in this case communication with the chained modules is achieved through the USB - RS485 Communication Protocol, (see N1470 User's manual). All modules must be assigned a LOCAL BUS ADDRESS different from one another and the last one must be terminated (see § 3.1).

In order to control the module via RS232 it is necessary to use the first module's COMM IN port and to follow adaptation instructions (see § 3.2).

2.1.2. *RS485 communication*

The COMM IN / OUT connectors implement a RS485 type LOCAL BUS which allows to build a 32 modules daisy chain. This can be achieved through the following steps:

- Connect the connector OUT of a module to corresponding the IN connector of the next one
- Assign to each module a different address (LOCAL BUS ADDR);
- Ensure that the LOCAL BUS BIT RATE is the same for all modules;
- Terminate the first and the last module in the chain

The module control can be done in one of the following ways:

- by connecting a RS485 controller to the first module's COMM IN port
- by connecting a RS485 controller to the last module's COMM OUT port
- via USB

Communication with the chained modules is achieved only through the USB - RS485 Communication Protocol

2.1.3. Ethernet communication

It is possible to communicate via Ethernet with one or more daisy chained N147x modules through the NIM8301 Fan Unit¹. Communication via Ethernet is possible only through the USB - RS485 Communication Protocol. The single module or the first module of the daisy chain must be connected to the Fan Unit RS232 port through the cable adapter (see figure below) connected to the N147x COMM IN port; SW[200, 201] switch placed on the Microcontroller board inside the module must be set to Adaptation ON.

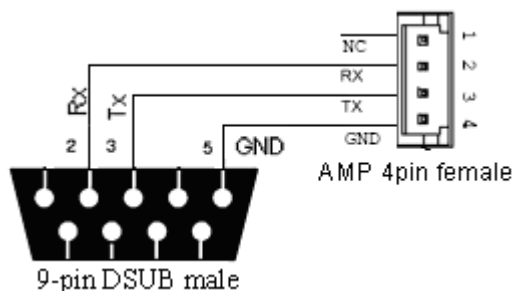


Fig. 2.1: RS232 port cable adapter

¹ The CAEN Mod. NIM8301 is a 7U (5+2) full size NIM crate (19"-12 slot) available with pluggable 300W and 600W power supplies, ventilated by pluggable 2U fan unit. Remote control and monitoring take place through CAN bus, Ethernet, USB and RS232 interfaces.

3. Internal Settings

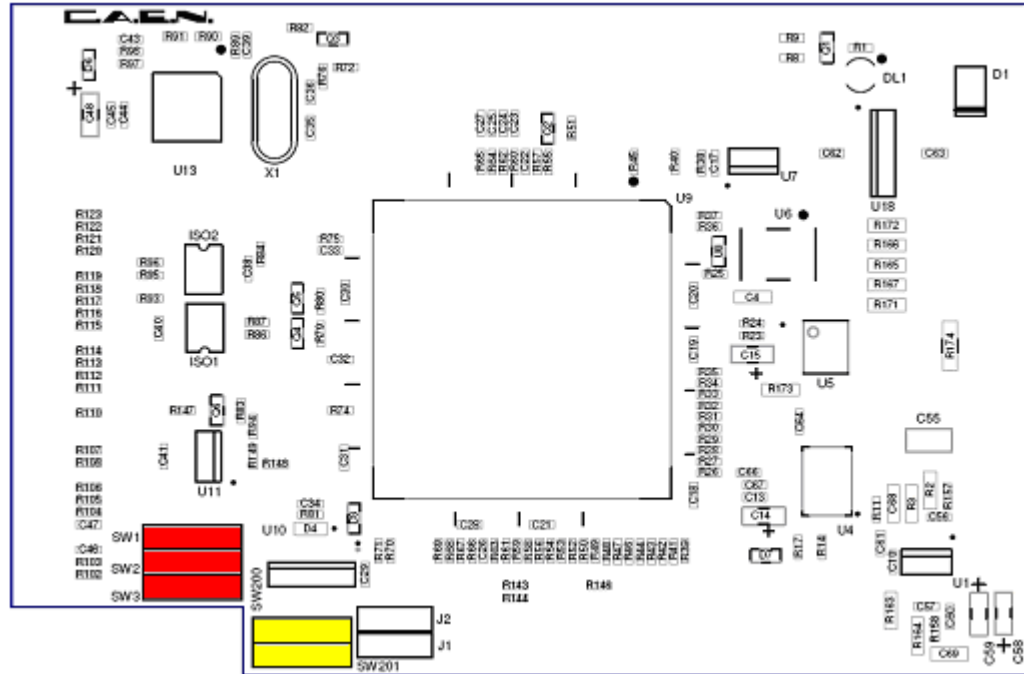


Fig. 3.1: Dip switch position

3.1. Local Bus termination

The SW[1..3] switch placed on the Microcontroller board inside the module (behind the *Remote communication control section*), allows to terminate the Local Bus for daisy chain purposes; dot NOT visible = Termination ON.

3.2. RS485 – RS232 conversion

The SW[200, 201] switch placed on the Microcontroller board inside the module, allows to adapt RS485 signals to RS232; dot visible = Adaptation ON.

4. Software overview

4.1. Installation

Place the CD in the CD tray in your PC, then follow the installation instructions.

4.1.1. *Install program fonts (Linux)*

The package contains a shell script named *install.sh*.

- Execute the script as Root user
- The script installs the font contained in the directory named openfont and copies the program in the file system
- If script execution is successful, the user can just run the program by typing its name.
- If script execution failed, the user must install the fonts using the guidelines of the Linux distribution used.

4.1.2. *Install RXTX Java library*

Since Java language does not provide a native support for the serial ports, a third-part library, the RXTX library, must be used for that purpose.

Download the RS232 Java support at: <http://www.rxtx.org> and follow the installation instructions on the RXTX website in order to correctly install the library.

The archive contains the driver for most platforms; for example, if Windows is used, then the important files are:

- Windows/i368-mingw32/rxtxParallel.dll
- Windows/i368-mingw32/rxtxSerial.dll
- RXTXcomm.jar

In order to install to RS232 support you have to copy:

- rxtxParallel.dll and rxtxSerial.dll under the sub-folder \jre\bin of the featured Java™ Runtime Environment main folder.
- RXTXcomm.jar under the sub-folder \jre\lib\ext and \jre\lib of the featured Java™ Runtime Environment main folder.

4.2. Module connection

Once the selected Serial Link is correctly connected, the SW1470 Control Software is ready to be configured.

Launch the program, a "blank" window will open, select the option:

File>add new N147x Board

4.2.1. *USB connection*

At this point the following pop-up (Board settings window) will open:

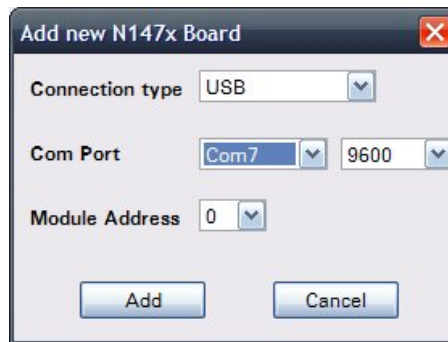


Fig. 4.1: USB Board settings

In order to use the USB port, select the relevant Connection Type.

The Communication port has to be correctly selected by verifying the used PC Peripheral Management list.

The Baud rate has to be selected according to the module pre-set

The module address depends on the daisy chain configuration (see § 2.1.1)

4.2.2. Ethernet connection

Communication via Ethernet is possible only if through the NIM8301 Crate Fan Unit (see § 2.1.3).

In order to use the Ethernet link, select the relevant Connection Type in the Board settings window, then insert the IP Address of the used NIM8301 Crate.

The pre-set USB Baud rate of the modules has to be selected the same as the Fan Unit RS232 Baud rate.

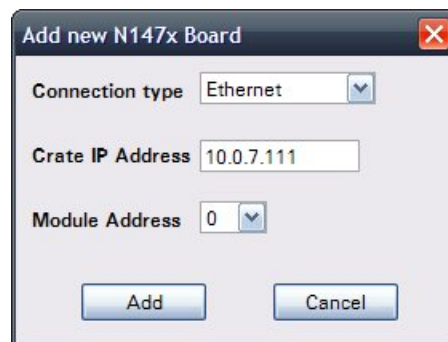


Fig. 4.2: Ethernet Board settings window

4.3. SW1470 Control Software

As the remote connection is established, the following screen will be displayed:

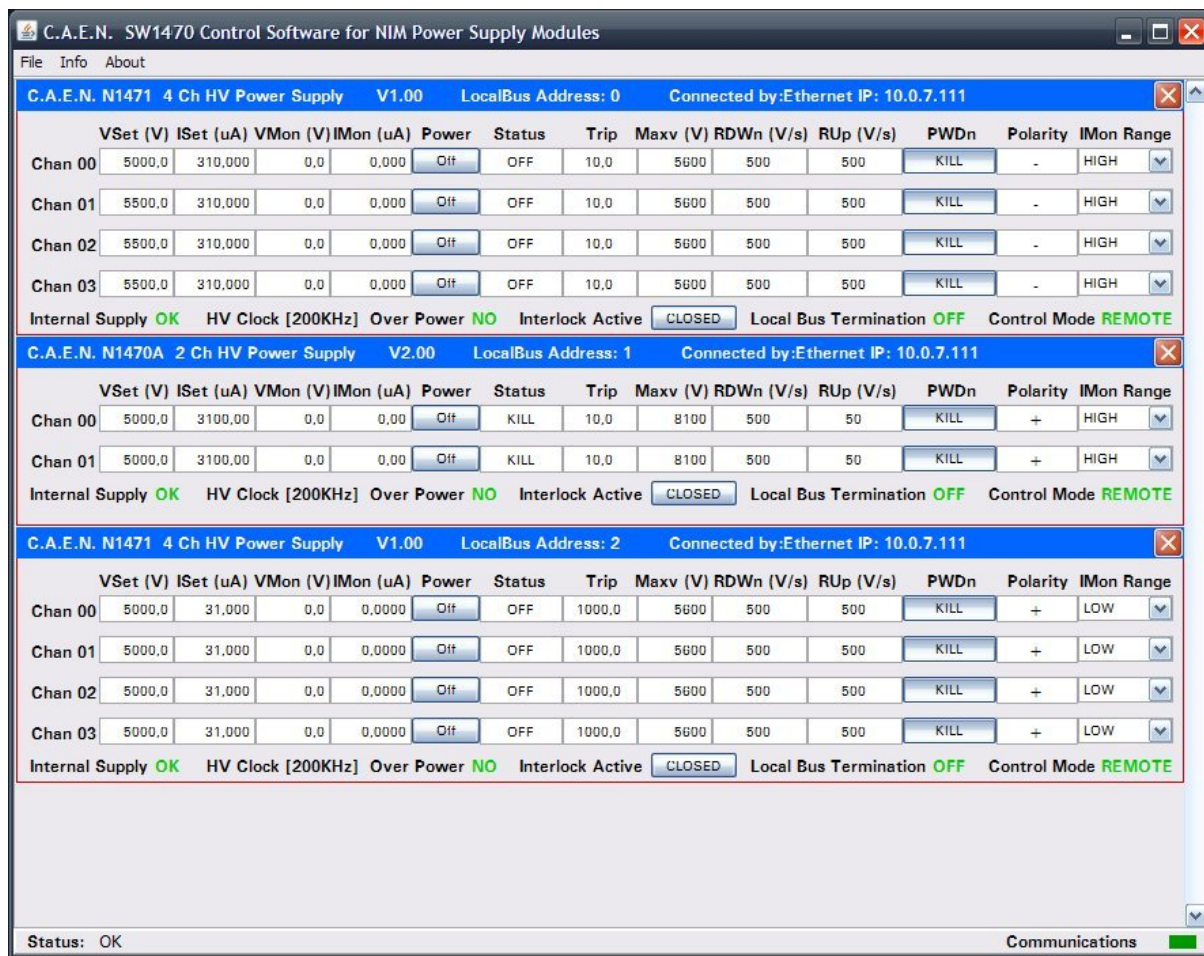


Fig. 4.3: Channel settings window

Values can be over written and confirmed by pressing <enter>
Modules can be disconnected by clicking on the red X
By clicking <Info>, a log file is displayed:

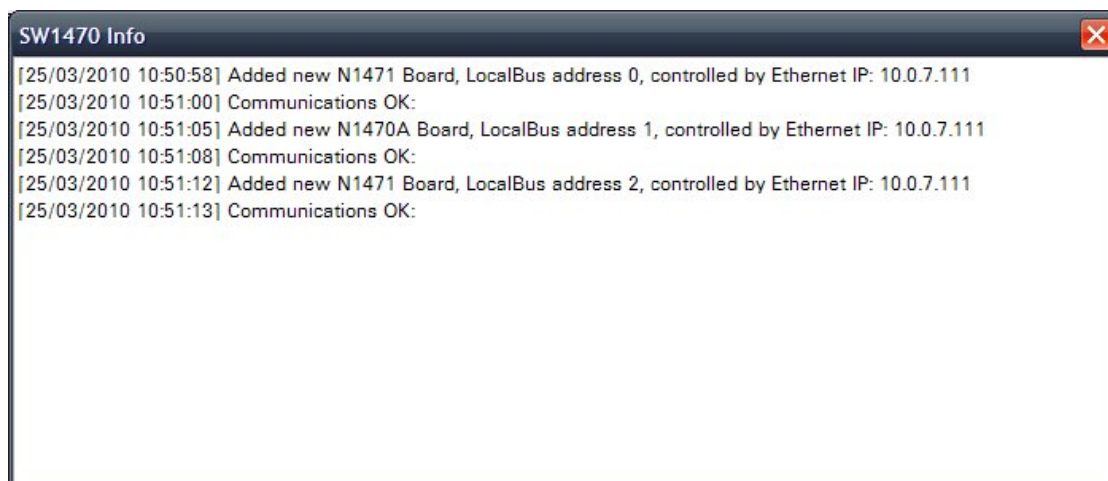
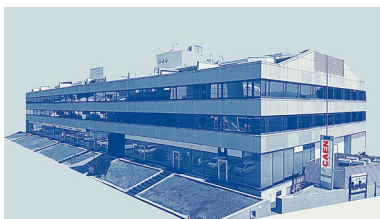


Fig. 4.4: Controller Info

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