

• 16B0871B1 •

REMOTE SUNWAY

INSTALLATION INSTRUCTIONS

Updated on 08/04/11
R.04
Software Version 2.33

English

- This manual is integrant and essential to the product. Carefully read the instructions contained herein as they provide important hints for use and maintenance safety.
- The software described in this manual is a tool helping device control. Enertronica Santerno S.p.A. is not responsible for any direct and/or consequential damages due to the implementation of the Remote Sunway.
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1. OVERVIEW

This manual contains the instructions required for properly installing and starting the supervisor system for the inverters manufactured by Enertronica Santerno S.p.A..

The Remote Sunway is a PC software application running on Windows™. The Remote Sunway makes it possible to manage Santerno inverters both in local mode, via the MODBUS protocol on RS232C, RS422 and RS485 serial communications, and in remote mode via TCP/IP protocol.

Being very versatile, the Remote Sunway quickly and efficiently sets and stores to file the whole parameter set of the connected device; manages the remote monitoring data; manages the firmware upgrade.

Also, the Remote Sunway may acquire, graphically represent and store to file all the variables that can be detected by the connected device.



NOTE

When the supervisor computer is operating as a data logger, this must be kept constantly on-line with the inverter(s) to be monitored. We recommend that a standard desk UPS be used for supplying the supervisor computer, thus avoiding faults due to mains failure.

Please refer to the MODBUS Manuals—when available—pertaining to each device for the description of the MODBUS protocol, the list of the parameters that can be exchanged and the relevant addresses. More details are also given in the User Manuals of the connected devices.



NOTE

The Remote Sunway is capable of managing any SW version prior to the latest SW version installed on the device by loading the configuration files stored in the \Devices folder of the Remote Sunway.



NOTE

The Remote Sunway is capable of managing SW Versions higher than the versions installed. Different devices may be managed by adding a configuration file for each of them to the \Devices folder in the Remote Sunway.

The configuration files are available from santerno.com or may be required to the Customer Service of Enertronica Santerno S.p.A..

2. TECHNICAL FEATURES

2.1. Minimum Installation Requirements

The same requirements as per a laptop allowing Internet navigation are needed.

2.1.1. MINIMUM HARDWARE REQUIREMENTS

- Pentium 1GHz or greater
- RAM \geq 256Mb for Windows 2000, 512 Mb for Windows XP and 1Gb for Vista
- CD-ROM player
- Modem or network card (depending on the type of remote connection to be established)
- At least 1 serial port or USB port
- Video card and monitor able to support 800x600 display resolution

2.1.2. MINIMUM SOFTWARE REQUIREMENTS

- Operating system: WindowsTM NT4, 2000, XP, Vista, 7
- When using Windows NT4, Internet Explorer 5.00 or greater must be installed

2.2. Items Supplied

The Remote Sunway is supplied on a CD-ROM including a wizard for installation to hard disk.

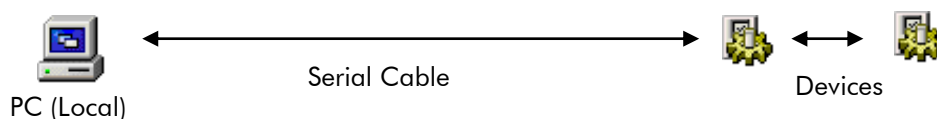
2.3. Operational Features

The Remote Sunway supports two operating modes: *Local mode* and *Remote mode*.

- In “*Local*” mode, the PC is connected directly to the device.
- In “*Remote*” mode, two options are available.
 1. Two computers can be connected to each other via the telephone line, via a LAN or via the Internet. The Remote Sunway must be installed and running on both computers. The equipment must be connected to the serial port of one computer, which is the slave computer. The master computer handles the equipment through the slave, and is capable of fully exploiting functionality just as if the equipment was connected to the serial port of the master computer. While connected, a chat window is also displayed for the users of the two computers.
 2. A computer using the Remote Sunway can be connected to a computer equipped with ES851 Data Logger. The Data Logger is the server, whereas the computer connected to it via the telephone line, the LAN or the Internet is the master computer, thus allowing the Remote Sunway to monitor both ES851 Data Logger and all its connected devices.

The remote connection uses TCP/IP-based Winsock services; the dialogue is made possible through TCP and UDP packets via the same port as mentioned in STARTING AND CONFIGURING THE PROGRAM. Connecting examples are given below.

2.3.1. LOCAL CONNECTION



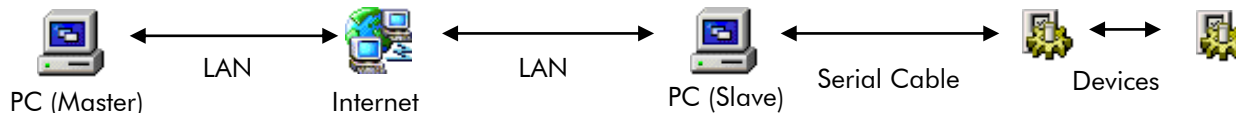
The computer is connected directly to the devices by means of an RS232 serial cable or USB/485 adapter. If ES851 Data Logger is installed on the devices, the local connection is made possible through the serial ports in ES851 (RS232 or RS485 ports) or through the Ethernet port in ES851 and a crossed-over Ethernet cable.

2.3.2. REMOTE CONNECTION VIA THE LAN BETWEEN 2 COMPUTERS



The devices can be remote-controlled via the Local Area Network of your company. The LAN must support the TCP/IP protocol.

2.3.3. REMOTE CONNECTION VIA THE LAN AND THE INTERNET BETWEEN 2 COMPUTERS



The devices located even at a long distance from the supervisor computer may be monitored via the Internet at reasonable costs.

When accessing the Internet via Firewall or Proxy server, make sure that the port used for the Remote Sunway is activated.

2.3.4. REMOTE CONNECTION VIA THE INTERNET BETWEEN 2 COMPUTERS



The Internet allows the remote control of long-distance connections at a relatively low cost. If you access the Internet through a firewall or a proxy server, remember to enable the port used for the Remote Sunway.



NOTE

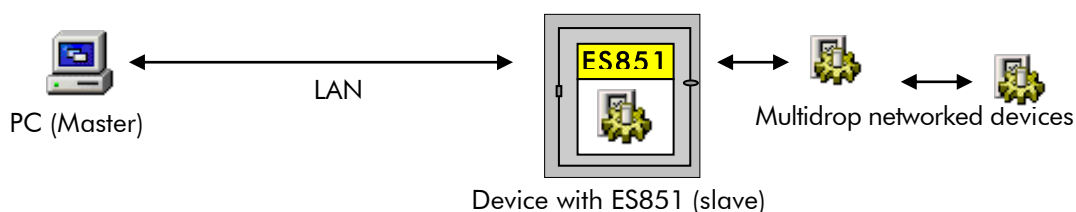
When using the remote control services provided from Enertronica Santerno S.p.A., the Internet connection must be established using the link.eletronicasanterno.it Proxy server (see the Connection via the Internet section).

2.3.5. MODEM POINT-TO-POINT CONNECTION VIA THE TELEPHONE LINE BETWEEN 2 COMPUTERS

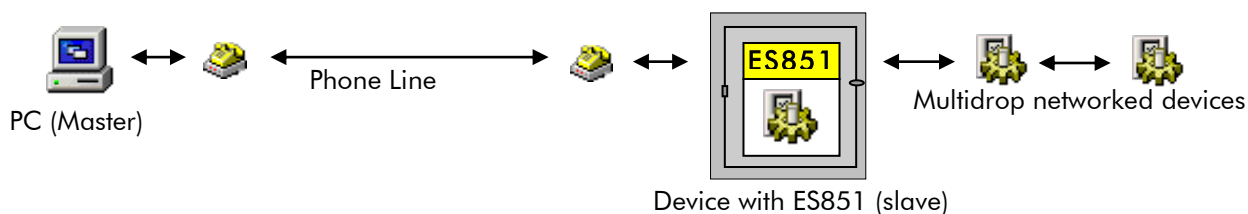


This type of connection may be adopted if no Internet connection is available or if the connection to the Internet is too slow (see Configuring the Operating System for Point-to-Point Connections). The Remote Access Server receiving the call shall be enabled.

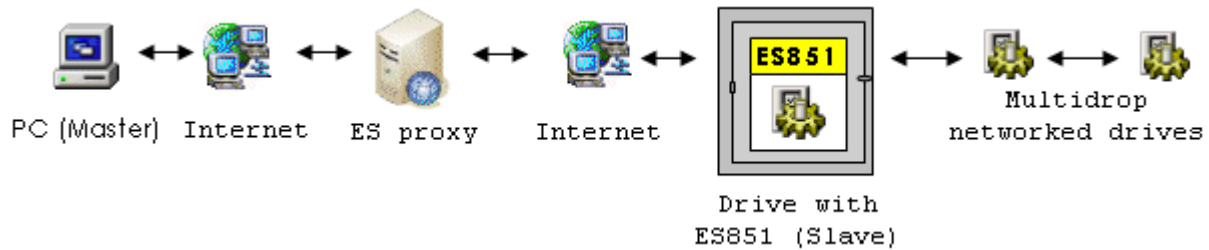
2.3.6. REMOTE CONNECTION VIA THE LAN BETWEEN THE COMPUTER AND THE DEVICE IMPLEMENTING ES851



2.3.7. REMOTE MODEM CONNECTION VIA THE TELEPHONE LINE BETWEEN THE COMPUTER AND THE DEVICE IMPLEMENTING ES851



2.3.8. REMOTE CONNECTION BETWEEN THE COMPUTER AND THE INVERTER IMPLEMENTING ES851 VIA THE INTERNET USING THE LINK.ELETTRONICASANTERNO.IT PROXY SERVER

**NOTE**

This type of connection allows connecting the plant via the Internet using the services provided from the link.elettronicasanterno.it Proxy server (see the Connection via the Internet section).

3. ELECTRICAL CONNECTIONS

3.1. *Connecting the Slave Devices Included in the Photovoltaic Plant*

Applicable slave devices:

Sunway TG

Sunway TG TE

Sunway M XR

Sunway M PLUS

Smart String Box

These devices can be connected directly to a computer implementing the Remote Sunway (local connection), or to an ES851 Data Logger board installed on one of the devices. Either in local mode or in remote mode, the Data Logger can then be connected to a computer implementing the Remote Sunway.

3.1.1. SUNWAY TG AND SUNWAY TG TE

Terminal board X4		
RS485 RX/TX A+	RS485 RX/TX B-	RS485 Common 0V
01	02	03

The terminal board X4 allows connecting the Sunway TG through its slave RS485 serial port (the layout and the location of the terminal board depends on the inverter model; normally, the terminal board is located on one side of the cabinet).

The terminators/polarisers, which are normally "ON", are located on the serial communications board installed on the converter module (inverter).



NOTE

If multiple inverters are connected, terminators must be set to ON in one device only.

To gain access to the terminators, open the front door on the inverter module.



DANGER

Before operating inside the inverter, remove voltage and wait at least 10 minutes. Electrical shock hazard exists even when the inverter is not powered on until the capacitors have completely discharged.



CAUTION

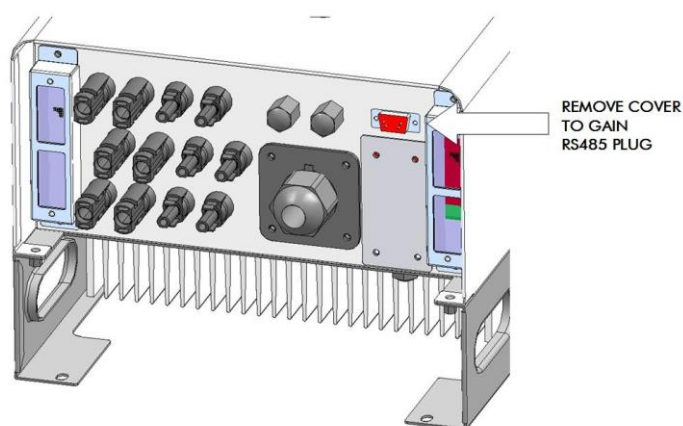
Do not connect or disconnect the signal terminals or the power terminals when the inverter is on. Electrical hazard exists; also, the inverter could be seriously damaged.

For more details, please refer to the Installation Instructions manual of the product.

3.1.2. SUNWAY M XR AND SUNWAY M PLUS

Slave RS485 plug is replicated to a 9-pin D connector, which is located on the lower part of the inverter frame. (A flying connector is also supplied, which maintains the IP65 degree of protection.)

CN1								
RS485 RX/TX A+	RS485 RX/TX B-	RS485 RX/TX A+	RS485 RX/TX B-	RS485 0V	+8V Ext	NC	NC	+5V
01	02	03	04	05	06	07	08	09



NOTE In multi-inverter plants, terminators must be set to ON for the farthest device only.

To gain access to the terminators, remove both the external polished cover and the internal water-tight cover. The terminators are located on ES821 control board.



DANGER

Before operating inside the inverter, remove voltage and wait at least 10 minutes. Electrical shock hazard exists even when the inverter is not powered on until the capacitors have completely discharged.



CAUTION

Do not connect or disconnect the signal terminals or the power terminals when the inverter is on. Electrical hazard exists; also, the inverter could be seriously damaged.

For more details, please refer to the Installation and Programming Instructions manual of the product.

3.1.3. SMART STRING BOX

When connecting a Smart String Box to RS485 serial network, use the screw connector (M11) and the CN3 D9 connector. M11 connector is available for the connection to RS485 serial network; CN3 connector is used for the internal connection of multiple 8-string modular units. The connection cable is supplied from Enertronica Santerno S.p.A.. For more details, please refer to the User Manual of the Smart String Box.


NOTE

Every Smart Junction Box (8-string module) is a node in the RS485 network. Because each CS-SP-24-XXXV consists in three modules, it is considered as forming three different nodes in the RS485 network.

Terminal board M11					
RS485 RX/TX A+	RS485 RX/TX B-	+5V out	RS485 0V	+10V I/O	PE Shield
07	08	09	10	11	12

D9 CN3 Connector								
RS485 RX/TX A+	RS485 RX/TX B-	RS485 RX/TX A+	RS485 RX/TX B-	RS485 0V	+8V Ext	RS485 0V	RS485 0V	+5V
01	02	03	04	05	06	07	08	09


NOTE

The screen for the interconnection cable between the modules is connected to the connector case.

The Smart String Boxes must be cascade-connected to RS485 serial link (star connections are to be avoided). If including multiple 8-input modules (up to three modules), these must be cascade-connected using the special cable supplied (cable 2 or cable 3).

Once the modules are interconnected (no interconnection is required for CS-SP(A)-8-XXXV), link the incoming RS485 serial link to the screwable terminal board (M11) in the first module. For CS-SP(A)-8-XXXV, the outgoing RS485 serial link comes from M11 terminal board; otherwise, the outgoing RS485 serial link comes from the farthest M11 terminal board.

**NOTE**

The terminator for RS485 serial link must be plugged into the farthest module in the line.

For more details, please refer to the Installation Instructions manual of the product.

3.2. Connecting ES851 Data Logger Board

The external devices that can be connected to the Data Logger Board are the following:

Sunway TG
Sunway TG TE
Sunway M XR
Sunway M PLUS
Smart String Box

For more details, please refer to the Installation Instructions manual of the product.

3.2.1. LOCAL CONNECTIONS

The Data Logger board is provided with N.2 COM ports for the local serial connection.

COM1 Port

The COM1 port may be accessed from a DB9 male connector connected to the board by means of a flat cable supplied with the Data Logger board.

The COM1 port may support either RS232 or RS485 protocol.



CAUTION

The COM1 port may support RS485 protocol starting from ES851/1 version only. For ES851/0 boards, the COM1 port acknowledges the RS232 standard only.

COM1 RS232

The factory setting for the COM1 port is slave Modbus RS232 communications standard. This makes possible to connect the PC to the plant by means of the null modem cable using the COM1 port of the Data Logger board and the COM port of the PC.

Pin	Function
1	CD – Carrier Detect
2	RD – Received Data
3	TD – Transmitted Data
4	DTR – Data Terminal Ready
5	GND – Ground
6	DSR – Data Set Ready
7	RTS – Request To Send
8	CST – Clear To Send
9	RI – Ring Indicator

COM1 RS485

By changing the factory setting, the COM1 port may be converted into an RS485 serial port. This is to be ordered at the same time as ordering the equipment. The COM1 (RS485) pinout is as follows:

Pin	Function
1 – 3	(TX/RX +) Differential input/output + (bidirectional). Positive polarity with regards to pins 2 – 4 for one MARK.
2 – 4	(TX/RX –) Differential input/output – (bidirectional). Negative polarity with regards to pins 1– 3 for one MARK.
5	(GND) Non isolated ground.
6	Not connected.
7 – 8	(GND) Non isolated ground.
9	+5 V (not used).

SW4 Selector switch 1 ON = COM1 RS232
 OFF = COM1 RS485
SW4 Selector switches 3 and 4: ON = TERMINATION ON
 OFF = TERMINATION OFF



NOTE

In order to set the COM1 port to RS485 protocol, besides properly setting selector switch SW4, the flat cable supplied with the board shall be connected to connector CN11, which is located next to connector CN3 (the default connector for the COM1). Some software parameters are to be changed accordingly (please refer to the User Manual of the Data Logger board.)

COM2 Port

The COM2 port in ES851 board acknowledges RS485 standard only, but it may acknowledge the Profibus protocol as well. The COM2 port pinout is as follows:

Pin	Function
1 – 2	Not connected
3	(TX/RX +) Differential input/output + (bidirectional).
4	Profibus RTS
5	(GND) Isolated signal ground
6	+5V
7	Not connected
8	(TX/RX –) Differential input/output – (bidirectional).
9	Not connected

SW2 Selector switches 3 and 4: ON = TERMINATION ON
 OFF = TERMINATION OFF



CAUTION

The master Modbus mode is the default mode for the COM2-RS485 port for the Sunway M XR, Sunway M PLUS and Sunway TG inverters. Consequently, the relevant parameter is to be changed accordingly (see the Programming Instructions manual of the Data Logger board) in order to be connected in slave mode.

ETHERNET

It is possible to connect the Data Logger in local mode via the Ethernet port of the Data Logger by means of a cross-over Ethernet cable. The default IP address of the Data Logger board is 192.168.0.2.

3.2.2. REMOTE CONNECTIONS

The Data Logger board makes it possible to connect the inverter to the plant in remote mode even when just one PC is used.

The available connecting modes are as follows:

1. Modem (Analogue or GSM)
2. LAN and VPN-LAN
3. Internet-Proxy

MODEM

The Data Logger board is to be connected through RS232 port to a GSM modem or an Analogue modem by means of a non-crossed RS232 cable. The board is to be correctly programmed.

The remote computer can be connected via modem to the plant (by means of an analogue or GSM modem) in Rem(Master) /Client mode as described in Connection via Modem and via the LAN.

LAN or VPN-LAN

By using the Ethernet port of the Data Logger and a non-crossed Ethernet cable it is possible to connect the plant to a LAN. A static IP address and the LAN gateway are required.

The remote computer may access the Data Logger board by connecting in Rem(Master) /Client mode as described in Connection via Modem and via the LAN. The remote computer is to be connected to the same LAN of the Data Logger board, both directly and via VPN.

INTERNET-PROXY

If the link.elettronicasanterno.it has been acquired, it is possible to connect the ES851 Data Logger board to a computer in Rem(Master)/Client Proxy mode via the Internet, as described in Connection via Modem and via the LAN.

3.3. Connection Kits and Accessories

3.3.1. DCS770 - USB/RS485 CONVERTER

RS485-side, extractable screwable terminal board.
This converter is used when your PC is provided with a USB port.



NOTE

When using this type of converter, a software application is to be installed (see the Installing the RS485/USB Converter section).



RS485-side Terminals		
-	+	GND
D0	D1	C

3.3.2. DIGITUS - USB/RS232 CONVERTER

RS232-side, male D9 converter; its pin-out complies with the RS232 standard.

If the plant is equipped with an ES851 Data Logger, its COM1 port (RS232 port) can be used. If the computer is not provided with the RS232 port, the USB/RS232 converter must be used.



CAUTION

RS232 connection is recommended for cable paths shorter than 2 m. For longer paths, RS485 links are recommended. For ES851 Data Logger, the COM1 port can be converted into an RS485 port (this is to be stated when ordering the equipment).



NOTE

When using this type of converter, a software application is to be installed (see the Installing the RS232/USB Converter section).



NOTE

ES851 Data Logger allows the local connection to a computer through the Ethernet port and a cross-over cable.

3.3.3. LED DISPLAY (LUMINOUS PANEL)

The PC can be connected also to a Led display (or luminous panel) to view the values of the variables detected from the plant. The LED display is provided with an RS485 cable equipped with a D9 connector. The pin-out of the D9 connector is the following:

RS485 RX/TX A+	NC	NC	NC	NC	NC	NC	NC	RS485 RX/TX B-
01	02	03	04	05	06	07	08	09

If the PC is not provided with any RS485 port, the same converter as described in Connection Kits and Accessories is to be used, depending on the port provided on the PC (USB or RS232 port).

3.4. Warnings Concerning RS485 Connection

**NOTE**

If diverse devices are linked to the RS485 network, make sure that all communications parameters are set up with the same Baudrate, Parity, Stop Bit N. You can refer to the respective manuals of the connected devices.

**NOTE**

Connect the corresponding terminals to each other when connecting slave devices to the communications master device; refer to the signal polarity, as the terminals of the connected devices are not uniquely identified.

**NOTE**

Connecting the common terminal is not required.
However, make sure that the common conductors (0V) for all the devices in the communications multidrop network are connected to each other. This minimizes any difference of reference potential among the devices that can adversely affect communications.

Wiring Cable	
Type of cable	Screened cable composed of balanced D1/D0 pair + common conductor ("Common").
Min. cross-section of the conductors	AWG24 corresponding to 0.25 sqmm. For long cable length, larger cross-sections up to 0.75 sq mm are recommended.
Recommended max. length	500 metres if compared to the max. distance measured between any two stations.
Characteristic impedance	Better if exceeding 100Ω (120Ω is typically recommended).
Standard colours	Yellow/brown for D1/D0 pair, grey for "Common" signal.

The type of cable recommended for those applications is "Belden 3106" (distributed by Cavitec).

**NOTE**

When multiple devices are connected to the same RS485 multidrop network, it is recommended that the line terminator and the bias of the farthest device from the master computer be activated.

On the other hand, it is recommended that the line terminator and the bias of the intermediate devices be deactivated.

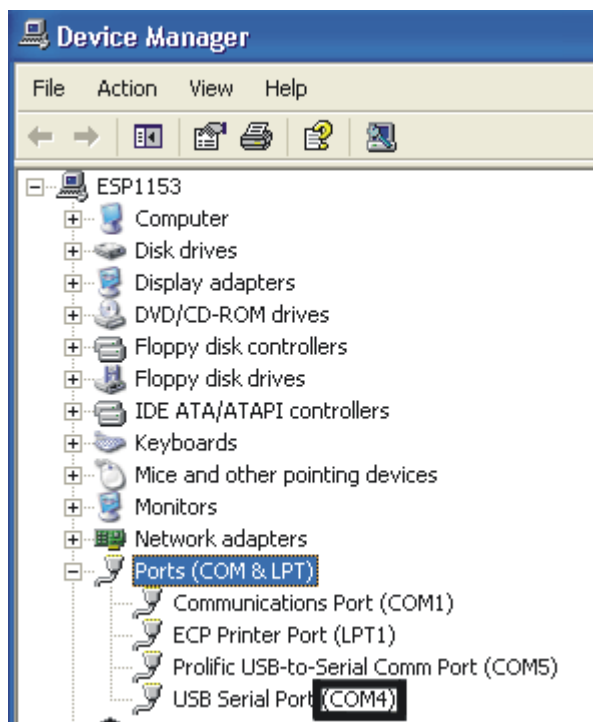
**NOTE**

Communication does not take place or is adversely affected if multidrop terminators are not properly set up, especially in case of high baud rate. If more than two terminators are fitted, some drivers can enter the protection mode due to thermal overload, thus stopping communicating with some of the connected devices.

4. INSTALLING THE SOFTWARE

4.1. *Installing the RS485/USB Converter*

Insert the USB connector into the USB port in your computer. In "Device Manager" (in "Control Panel"), check the **number of the serial port where the device has been installed (COMxy)**.



If no "USB Serial Port" is available, you must install the driver for the RS485/USB connector. Remove the USB connector from the USB port in your computer. Insert the CD-ROM supplied.



Select "MekuWin Configuration Program" and click "FTDI USB Drivers".

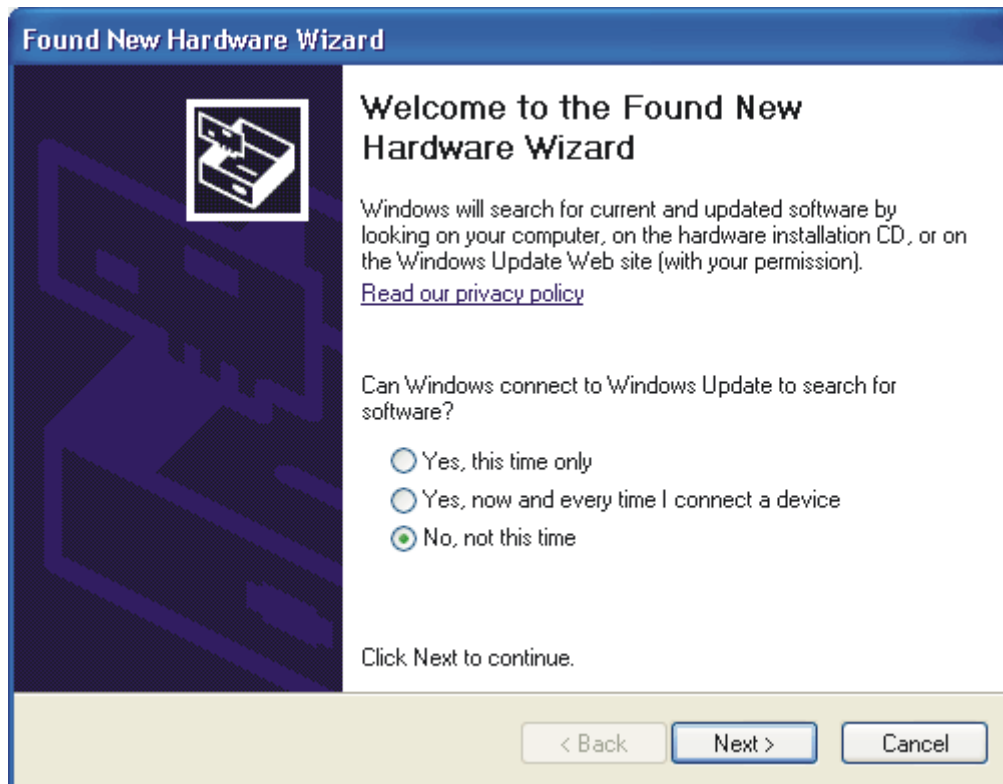


Click OK to finish the installation of the FTDI USB Drivers. In "Device Manager" (in "Control Panel"), check the **number of the serial port where the device has been installed (COMxy)**.

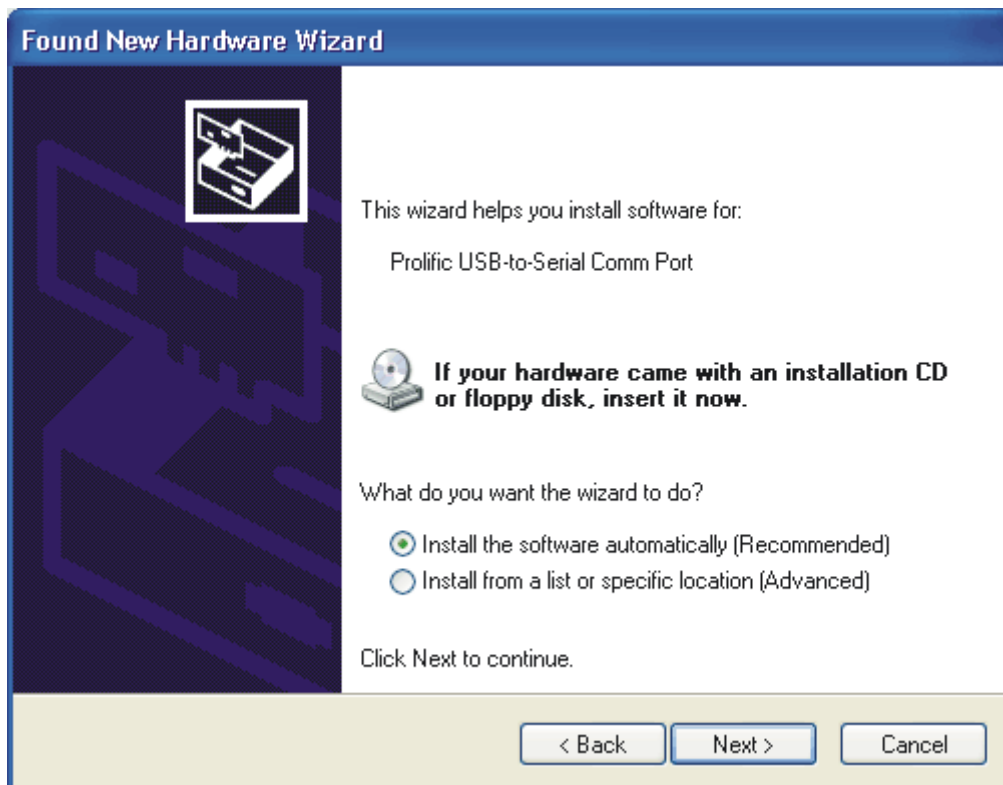
4.2. Installing the RS232/USB Converter

If an RS232 serial port must be used, but this is not available on your computer, install the Driver of the RS232/USB converter using the CD-ROM supplied.

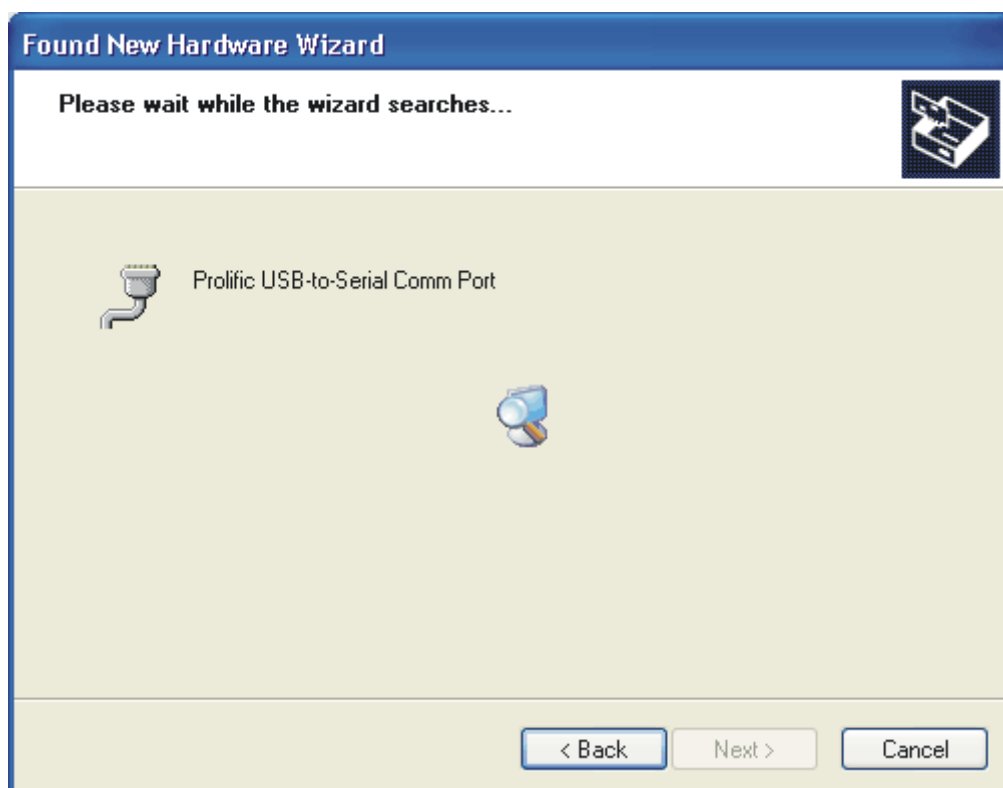
Insert the USB connector into the USB port in your computer. The following window appears:

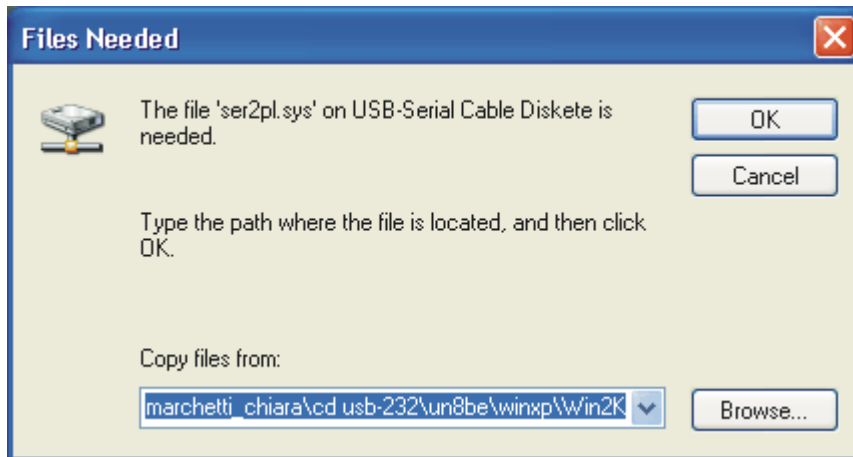


Select **No, not this time** and press **Next**.

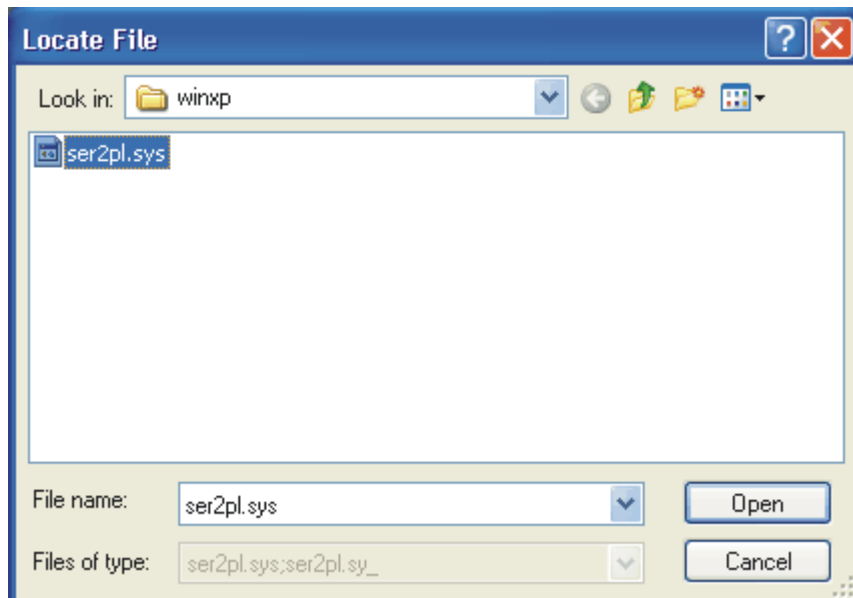


Choose the automatic setup and press **Next**.

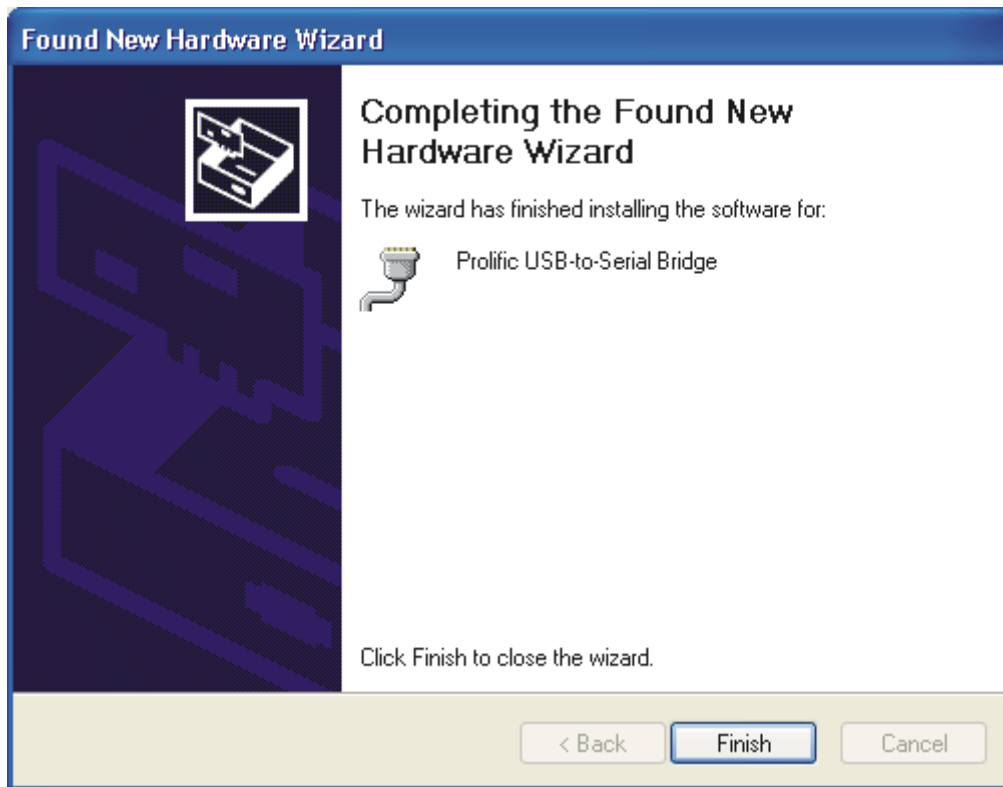




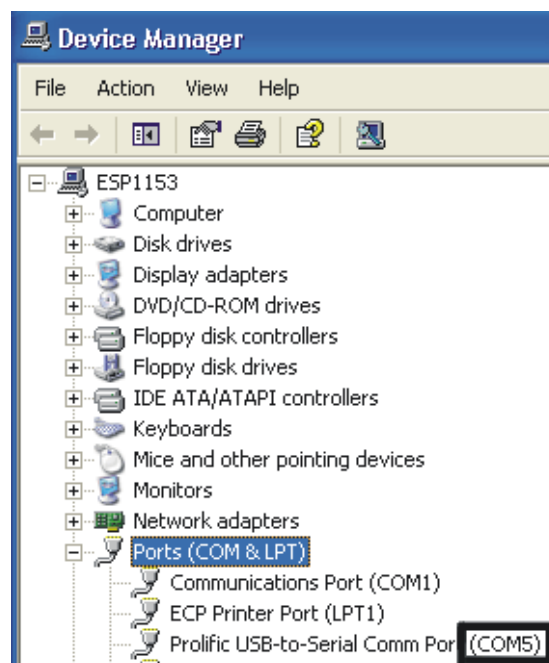
When the "Files Needed" window appears, select the same file as in the figure below:



Press **Open** to complete the installation. Press **Finish**.



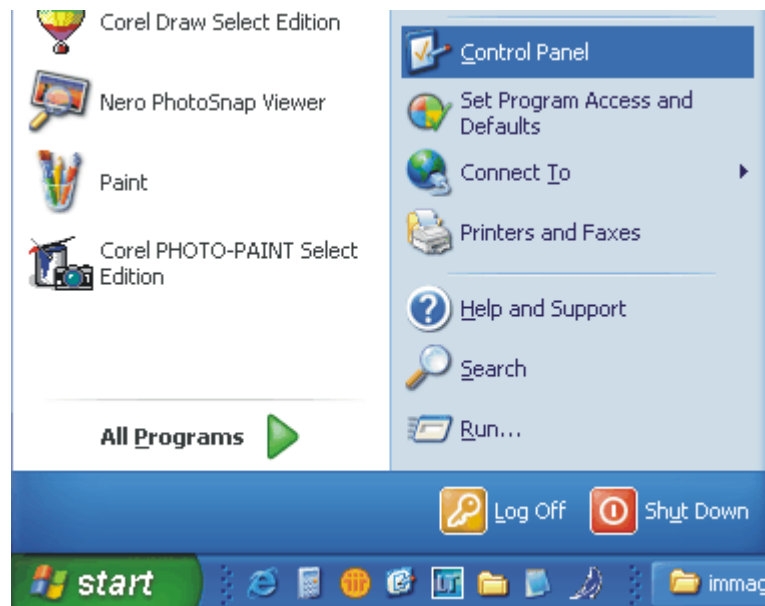
In "Device Manager" (in "Control Panel"), check the **number of the serial port** where the device has been **installed** (COMxy).



4.3. **Configuring Energy Saving Options for your Computer**

The most advanced operating systems allow the optimization of energy saving for a PC and the connected monitor. When selected, however, the options for energy saving can adversely affect the operation of the Remote Sunway application.

From "Settings", "Control Panel", select "Energy Saving".



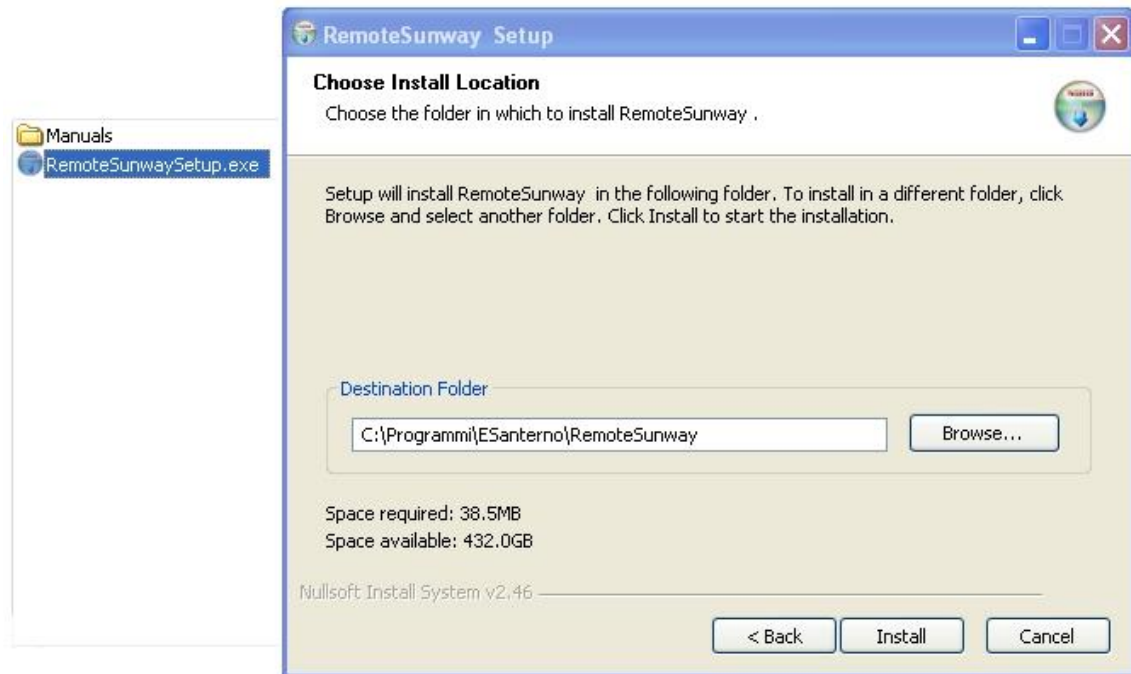
Select "Turn Off Hard Disk- Never"

Select "Turn off Monitor - Never" to constantly display the status of the system being monitored.

4.4. *Installing the Remote Sunway*

Insert the CD-ROM containing the Remote Sunway application.

To install the program, click the "RemoteSunwaySetup" icon and follow the instructions given.

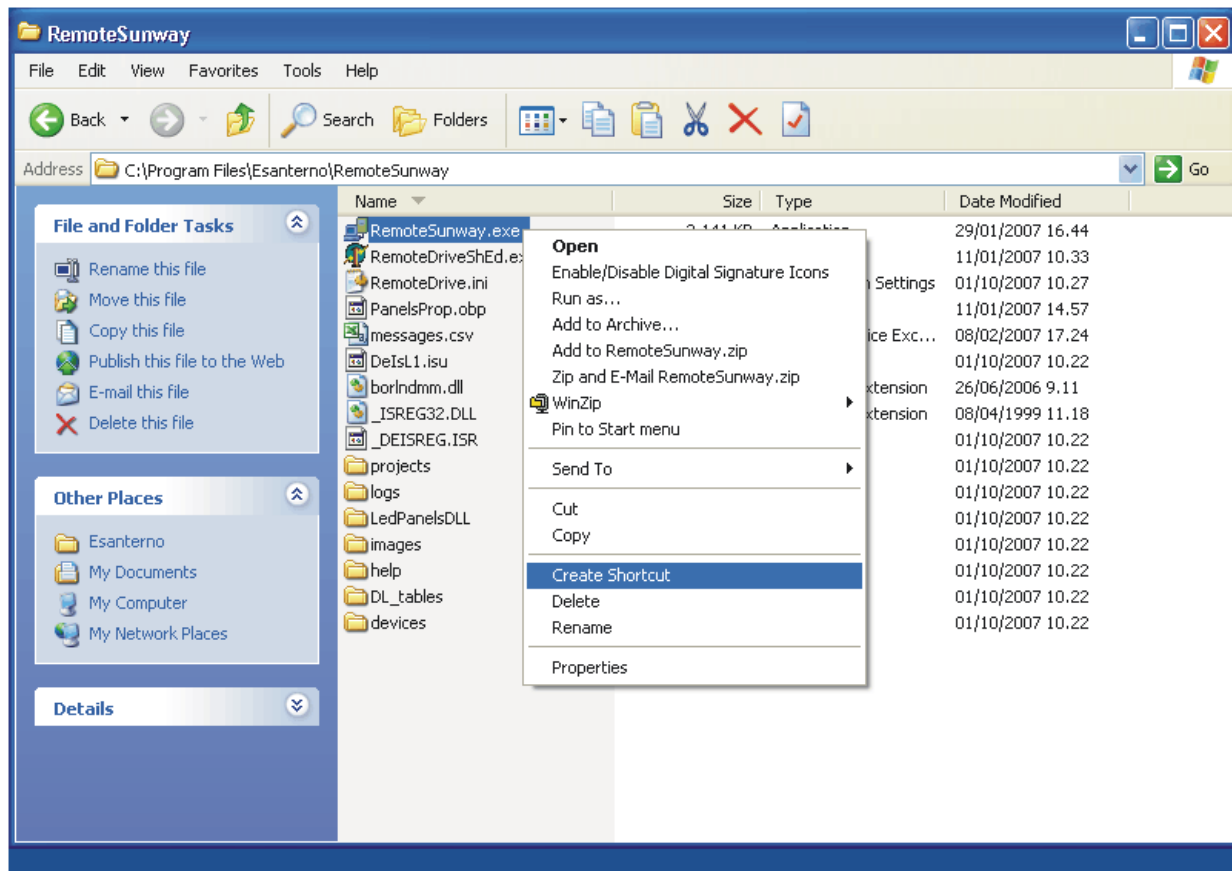


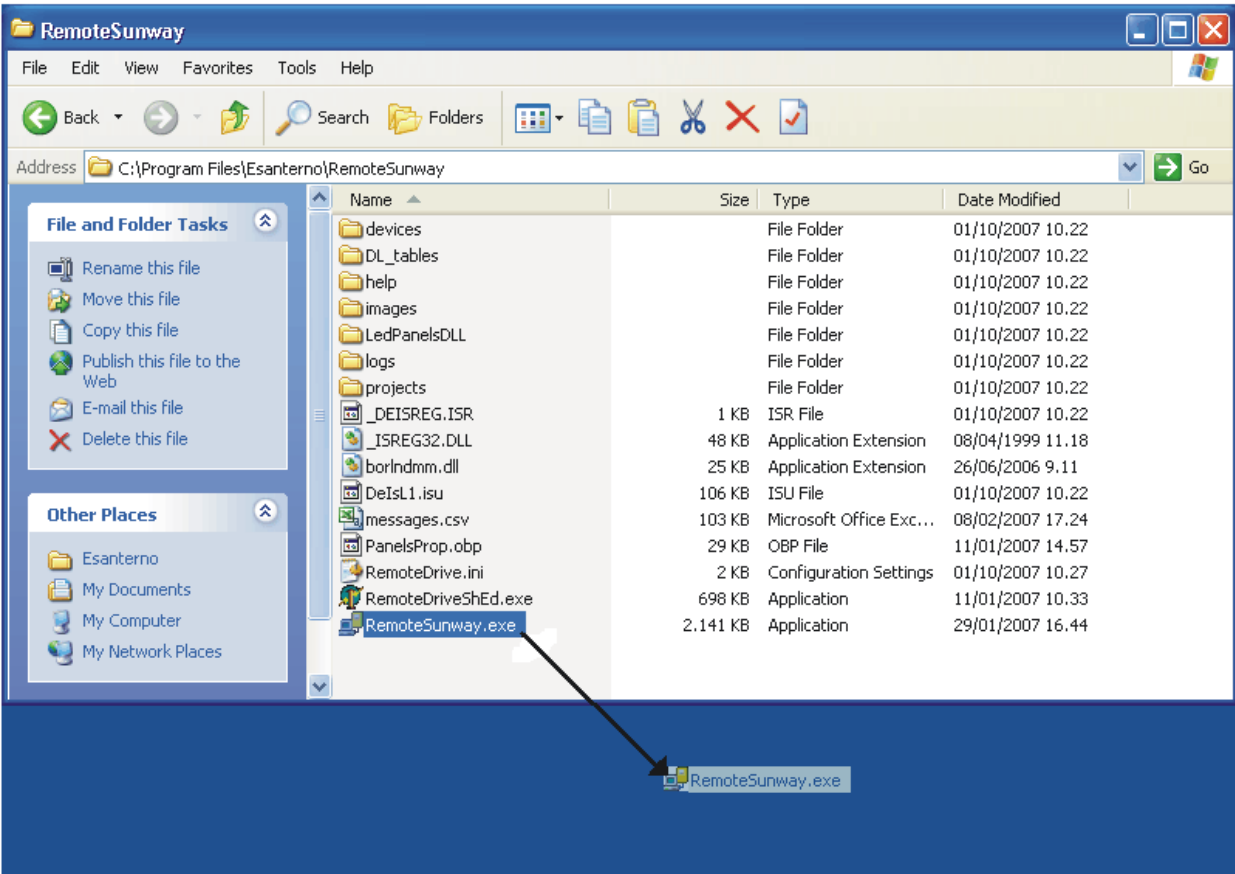
NOTE

The standard installation location is
C:\Programs\ESanterno\RemoteSunway\

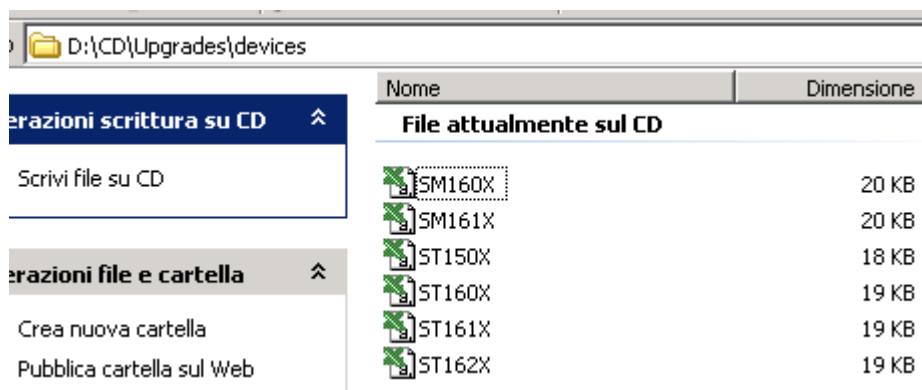
Create the icon on the desktop to quickly start the Remote Sunway.

Right-click the icon for the Remote Sunway to open the drop-down menu; select "Create Shortcut". Drag the "Shortcut to Remote Sunway" icon to the desktop.





From the "Upgrades\Devices" folder (if available) in your CD, copy the *.CSV files to the following folder:
"C:\Programs\ESanterno\RemoteSunway\devices".



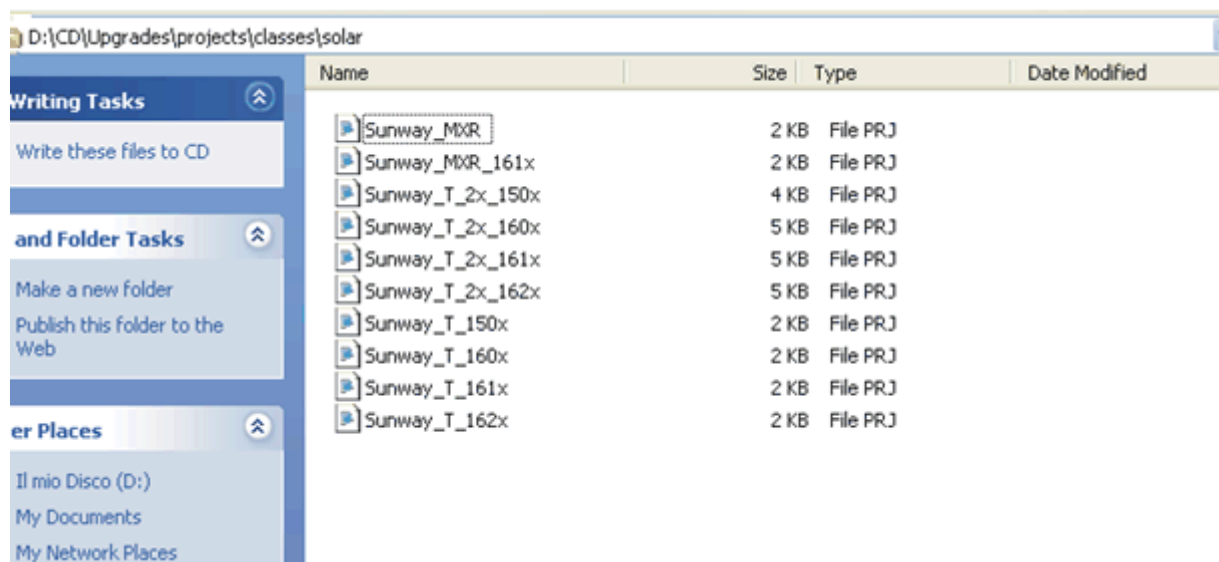
The configuration files for the devices connected to the supervisor system are the following:

SMXXXX: Sunway M XR
STXXXX : Sunway TG
QFXXXX : Smart String Box
DLXXXX: Data Logger

If no configuration file for the connected device is available on the CD, please contact Enertronica Santerno S.p.A., or download the configuration files from santerno.com.

From the "Upgrades\projects\classes\solar" folder (if available on the CD), copy the available projects to the following folder:

C:\Programs\ESanterno\RemoteSunway\projects\classes\solar\



"Projects" are plant configuration files, i.e. they contain information about the devices connected to the photovoltaic plant to be monitored.

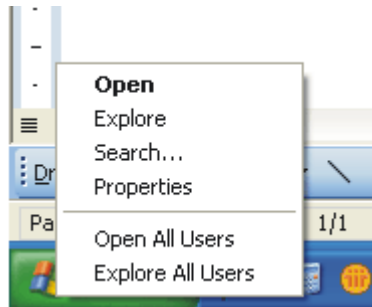
If the project required is not available on the CD, please contact Enertronica Santerno S.p.A., or download it from santerno.com.

4.5. Auto Start

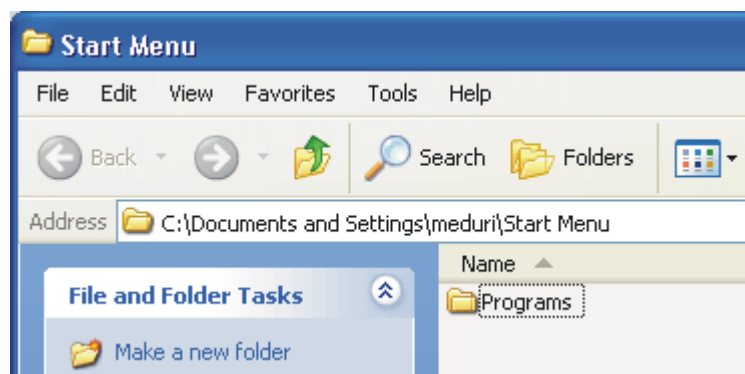
If no UPS is used for the power supply of your computer (although using a UPS is always recommended), the supervisor system will stop (along with your computer) whenever a power failure occurs. Nevertheless, the Remote Sunway can be restarted from the operating system of your computer.

Create a new shortcut to the Remote Sunway (see instructions above).

Right-click **Start** and select **Open**.

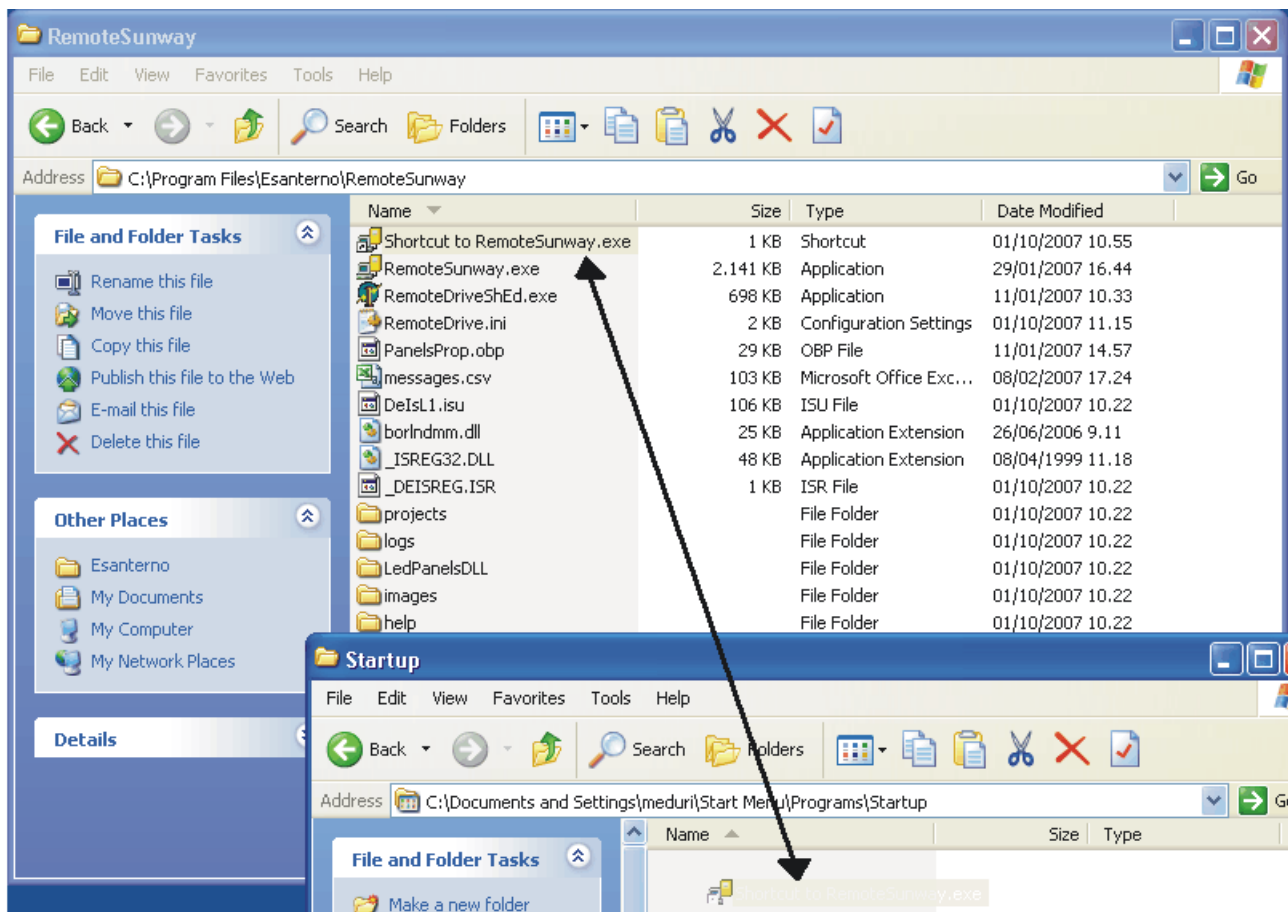


The Start Menu is displayed:



Open the **Programs** folder; the **Startup** folder is now available.

Move the "Shortcut to RemoteSunway" to the **Startup** folder.



5. STARTING AND CONFIGURING THE PROGRAM

5.1. *First Start*

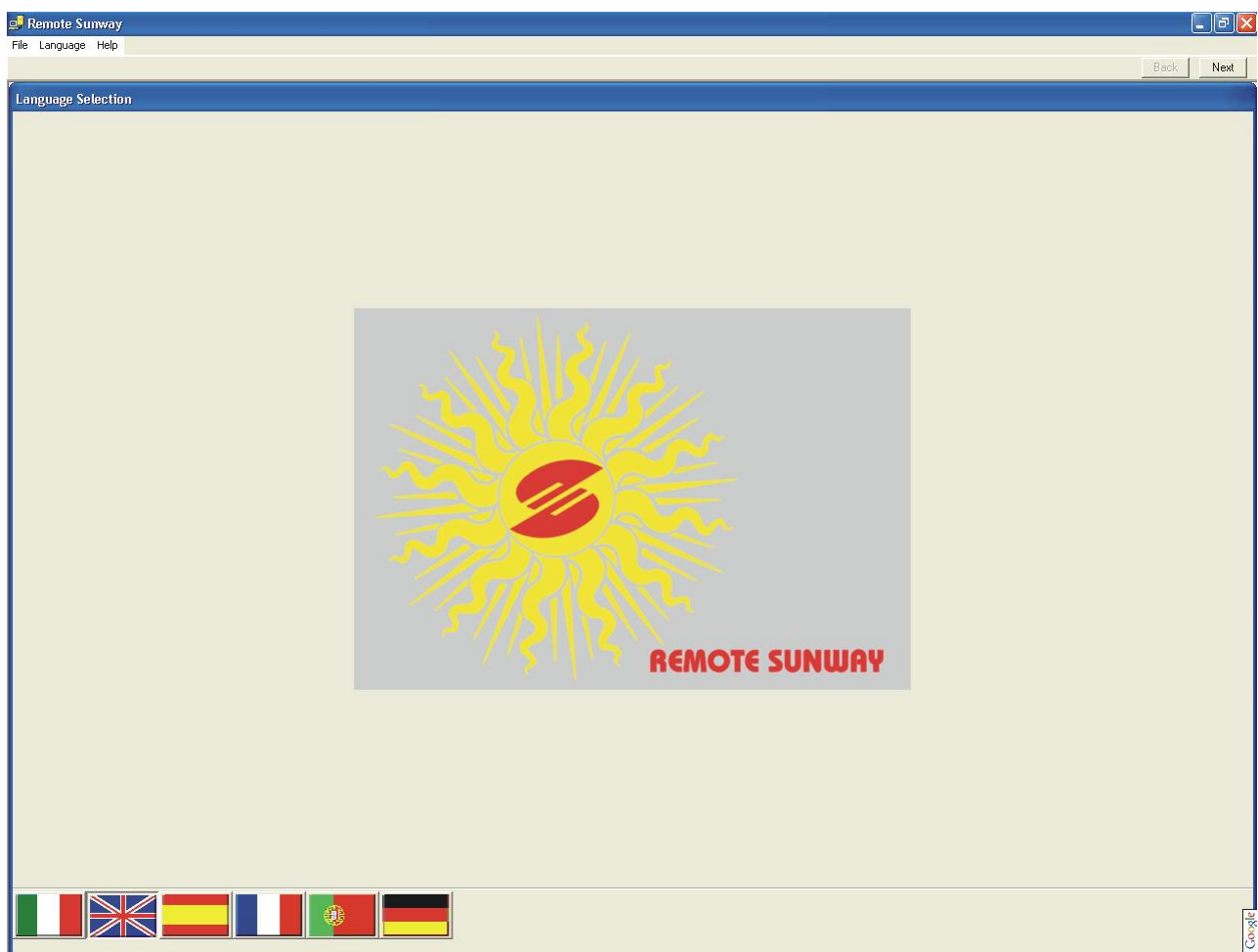
**NOTE**


Starting from software version 2.12, the installation CD into the CD player is no longer required for the correct operation of the supervisor.

**NOTE**

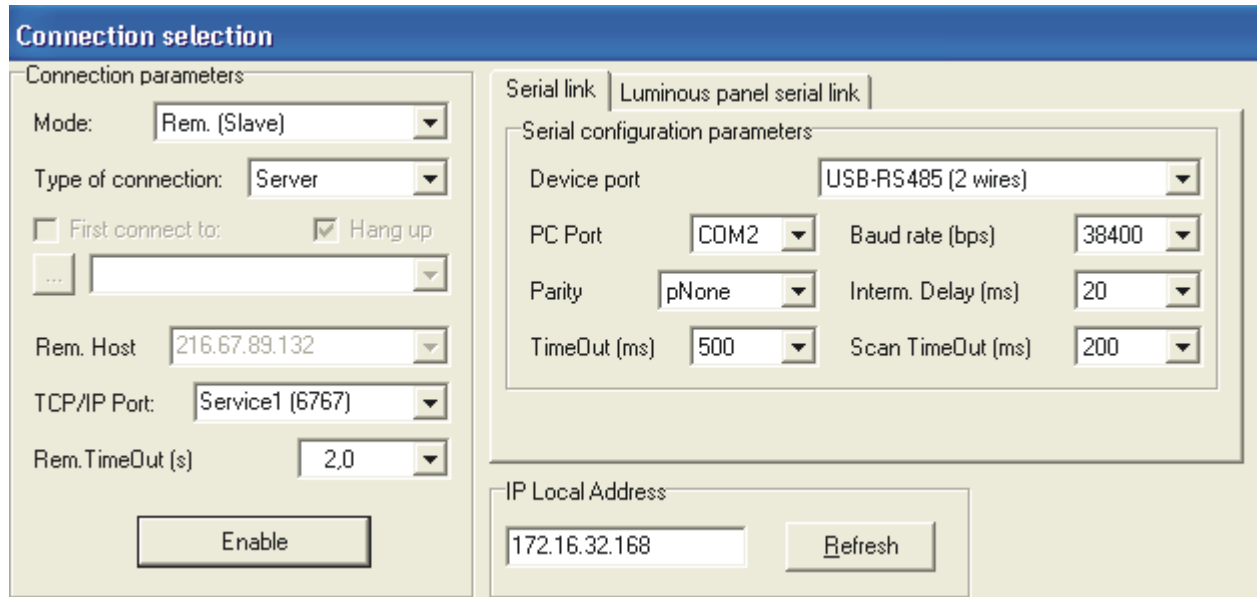
Before starting the Remote Sunway, set up different addresses for all the devices to be monitored (see respective manuals).

Start the “Remote Sunway” by clicking the “Remote Sunway” icon you have just created.



Italian is the default dialogue language. Select a flag and click  for a different dialogue language.

The **Connection selection** window appears, allowing configuring the type of connection.



The **Connection selection** window is divided into two main sections: **Connection parameters** and **Serial configuration parameters**.

Connection parameters:

- Mode:** Rem. (Slave)
- Type of connection:** Server
- ☐ First connect to: ☒ Hang up
- Rem. Host:** 216.67.89.132
- TCP/IP Port:** Service1 (6767)
- Rem. TimeOut (s):** 2.0
- Enable** button

Serial configuration parameters:

- Serial link:** Luminous panel serial link
- Device port:** USB-RS485 (2 wires)
- PC Port:** COM2
- Baud rate (bps):** 38400
- Parity:** pNone
- Interm. Delay (ms):** 20
- TimeOut (ms):** 500
- Scan TimeOut (ms):** 200

IP Local Address:

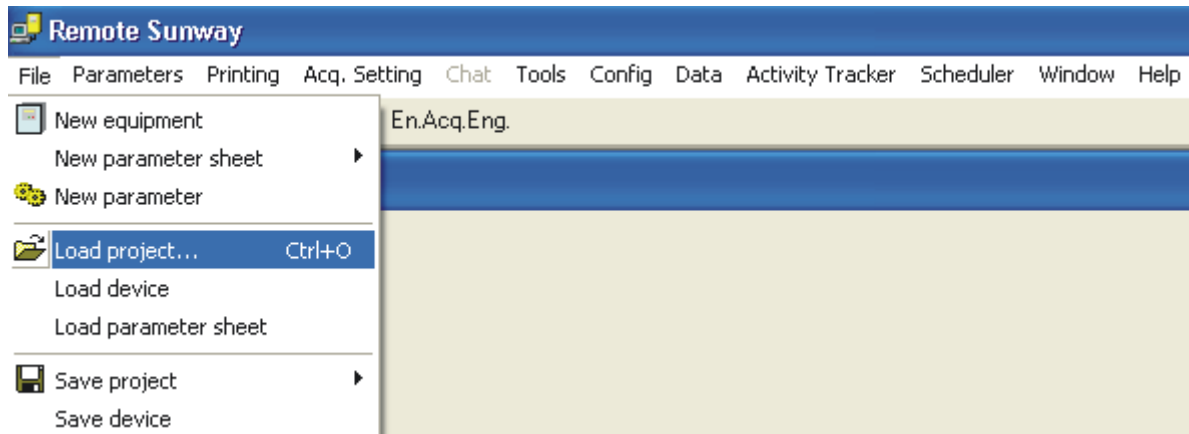
- 172.16.32.168
- Refresh** button

Click **Next** to continue.

5.2. *Dedicated Project*

After the **Connection Selection** window, the **Main window** is displayed, allowing performing most of the Remote Sunway's functions.

If you want to use a dedicated project or a preset project, or if you want to restore a previous configuration of the Remote Sunway, load the project suitable for your application (single or double inverter, single-phase or three-phase inverter, etc.) from the **Main** window.



The standard search path is Projects\Classes\Solar.

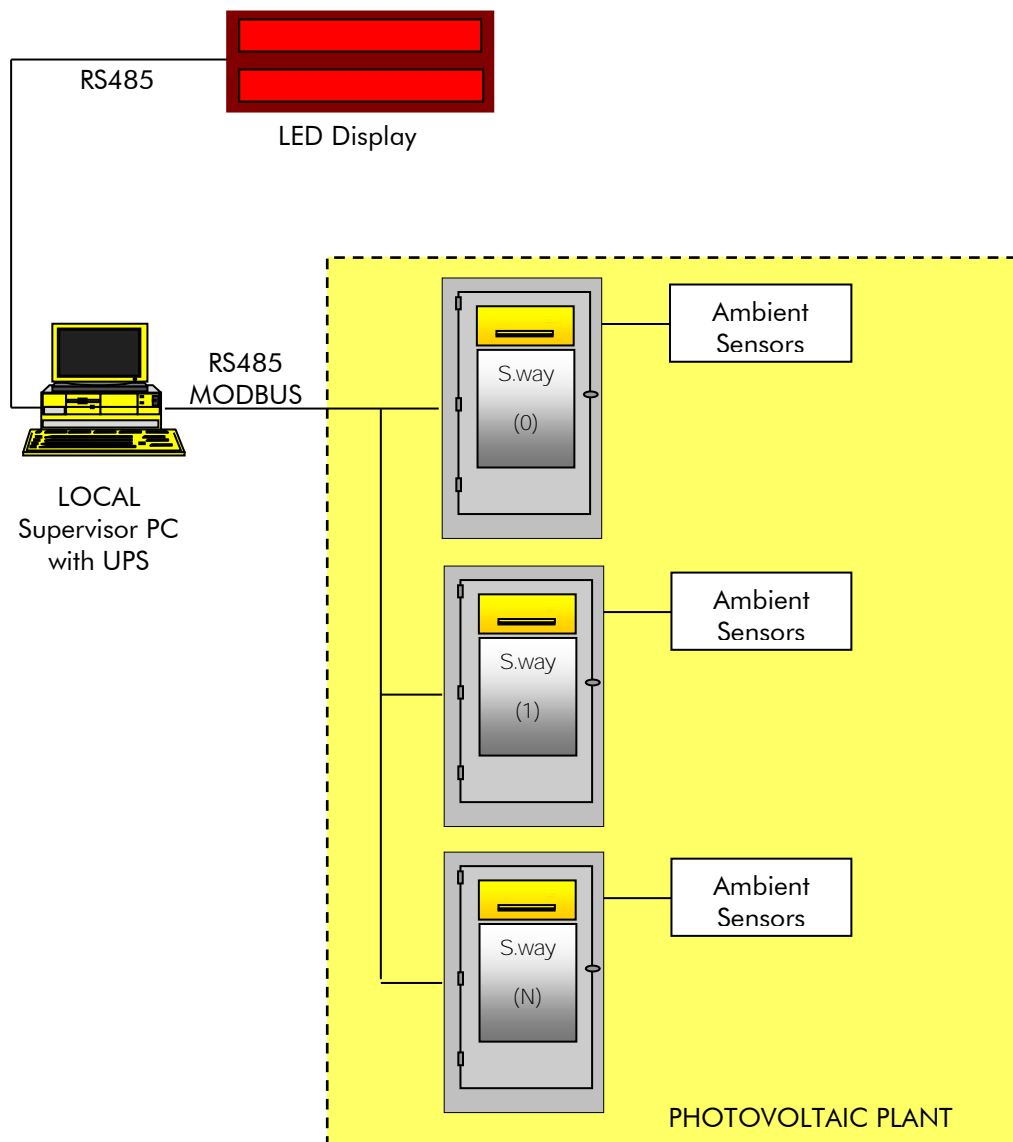
When loading a project, the connection parameters might be different from the ones required (.e.g.: type of connection, PC port, etc). After loading a project, check and change the connection parameters, if required.

To do so, press  to go back to the **Connection selection** window for the correct connection configuration.

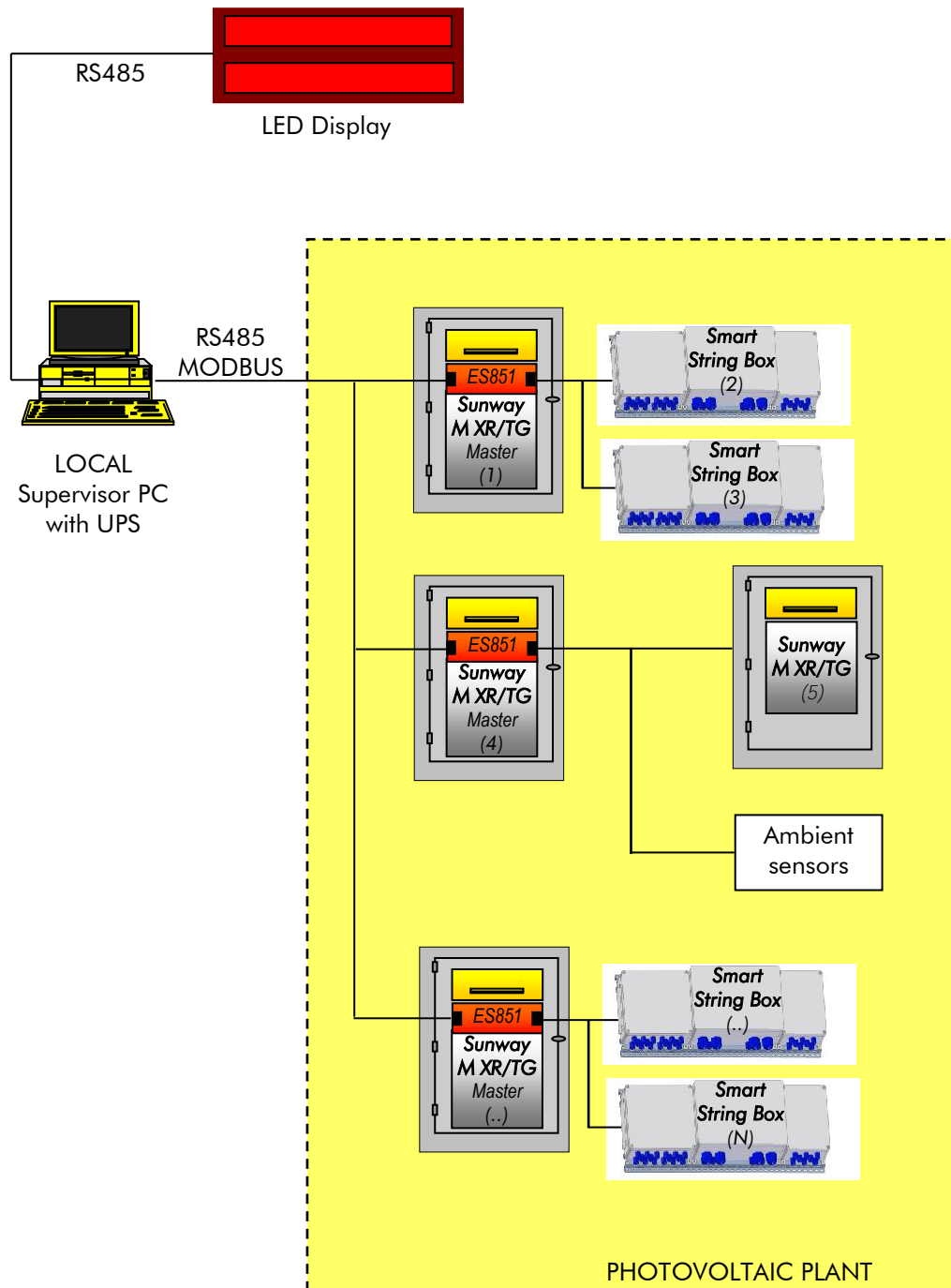
5.3. **Configuring the Connection to the Local PC**

This configuration allows a supervisor computer to be connected directly to the devices in the photovoltaic plant for on-line display and data logging.

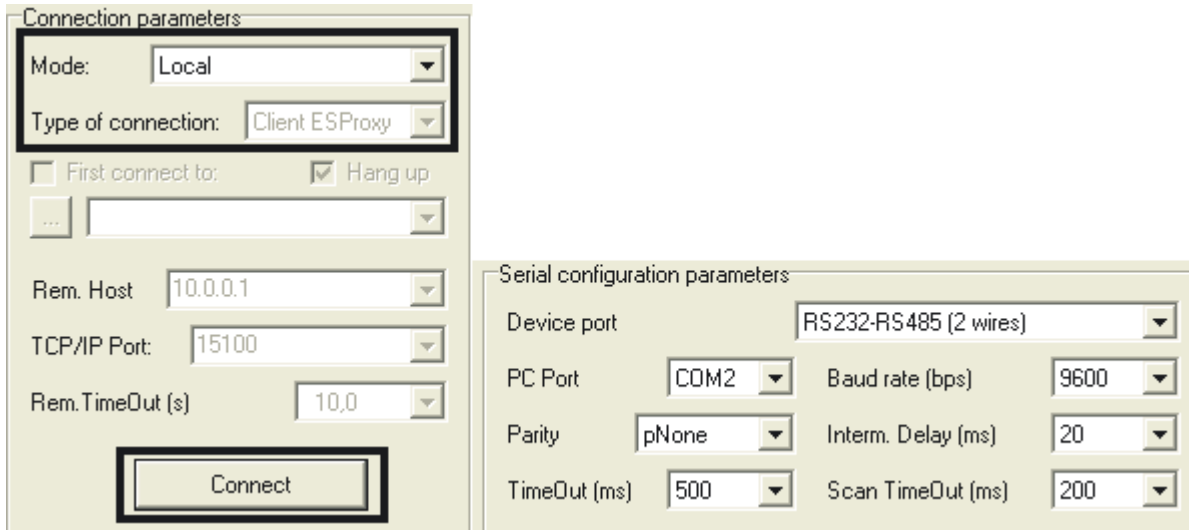
- **Simple plant** (with no ES851 Data Logger board)



- **Complex plant** (provided with ES851 Data Logger)



5.3.1. CONFIGURING THE CONNECTION TO THE DEVICES



Return to the **Connection selection** window. From the **Connection Parameters** window, select the **Local** Mode. The **Serial configuration parameters** tab contains the parameters required for the configuration of the serial port of your computer connected to the device in Local and Slave mode.

Device port

1. **RS232** 3-wire RS232C standard is used.
2. **USB-RS232** RS232C protocol using a USB port of the computer through a USB/RS232 adapter box is used.
3. **RS232-RS42 (4-wire)** 4-wire RS422 protocol is used; can be supported through an RS232/422 adapter box. The link is controlled by the RTS signal.
4. **USB-RS422 (4-wire)** 4-wire RS422 protocol is used, using a USB port of the computer through a USB/RS422 adapter box.
5. **RS232-RS485 (2-wire)**
not supported
6. **USB-RS485 (2-wire)** 2-wire RS485 is used, using a USB port of the computer through a USB/RS485 adapter box.

PC Port

Serial port of your computer where the device is connected to (enter the number of the serial port allocated to the device when installing the converter).

Baud Rate

Baud rate of the serial port. It must be the same as the baud rate selected for the connected device.

Parity

Defines the parity bits. It must be the same as the parity selected for the connected device.

R-I Minimum Delay

Minimum delay between a response and a new query. It is expressed in ms and is the waiting time between the last response received by the device and a new query sent from the computer. It is required when using the RS485 protocol and when the connected device engages the bus for a time longer than the time required for data transfer.

Timeout

Timeout period allowed between a query from the computer and the response of the connected device. When the preset timeout period is exceeded, a warning message is displayed.

Scan Timeout

Timeout period allowed between a query from the computer and the response of the connected device when scanning the devices connected to the same network.

Enter the number of the COM port (COM xy) of the PC being used. You can obtain the number of the Com port from "Device Manager" (in "Control Panel").

Enter the number of the converter being used (e.g. 2-wire USB-RS485).

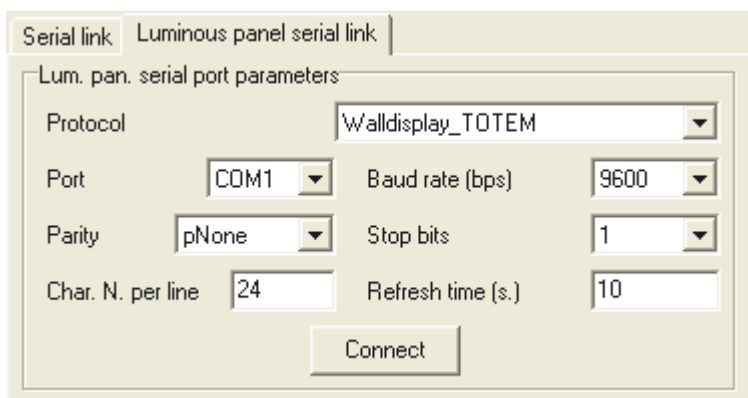
If the devices connected to the supervisor systems are all inverters (both Sunway TG and Sunway M XR inverters), do not alter the data set in "Baud Rate 38400"; if not, adjust the baud rate to the slowest device.

5.3.2. THE LED DISPLAY (LUMINOUS PANEL)

When the supervisor computer is persistently connected to the photovoltaic plant, a LED display (luminous panel) can be used to view some important variables.

The supervisor computer must be provided with an additional RS485 link, separate from the link dedicated to the acquisition of the devices included in the PC plant. The additional RS485 link can be obtained by converting an available serial link or USB port using the dedicated converter.

Return to the **Connection Selection** window and click the **Luminous Panel Serial Link** tab to configure the correct connection between the Remote Sunway and the luminous panel.



Set up the parameters required for configuring the serial port of the supervisor computer connected to the luminous panel.

Protocol

Allows selecting the driver to be used for the luminous panel. The driver consists of DLL files; the filenames include the model of luminous panel being used and contained in the "LedPanelsDLL" folder (**Walldisplay_TOTEM_RS485_CRC** is selected by default).



NOTE If the luminous panel is not used, set **None** for the "Protocol" drop-down box.

Port

Serial port of the PC where the luminous panel is connected to.

Baud Rate

Baud rate of the serial port; it must be the same as the baud rate selected for the luminous panel. The default baud rate is **9600**.

Parity

The parity bit must be the same as the parity bit selected for the luminous panel (the default setting is **pNone**).

Stop Bit

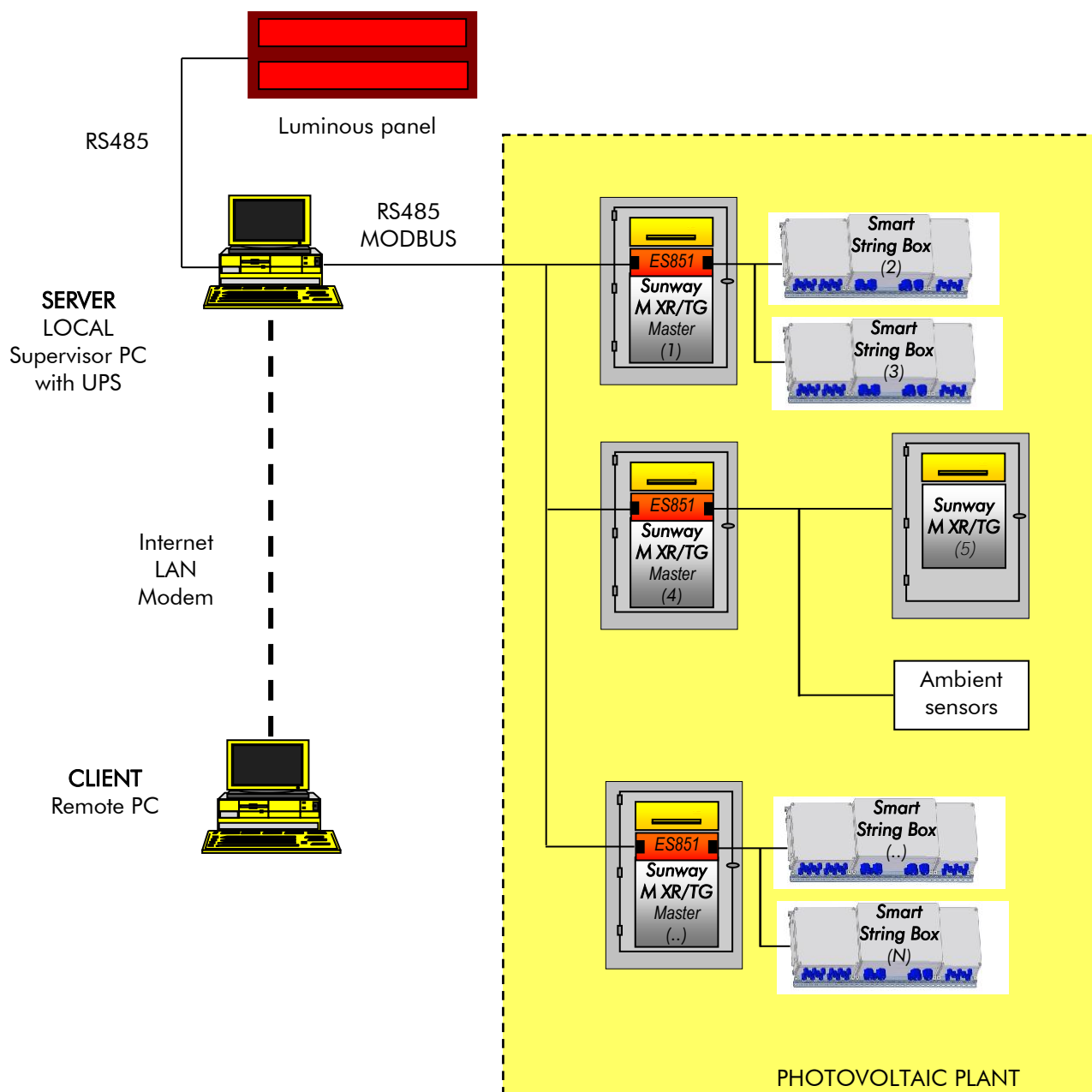
N. of stop bits. The default setting is **1**.

Character N. per Line

Maximum number of characters per line allowed by the luminous panel.

5.4. Configuring the Remote Connection (PC to PC)

The configuration shown below allows a supervisor computer to be connected directly to the devices included in the PV plant for on-line display and data logging, as well as the remote connection of a computer offering the same display functionality.



The Remote Sunway must be correctly configured for both the SERVER (Local PC) and the CLIENT (Remote PC).

5.4.1. CONNECTION VIA THE INTERNET

The connection via the Internet between two computers is possible using the **link.elettronicasanterno.it** service offered by the Proxy-server system from Enertronica Santerno S.p.A..

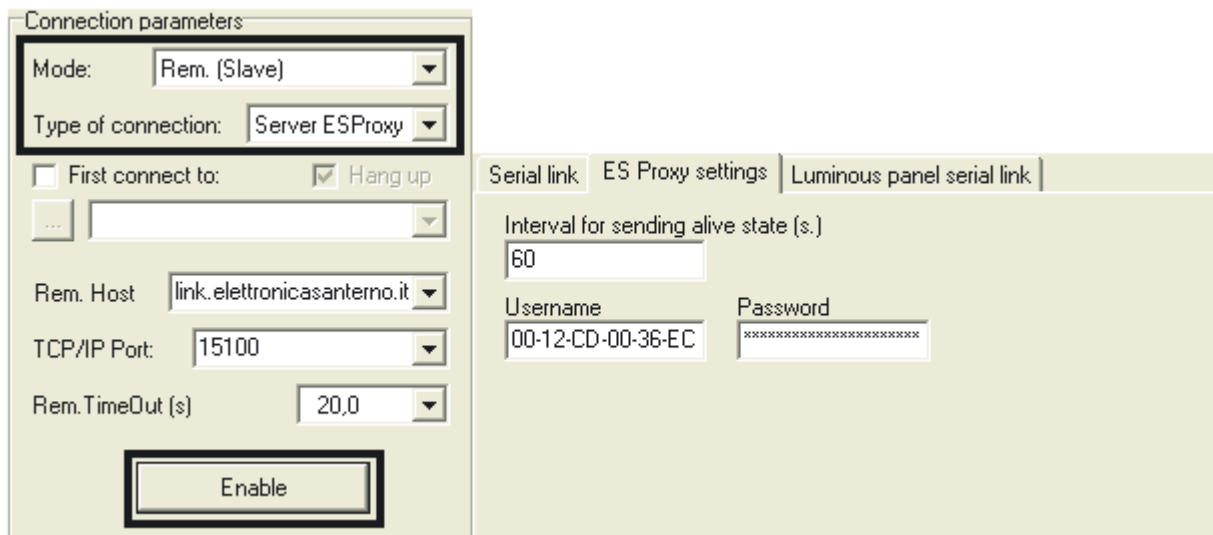
Thanks to this service, a remote PC can be connected to a local supervisor computer of the plant at any time and from any place, even if its IP address is not known. The **link.elettronicasanterno.it** service also offers automatic services for supervision and remote control allowing notifying the plant status via mail or SMS.

5.4.1.1. PLANT SUPERVISOR COMPUTER–ESPROXY SERVER

In the **Connection selection** window of the Remote Sunway implemented on the SERVER PC (local supervisor computer of the plant), set the following items:

Mode: **Rem (Slave)**; Type of connection: **ESProxy Server**.

The RemoteSunway automatically sets up the **TCP/IP Port** and the **Remote Host** for the connection to **link.elettronicasanterno.it**.



A tab appears, that must be filled in. The mandatory fields are marked with (*).

Please refer to the Configuring the Connection to the Local PC section for the setting of the connections to the devices (Serial Link tab) and the LED display (Luminous Panel Serial Link) and enter the same settings.

In the **ES Proxy settings** tab, enter the time interval the Remote Sunway requires to communicate its status to **link.elettronicasanterno.it**.

Also enter the **Username** and **Password** of the Internet account provided from Enertronica Santerno S.p.A. and which identifies the implemented Remote Sunway.



CAUTION

The Remote Sunway is case-sensitive. Pay attention when entering your username and password.



NOTE

The remote client PC shall be capable of establishing a connection to the Internet; no specific protocols are required.

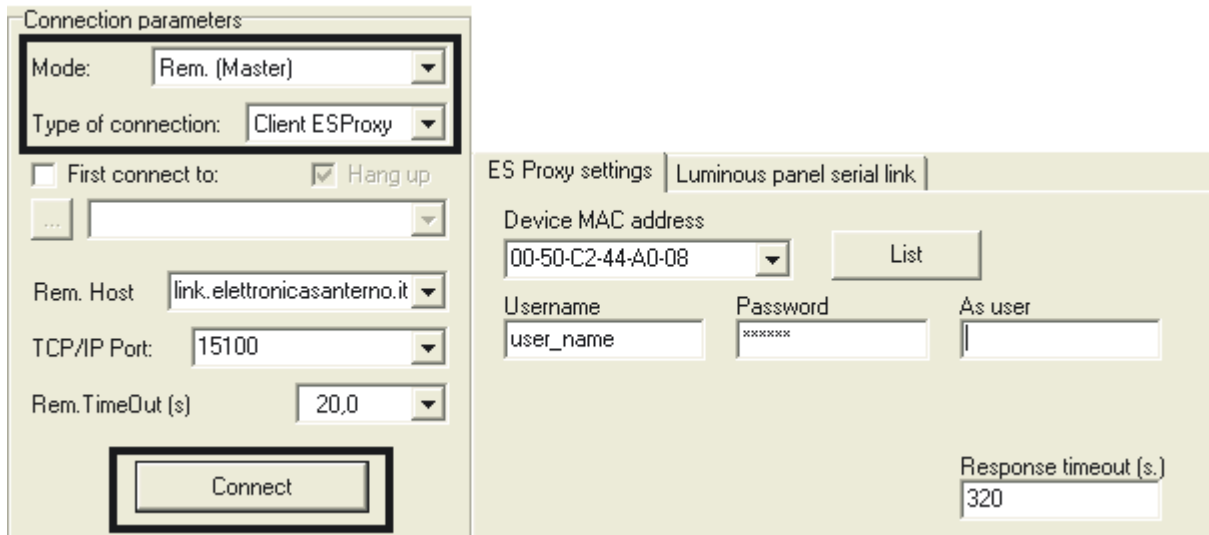
Click **Enable** to establish a connection and to send enquiries to the connected devices.

5.4.1.2. REMOTE PC– CLIENT ESPROXY

In the **Connection selection** window of the RemoteSunway implemented on the CLIENT PC (remote PC), set the following items:

Mode: **Rem (Slave)**; Type of connection: **ESProxy Client**.

The RemoteSunway automatically sets up the **TCP/IP Port** and the **Remote Host** for the connection to link.eletronicasanterno.it.



A tab appears, that must be filled in. The mandatory fields are marked with (*).

In the **ES Proxy settings** tab, enter the **Username** and **Password** of the Internet account provided from Enertronica Santerno S.p.A.. In the **Device MAC Address** field, enter the MAC address of the computer or of the ES851 Data Logger you are connecting to. If the MAC address of ES851 is not known, press the List button to view the available boards (see the Device List Window section below).

Press the **Connect** button to establish the connection to the local supervisor computer of the plant (PC server).

It is now possible to operate on the devices connected to the control power unit.

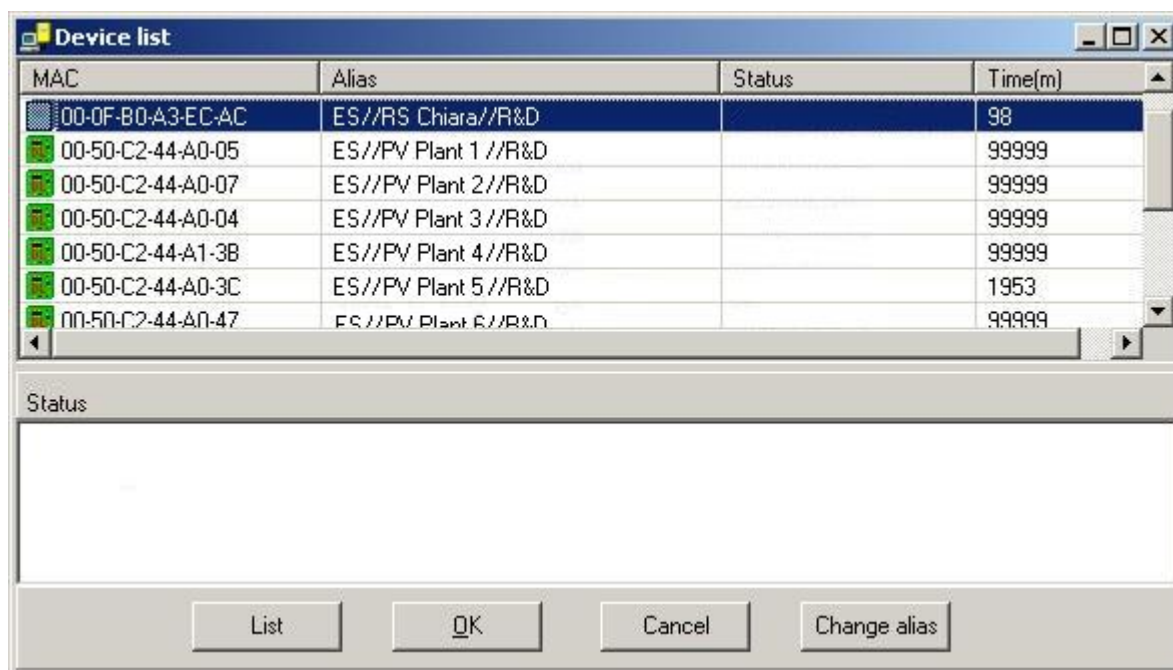


NOTE A LED display (luminous panel) can be connected also to the remote client PC.



NOTE The PC shall be capable of establishing a connection to the Internet; no specific protocols are required.

5.4.1.3. DEVICE LIST WINDOW



This window shows the whole list of the devices assigned to the user set in **Username** and **Password** in the ESProxy Configuration window in Master-ESProxy Client mode. A device can be an ES851 Data Logger board or a computer where the Remote Sunway is configured as ESProxy Server Slave.

The following items are provided:

- **MAC:** MAC address of the device.
- **Alias:** Description of the device. The "link.elettronicasanterno.it" service provides a default description for each device. To edit this description, see the Change Device Alias Window.
- **Status:** Lists the different errors and states of the device. If this line is highlighted, errors and states are reproduced in the "Status:" box below the table.
- **Time(m):** Time (in minutes) elapsed from the last status message sent from the device.

List button

If you press the List button, the portal refreshes the device list and the new list is displayed.



NOTE

Enter the correct username and password to correctly execute this command.

OK button

This button allows copying—in the **Device MAC Address** box (ESProxy Configuration window)—the MAC address of the device selected in the list and closes the **Device List** window.

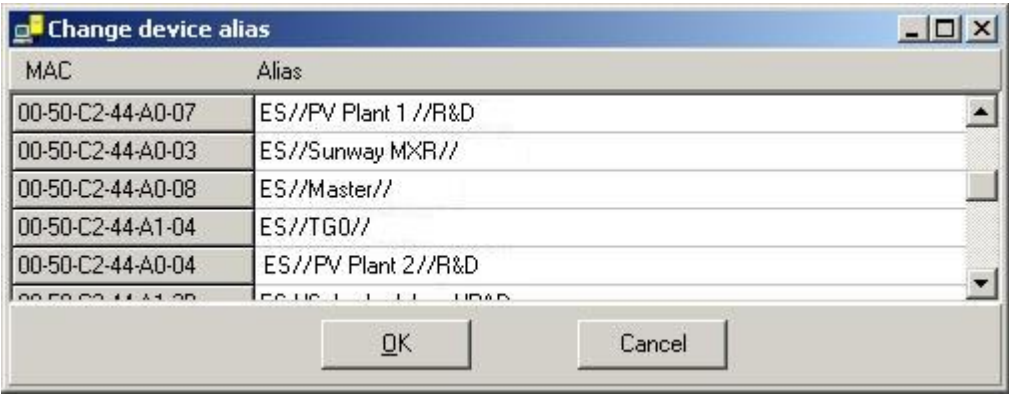
Cancel button

Closes the window.

Change Alias button

Opens the window allowing change the device alias (see the Change Device Alias Window).

5.4.1.4. CHANGE DEVICE ALIAS WINDOW



This window allows changing the alias assigned to each device. It provides a blank line for each device where you can add comments for the device identification.
Press OK to confirm changes. Any changes will be saved to the **“boardsalias.txt”** file in the Remote Sunway folder.



NOTE

The link.elettronicasanterno.it service provides a Default Alias list which is automatically displayed and which can be changed from the **Change device alias window**.

5.4.2. CONNECTION VIA MODEM AND THE LAN

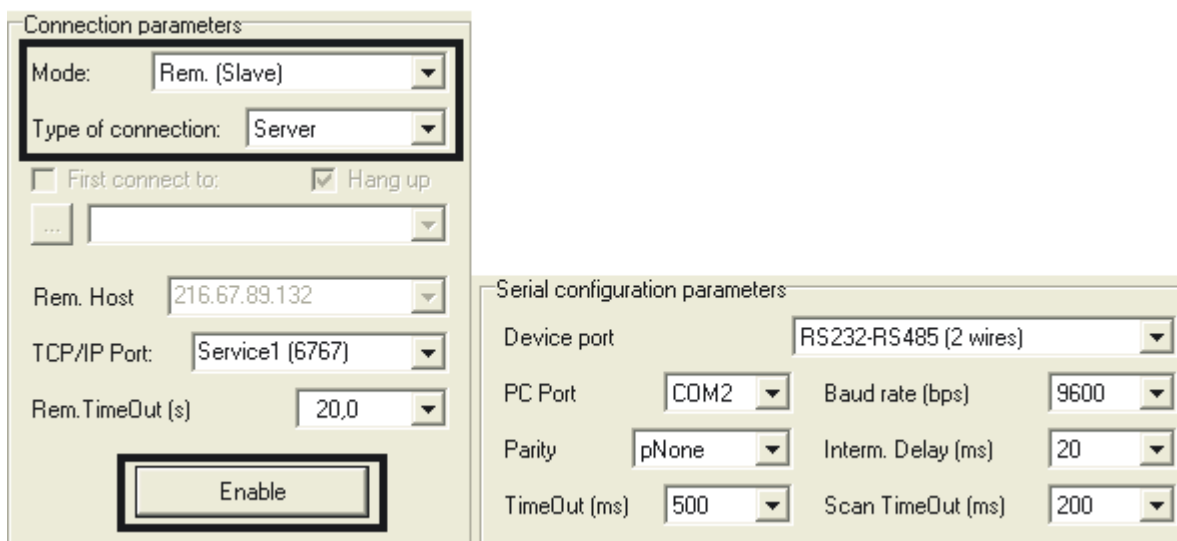
When using a LAN connection or a modem point-to-point connection, the master PC and the slave PC can be connected as described in the sections below.

5.4.2.1. PLANT SUPERVISOR COMPUTER - SERVER

In the **Connection selection** window in the Remote Sunway implemented on the SERVER PC (local supervisor computer of the plant), set the following items:

Mode: **Rem (Slave)**; Type of connection: **Server**.

Set the device Port based on the connection selected and set the correct serial port of the PC. Baud rate and Parity must match with the values set for the connected devices.



The image shows two overlapping windows from the Remote Sunway software. The 'Connection parameters' window on the left has a tab selected. It contains dropdown menus for 'Mode' (set to 'Rem. (Slave)') and 'Type of connection' (set to 'Server'). Below these are checkboxes for 'First connect to:' (unchecked) and 'Hang up' (checked), followed by a button with three dots and a dropdown menu. Further down are fields for 'Rem. Host' (216.67.89.132), 'TCP/IP Port' (Service1 (6767)), and 'Rem. TimeOut (s)' (20.0). At the bottom is a large 'Enable' button. The 'Serial configuration parameters' window on the right shows 'Device port' as 'RS232-RS485 (2 wires)'. It has two columns of settings: 'PC Port' (COM2), 'Baud rate (bps)' (9600), 'Parity' (pNone), 'Interm. Delay (ms)' (20), 'TimeOut (ms)' (500), and 'Scan TimeOut (ms)' (200).

A tab appears, that must be filled in. The mandatory fields are marked with (*).

The connections to the devices in the plant (**Serial configuration parameters** tab) and to the luminous panel (**Luminous panel serial link** tab) are configured as stated in the Configuring the Connection to the Local PC section.

Based on the type of remote connection being used (connection via modem or the LAN), some dedicated tasks might be required:

Modem connection between the remote PC and the Local PC: the local PC shall be ready to receive incoming connections.

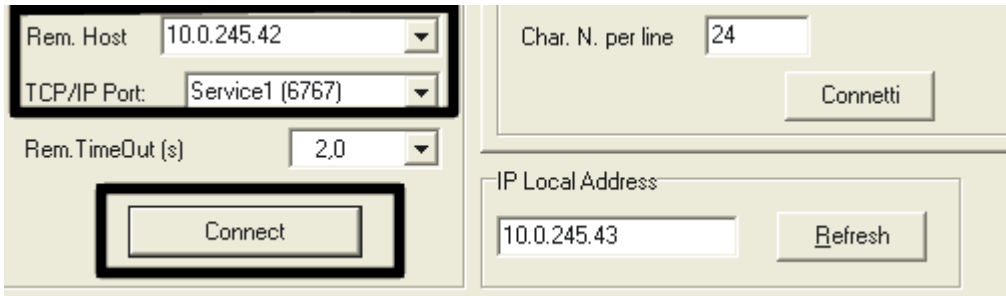


NOTE

To create the incoming connection, use the Windows utilities for networking. See the Configuring the Operating System for Point-to-Point Connections.

Connection via the LAN between the remote PC and the Local PC: No additional operation is required.

Click **Enable** to start the connection and to query the devices.



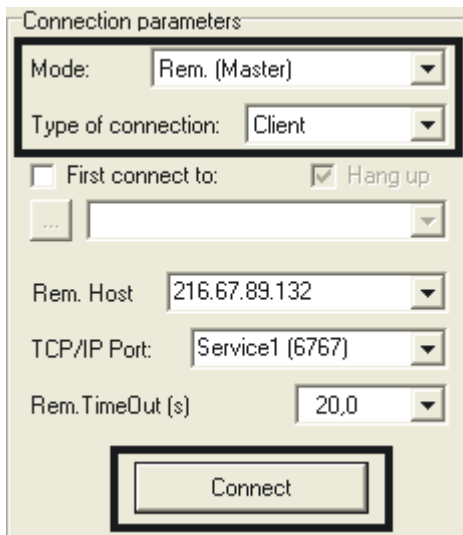
Rem. Host	10.0.245.42	Char. N. per line	24
TCP/IP Port:	Service1 (6767)	Connetti	
Rem.Timeout (s)	2,0	IP Local Address	
Connect		10.0.245.43	Refresh

Check the **local IP address** (a STATIC IP Address is required for persistent connections) and the **TCP/IP Port** being used. The CLIENT PC needs this data to establish a connection.

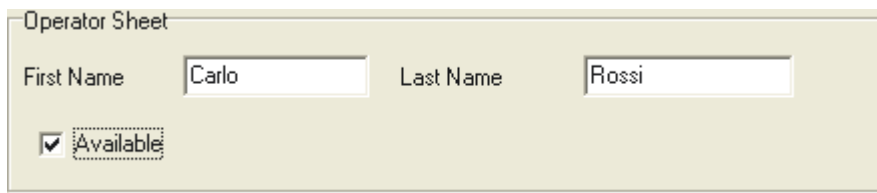
5.4.2.2. REMOTE PC - CLIENT

In the **Connection selection** window of the Remote Sunway for the CLIENT PC (Remote PC), set the following items:

Mode: **Rem (Master)**; Type of connection: **Client**.



Fill in the Operator Sheet:



Based on the type of remote connection (via modem or via the LAN), some dedicated tasks might be required:

Modem connection between the Remote PC and the Local PC: without quitting the Remote Sunway, establish the point-to-point connection, or select the desired modem connection from the **"First Connect to"** option. In **Rem. TimeOut**, increase the delay time (10 seconds if you are connecting to a GSM modem, 5 seconds if you are connecting to an analogue modem).



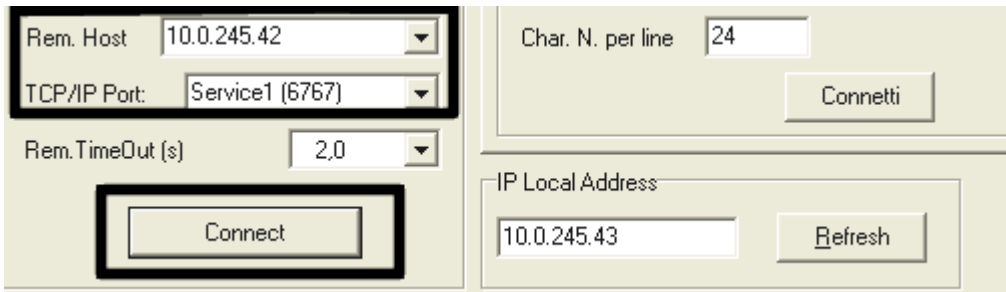
NOTE

The point-to-point connection can be created from the Remote Sunway using the **"First Connect to"** Option.

Connection via the LAN between the Remote PC and the Local PC: No additional operation is required.

For any type of connection (via Internet, LAN, modem), the Remote HOST and the TCP/IP Port must be set up accordingly.

In **Rem. Host**, enter the IP address of the server PC (local supervisor computer of the plant); in **TCP/IP Port**, enter the same TCP/IP Port used from the server.



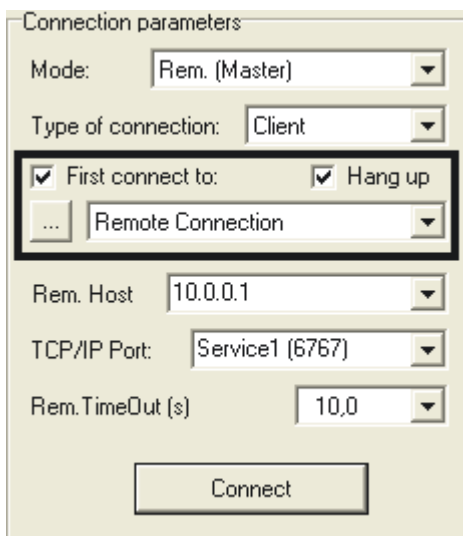
Click **“Connect”** to establish a connection with the server.
It is now possible to operate on the connected devices.




NOTE A LED display can be connected to the Remote PC as well.

5.4.2.3. “FIRST CONNECT TO” OPTION

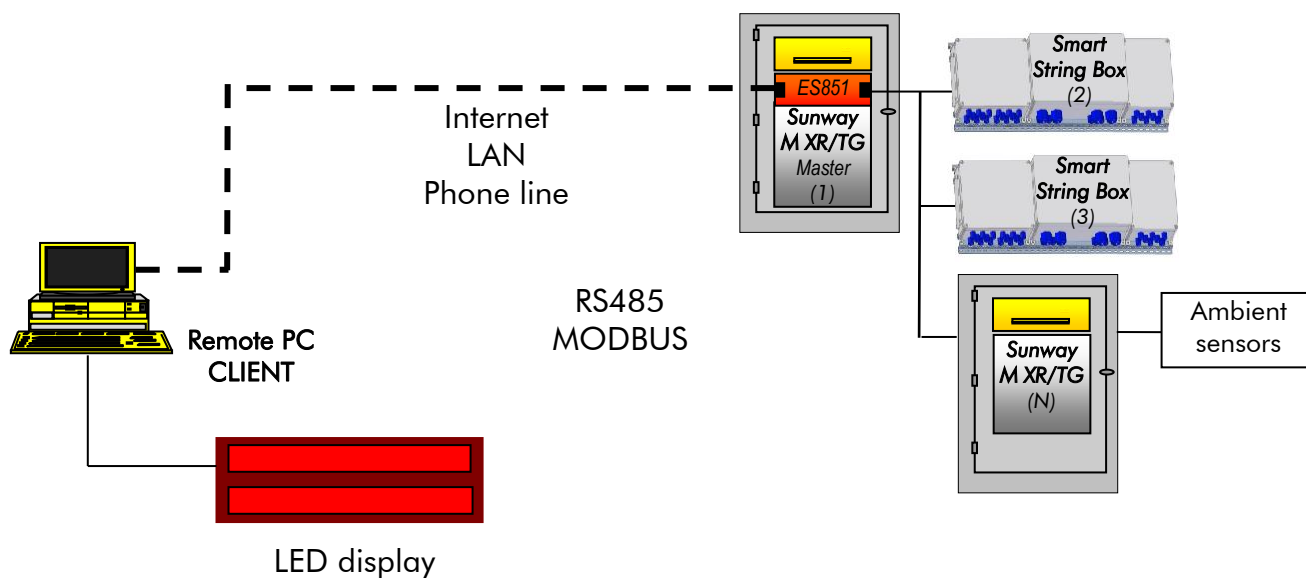
If the “First connect to” box is selected, press the “Connect” button to automatically establish the selected remote connection, thus avoiding activating any connections manually from Windows.



The  button allows accessing a menu to create a remote connection. See the Windows XP and Windows 2000 section.

5.5. **Configuring a Remote Connection between a PC and ES851 Data Logger**

ES851 Data Logger is installed on one of the connected inverters (a single-phase or a three-phase inverter) forming the photovoltaic plant. All the remaining devices can be connected directly to ES851 Data Logger board. This configuration allows the remote connection of a computer to view the plant conditions on-line and to retrieve stored data.



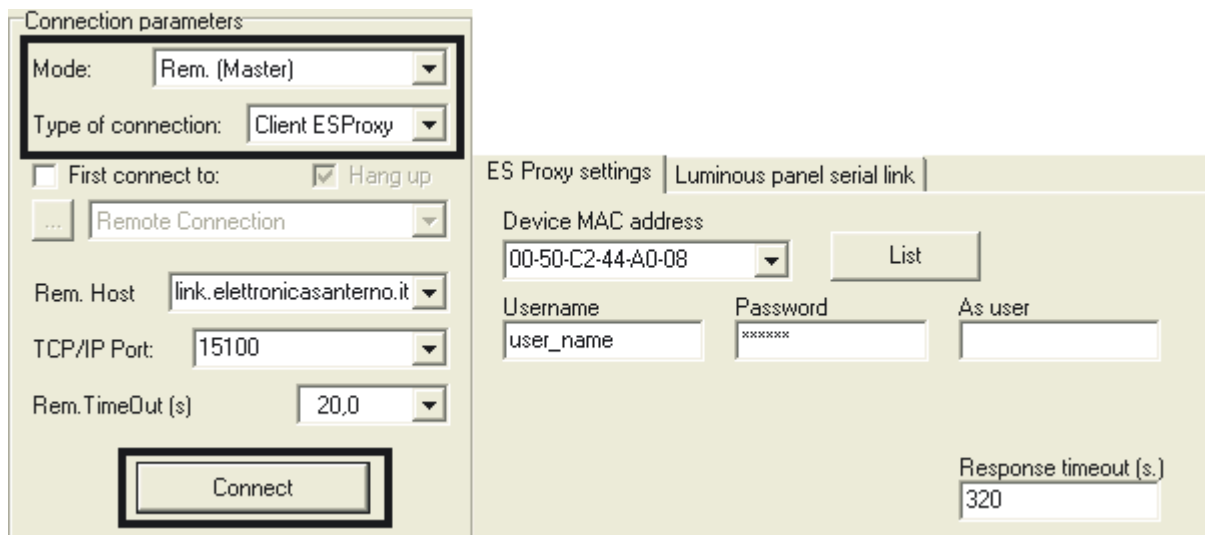
5.5.1. CONNECTION VIA THE INTERNET

5.5.1.1. REMOTE PC – ESPROXY CLIENT

In the **Connection selection** window of the Remote Sunway implemented in the Remote CLIENT PC set the following items:

Mode: **Rem (Master)**; Type of connection: **ESProxy Client**.

The Remote Sunway automatically sets the **TCP/IP port** and the **Remote Host** for the connection to link.eletronicasanterno.it.



A tab appears, that must be filled in. The mandatory fields are marked with (*).

In the **ES Proxy settings** tab, enter the **Username** and **Password** of the Internet account provided from Enertronica Santerno S.p.A.. In the **Device MAC address** field, enter the MAC address of the ES851 Data Logger you are connecting to. If the MAC address of ES851 is not known, press the List button to view the available boards (see the Device List Window section).

Press the **Connect** button to establish the connection to the selected ES851 Data Logger.

It is now possible to operate on the devices connected to the control power unit.



NOTE

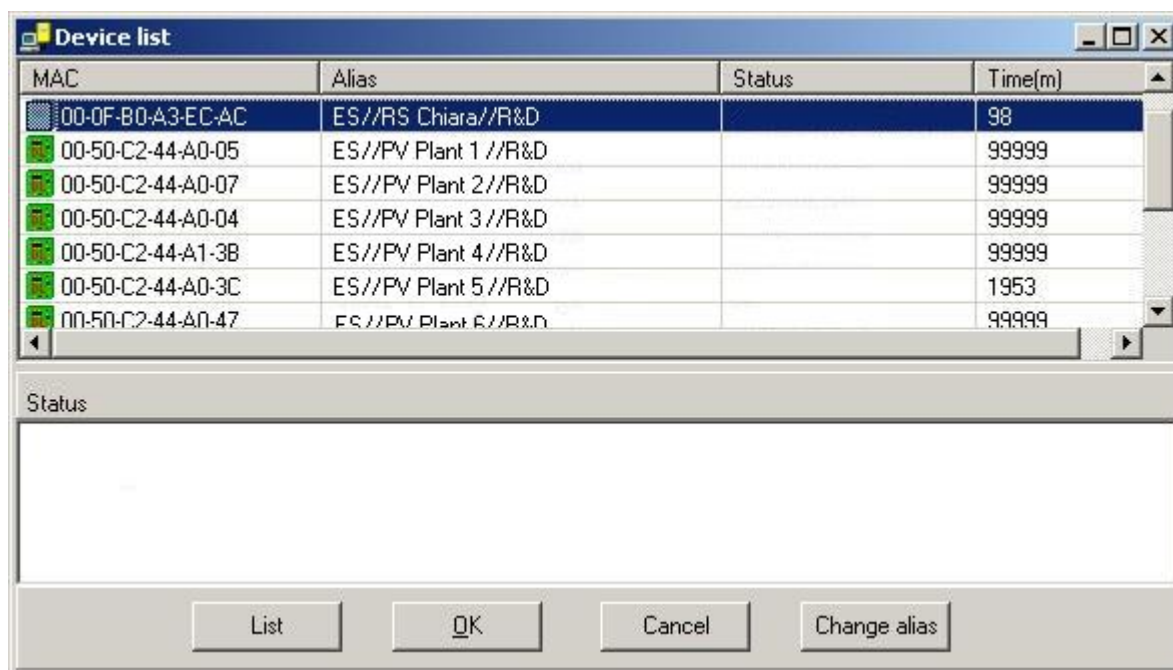
A LED display (luminous panel) can be connected to the remote client PC as well.



NOTE

The remote client PC shall be capable of establishing a connection to the Internet; no specific protocols are required.

5.5.1.2. DEVICE LIST WINDOW



This window shows the whole list of the devices assigned to the user and set in **Username** and **Password** in the **ESProxy Configuration** window in Master-ESProxy Client mode. A device can be an ES851 Data Logger board or a computer where the Remote Sunway is configured as ESProxy Server Slave.

The following items are provided:

- **MAC:** MAC address of the device.
- **Alias:** Description of the device. The "link.elettronicasanterno.it" service provides a default description for each device. To edit this description, see the Change Device Alias Window.
- **Status:** Lists the different errors and states of the device. If this line is highlighted, errors and states are reproduced in the "**Status:**" box below the table.
- **Time(m):** Time (in minutes) elapsed from the last status message sent from the device.

List button

If you press the List button, the portal refreshes the device list and the new list is displayed.



NOTE

Enter the correct username and password to correctly execute this command.

OK button

This button allows copying—in the **Device MAC Address** box (ESProxy Configuration window)—the MAC address of the device selected in the list and closes the **Device List** window.

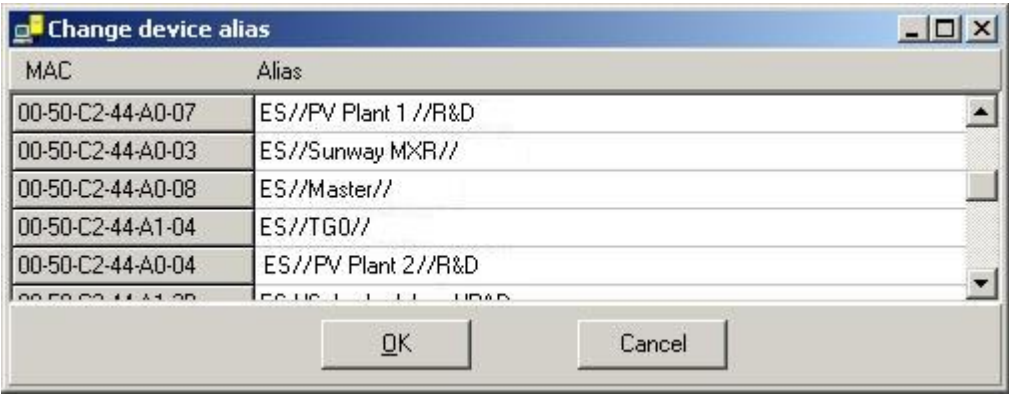
Cancel button

Closes the window.

Change Alias button

Allows opening the window to change the device alias (see the Change Device Alias Window).

5.5.1.3. CHANGE DEVICE ALIAS WINDOW



This window allows changing the alias assigned to each device. It provides a blank line for each device where you can add comments for the device identification.
Press OK to confirm changes. Any changes will be saved to the “**boardsalias.txt**” file in the Remote Sunway folder.



NOTE

The link.elettronicasanterno.it service provides a Default Alias list which is automatically displayed and which can be changed from the **Change device alias** window.

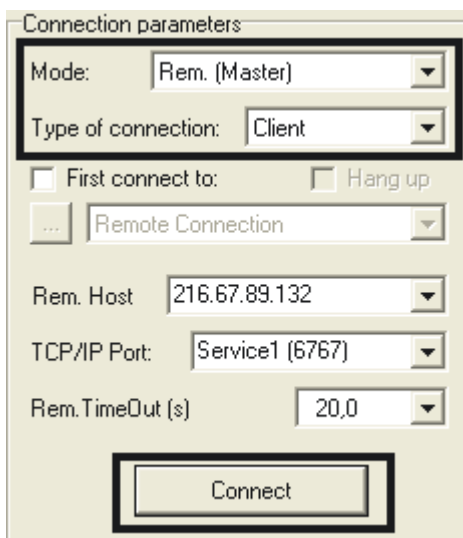
5.5.2. CONNECTION VIA MODEM AND VIA THE LAN

A remote connection to a PC can be established when ES851 Data Logger board is connected to a LAN or to an analogue modem or to a GSM modem for point-to-point connections. To do so, the Remote Sunway is to be configured as described below.

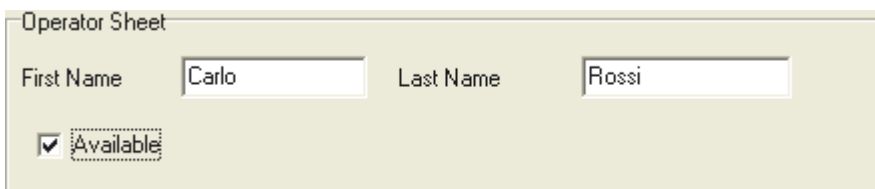
5.5.2.1. REMOTE PC - CLIENT

In the **Connection Selection** window of the Remote Sunway implemented on the remote CLIENT PC, set the following items:

Mode: **Rem (Master)**; Type of connection: **Client**.



Fill in the Operator Sheet:



Based on the type of remote connection (via modem or LAN), some dedicated tasks might be required:

Modem connection between the Remote PC and ES851 Data Logger: without quitting the Remote Sunway, establish a point-to-point connection, or select the desired Internet connection from the **"First Connect to"** option. In **Rem. TimeOut**, increase the delay time (10 seconds if you are connecting to a GSM modem, 5 seconds if you are connecting to an analogue modem).

In **Host rem.**, if the **"First Connect to"** option is selected, "10.0.0.1" is automatically selected. This is the default address for connections via modem for the plants where ES851 Data Logger is installed.



NOTE

You can create a point-to-point connection from the Remote Sunway using the **"First Connect to"** option. Refer to the Windows XP and Windows 2000 section.

Connection via LAN between the Remote PC and ES851 Data Logger: No additional operation is required.

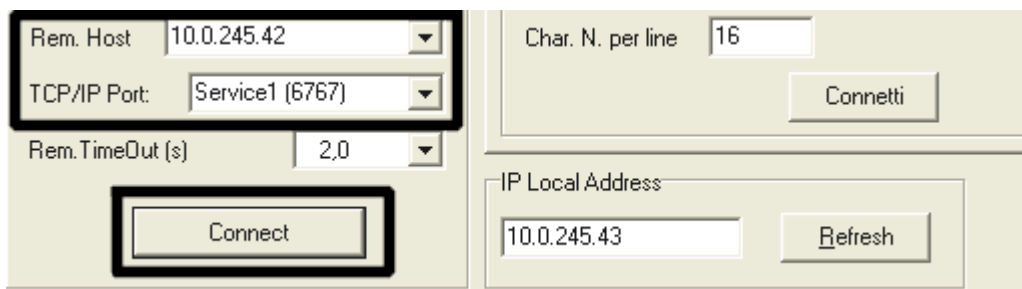
In **Rem. Host**, enter the IP address of ES851 Data Logger you are connecting to:

- For connections via modem, enter "10.0.0.1", which is the correct IP address for point-to-point connections via modem. If you selected the "**First Connect to**" option, "10.0.0.1" is automatically set up.
- For connections via the LAN, enter the address assigned to ES851 Data Logger and provided from your network administrator.



NOTE The same IP address must be set up for ES851 Data Logger.

In **TCP/IP Port**, enter the same TCP/IP port used from ES851 Data Logger: the default setting is Service1 (6767).



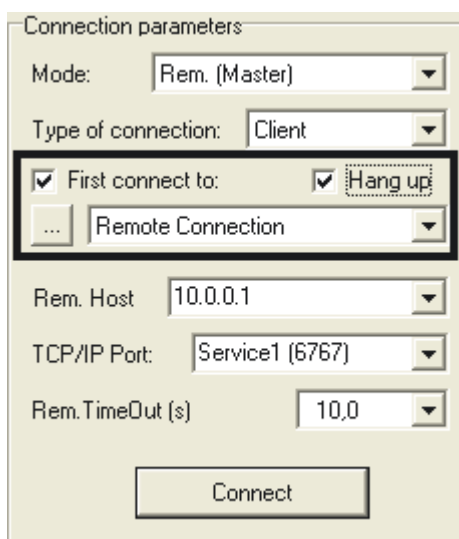
Click "**Connect**" to establish a connection with ES851 Data Logger.
It is now possible to operate on the connected devices.




NOTE A LED display (luminous panel) can be connected to the remote client PC as well.

5.5.2.2. "FIRST CONNECT TO" OPTION

If the "First connect to" box is selected, press the "**Connect**" button to automatically establish the selected remote connection, thus avoiding activating any connections manually from Windows.




The  button allows accessing a menu to create a remote connection. See the Windows XP and Windows 2000 section.

5.6. Configuring the Operating System for Point-to-Point Connections

5.6.1. CLIENT

When using remote connections where the computer implementing the Remote Sunway programmed as a client is not connected to a LAN, you have to create an outgoing connection (Client connection) allowing the operating system to establish a connection to an ES851 Data Logger or to a computer implementing the Remote Sunway programmed as a server.

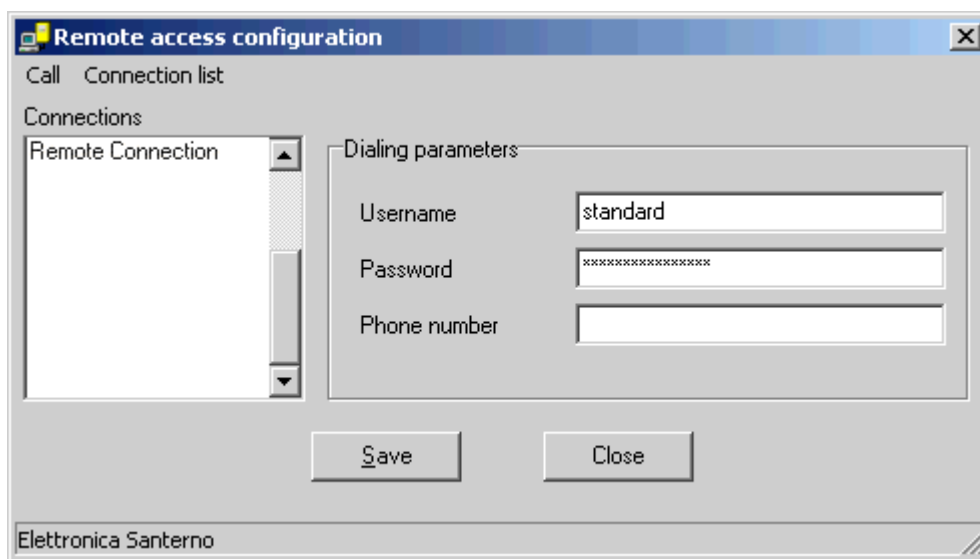
5.6.1.1. WINDOWS XP AND WINDOWS 2000

When using Win2000 and WinXP, you can connect the client to an XP server or an ES851 Data Logger by selecting the **"First Connect to"** option and the  button. This allows displaying the **Remote Access Configuration** window directly from the Remote Sunway. Also, you can use the same connecting procedure allowing connecting to the Internet via analogue modem without changing the default settings of the operating system.

Your username and password must be the same as those you entered for your account authorizing dial-in for the server PC or ES851 Data Logger.

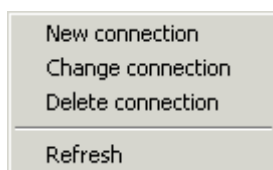


NOTE If you are asked to enter the domain name, leave blank.

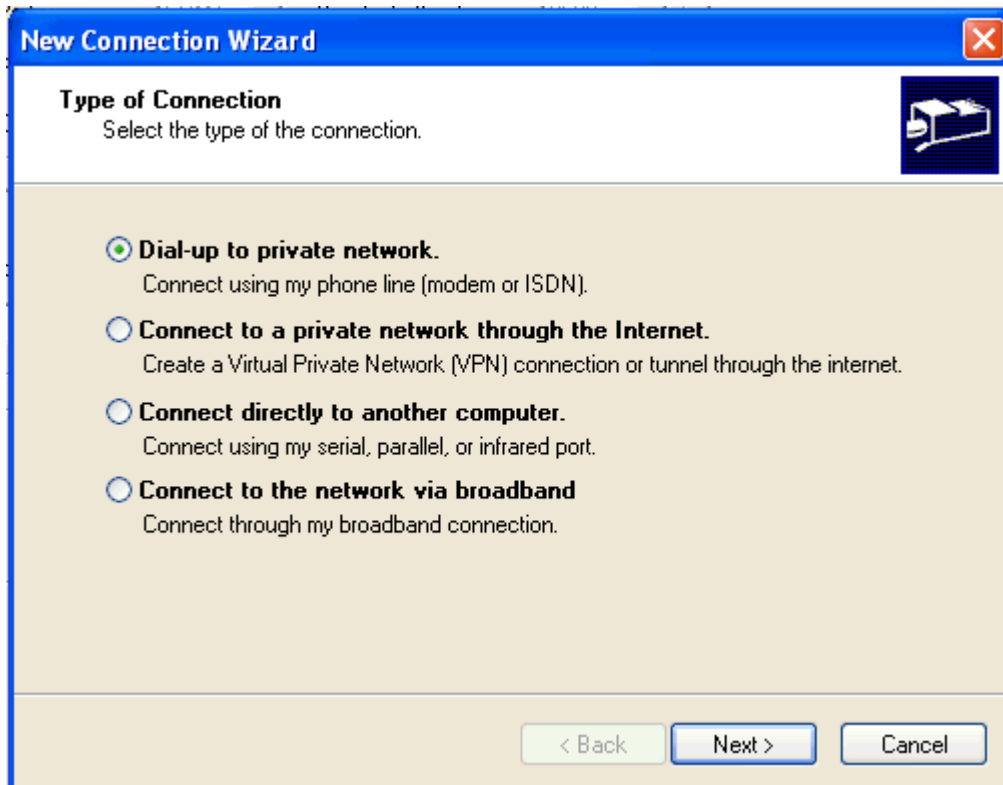


The Remote Access Configuration window is a simplified interface for the Windows Network Connections window.

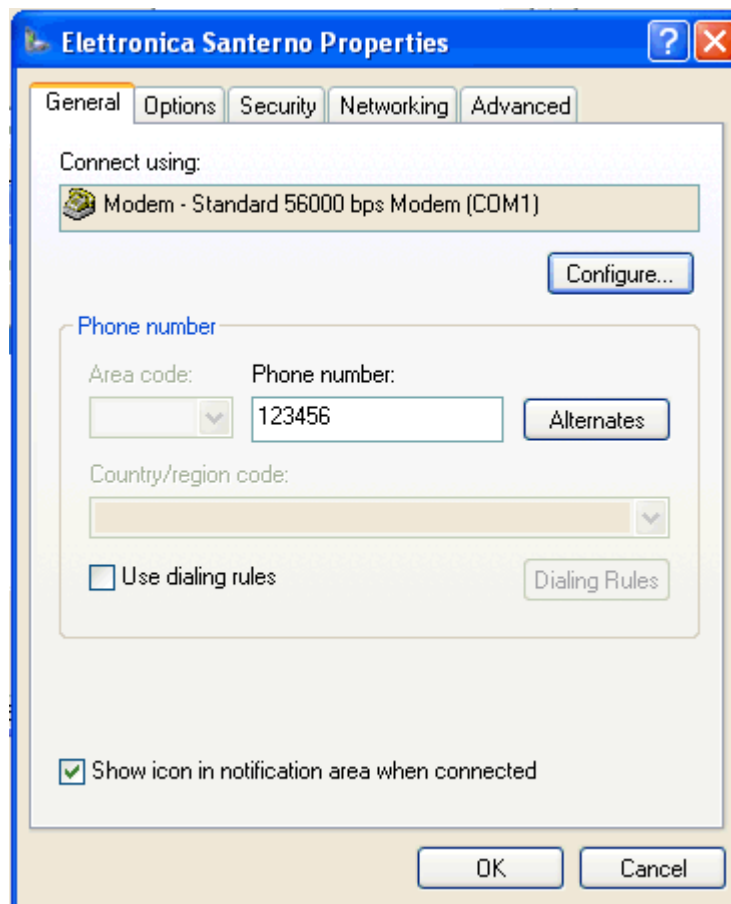
For each connection, you can set and alter the following items: Username, Password, Phone Number. Use the **Call->Dial** command to test the selected connection.



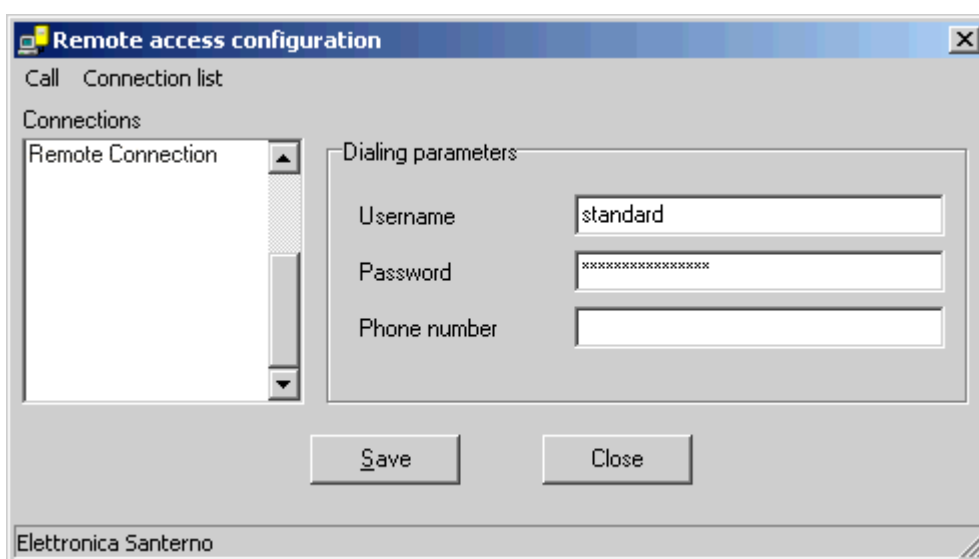
From the **Connection List** menu, use the **Connection List->New Connection** to create additional connections, as this function automatically recalls the utilities of the operating system to create a new connection.



You can also alter advanced connection parameters using the **Connection List->Change Connection** command.



Fill in all the fields in the **"Remote Access Configuration"** window (enter the same data items as those entered for the Server; also enter the phone number).



5.6.1.2. WINDOWS VISTA

The connection to a client PC implementing Windows Vista is the same as an Internet connection via analogue modem. The default settings of the operating system are to be left unchanged.

The username and password must be the same as the ones used for an account authorized to receive incoming calls to the server computer or to ES851 Data Logger.



NOTE If you are asked to enter the domain name, leave blank.

5.6.2. SERVER

For point-to-point connections via modem between two computers, an incoming connection is required in the computer implementing the Remote Sunway programmed as a Server. The incoming connection allows the Remote Sunway to accept the calls performed by the computer implementing the Remote Sunway programmed as a client. To create an incoming connection, you can exploit the utilities of the operating system.

Below is an example of how to accept incoming connections in Windows XP.

From the Start menu, choose:



To open the "My Network Places" window, create a new connection:

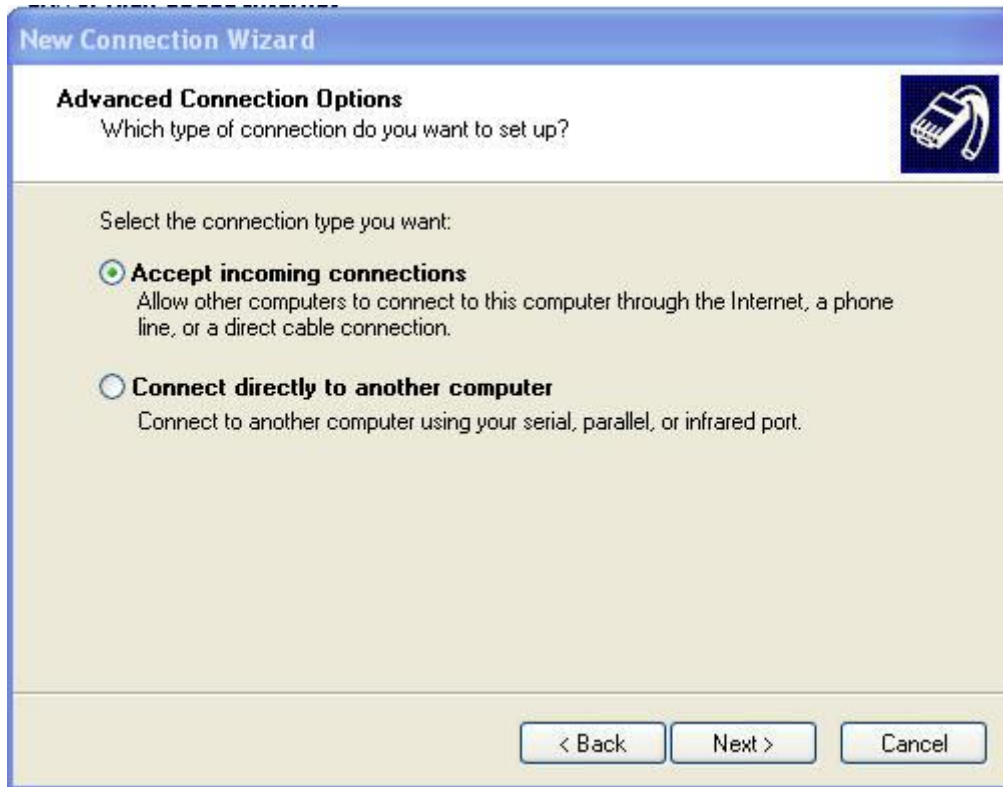




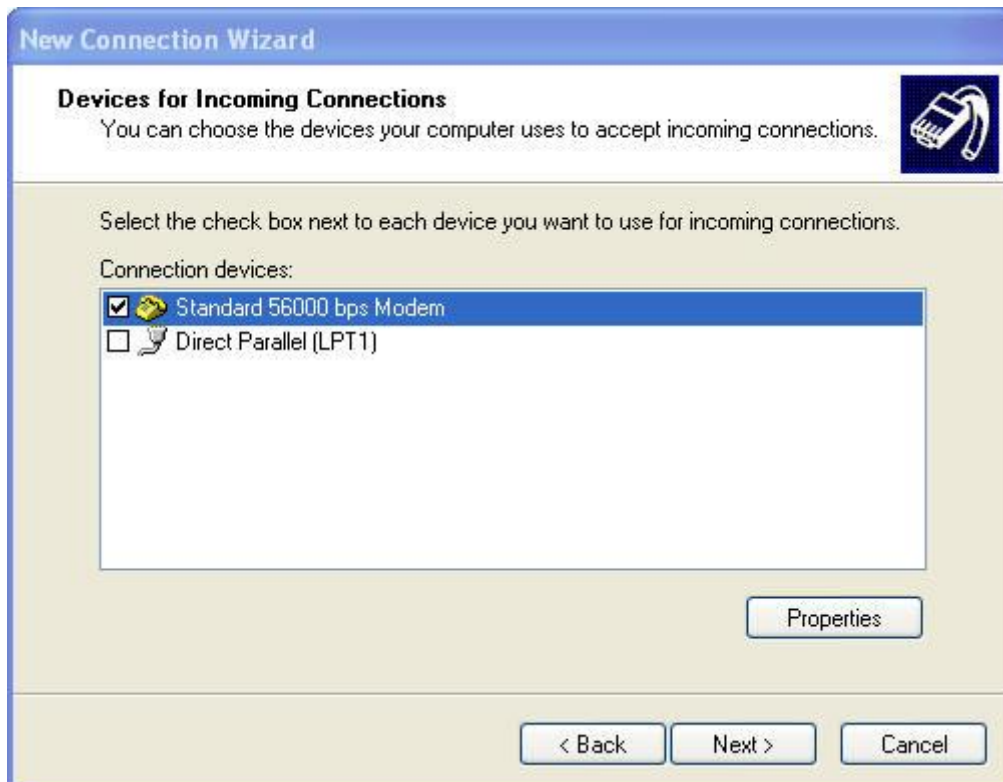
Select "Set up and advanced connection":

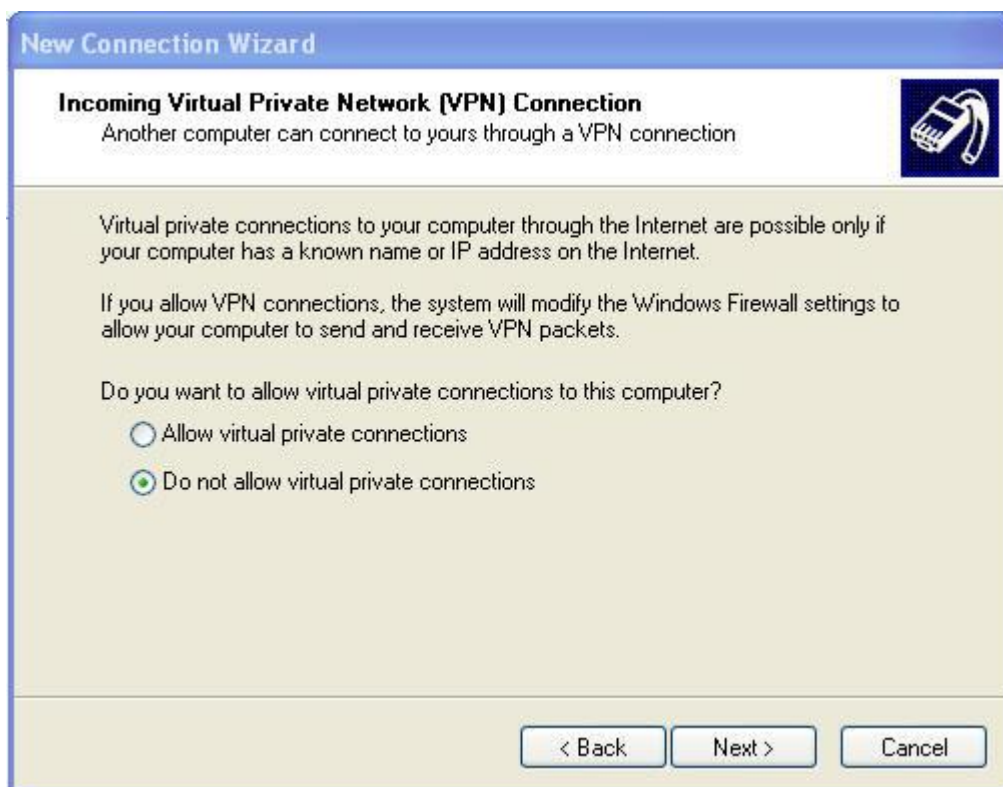


and select **"Accept incoming connections"**:



Select a modem for incoming calls:

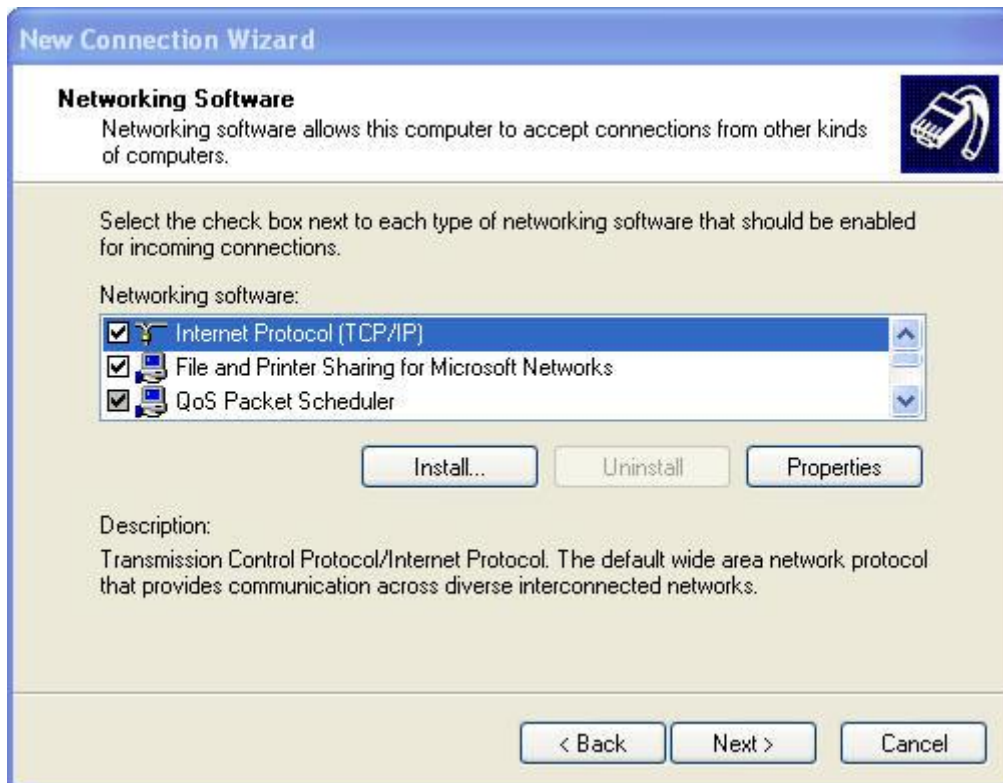




Select or add the user the Client computer shall connect to. If no authorized user is selected, no incoming connection is available.



In the “**Networking Software**” section, no changes are needed, as the default settings are sufficient for incoming connections.



In “My Network Places”, the following icon appears: this indicates that the computer can now receive incoming calls.



When an incoming connection is active, an icon showing the name of the connected user appears:

**NOTE**

In Windows 2000 operating system, only one window for the network connection wizard is available; the incoming connection is then selected from that window.

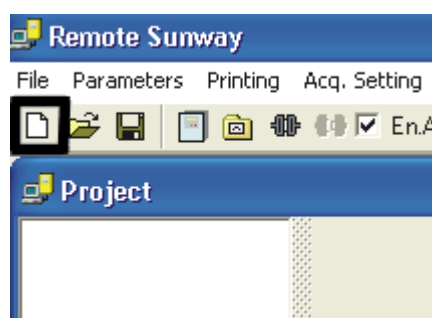
5.7. Automatic Selection of the Connected Devices

Once a connection has been selected from the **Connection selection** window, click **"Connect"** to establish a connection.

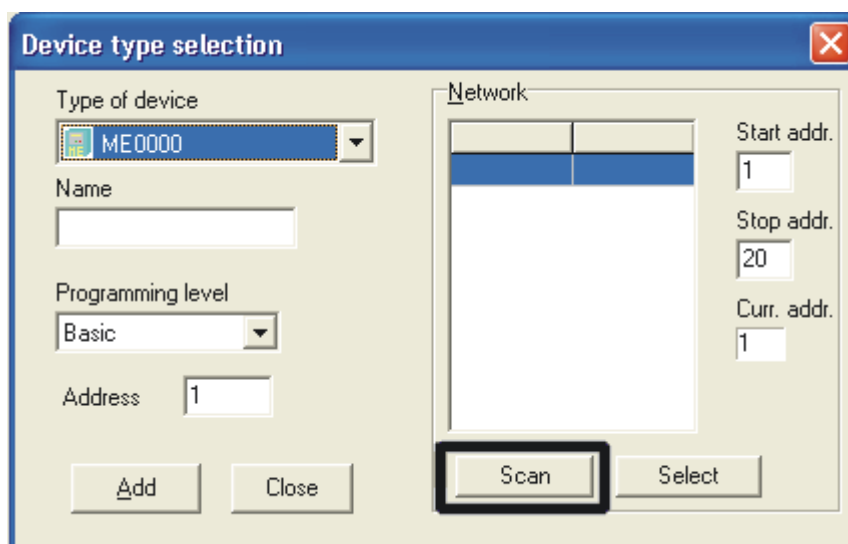
Click **Next** to access the **Main Window** of the Remote Sunway, where you can access all menus and create/handle the projects for the photovoltaic plants.

If no project fitting the plant requirements is included in the installation CD-ROM for the Remote Sunway, a special project is to be created.

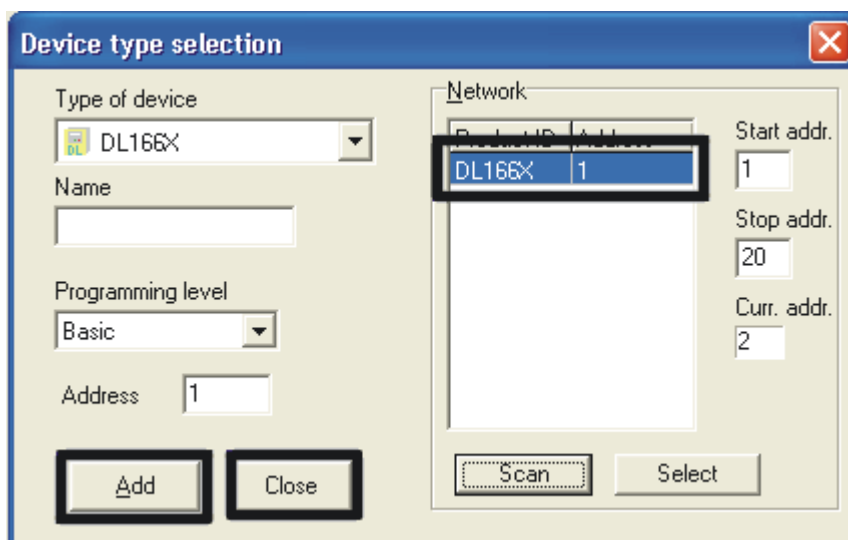
To do so, open a New Project by clicking the icon highlighted in the picture below, or select **"Open"** from the **File** menu.



The **Device Type Selection** window appears, allowing the connected devices to be automatically detected by the Remote Sunway. First set up the **Start address** and the **Stop address** for the address range to be scanned, then click **"Scan"** to initiate automatic scanning.



Select the detected devices one by one from the “Network” section, then click “Add”.



Once you have added all the detected devices one by one, click “Close”.

5.7.1. MULTIREAD OPTION

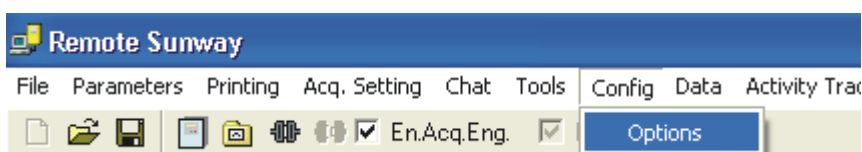
The **Multiread** option is activated ONLY when a remote connection is established to a PC and to ES851 Data Logger board. This option allows multiple readout events by sending just one remote request. As a result, the read rate of parameter sets is dramatically increased when the remote connection is particularly slow. The enable/disable status of the Multiread option can be viewed from the main window.



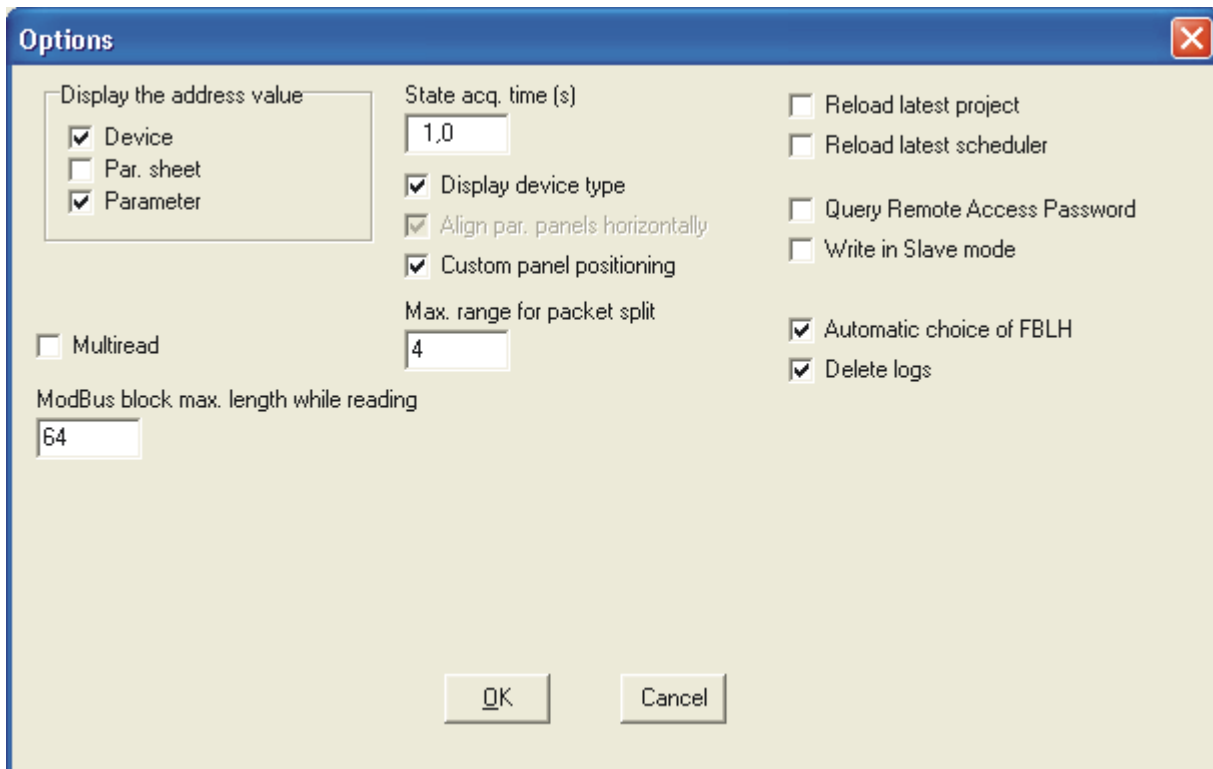
CAUTION

When a remote connection is established to a Data Logger ES851 board with software versions DL 160x or DL 165x, or to the Remote Sunway with software versions 2.01, 2.12 or 2.13, the **Multiread** option **MUST** be disabled because it is not supported. If not, the automatic/manual selection of the connected devices and the readout from the devices included in a project is inhibited.

Always check the software version of ES851 Data Logger board and of the Remote Sunway you are connecting to. When software versions are implemented, that do not support the **Multiread** option (as stated in the “CAUTION” box above), make sure that the **Multiread** option is **DISABLED**. To do so, open the **Option** window from the **Config** menu.



Disable the **Multiread** option.



The image shows a software dialog box titled "Options" with a standard Windows-style title bar (blue with a close button). The dialog has a light beige background and contains several configuration options organized into three columns. On the left, there is a group box "Display the address value" containing three checked checkboxes: "Device", "Par. sheet", and "Parameter". Below this is an unchecked checkbox for "Multiread". At the bottom left is a text input field for "ModBus block max. length while reading" containing the value "64". In the middle column, there is a text input for "State acq. time (s)" with "1.0", followed by three checked checkboxes: "Display device type", "Align par. panels horizontally", and "Custom panel positioning". Below these is a text input for "Max. range for packet split" with "4". The right column contains five checkboxes: "Reload latest project" (unchecked), "Reload latest scheduler" (unchecked), "Query Remote Access Password" (unchecked), "Write in Slave mode" (unchecked), "Automatic choice of FBLH" (checked), and "Delete logs" (checked). At the bottom center are two buttons: "OK" and "Cancel".

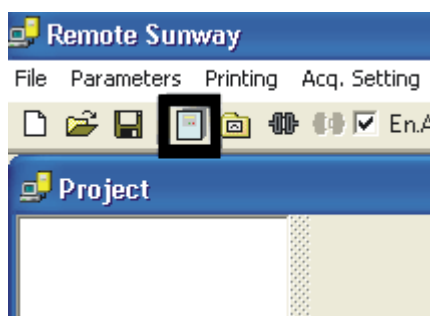
Options		
<div>Display the address value</div> <div><input checked="" type="checkbox"/> Device</div> <div><input type="checkbox"/> Par. sheet</div> <div><input checked="" type="checkbox"/> Parameter</div>	State acq. time (s) <input type="text" value="1.0"/>	<input type="checkbox"/> Reload latest project
	<input checked="" type="checkbox"/> Display device type	<input type="checkbox"/> Reload latest scheduler
	<input checked="" type="checkbox"/> Align par. panels horizontally	<input type="checkbox"/> Query Remote Access Password
	<input checked="" type="checkbox"/> Custom panel positioning	<input type="checkbox"/> Write in Slave mode
<input type="checkbox"/> Multiread	Max. range for packet split <input type="text" value="4"/>	<input checked="" type="checkbox"/> Automatic choice of FBLH
ModBus block max. length while reading <input type="text" value="64"/>		<input checked="" type="checkbox"/> Delete logs
<div>OK</div> <div>Cancel</div>		

5.8. **Manual Selection of the Connected Devices**

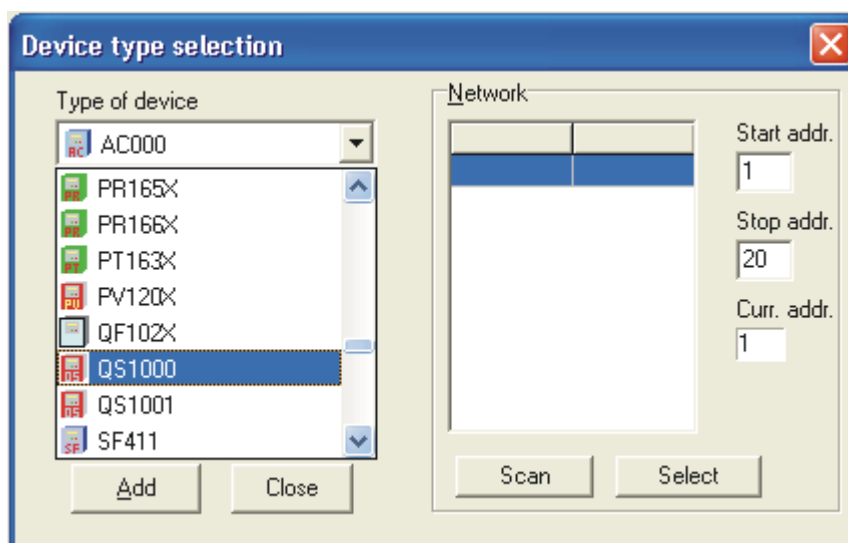
This function allows the devices that do not support the automatic detection function to be integrated into the supervisor system.

The devices that can be added to the supervisor system are String Boxes up to 8 inputs. More complex string boxes are obtained by combining basic string boxes; 16-input string boxes are considered as two separate devices and require two different addresses.

To open the **Device Type Selection** window, click the **Add New Device** icon (highlighted in the picture below) from the **Main Window**, or select the "Add New Device" option from the File menu.

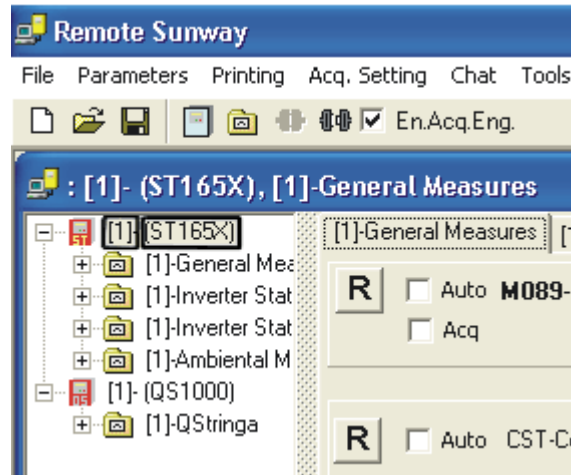


Access the manual selection by clicking the **Type of device** drop-down box. Select the device desired.



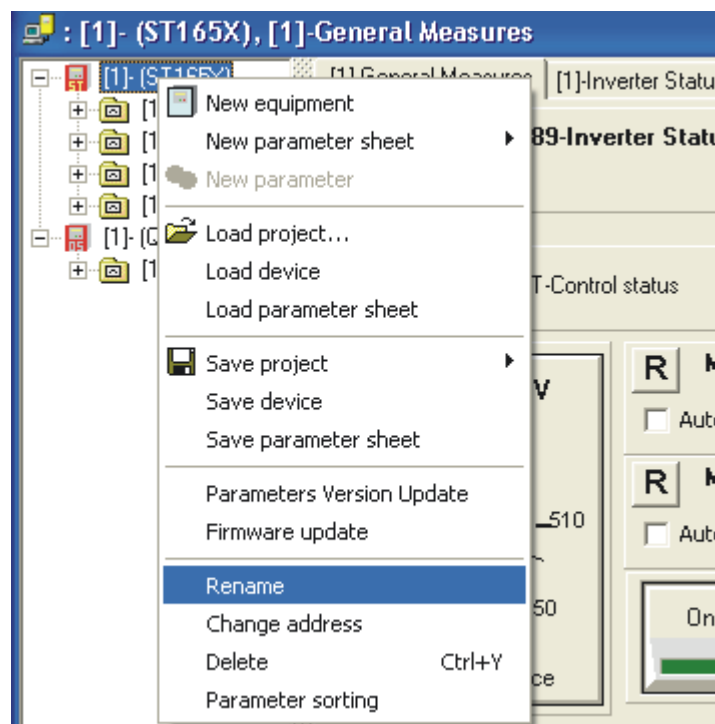
5.9. Project Window

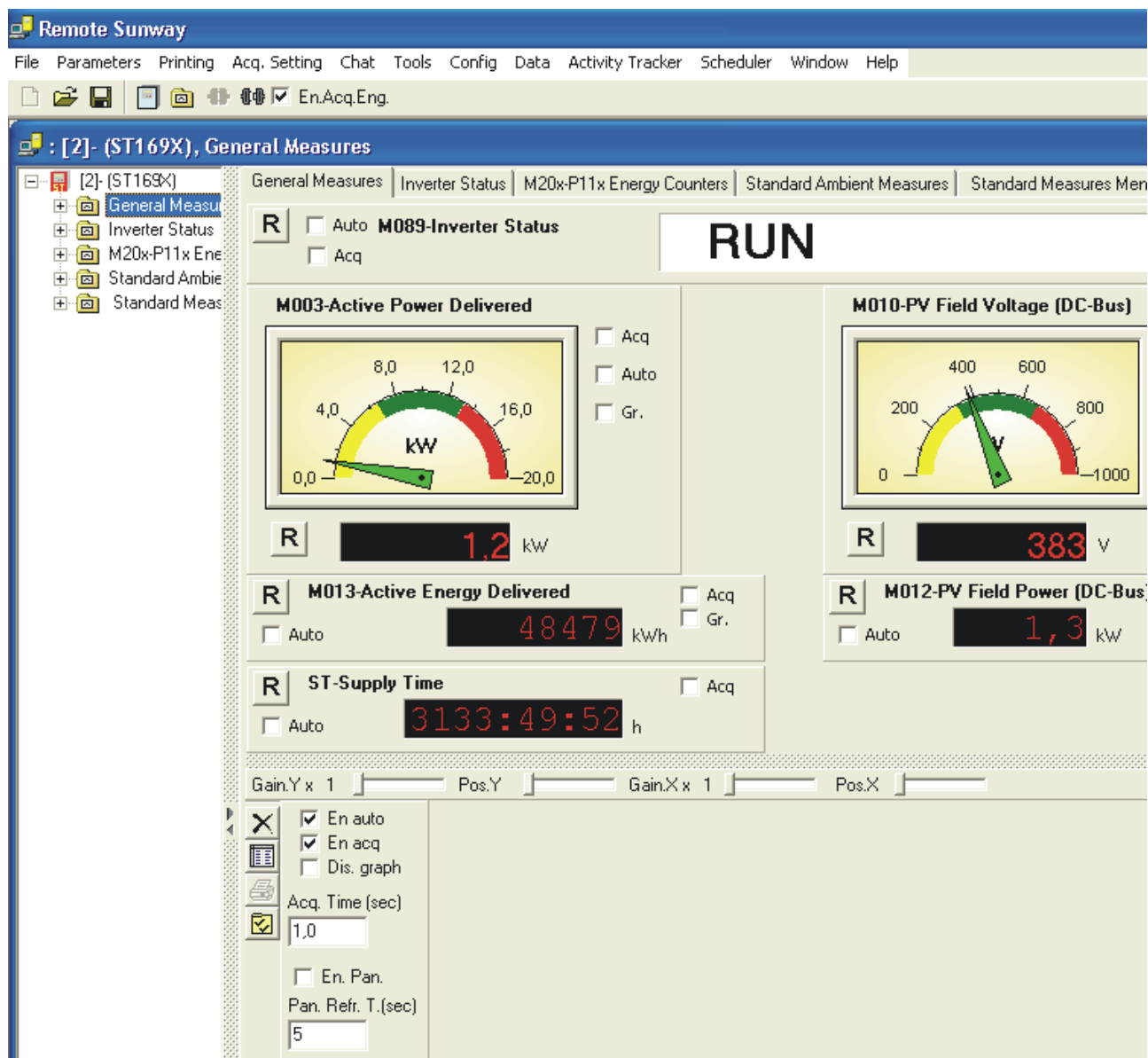
The **Project Window** is divided into two sections. The section on the left is the list box of the system. Click one item to select the respective device.



The black boxes identify the address and the device type.

You can assign an arbitrary name to each device. Right-click the desired device and select **Rename**.





The right portion in the **Project Window** contains some tabs, which are arranged by device. The tabs for the Sunway T are shown below.



General Measures: displays all the electric measures available from the inverter;

Inverter Status: displays the current operating conditions of the inverter, the alarm tripped (if any), the status of each digital input in the control board allocated to electromechanical functions;

Standard Ambient Measures: contain the values of four ambient variables (two values for solar radiation and two temperature values) detected by special sensors (if any) connected to the inverter.

5.10. Configuring Data View and Acquisition

It is possible to set up the readout, acquisition and automatic graphical representation of the variables displayed in the **Project window**.

In the available projects, all the electric variables available at the moment ("**Auto**" checkbox selected) are displayed in the "**Inverter Measures**" panel; on the other hand, some variables have been already selected to be acquired as history data ("**Acq**" box selected).

In order to add data items to be acquired and saved, select the corresponding "**Acq**" boxes for each variable.



NOTE

We suggest that "M089 Inverter Status" be acquired in the "Inverter Status" folder instead of the "Inverter Measure" folder.

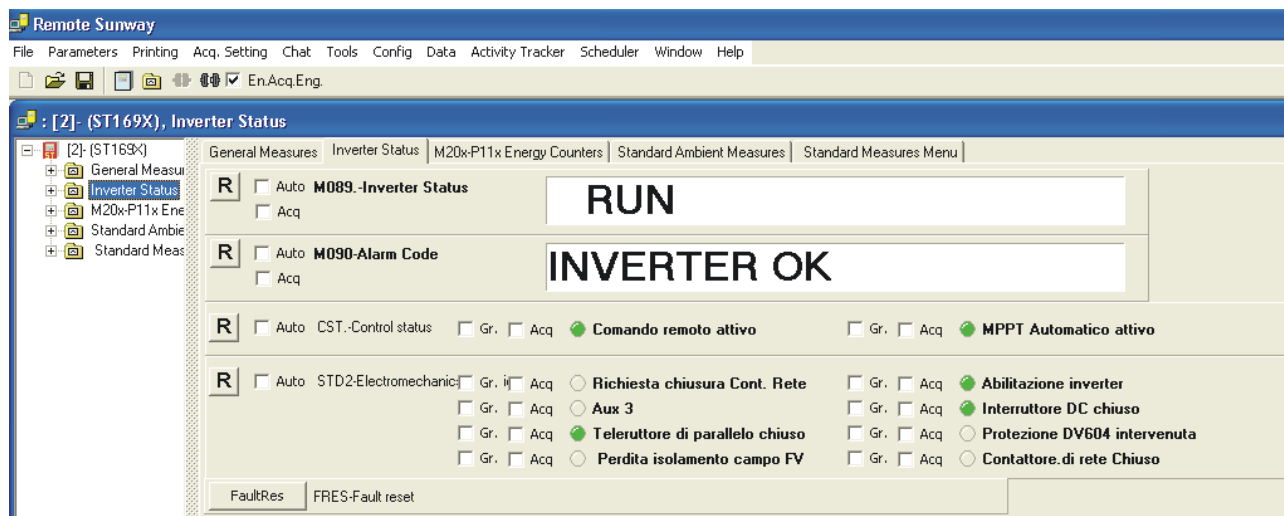
Select the "**Gr**" checkbox to display an on-line graph representing some particular variables.

The screenshot displays a software interface with several monitoring and configuration panels:

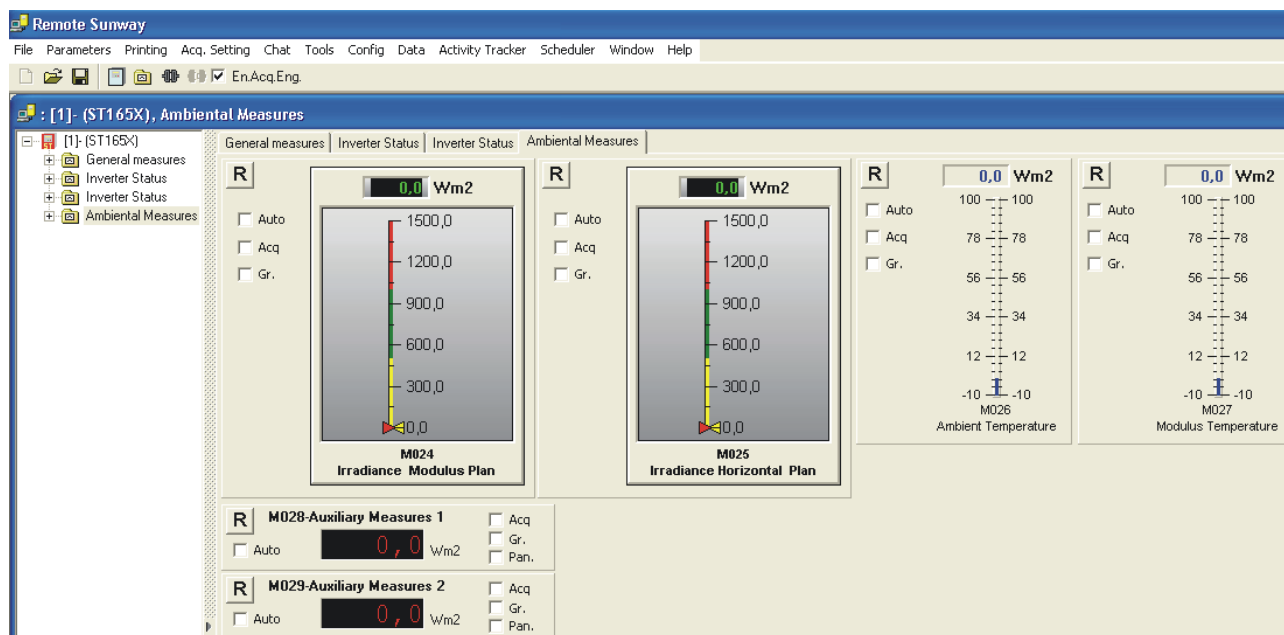
- M000-Field Voltage Ref. (R)**: Includes checkboxes for **Acq** (checked) and **Gr.** (checked). The value is 0,0 V.
- M011-PV Field Current (DC-Bus)**: Includes checkboxes for **Acq** (checked) and **Gr.** (checked). The value is 0,0 A.
- MPPT-**: A status indicator showing "On" with a green bar.
- M010-PV Field Voltage (DC-Bus)**: Features a semi-circular gauge with a needle pointing to 0. Includes checkboxes for **Acq** (checked), **Auto** (checked), and **Gr.** (checked). The value is 0 V.
- M007-Mains Voltage**: Includes checkboxes for **Acq** (checked) and **Gr.** (checked). The value is 0,0 V.
- M009-Mains Current**: Includes checkboxes for **Acq** (unchecked) and **Gr.** (unchecked). The value is 0,0 A.
- M001-Mains Frequency**: Includes checkboxes for **Acq** (unchecked) and **Gr.** (unchecked). The value is 0,00 Hz.
- Delivered**: A partially visible panel on the left showing a gauge and checkboxes for **Acq**, **Auto**, and **Gr.**

In the “**Inverter Status**” folder, the available projects allow the inverter status and alarm tripped (if any) to be displayed on-line and to be acquired as history data.

The “**Control Status**” (MPPT enabled, etc.) and the electromechanical conditions are viewed on-line.



For the “**Standard Ambient Measures**” tab, no data is expected to be viewed and/or acquired. The user shall configure this tab based on the available measures by selecting the “**Auto**”, “**Acq**” and—if necessary—“**Gr.**” checkboxes of the channels where a sensor/transducer is connected to.



NOTE

The “**Standard Ambient Measures**” tab follows the default configuration of the “**Ambient Measures**” menu for the Sunway inverters.

Select the “**General Acquisition Setting**” menu to configure the acquisition times of the selected variables for all the available folders:

Acquisition Time (1-10sec),

Average Time (1-30min),

Save Time (multiple of the Average Time).

Select the “**Acq En.**” and “**Save En.**” checkboxes and click “**Apply**” for each sheet. You can also select some adjacent sheets and click “**Apply**” for all the selected sheets.

Cod.	Name	Active Acq.	Active Sav.	Acq.T.(s)	Aver.T.(s)	Sav.T.(m)	File name
0	[1]- (ST165X)General meas	True	False	1,0	1,0	1	C:\Program Files\Esanterno\Rem
1	[1]- (ST165X)Inverter Statu	True	False	1,0	1,0	1	C:\Program Files\Esanterno\Rem
2	[1]- (ST165X)Inverter Statu	True	False	1,0	1,0	1	C:\Program Files\Esanterno\Rem
3	[1]- (ST165X)Ambiental Me	True	False	1,0	1,0	1	C:\Program Files\Esanterno\Rem

Change setting

☒ Active Acq. ☐ Active Sav.

Acq.T.(s) Aver.T.(s) Sav.T.(m)

Setting of saving folder

☐ Enable saving

Folder name Split:

Reset commands



NOTE

The average time for the “**Inverter Status**” tab shall be the same as the sampling time.



NOTE

If no ambient variables are expected to be acquired, do not enable data acquisition and save options for the “**Standard Ambient Measures**” tab.

In the **Setting of saving folder** field, select the target folder for the files to be saved, as well as the type of **Split** for acquired data. When **Monthly** is selected, the Remote Sunway will create a new folder every month. This folder will contain the data files saved every month (one file per each sheet is created). When **Weekly** or **Daily** is selected, a folder for each week or day of a given month is created. This folder contains the data files relating to a given month or day (one file for each sheet is created).

In order to save all the sheets, select the **Enable saving** box and click **OK** to store the new settings.

5.11. Starting Acquisition and Saving Configuration

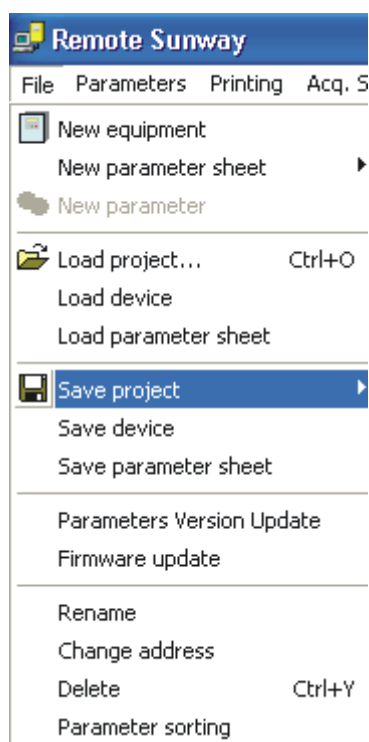
Select the “EnAcq.Eng.” checkbox.

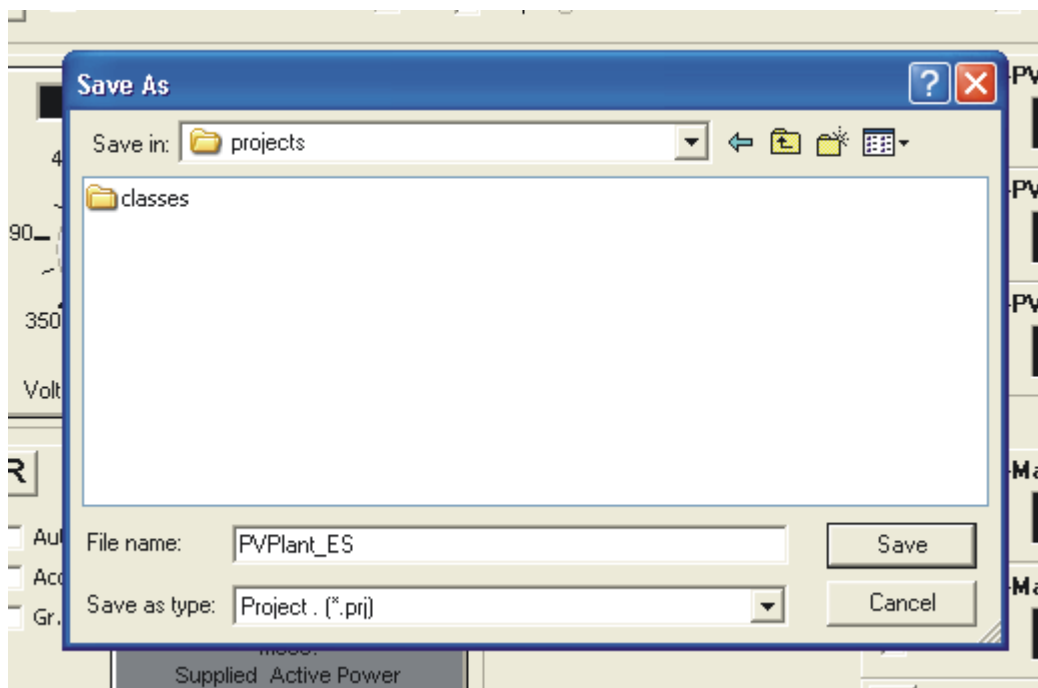


Acquisition is now started; queries from the PC to the inverter are viewed. This means that communication is in progress.



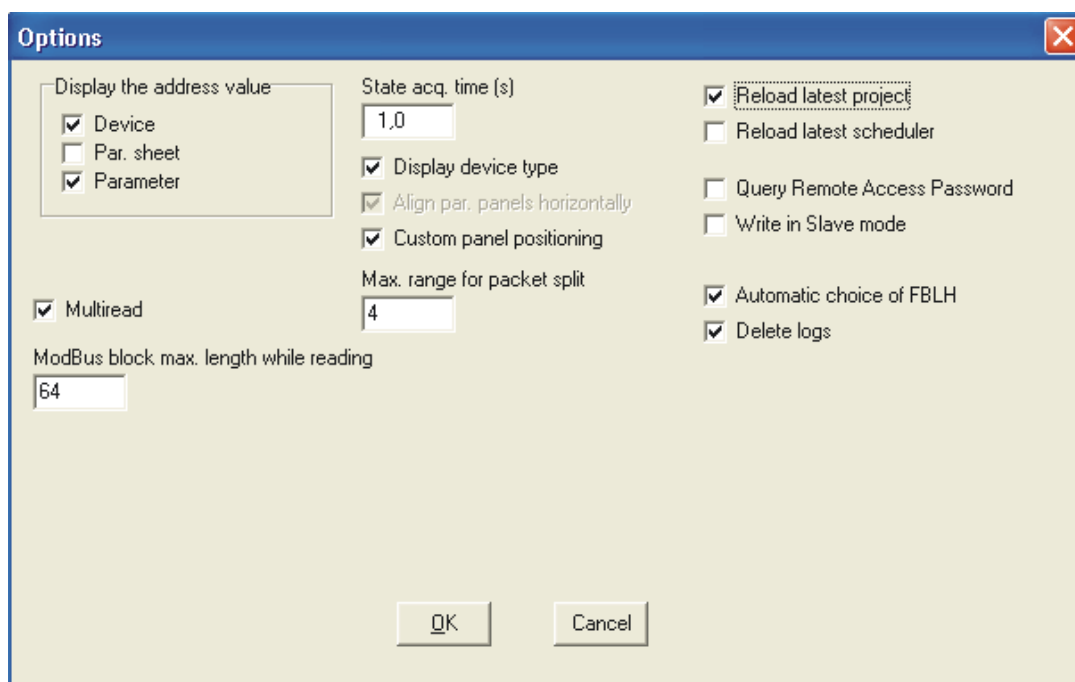
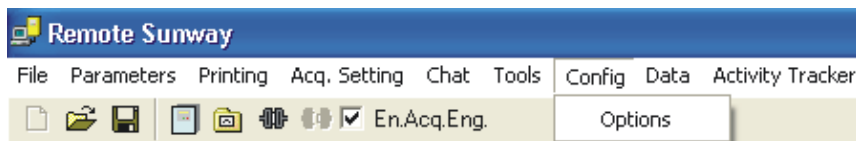
Save the project to the “Project” window with the **Save Project → Save all** option from the **File** Menu. You can provide a name to the project (e.g. the plant name). This is required only after creating or changing the project.





It is recommended that you not overwrite the original project in the "Classes\Solar" folder, thus keeping an intact copy to be used in case of incorrect programming.

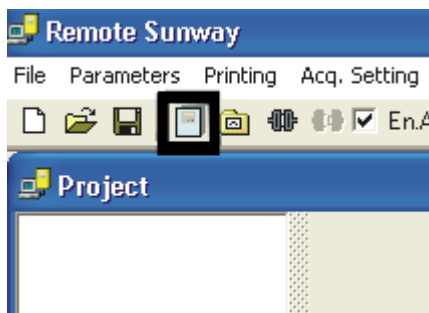
From the **Config** → **Options** menu, check the **Reload last project** folder to reload and start this project when the Remote Sunway is next started.



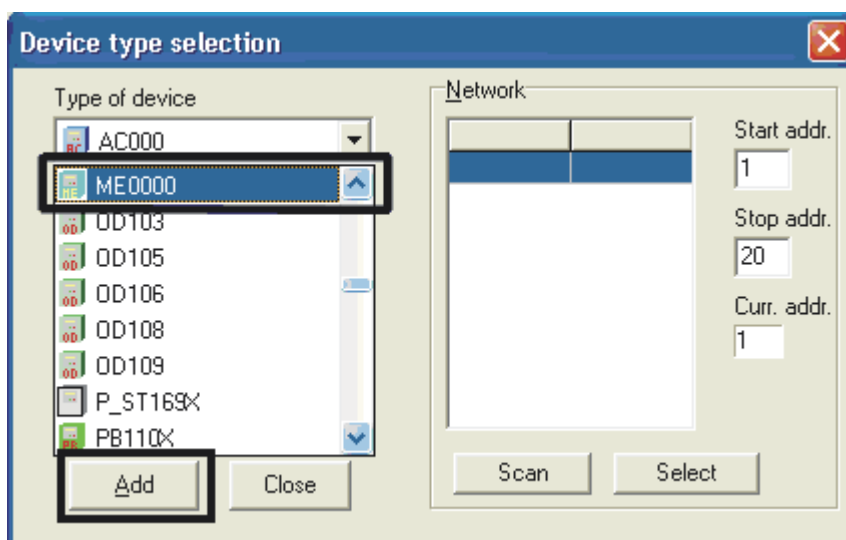
5.12. *The ME00X0 Panel and the LED Display*

When the photovoltaic plant includes more than one inverter, a special panel is available, providing the values of the main variables, such as the overall energy delivered, the overall power in the network, and so on. This “virtual” panel is called **ME00X0** and consists of configurable measure panels.

Click “Add New Device”.

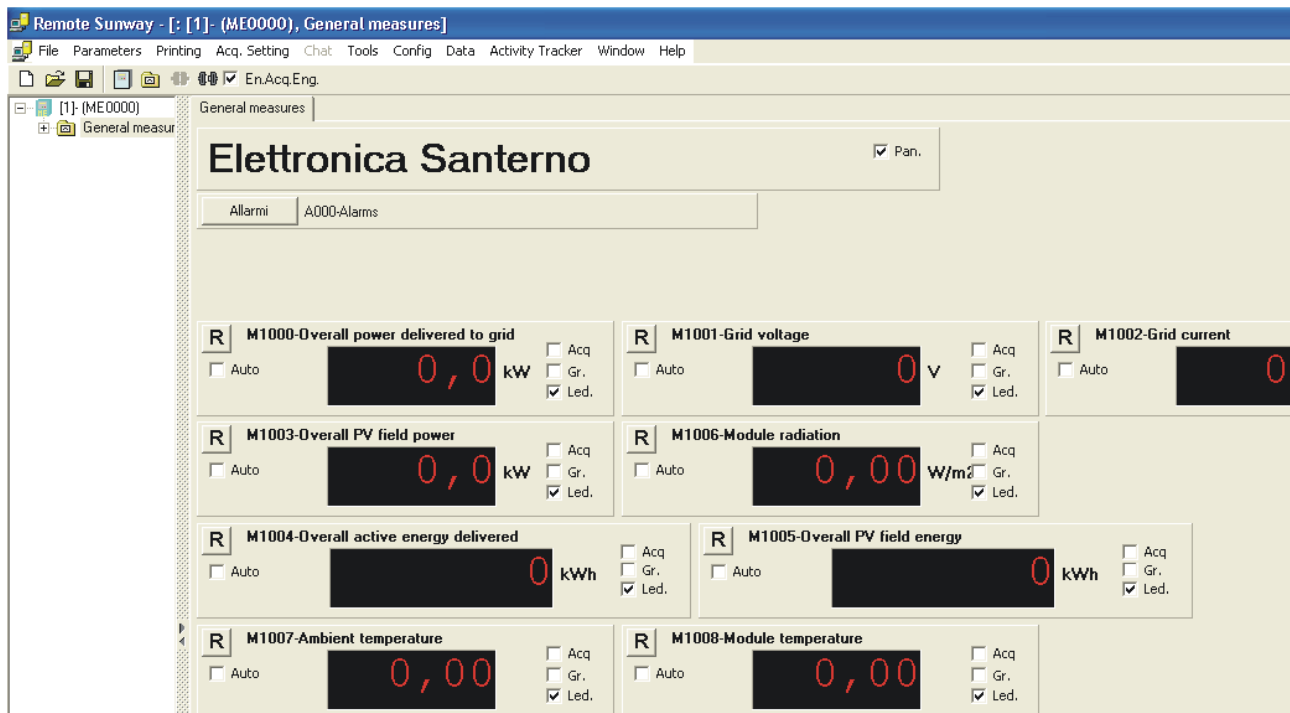


Manually select **ME00X0** and add the default address without making any changes.



The “General Measures” panel is displayed.

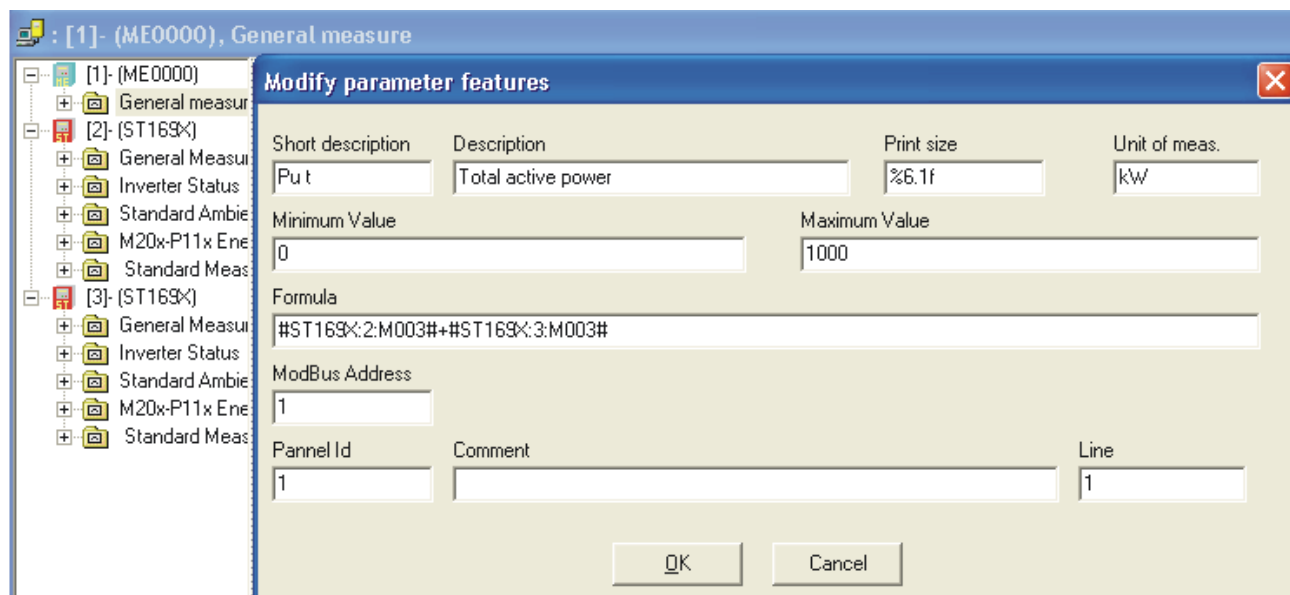
This panel includes several panels that can be thoroughly programmed by the user. Their meanings are assigned during factory setting, but can be easily changed.



Right-click any measure panel; the button allowing opening the **Features** panel is displayed.



Click **Features** to open the **Modify Parameter Features** window.



All the fields can be changed by the user:

- **Description:** Description of the measure.
- **Unit of Meas.:** Unit of measure viewed on the panel.
- **Print Size:** Measure display; e.g. six digits with one decimal place.
- **Minimum Value and Maximum Value:** Range of the measure to be displayed.
- **Formula:** This is what is intended to be displayed; the syntax allows matching measures from different devices.

The syntax of the formula contained in the picture above is the following:

The “#” character is the device separator; ST160X is the type of device viewed in the left column of the project window in the Remote Sunway; “:2:” is the address of the device; **M003** is the code identifying the variable concerned (M003 is the grid power in the example); “#” terminates the description of the first variable; “+” is the arithmetical operator (-, *, / operators are also available); you can then add a similar expression to retrieve the same variable from a different device.

More than two operands can be combined.

The second operand can be a constant to translate a variable (i.e. to translate the overall energy produced into the overall CO2 not produced).

Click OK to quit.

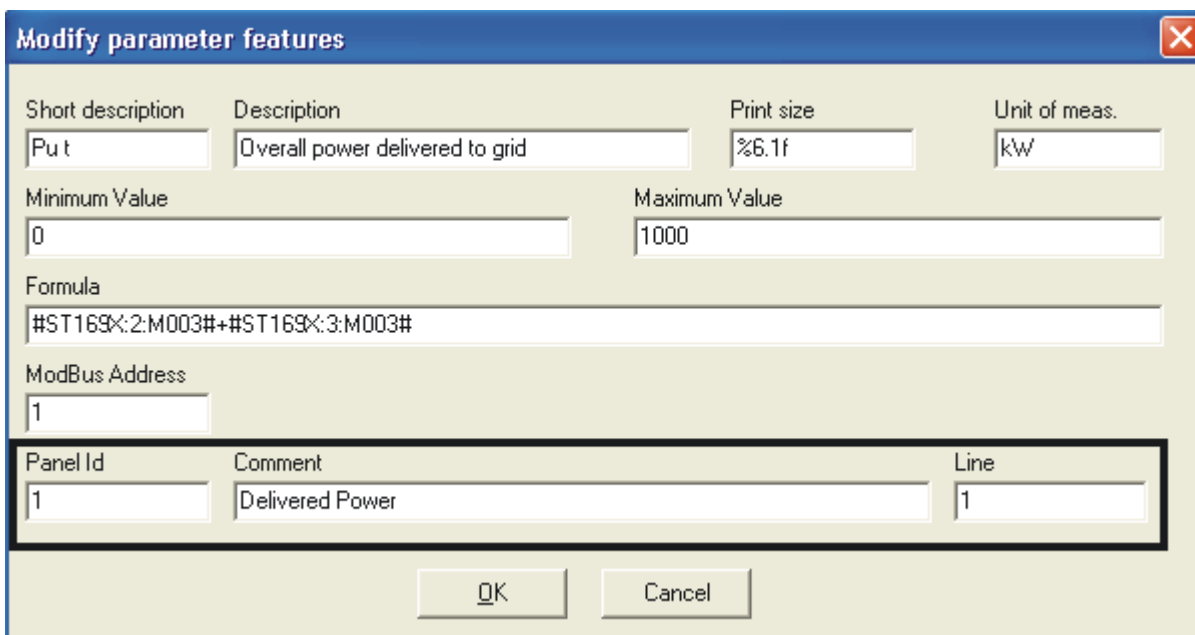


The “Auto”, “Acq” and “Gr.g” checkboxes allow on-line view, acquisition enable and on-line graphic representation at the bottom of the screen.

The **Led box** is to be enabled to publish the measure to an external LED display connected to the PC. See The LED Display (Luminous Panel).

Two more steps are to be taken to send more than one measure to the LED display:

- In the **Modify parameter features** window, enter the **Line** where the variable is displayed to, and the panel **Id** if two or more panels are present. Also, a **Comment** can be entered next to the description of the measure.



Modify parameter features

Short description	Description	Print size	Unit of meas.
Put	Overall power delivered to grid	%6.1f	kW
Minimum Value	Maximum Value		
0	1000		
Formula			
#ST169X:2:M003#+#ST169X:3:M003#			
ModBus Address			
1			
Panel Id	Comment	Line	
1	Delivered Power	1	

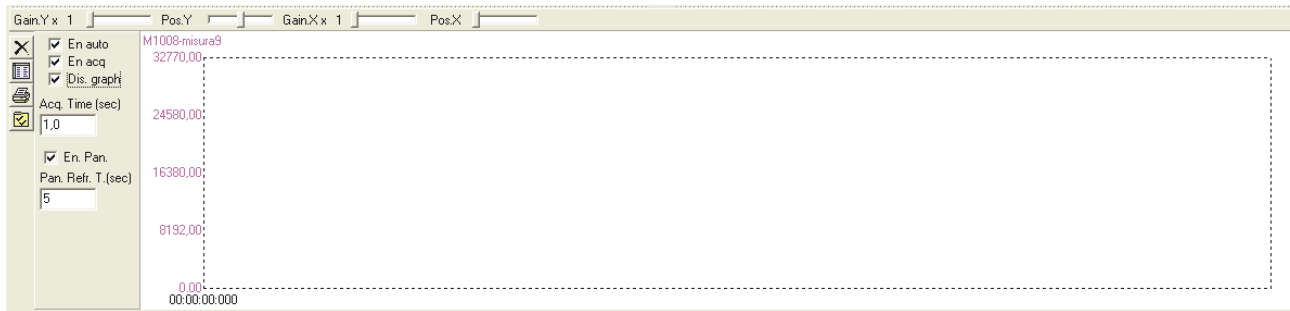
OK Cancel

**NOTE**

When the **LED** option is enabled, all the measures shall have a different line number.

- Select the **En.Pan.** box (at the bottom of the window) to send the alphanumeric strings to be viewed on the LED display.

The refresh time for the data viewed on the **LED** display can be changed from the **Pan.Refr.T(sec)**.

**CAUTION**

In order to dialog with the Led display, The LED Display (Luminous Panel) window must be set up and the “**Connect**” option in that window must be activated.

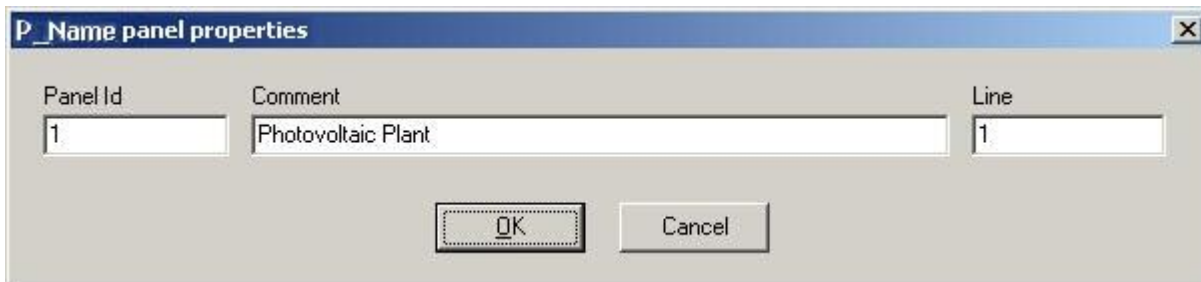
5.12.1. P_NAME PANEL

Photovoltaic Plant

☐ Led

The P_Name panel is used for viewing text strings. Strings can be published to the Led display by enabling the LED option.

Right-click the panel. The  function appears. Click this function to display the following window:



The dialog box titled "P_Name panel properties" contains three input fields: "Panel Id" with the value "1", "Comment" with the text "Photovoltaic Plant", and "Line" with the value "1". At the bottom are "OK" and "Cancel" buttons.

Panel Id

The same features as "Panel ID" are implemented for the measure panel with custom properties and output to Led display.

Comment

String displayed on the panel.

Line

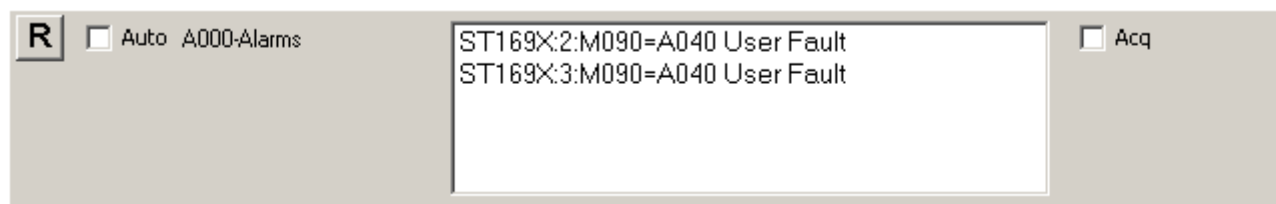
The same features as "Line" are implemented as for the measure panel with custom properties and output to Led display.



CAUTION

The P_Name panel is present in dummy device ME0010. Two additional P_Name panels can be added using the New parameter function from the File Menu.

5.12.2. STATUS PANEL



The Status panel monitors the status of one or multiple devices. The figure above, which is given as an example, shows the list of the active alarms, along with the equipment identifier, the equipment address, the parameter identifier and the string related to the alarm tripped.

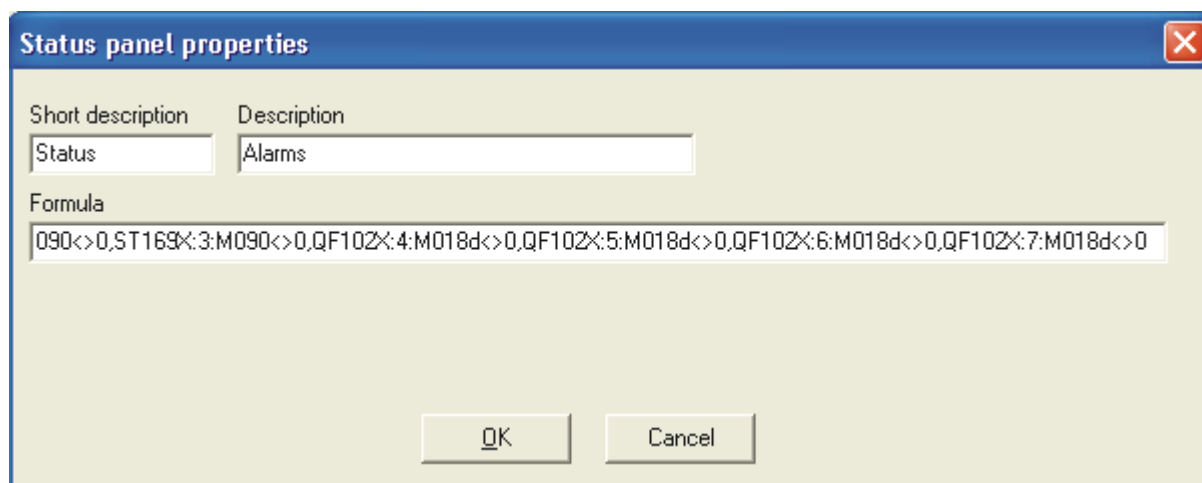
R Refreshes the alarms tripped.

☐ **Auto** Cyclically reads the alarm conditions of the equipment. The time interval for cyclic reading is set in **State Acq Time**.

☐ **Acq.** Enables the state recording. The actual acquisition will take place only once the recording state has changed. The recording state is checked at each time interval specified by **State Acq Time**.

To view the measures to be checked, open the Properties window. Right-click the panel; the function appears. Left-click this function to display the following window:

Features



Short description

Parameter description in the Tree list.

Description

Parameter description in the panel.

Formula

String defining the list for the state measures to be checked.

Syntax:

<Reference to the state measure> <> <Numeric value representing the "OK status" condition>, <Reference to the state measure> <> <Numeric value representing the "OK status" condition>...

References to the state measures are to be expressed as follows:

d:a:p, where **d** specifies the equipment identifier, **a** specifies the address, and **p** specifies the parameter identifier.

Example:

ST169X:2:M090<>0,ST169X:3:M090<>0.

**NOTE**

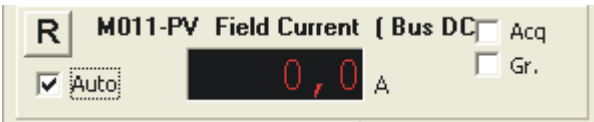
The Status panel is present in dummy device ME0010. Two additional Status panels can be added using the “New parameter” function from the File Menu.

6. DATA PROCESSING

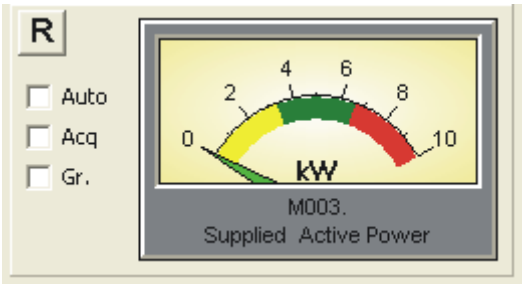
For each analogue variable, real-time display (numeric values or analogue display with a pointer instrument), on-line graphic representation (trend), saving to file (log) are possible for a delayed off-line data analysis.

6.1. Real-time Display

If the “Auto” checkbox is selected, the measure of the variable processed by the inverter is displayed in real time (otherwise, the corresponding value is not refreshed).



Numeric display



Analogue display

Numeric display is available for all variables, whereas analogue display is available for the Supplied Active Power and the Field Voltage.

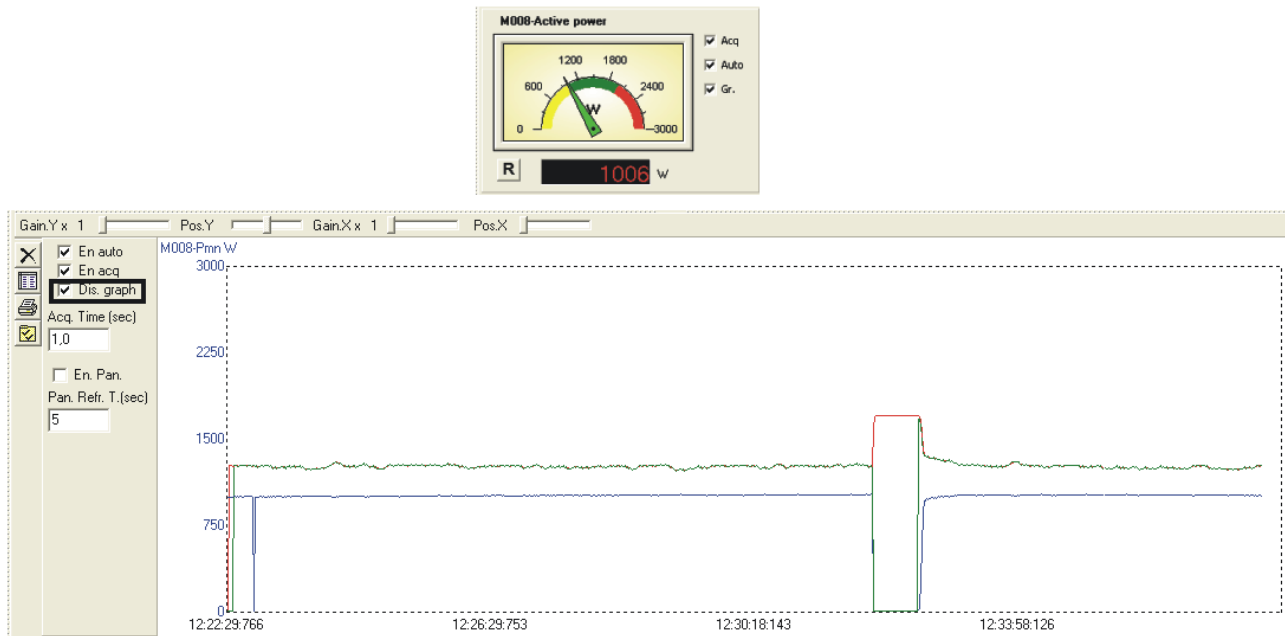


NOTE

M011 and **M003** refer to the display in the General Measures Menu that can be accessed from the display/keypad of the device.

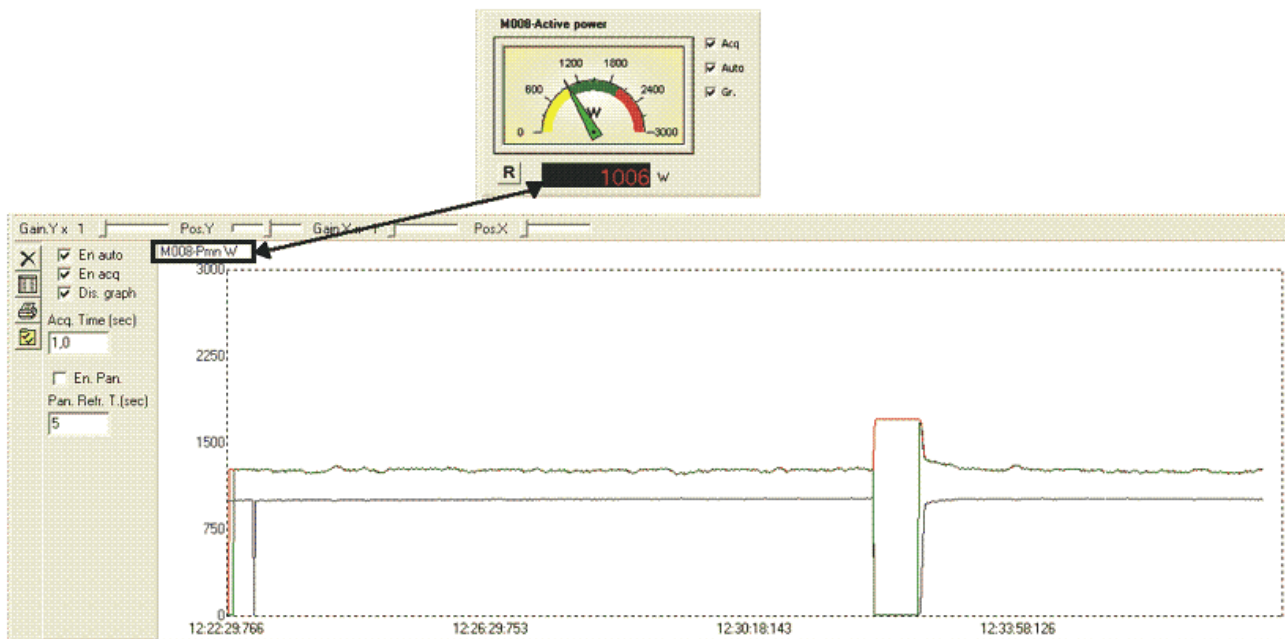
6.2. Trend

If the "Gr." checkbox is selected, you can obtain the on-line graph of the selected variable.



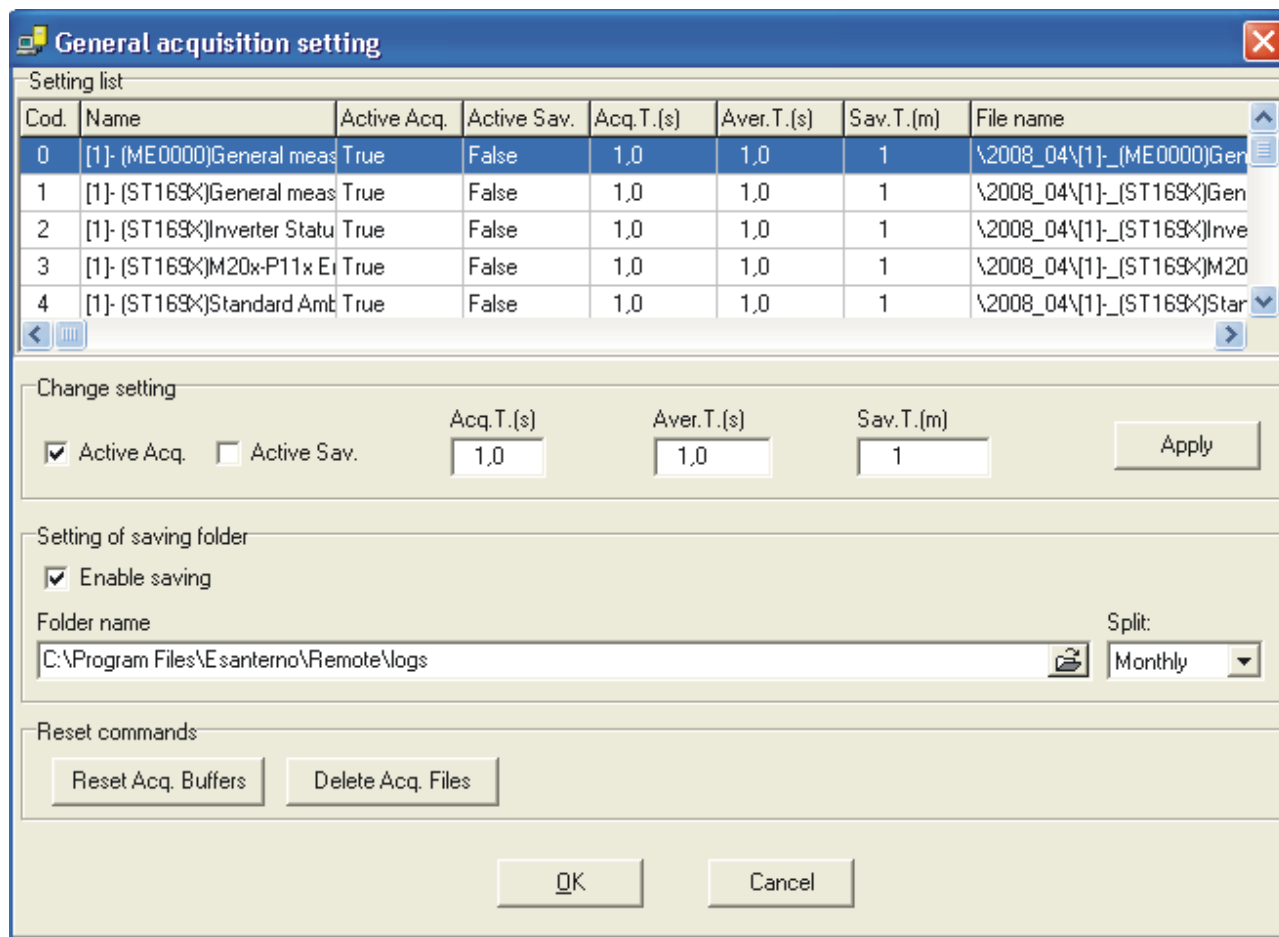
Select the "Dis.Graph" checkbox to view the graphic representation window.

The graph represents all the variables whose "Gr." checkbox has been selected, but the ordinate represents the scale of only one variable. To view the scale of a different variable, point to the relevant numeric field.



6.3. Data Log

Data constantly acquired from the supervisor system is logged to the path programmed so far (see the Configuring Data View and Acquisition section).



General acquisition setting

Setting list

Cod.	Name	Active Acq.	Active Sav.	Acq.T.(s)	Aver.T.(s)	Sav.T.(m)	File name
0	[1]- (ME0000)General meas	True	False	1,0	1,0	1	\2008_04\[1]- (ME0000)Gen
1	[1]- (ST169X)General meas	True	False	1,0	1,0	1	\2008_04\[1]- (ST169X)Gen
2	[1]- (ST169X)Inverter Statu	True	False	1,0	1,0	1	\2008_04\[1]- (ST169X)Inve
3	[1]- (ST169X)M20x-P11x E	True	False	1,0	1,0	1	\2008_04\[1]- (ST169X)M20
4	[1]- (ST169X)Standard Amt	True	False	1,0	1,0	1	\2008_04\[1]- (ST169X)Star

Change setting

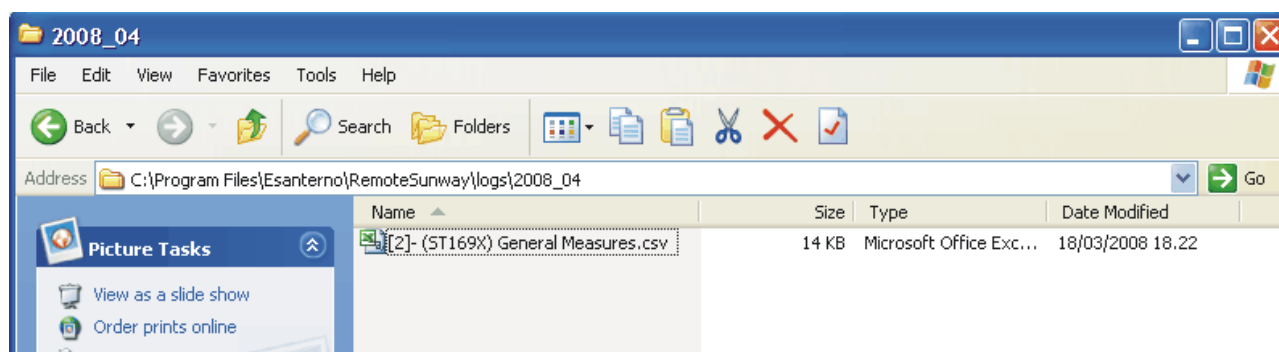
☒ Active Acq.
 ☐ Active Sav.
 Acq.T.(s)
 Aver.T.(s)
 Sav.T.(m)

Setting of saving folder

☒ Enable saving
 Folder name
 Split:

Reset commands

Log files are *.csv files that can be viewed from Microsoft Excel only. Logs are sorted by monthly folder.



Examples of acquired files:

- File: [3]-(ST169X)Operating_conditions.csv

Date:	Time:	[3]-M089	[3]-M090
(yyyy/mm/dd)	(hh.mm.ss)	InvStatus ()	Alr Code ()
22/02/2008	17.12.00	SB2 INSOL. KO	INVERTER OK
22/02/2008	17.40.11	ALARM 2	A040 User Fault
22/02/2008	17.40.57	Resetting	INVERTER OK
22/02/2008	17.41.03	STOP	INVERTER OK
22/02/2008	17.42.39	PRECHARGE	INVERTER OK

This file contains the sequence of the PV plant events/alarms.

Note that columns M089 and AL are provided because the following checkboxes are selected in the Inverter Status tab: **"Acq"** for M089-Inverter Status –, **AL** Alarm tripped.

- File: [3]-(ST169X)Inverter_measures.csv

Date:	Time:	[3]-M003	[3]-M010	[3]-M012
(yyyy/mm/dd)	(hh.mm.ss)	Pu (kW)	Vdc (V)	Pdc (kW)
22/02/2008	16.51.00	0.2	341	0.3
22/02/2008	16.51.01	0.2	341	0.3
22/02/2008	16.51.02	0.2	344	0.3
22/02/2008	16.51.03	0.2	344	0.3
22/02/2008	16.51.04	0.2	339	0.3
22/02/2008	16.51.05	0.2	338	0.3
22/02/2008	16.51.06	0.2	341	0.3
22/02/2008	16.51.07	0.2	341	0.3
22/02/2008	16.51.08	0.2	336	0.3
22/02/2008	16.51.09	0.2	335	0.3
22/02/2008	16.51.10	0.2	337	0.3

This file contains sampled and average measures based on the settings in Acquisition General Settings. Variables are acquired when their **"Acq"** checkboxes are selected.

Collected data can be mathematically processed with Microsoft Excel or similar applications.



CAUTION

Do not open those files with Microsoft Excel or other applications when the supervisor is operating, in order to avoid any conflicts with the Remote Sunway trying to write those files.



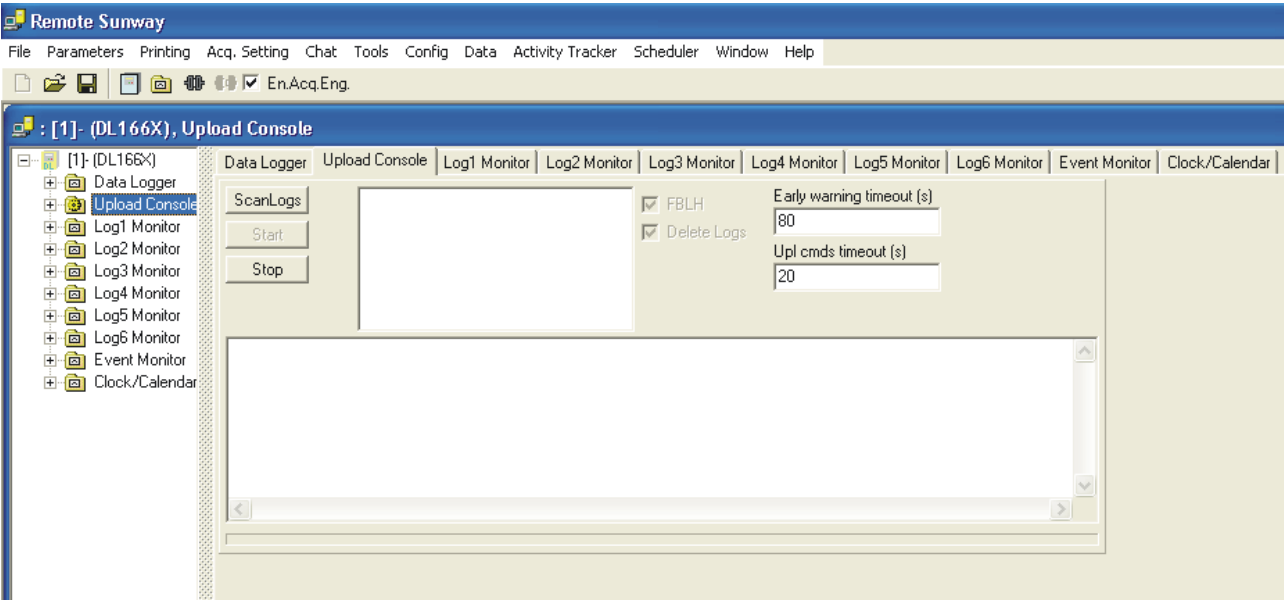
NOTE

The decimal symbol ("." or ",") being used depends on the regional settings of your operating system.

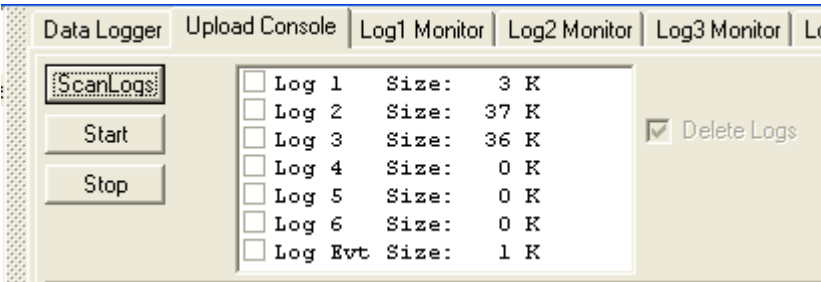
6.4. Data Logs Acquired from ES851 Data Logger

The Remote Sunway also allows downloading and displaying data stored to ES851 Data Logger board. Log files are .csv files.

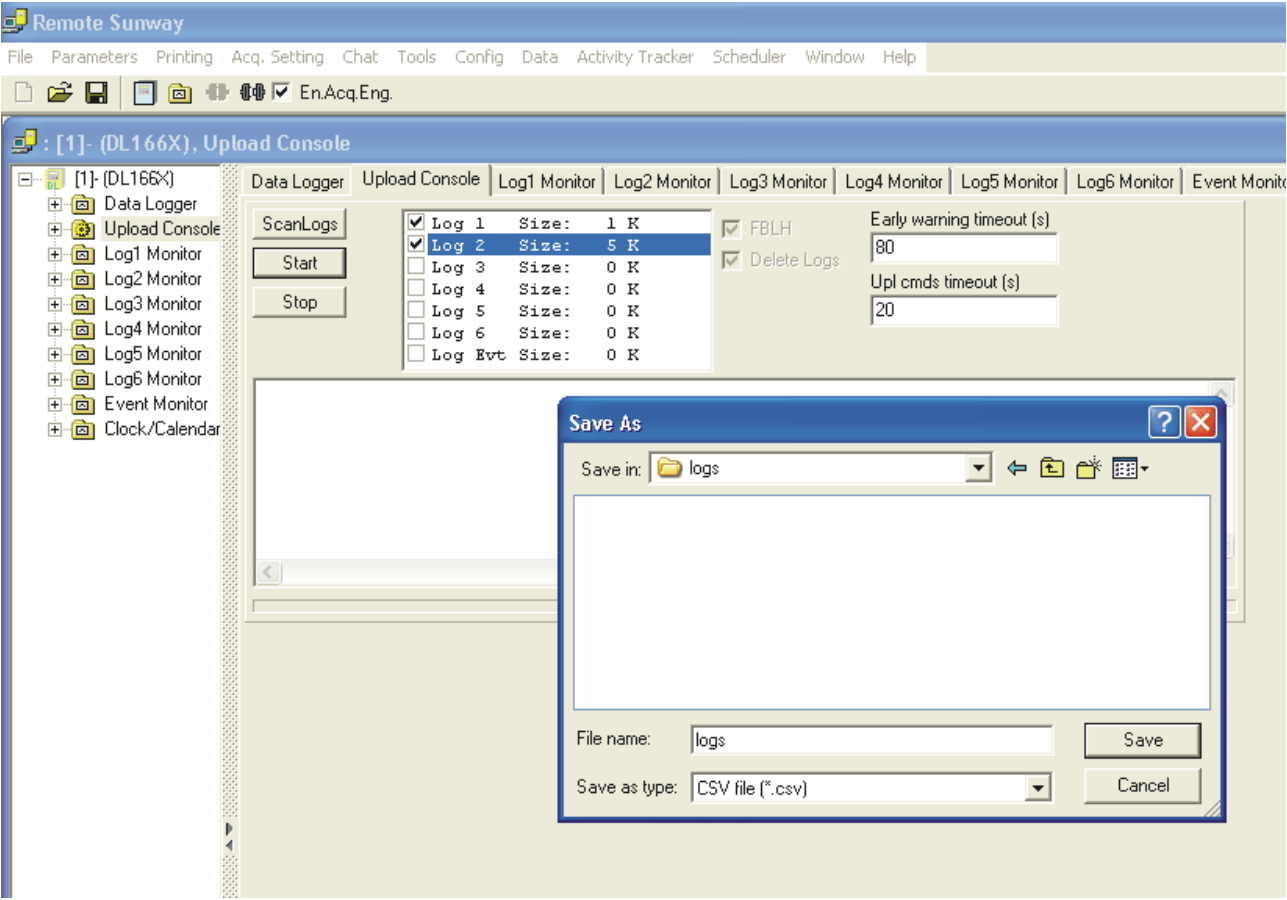
Once connected to ES851 Data Logger with the connecting modes seen in Configuring a Remote Connection between a PC and ES851 Data Logger), open the **Project window** in the Remote Sunway, click **Scan** and load the DL (Data Logger) device detected in Basic level.



Select the **Upload Console** parameter sheet and press **ScanLogs** to display the status of the logs stored from ES851 Data Logger.



Select the logs to be downloaded and click the **Start** button.



The Remote Sunway asks for generic log filenames. Then, the Remote Sunway will create distinctive logs by adding their ordinal number or the Evt acronym as suffixes to their filenames.
Press **Save** to start log download. The download procedure can be stopped only by pressing the **Stop** button; any other operation is inhibited.

The history logs can be of two kinds:

- Measure logs: systematically acquire states and variables relating to the connected devices (e.g. logs1.csv)

		D1	D3	D4	D5	D6	D7
		ST1692[24]	ST1692[24]	ST1692[24]	ST1692[24]	ST1692[24]	ST1692[24]
Detection date	Detection time	Eu00	01 Last Alr Code	Vf_Ref R	CntMko	CntInsKo	Terog.
		M013	FL01	M000	M19	M20	M21
		(kWh)		(V)			(h)
		3: Last Sample	3: Last Sample	0: Avg	3: Last Sample	3: Last Sample	3: Last Sample
04/08/2007	23.33.11	3202	A81	5.0	11	4	31.23.48
04/08/2007	22.33.11	3202	A81	5.0	11	4	31.23.48
04/08/2007	21.33.11	3202	A81	4.9	11	4	31.23.48
04/08/2007	20.33.11	3202	A81	4.9	11	4	31.23.48
04/08/2007	19.33.12	3202	A81	351.2	11	4	31.23.48
04/08/2007	18.33.12	3199	A81	367.3	11	3	30.33.34
04/08/2007	17.33.12	3175	A81	417.0	11	3	29.33.33

- Event logs: contain recorded events (such as alarms) fired for the connected devices (e.g. LogEvt.csv)

Event 1

ST1690[2].M0XX Other than INVERTER OK

Hysteresis = 0

E1	Detection date	Detection time	Event status	ST1690[2]	ST1690[2] 01	ST1690[2]
E1				LstAlrm	InvStatus	01 Pout
E1				M0XX	FL01c	FL01s
E1						(kW)
E1	19/06/2007	14.49.32	ON	A040 User Fault	STOP	0
E1	19/06/2007	11.00.33	OFF	INVERTER OK	RUN	3,2
E1	18/06/2007	22.25.23	ON	A040 User Fault	RUN	3,2

Event 2

ST1690[3].M0XX Other than INVERTER OK

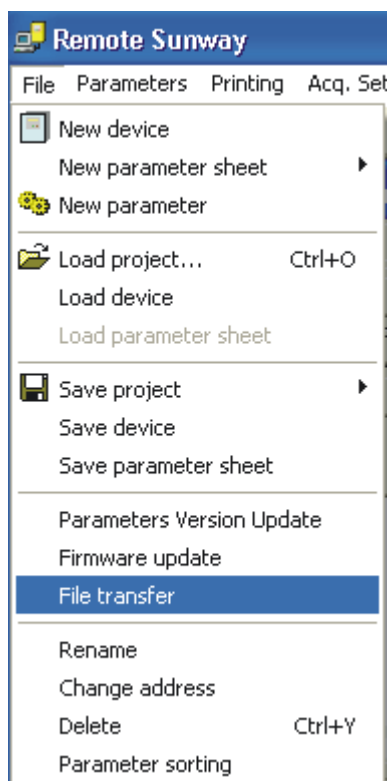
Hysteresis = 0

E2	Detection date	Detection time	Event status	ST1690[3]	ST1690[3] 01	ST1690[3]
E2				LstAlrm	InvStatus	01 Pout
E2				M0XX	FL01c	FL01s
E2						(kW)
E2	18/06/2007	17.17.24	OFF	INVERTER OK	STOP	0
E2	18/06/2007	16.09.24	ON	A040 User Fault	RUN	1,3

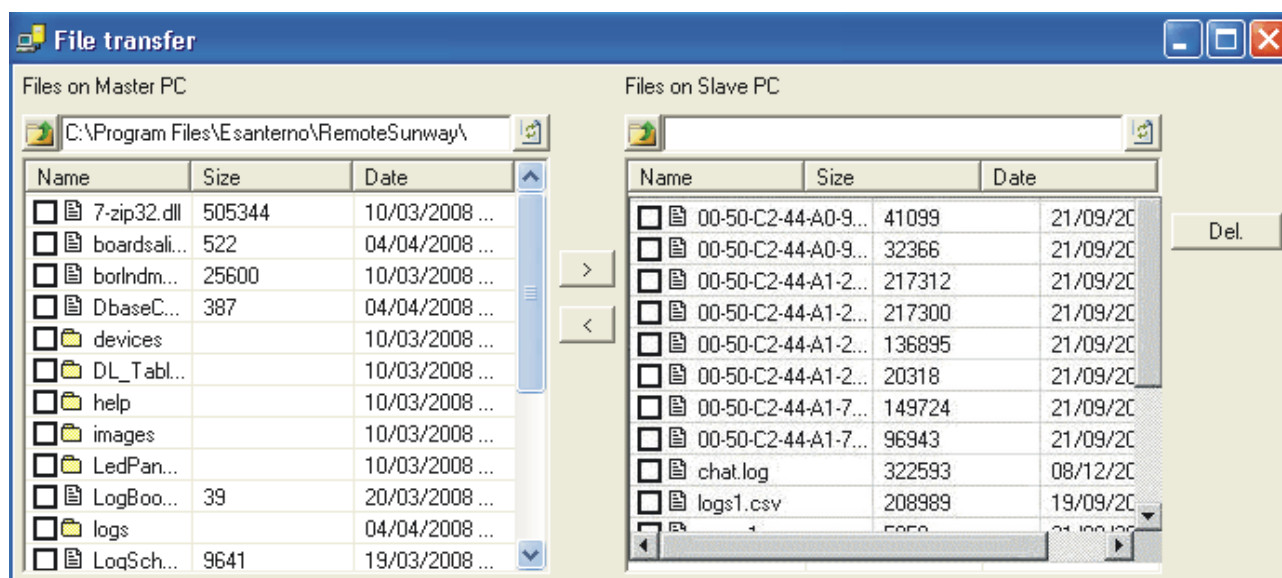
6.5. File Transfer

When a remote connection is established between two computers, files can be transferred from the PC connected to the PV plant (Slave PC) to another PC (Master PC).

To do so, you can use the **File Transfer** option from the File menu of the Remote Sunway implemented in the Master PC.



Once the connection to the Slave PC is established, select the **File Transfer** function from the Remote Sunway implemented in the Master PC. The window below appears:



The files and folders of the Master PC and the Slave PC are contained in the left and right box respectively.


**CAUTION**

The root folder of the path on the Slave computer is the Logs folder within the folder where the Remote Sunway is installed.

**NOTE**

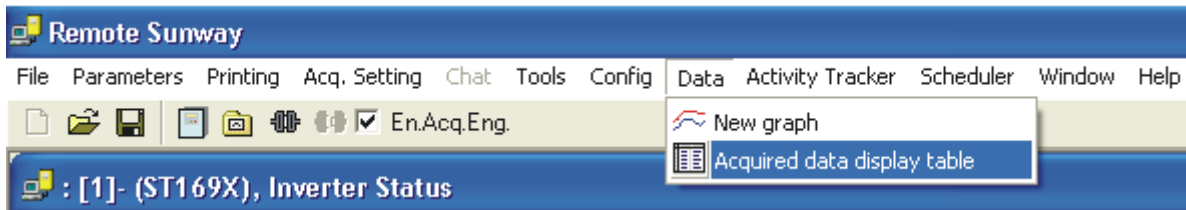
Folders cannot yet be transferred.

Select the files to be transferred and press  or  depending on the target folder.

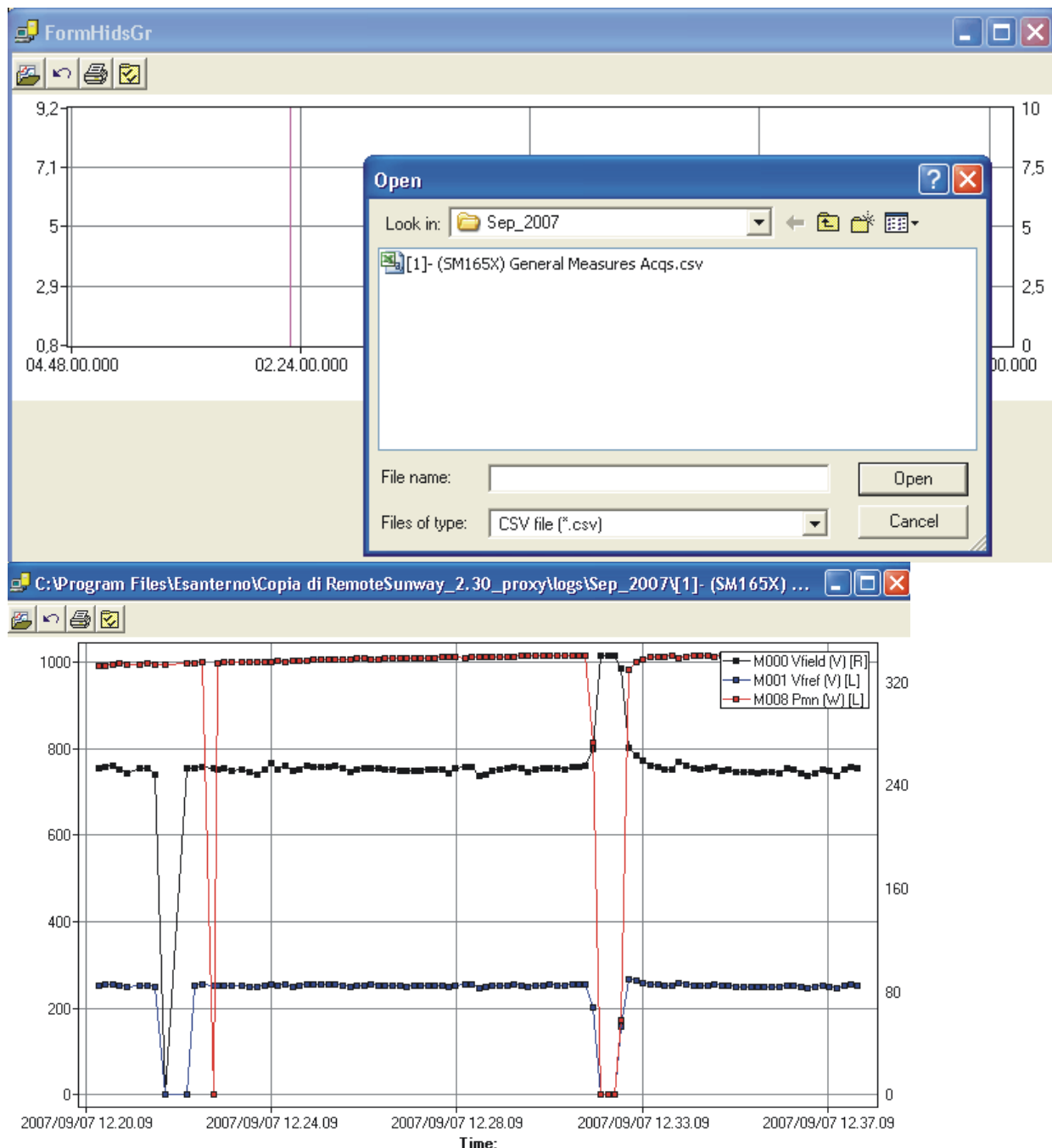
The files selected on the Slave PC can be deleted pressing the  button.

6.6. Data Display from the Remote Sunway

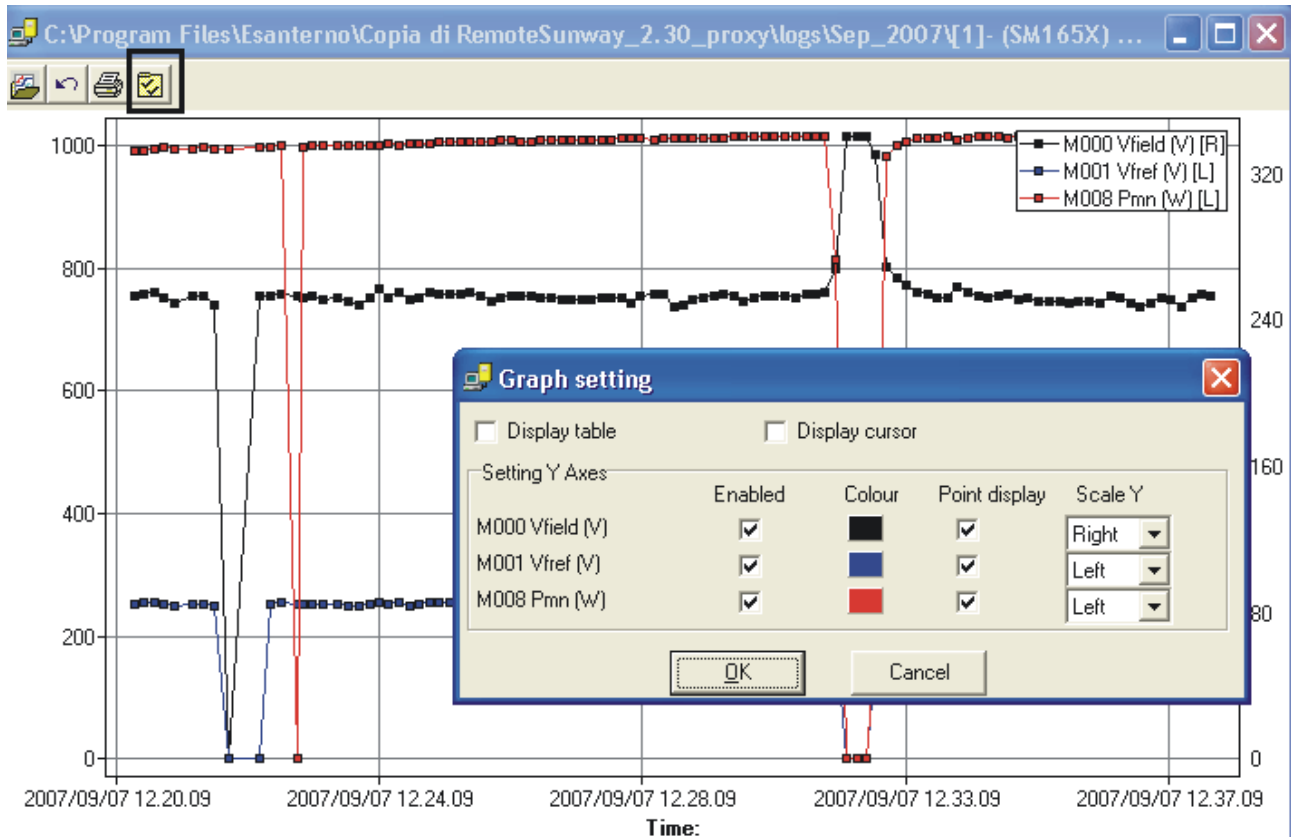
The Remote Sunway is capable of providing a graph for the data that has been previously saved. Click "Graph", then "New Graph".



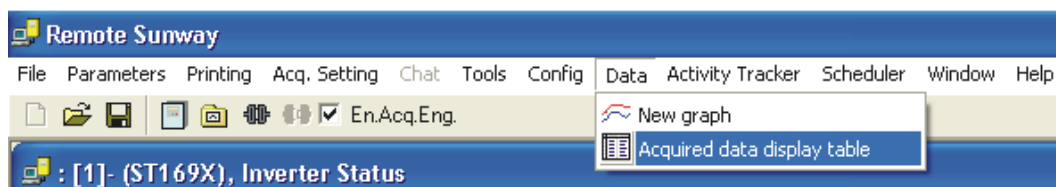
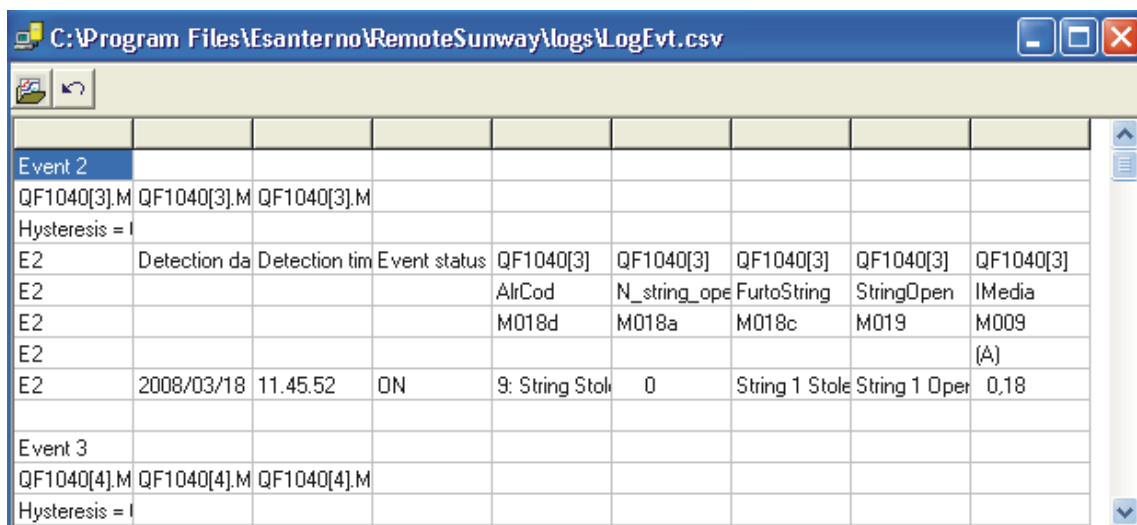
Select the data file to display, for example General Measures Acqs.



"**Graph Setting**" allows changing some properties of the graph, such as the colour of the tracks and the scale (it is suggested that variables, such as powers, be the same in the right or left ordinate).



To display the files that are not graphically represented (such as logsEvt.csv or [3]-(ST69X)Operating_conditions), use the **Acquired data display table** option from the **Data** menu.

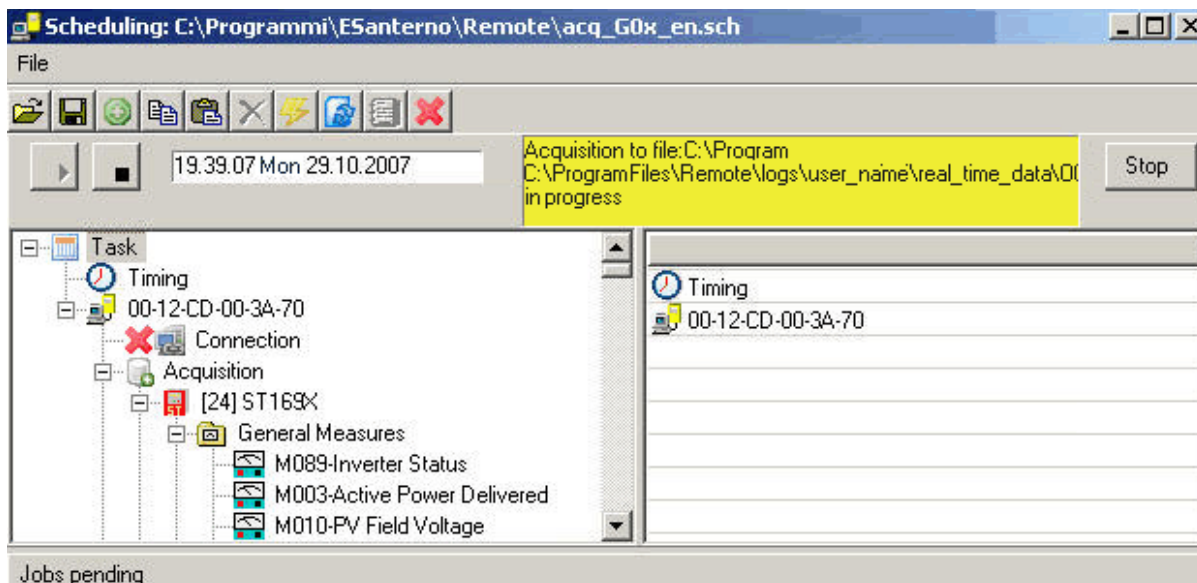



C:\Program Files\Esanterno\RemoteSunway\logs\LogEvt.csv								
Event 2								
QF1040[3].M	QF1040[3].M	QF1040[3].M						
Hysteresis = 1								
E2	Detection da	Detection tim	Event status	QF1040[3]	QF1040[3]	QF1040[3]	QF1040[3]	QF1040[3]
E2				AlrCod	N_string_ope	FurtoString	StringOpen	IMedia
E2				M018d	M018a	M018c	M019	M009
E2								(A)
E2	2008/03/18	11.45.52	ON	9: String Stole	0	String 1 Stole	String 1 Oper	0,18
Event 3								
QF1040[4].M	QF1040[4].M	QF1040[4].M						
Hysteresis = 1								


7. SCHEDULER

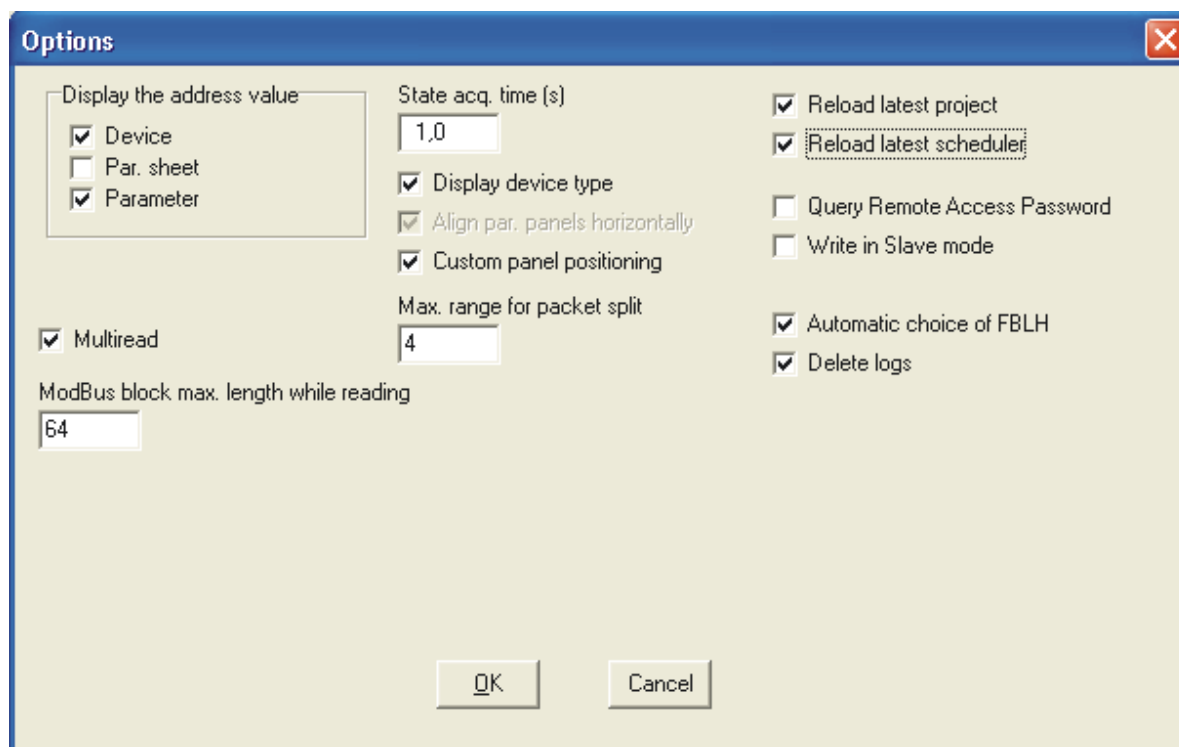
The **Scheduler** menu allows automating and scheduling the following functions:

- ES851 log upload.
- Remote Sunway log upload.
- Acquisition of a measure set.
- Publication to the wall display of some measures recorded when using the Acquisition function.

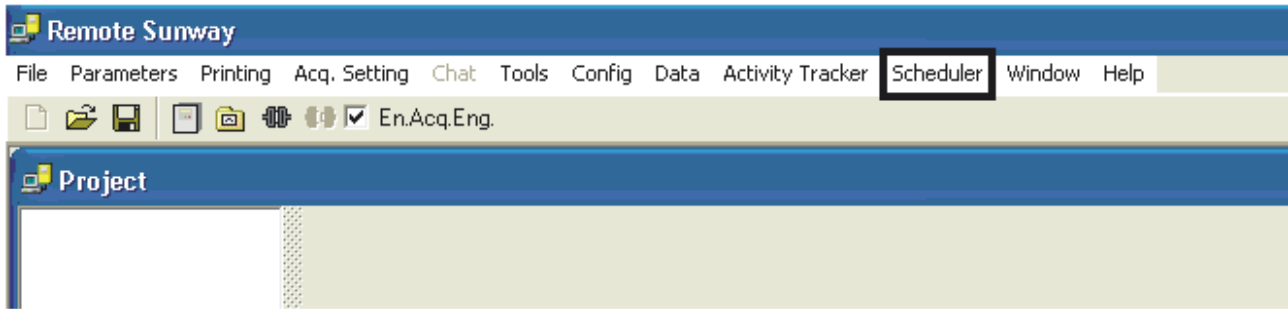


Programming is configured by composing a tree list of objects implementing special functions.

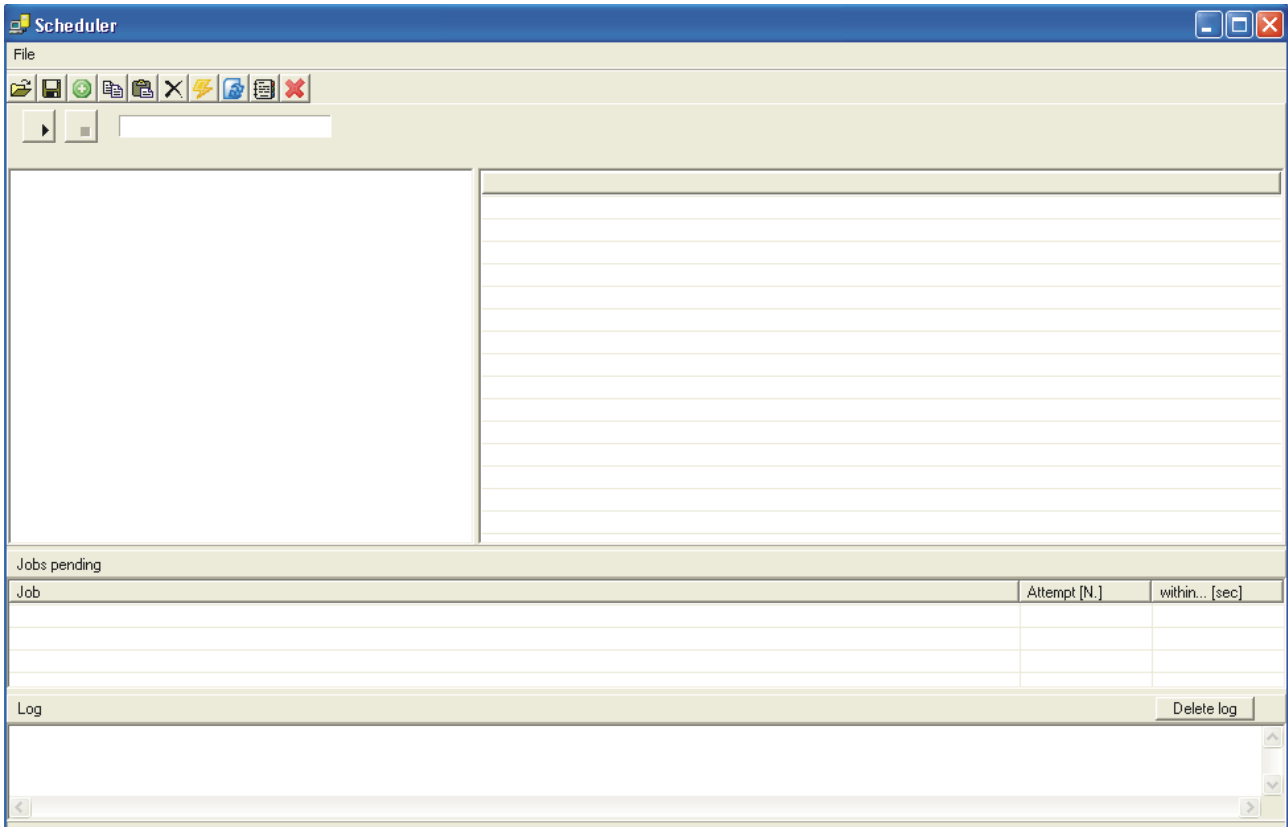
The tree list can be saved (click ) to a .sch project that can be automatically reloaded from the Remote Sunway when it is restarted and if the **Reload latest scheduler** option from the **Config → Options** is activated.



From the menu bar, select the Scheduler menu.

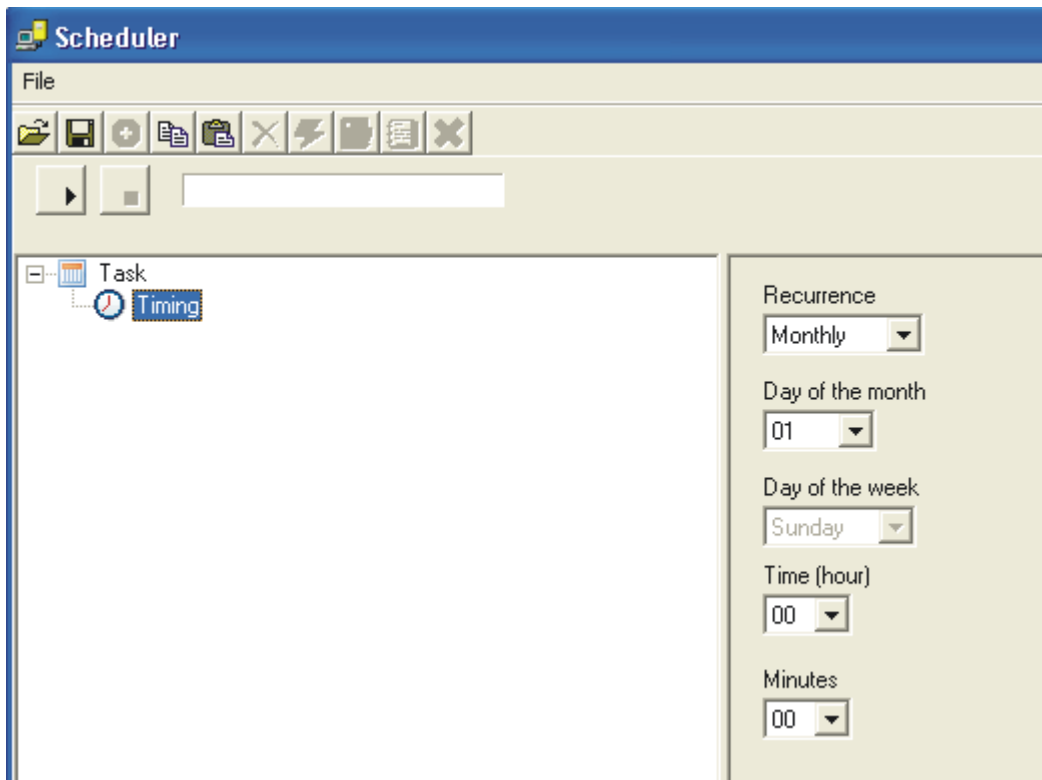


The window below appears:



First create the **Task** object before performing any operation with the Scheduler.

Use the  button (**Add** function) to create the **Task** object.

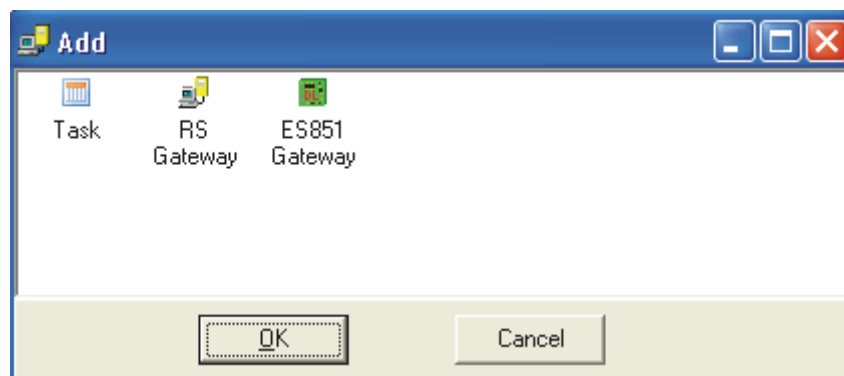


The **Task** object allows programming the function recurrence in the **Timing** object, which is automatically created.

Recurrence can be:

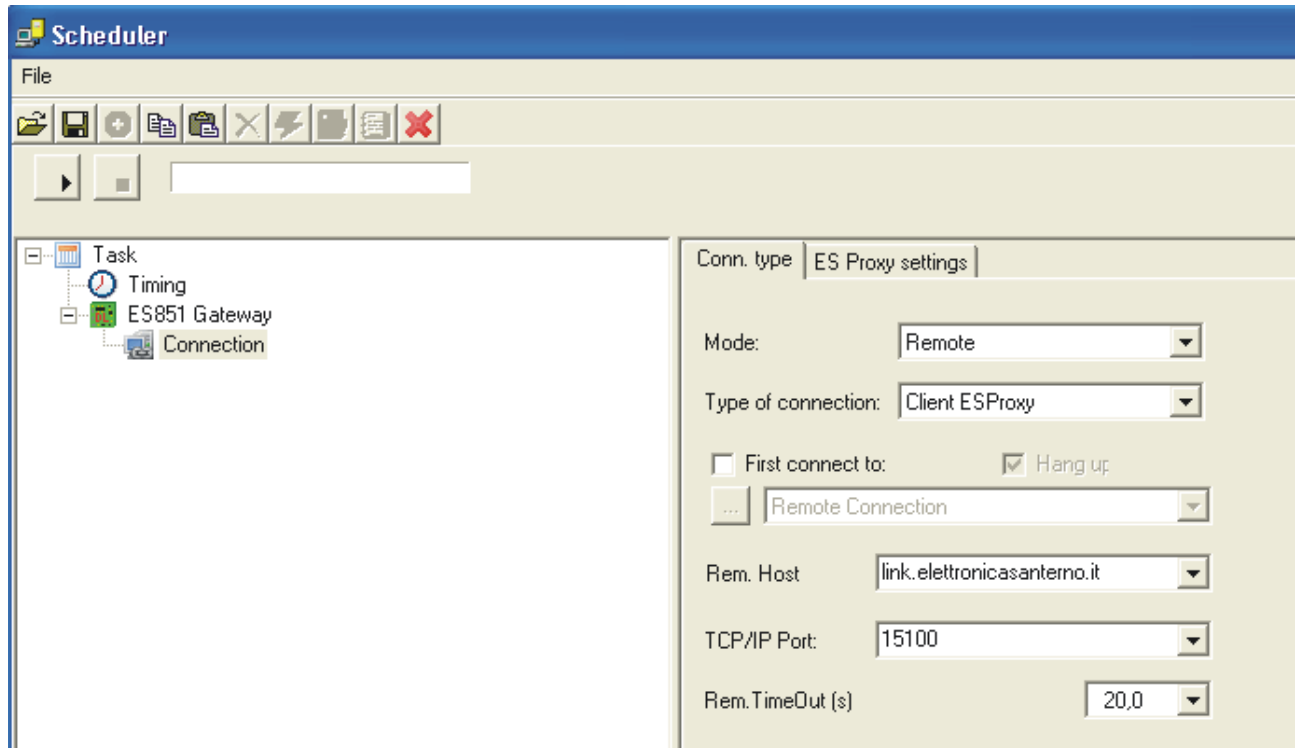
- "Monthly"
- "Weekly"
- "Daily"
- "Every" (only for data acquire functions)

Point to the **Task** object and press . The window below appears:



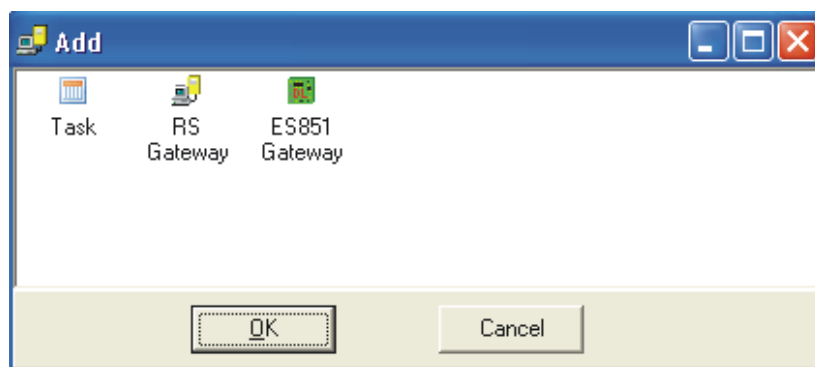
From that window, select the type of device (Gateway) you want to establish a connection with:

- **RS Gateway:** PC implementing the Remote Sunway programmed in Slave mode
- **ES851 Gateway:** ES851 Data Logger board.



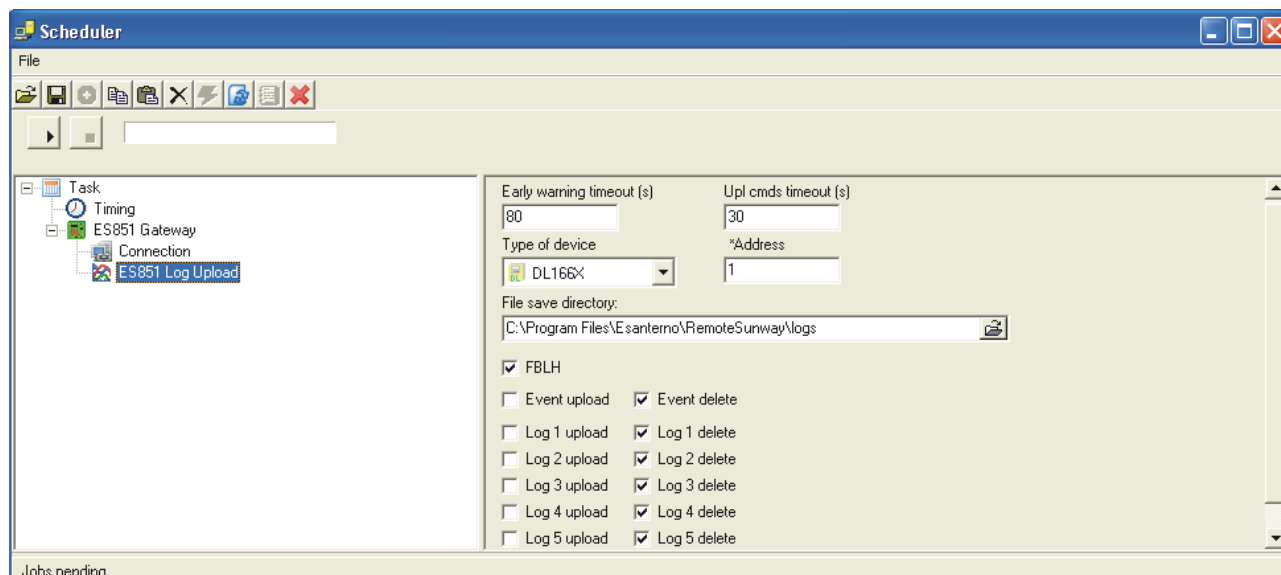
When adding one of the two Gateways, the **Connection** object appears, that is to be set up as the **Connection selection** window in the Remote Sunway. This allows the Scheduler to establish a connection to the Gateway.

Point to the Gateway and click ; the window allowing selecting the Scheduler's functions appears:



7.1. ES851 Log Upload


In order to automatically upload the logs from an ES851 Data Logger board, create a **Task** with an **ES851 Gateway** and add the Upload Logs function as described in the S section.



When selecting the created object (**ES851 Log Upload**), the function parameters are viewed in the right box in the window.

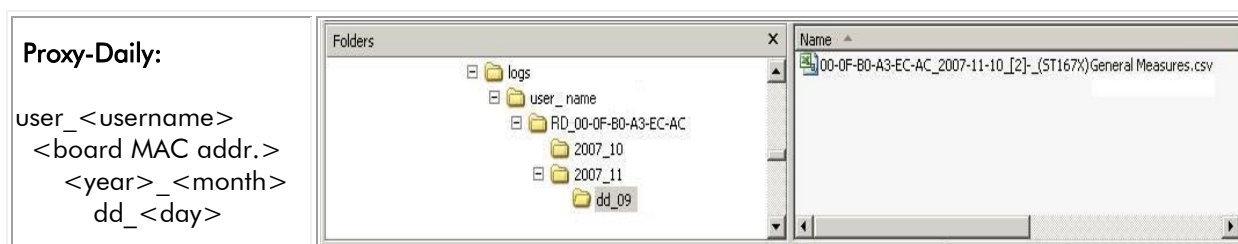
Select the **Type of device** and enter its Modbus **Address**.

Select the logs to be uploaded.

Save the project you have just created and click  to start the Scheduler.

Once uploaded to the Logs folder in the Remote Sunway, logs will be sorted in different tree lists.

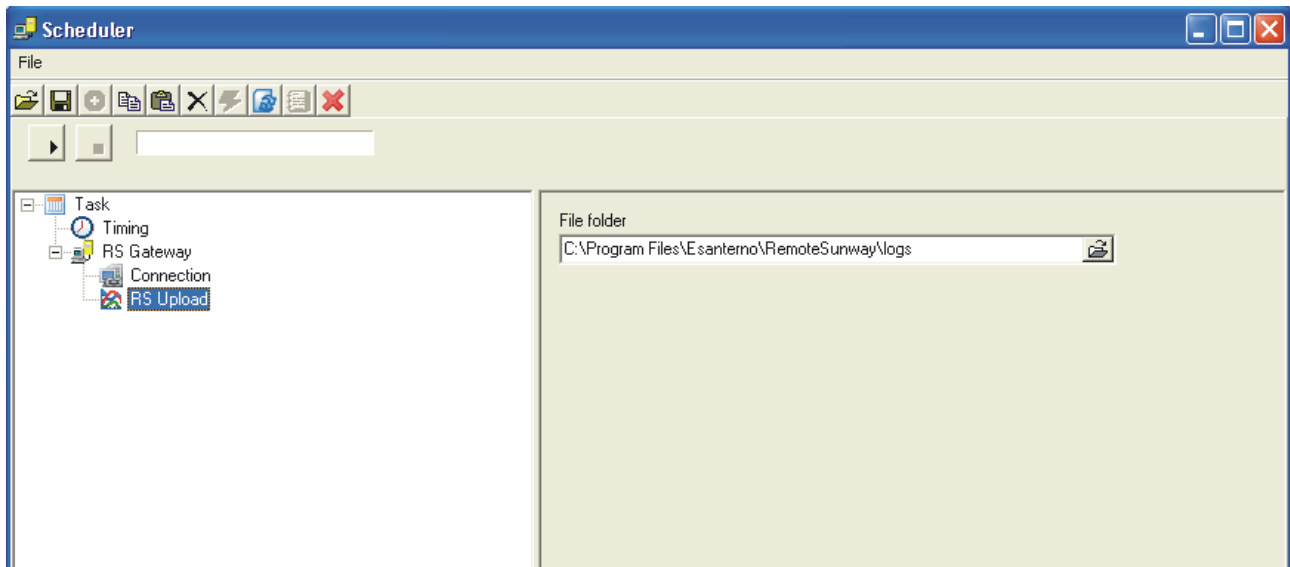
Example - Tree list of the logs when the recurrence for the Remote Proxy upload is "daily":



NON Proxy connections have a similar structure, except for the <Username> folder, which is not included.

7.2. RS Log Upload

The Scheduler is capable of automatically transferring the log files created from a Slave PC (e.g. a local supervisor computer of the plant). A **Task** is to be created with an **RS Gateway** and the Upload Logs is to be added, as described in the S section.



The figure above shows a Proxy remote connection, where the filename created by the RS Upload object is composed as follows:

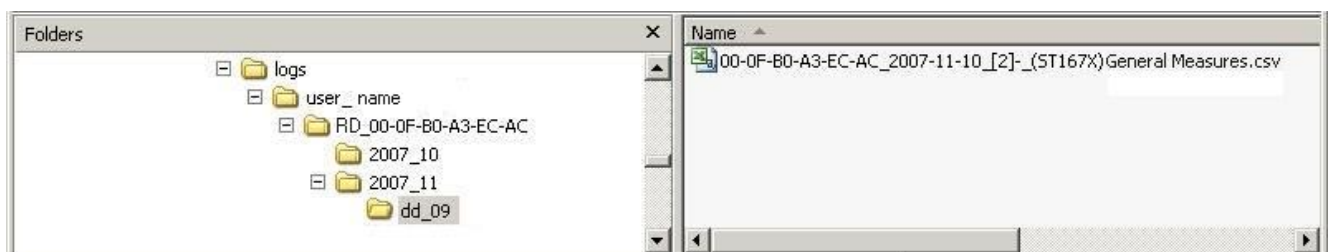
<MAC of the slave PC>_date_sheet name

For serial links, LAN connections or modem connections (i.e. any type of NON PROXY connections), the right box automatically shows the "Slave PC name" box, which allows creating the folder containing the log files. For compatibility with Proxy connections, enter the MAC address of the Slave PC preceded by "RS_" as a filename.

In the "File folder" case, select the target folder.

When the upload procedure is complete, the logs sorted by tree list will be saved to the Logs folder in the Remote Sunway.

Example: Tree list of the logs for Proxy Remote with "daily" recurrence.



The same structure, except for the <Username> folder, applies to NON Proxy connections:

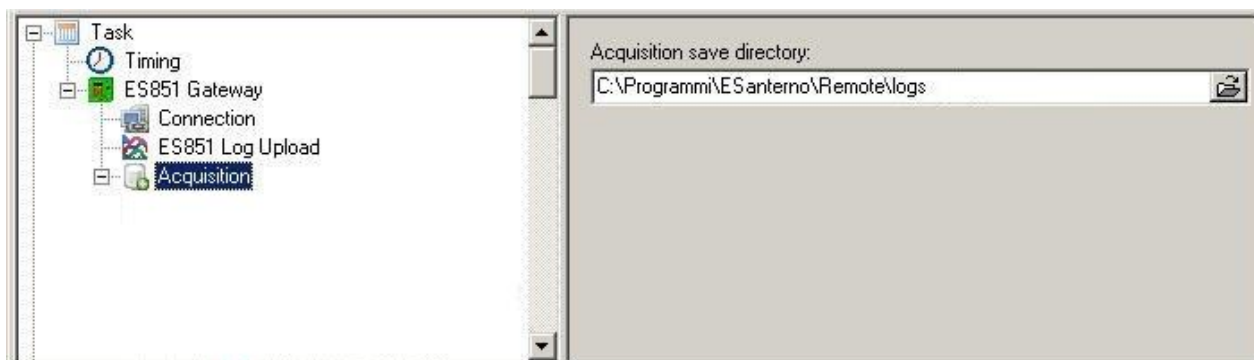
date_sheet name.

7.3. Acquisition

This object allows acquiring some measures from any device connected to a PC implementing the Remote Sunway and which is connected in Slave Remote mode (**RS Gateway**) or to an ES851 Data logger board (**ES851 Gateway**).

A **Task** is to be created with an **RS Gateway** object and the Upload Logs is to be added, as described in the S section.

When selecting **Acquisition**, the “**Acquisition save directory:**” field appears in the right box. Select the target folder for the acquisition file.




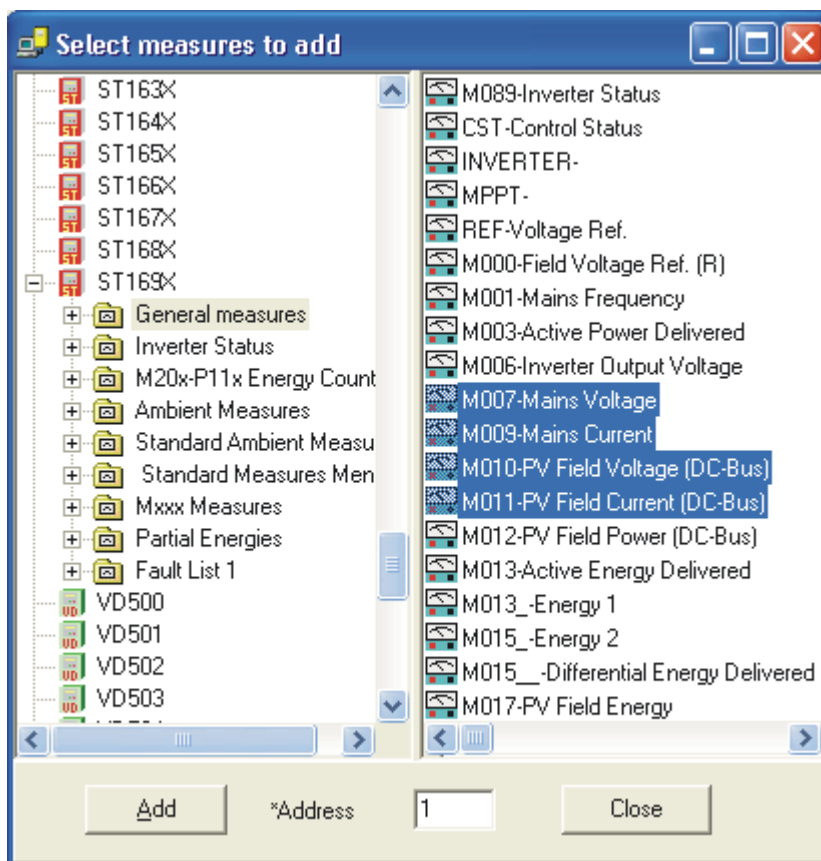
The figure above shows a Proxy remote connection. The filename created by the Acquisition object is as follows:

<board MAC address>_acq

When using a serial link, a LAN or a modem connection (any NON-PROXY connection), the Filename box is automatically displayed. In that case, the filename of the Acquisition object is:

<Filename>_acq

Once the acquisition object is added to the list, you have to specify the devices and the relevant measures to be acquired. To do so, select the **Acquisition** object and press the  button (**Add** function) to open the **Select measures to add** window.



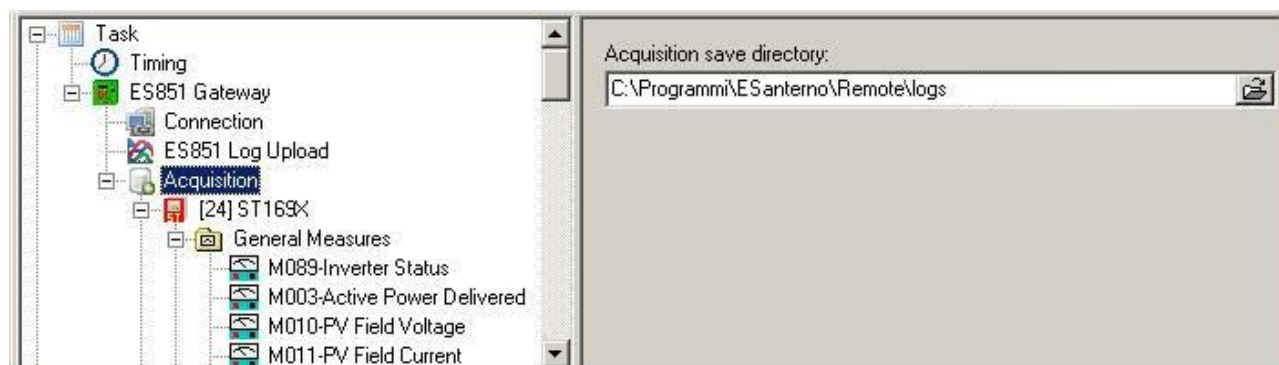
Select a device and double-click to display the whole list of the measure sheets. You can select all the sheets to acquire any available measure, or you can select only one sheet to choose any single measure.



CAUTION

Before adding measures to the scheduler, set up the Modbus address of the selected device.

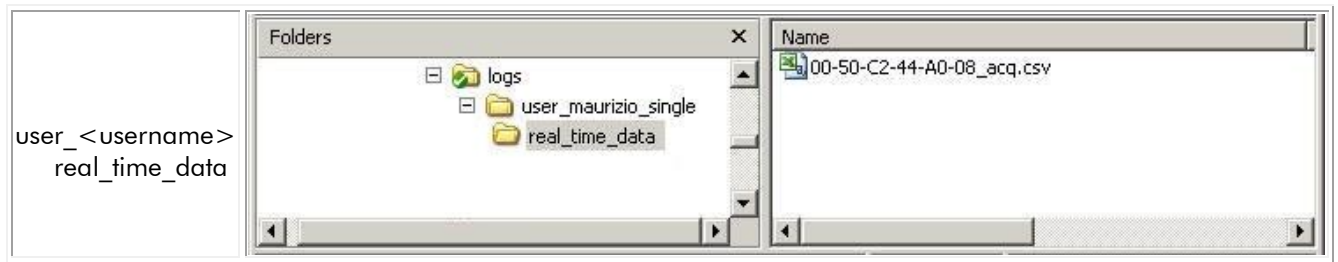
Click the **Add** button to add the measures selected in the right box to the list of objects contained in the **Acquisition** object and sorted by measure sheet.



Do the same for any other acquisition procedure.

The acquisition files are sorted in a tree list.

Example: Path of the acquisition file for Proxy Remote connections.



The same structure, except for the <Username> folder, applies to NON Proxy connections.

**CAUTION**

The file is replaced whenever an acquisition procedure takes place. Appending is not supported.

7.4. Data Published to the LED Display

The **Wall Display** object contains the publication activity of the acquired data to the LED display. Publication occurs when the **Acquisition** object contains measures configured for the output to the wall display. For example, this kind of measure is contained in the ME00X0 dummy device.

The Acquisition object shall be created (see the Acquisition section), so the ME00X0 dummy device is to be selected. The Acquisition object records custom measures.

When a measure is selected, its custom properties are displayed in the right box in the window. They are very similar to the measures described in The ME00X0 Panel and the LED Display. Two additional options are included:

- **Persistence (s.):**
Indicates the persistence time (in seconds) of the last valid value read by the Scheduler. When this time is over, 0 is displayed on the LED display.




NOTE

If the persistence time is set to 0, this means that this function is disabled and the last valid value read by the Scheduler is kept displayed until it is refreshed (in that case, no time limits are provided).

- **Enabled:**
Enables publishing the measure to the wall display.

Short description	Description	
Put	Overall power delivered to grid	
Print size	Unit of meas.	ModBus Address
%6.1f	kW	1
Formula		
Panel Id	Comment	Line
1		1
Persistence (s.)		
1800 <input type="checkbox"/> Enabled		

Select the Gateway of the task (ES851 Gateway in the figure below) and click  (**Add function**) to add the **Wall Display** object.

This object does not need to be programmed. Once selected, the right box in the window shows the last string published to the wall display.

Latest output on display



CAUTION

In order to dialog with the Led panel, the **Luminous Panel Serial Link** window must be set up and the "Connect" option in that window must be activated. See The LED Display (Luminous Panel).