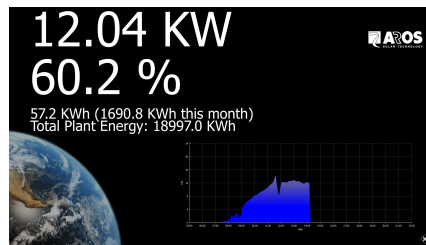


Sirio Data Control User Guide



V 1.2.0

Fast facts

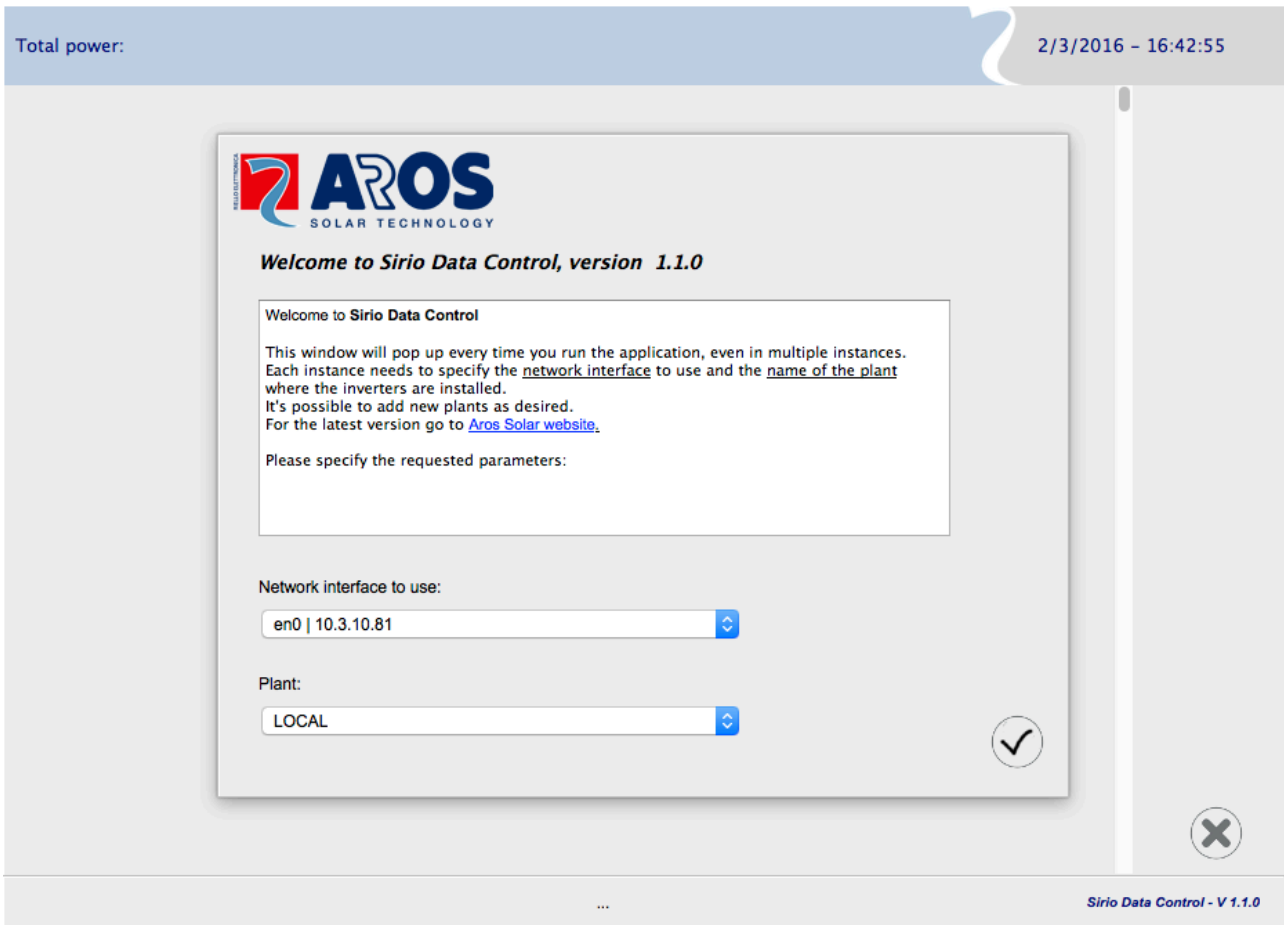
Sirio Data Control software:

- Allows monitoring of AROS/RPS solar inverters from inside a LAN or over the Internet using plant configurations
- Allows (from version 1.2.0) creating an SPS (Sirio Power Supply) device¹
- Allows the user to send commands to a single inverter or to all the configured inverters
- Optionally shows a full screen mode to summarize the group of inverters configured (not in SPS mode)
- Has intuitive, self-explanatory buttons
- Scans automatically the network and configures itself, with no user action necessary (only for LAN networks)
- Allows the network configuration of newly installed inverters without the use of DHCP
- From SirioDataControl 1.2.0 onwards, supports the Netman 204 Solar with the optional WiFi kit
- Let the user browse graphs of logged data, mixing different measures in the same graph
- Shows live data of each inverter
- Allows the time synchronization between the pc and the inverters
- Runs on Windows, OS X and Linux
- Needs that display firmware is at least 1.2.5

¹ Sirio Power Supply is a device that can both increase the functionality of an On Grid photovoltaic system with AROS Solar Technology inverters as well as create an Off-grid system. In fact, thanks to energy storage which is suitably sized based on the desired load characteristics and battery life, the system can store energy produced from a renewable source which can then be used later or when there is no radiation, in addition to making the system independent of the existence of electricity distribution grid.

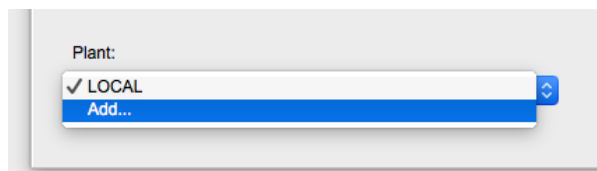
Splash Screen

When you run the software, you'll see a Welcome splash screen like this:



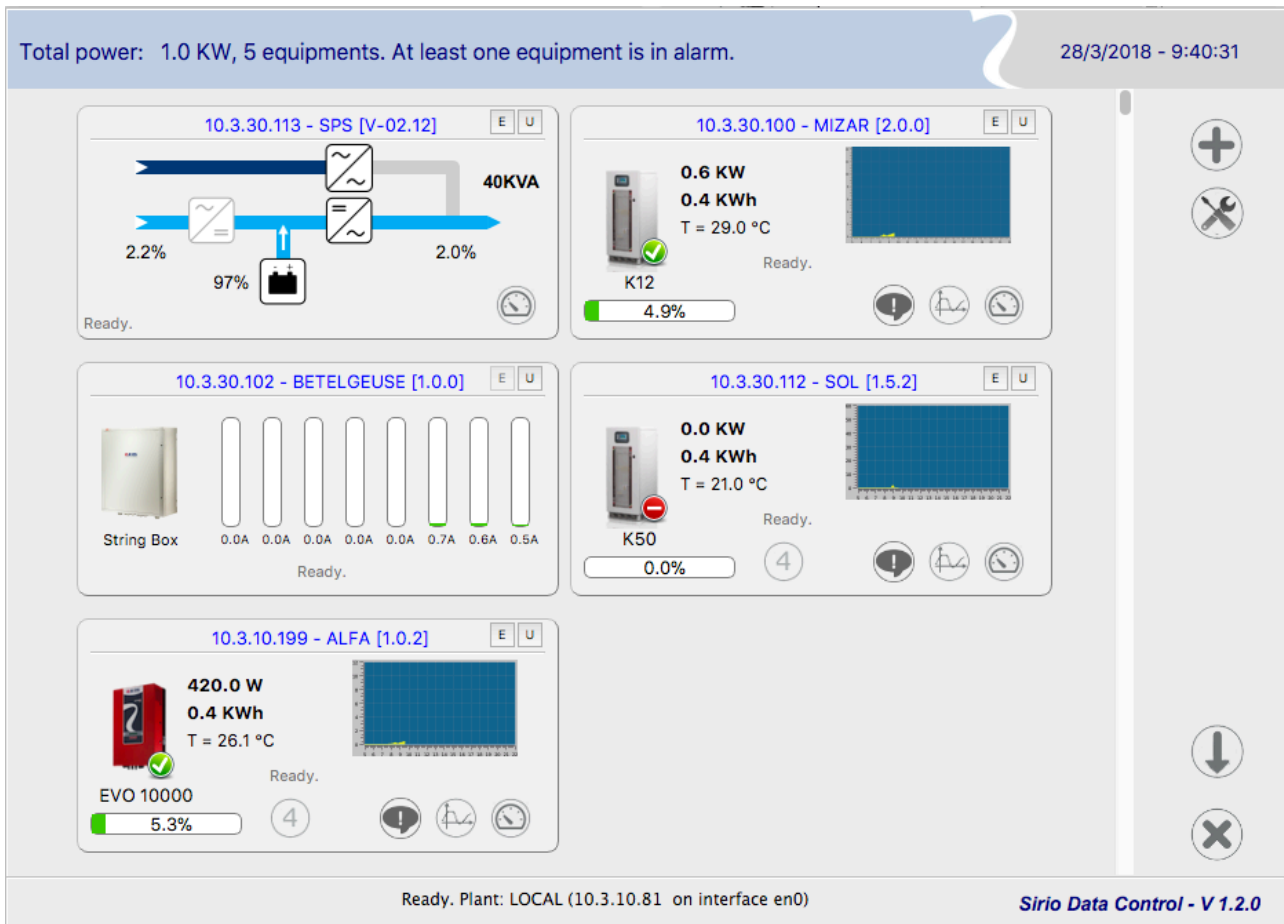
As you can see, the software is asking what is the network interface you want to use and what *plant* you want to open. With Windows version of the software, you can open an instance of SDC for anyone of the plants you've defined. The plant LOCAL is always defined and SDC will add automatically the Inverters found on the LAN without any configuration.

Adding a new plant is easy: click on the popup menu and choose Add:



If you choose Add a new little window will ask you the name of the new plant. You can add as many plants as you like. The newly created plant (which is not LOCAL, but on the Internet) will have no inverters inside: the user shall create the inverters by him or herself.

Main Screen



This is the main screen after the software has successfully browsed the network seeking for the inverters. When in LOCAL plant, the search is always active, so if you add a new Inverter with the address into your LAN, the software will add it for you without the need of any configuration. The scan of the network is made about every 30 seconds.

SDC also remembers all the equipments that have been connected.

On the right side of the main screen a vertical row of buttons for the following actions (from top to bottom):

- Add manually an inverter/equipment (for access via the Internet, i.e. for plants different from LOCAL)²
- Global commands and Full Screen mode³
- Inverter network configuration mode (even for not configured Inverters)

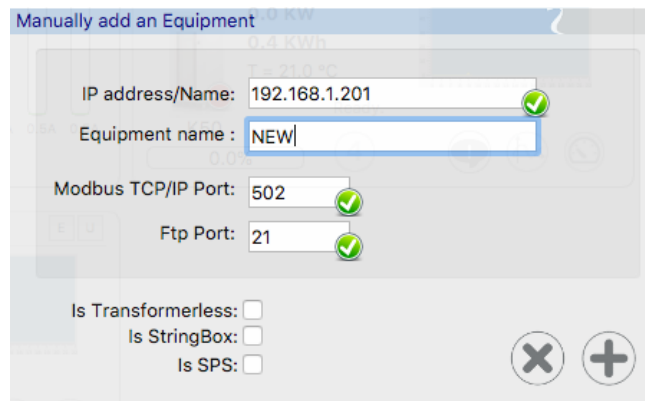
² Notice that for SPS the equipment can be added only manually.

³ Except for SPS plants

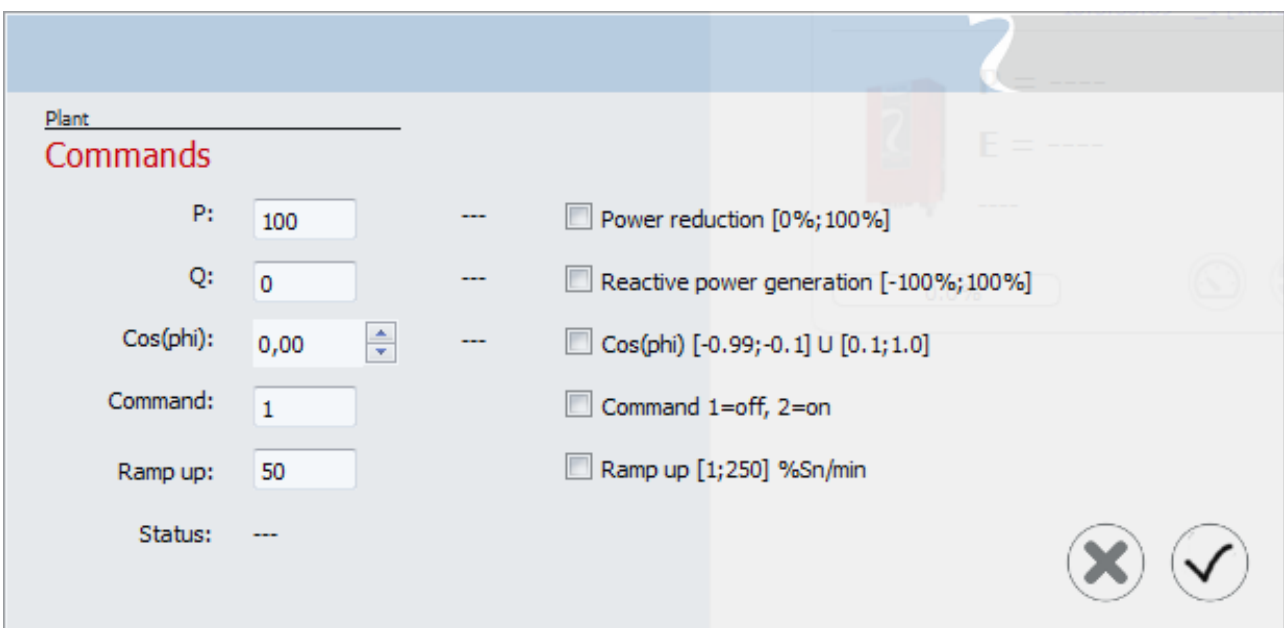
- Minimize
- Exit program

Adding manually an equipment to a plant must be done when configuring WAN plants or in special LOCAL cases where UDP packet restrictions apply. In this case you have to input:

- IP address or ip name (hit apply button that will appear to validate the ip name)
- The equipment name
- The Modbus TCP/IP port
- The Ftp port
- The name you want to give to this equipment
- The equipment type. With no selection, it will be a centralized inverter, otherwise it can be a Transformerless (EVO), a StringBox or an SPS.



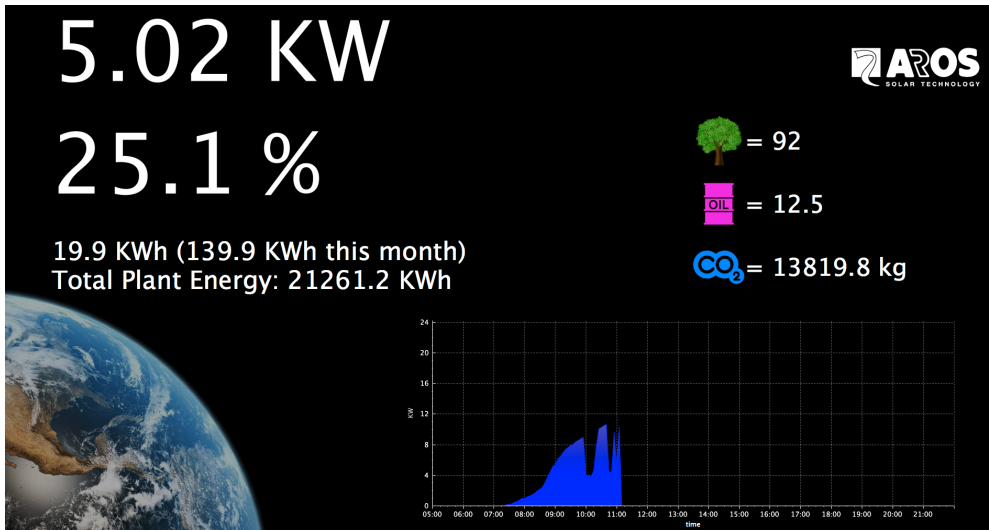
The software can send commands to all the inverters monitored (commands to the plant⁴). Here you can see the panel that allows you to do so:



⁴ Except for SPS plants

As you see, the standard AROS/RPS command reduction parameters are under total control.

The full screen mode⁵ gives a snapshot of the plant, with data, coming from all the inverters, changing in real time:



The Setup button let the user manage the network preferences of all the plant inverters:

The interface is titled "Install new inverters or modify network preferences." and includes the following sections:

- Plant:** A list of inverter identifiers and their IP addresses:
 - 00:02:63:00:31:52 (10.3.200.60)
 - 00:02:63:00:32:78 (10.3.30.70)
 - 00:02:63:05:00:39 (10.3.30.71)
- Network:** A set of input fields for configuring network parameters:
 - IP address:
 - Netmask:
 - Gateway:
 - DNS 1:
 - DNS 2:
 - UDP port:
 - VNC port:
 - FTP Pasv lower port:
 - FTP Pasv upper port:
- Netman:** A field for "Name:".

This especially true for new, not configured inverters, that all have the same IP address of 192.168.1.200⁶.

⁵ Not available for SPS plants

⁶ Not available for SPS equipments

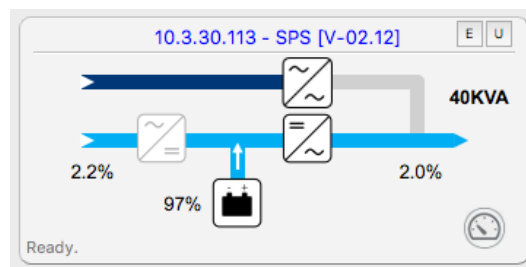
The Inverters/SPS

As is easily seen in the main screen, each tile represents a single equipment, that can be an inverter (centralized or transformerless), Stringbox or SPS.

For the SPS we have:

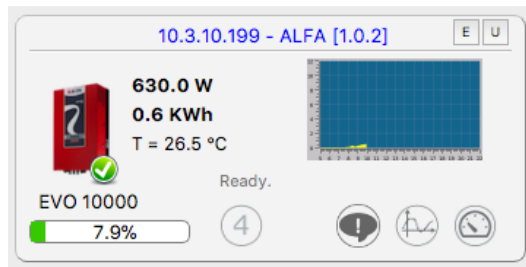
- The graphical representation of the SPS equipment
- The input current percentage compared to the nominal
- The output power percentage compared to the nominal
- The battery charge percentage
- The nominal power of the SPS

The colors of the lines change color according to the operating mode. Refer to the SPS manual for these details. In any case notice that the bypass line has a darker color and in case of manual bypass it's colored in red. A flashing white arrow indicates if the battery is charging or discharging.



For the inverters:

- The image of the equipment, this changes in function of the model
- A green patch assuring the user the Inverter is working properly (in fault case the symbol is red)
- On the right of the image you can see instant power and the energy for today; just below the internal Inverter temperature.
- Below the image you can see the model name. Below the model name, a graphical representation of the instant percentage of the power.
- On the right of the Inverter tile, there is a simple graph with instant power; this gives you a rough idea of what is going on without opening the graphs browser window.
- Last, but not least, on the lower right part of the Inverter tile we can have up to 5 buttons. From left to right: the Button for configure the external measures (if configured), the graph browser button, the alarms button, the graph browser button and the measures button. If you move the mouse cursor over each button, a short tip remembers what is the function of the button.



The external measures configurable are 4.

The following panel allows you to choose what measure will show on full screen together with the total plant power.

Only one measure can be shown on the full screen; the button of this functionality will become blue if for that inverter the measure has been chosen.

External measures

Choose measure to show on full screen

None

W/m2

m/s

V

V

Values

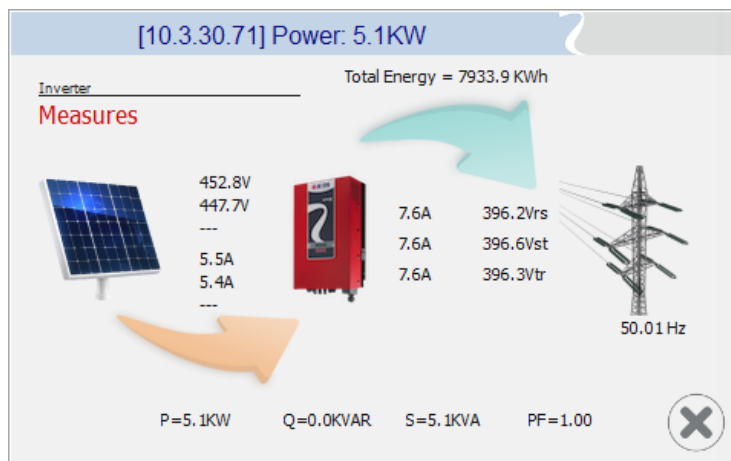
W/m2	0.00
m/s	0.00
V	0.00
V	0.00

✕
✓

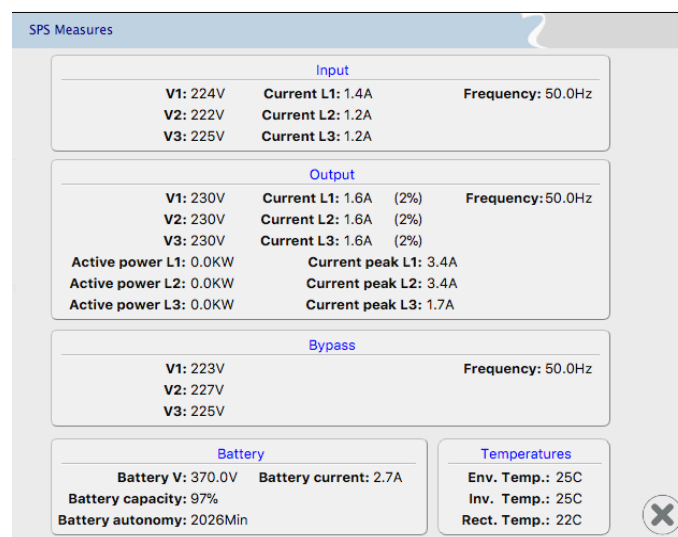
The live data from the Inverter is a panel like this:



or like this:



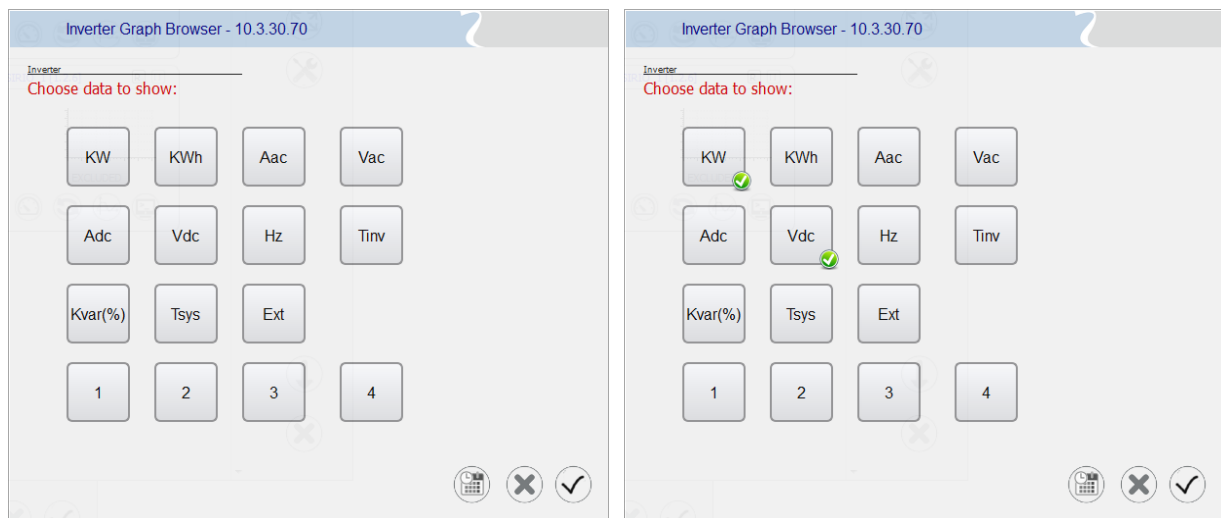
depending if the inverter is centralized or EVO.
If the equipment is an SPS, we have a screen like this:



For the Inverters⁷ the graph browser allows you to see years of data from the inverters, day by day. When you press this button you're asked to choose for a date:



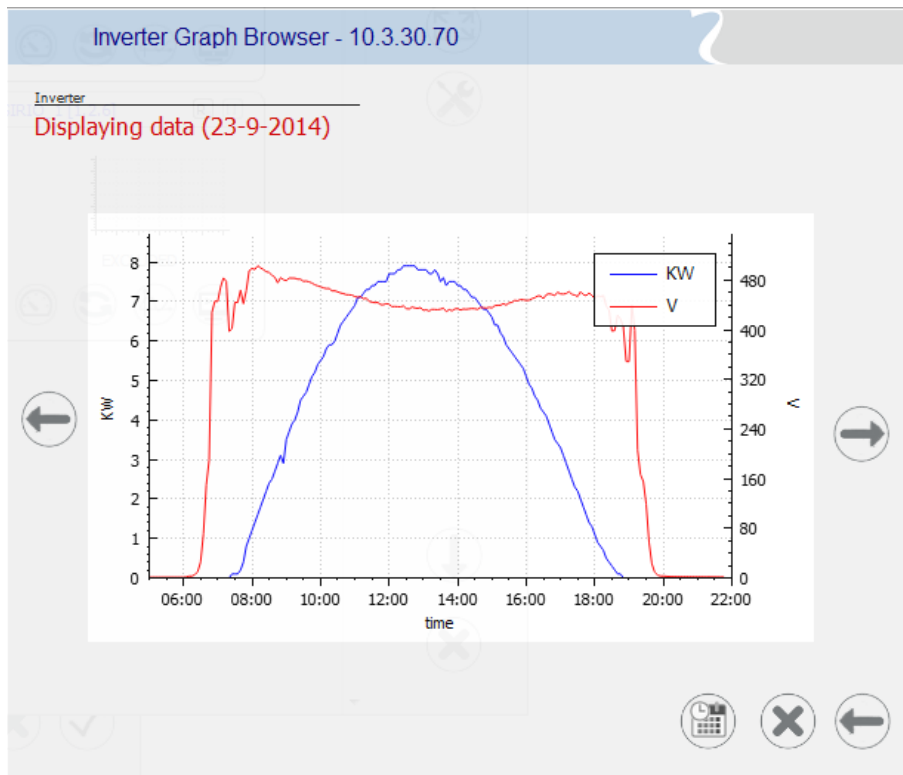
When you have decided the date you're interested in, continue, and you can choose between a lot of data:



You can click two buttons maximum. Each button can refer to a full set of measures, just like Vac, that's three values.

⁷ Not for SPS equipments

After that, you can watch the data of the chosen day:



the arrows on both sides of the graph let you go to the following or the previous day. It's possible also to change date, go back to see other measures or exit the Browser.

The commands panel for the single inverter⁸ has the same appearance of the Plant Commands panel:

The screenshot shows the 'Inverter Commands' panel. It contains several input fields and checkboxes for configuring the inverter's operation. The parameters are:

- P: 100 (100%) Power reduction [0%;100%]
- Q: 0 (1%) Reactive power generation [-100%;100%]
- Cos(phi): 0,00 (1.00) Cos(phi) [-0.99;-0.1] U [0.1;1.0]
- Command: 1 Command 1=off, 2=on
- Ramp up: 50 Ramp up [1;250] %Sn/min
- Status: ---

At the bottom right, there are two circular buttons: a close button (X) and a confirm button (checkmark).

⁸ Not for SPS equipments

If you're trying to connect an equipment or a plant through the Internet, it happens that some special actions have to be done on the customer's router.

The ftp port (21) and the Modbus port (502) that SirioDataControl uses are normally not accessible from the Internet.

What has to be done is called **port forwarding**, this means that the software must use some other ports (example: 503 for Modbus, 50001 for ftp), and the router of the customer must forward these ports so when it receives a request for the router IP on port 503, it forwards the request for the internal IP, port 502.

This way:

IP=ip address or name

port 503 for Modbus

port 50001 for ftp

port from 41001 to 41010, used by the physical inverter to respond.

For the chosen ip or name the customer router must forward (direction from Internet to customer's LAN):

503 -> IP:502

50001 -> IP:21

and must allow ports from 41001 to 41010 to come out from the LAN of the customer towards the Internet.

This complication can arise if ftp connects but does not receive any file... In this case a range of ports dedicated to the so named **ftp passive mode** must be taken into account.

See next page for a real-world visual example in detail, configurations for both SDC side and customer's router side.

