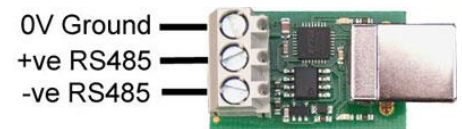


## Configuring Inverters for Installation

### SETTING UP COMPUTER FOR THE FIRST TIME

#### Install the driver for the USB

Although there is a USB port within the inverter, in general we find it more reliable to use a separate USB to RS485 converter, particularly for monitoring when the inverter may power up and down. You can buy one from Active Robotics (click [here](#)). See connections on picture (right)



This may work right out of the box, but some computers don't have the driver pre-loaded. The driver software for the Active Robotics unit is on our website at <http://voltsys.com> under Support-Software. The file is named CDM20600. If you unplug the USB lead and run this file it will install that driver.

If you hit problems later on, you can find out if this has worked by looking for the port in your device manager (Right click on my computer – properties – device manager – hardware – ports). Take a note of the com port allocated.

#### Install the Aurora Installer Software

This is in the support section of our website at <http://voltsys.com> under support - software. There is also a manual under support-manuals.

#### Connect the inverter to DC supply.

If you are doing this onsite, you can programme the inverters with the wind turbine running. However, you should be aware that there can be high voltage DC on the supply side.

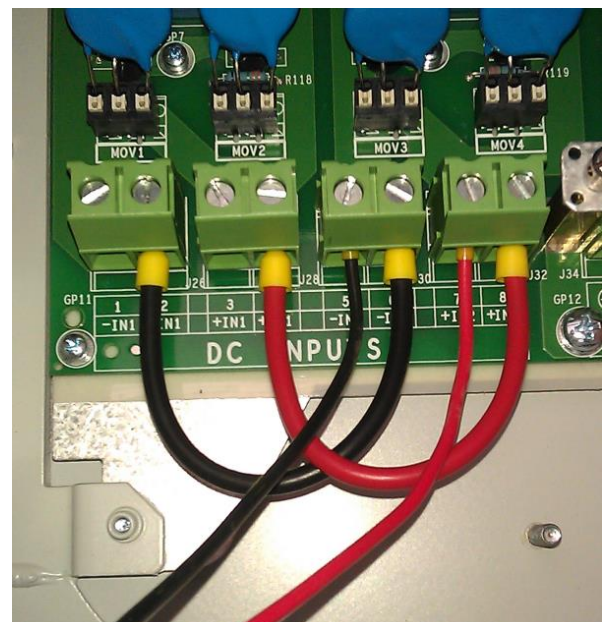
However, if you are doing this in the workshop, you will need to supply 50V DC to start up the inverter. Connect the 50V to the terminals as shown in the picture (right). (we can supply you with a suitable 50V DC power supply)

Once you do this, the inverter will have to be programmed for two things;

- 1) Country code
- 2) Address.

#### Country Code

- The screen will initially say "No Nation". Scroll down by pressing the **DOWN** button until it comes to the desired country standard (e.g. UK G59)
- Press the **Enter** Key to select the desired country standard
- The screen will say "Press Enter 5 sec to confirm". Press and hold the **Enter** key.
- The unit is now set to G59 for the UK.



Should you end up with the wrong country selected, you have 24 hours to change it. Please call us for information on how to do this.

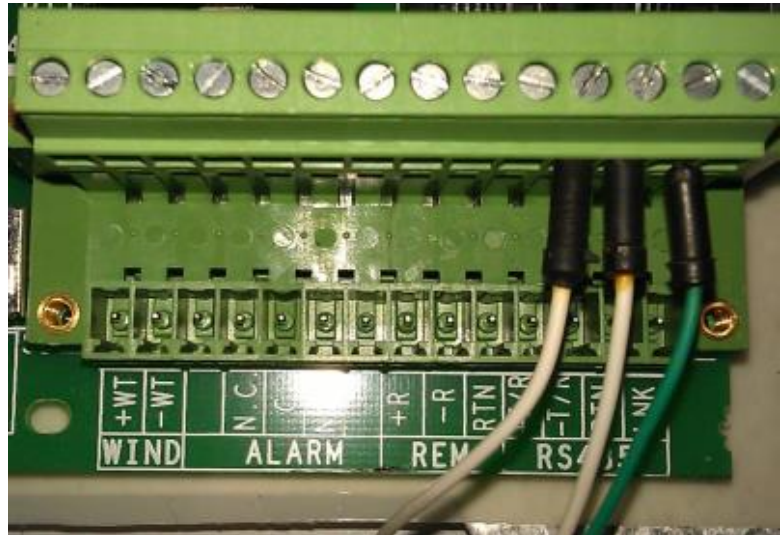
## Set the Address (ignore this if using only one inverter)

If you plan to use Aurora Communications Software on multiple inverters, each inverter should have a different port Address. The default address is "2". You should change two of the inverters to "3" and "4". To do this, follow the following steps;

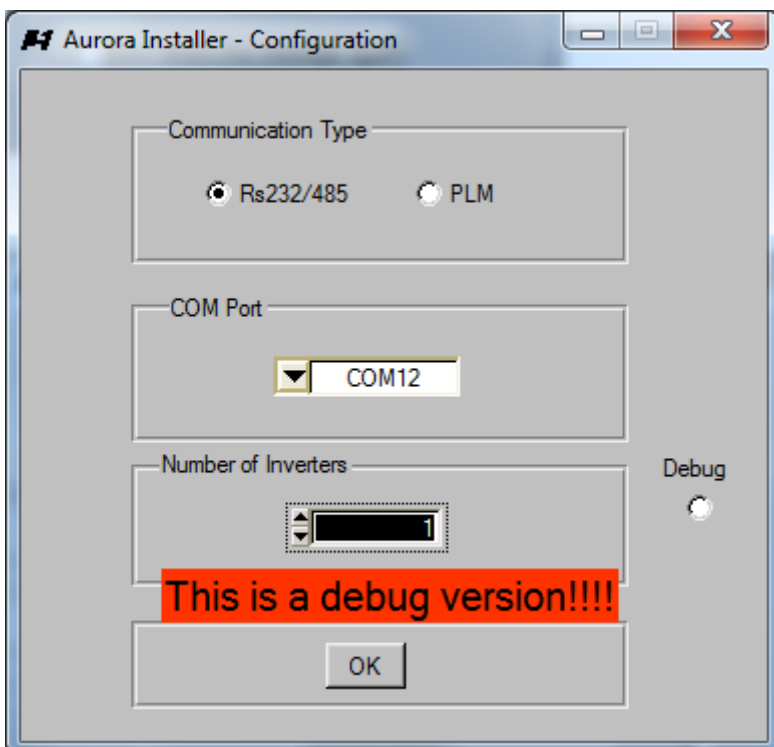
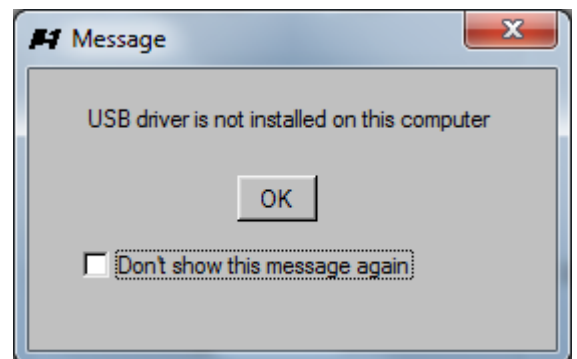
- The inverter will start with the message "Empty Table"
- Press ESC button once
- Press **Down** button to scroll to settings
- Press **Enter** button
- When asked for a password, press "**Enter**" 4 times
- Press the **Down** button to scroll to address
- Press the **Enter** button
- Press **Down** or **UP** to lower or raise the address
- Press **Enter**

## Programming the Power Curve and other Parameters

Connect your computer to the inverter using the RS485 connector. As outlined above, this may be done using USB but is more reliable through an interface which adopts RS485 to the USB port. This should be connected to the +T/R, -T/R and Rtn connections on the right side of the inverter as shown (right). This picture shows the 3.6kw inverter. The connections on the 6kw unit are slightly different.



If you are not using the USB port, you will initially see this screen. You can click on OK (as you are not using the internal USB)



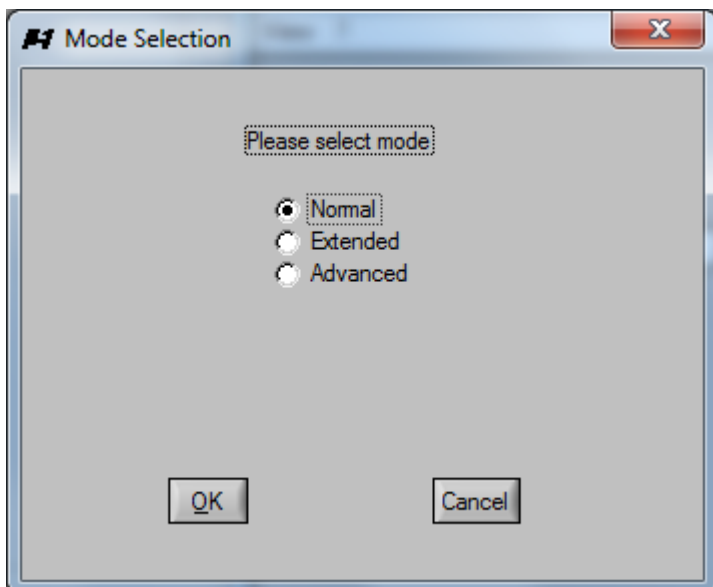
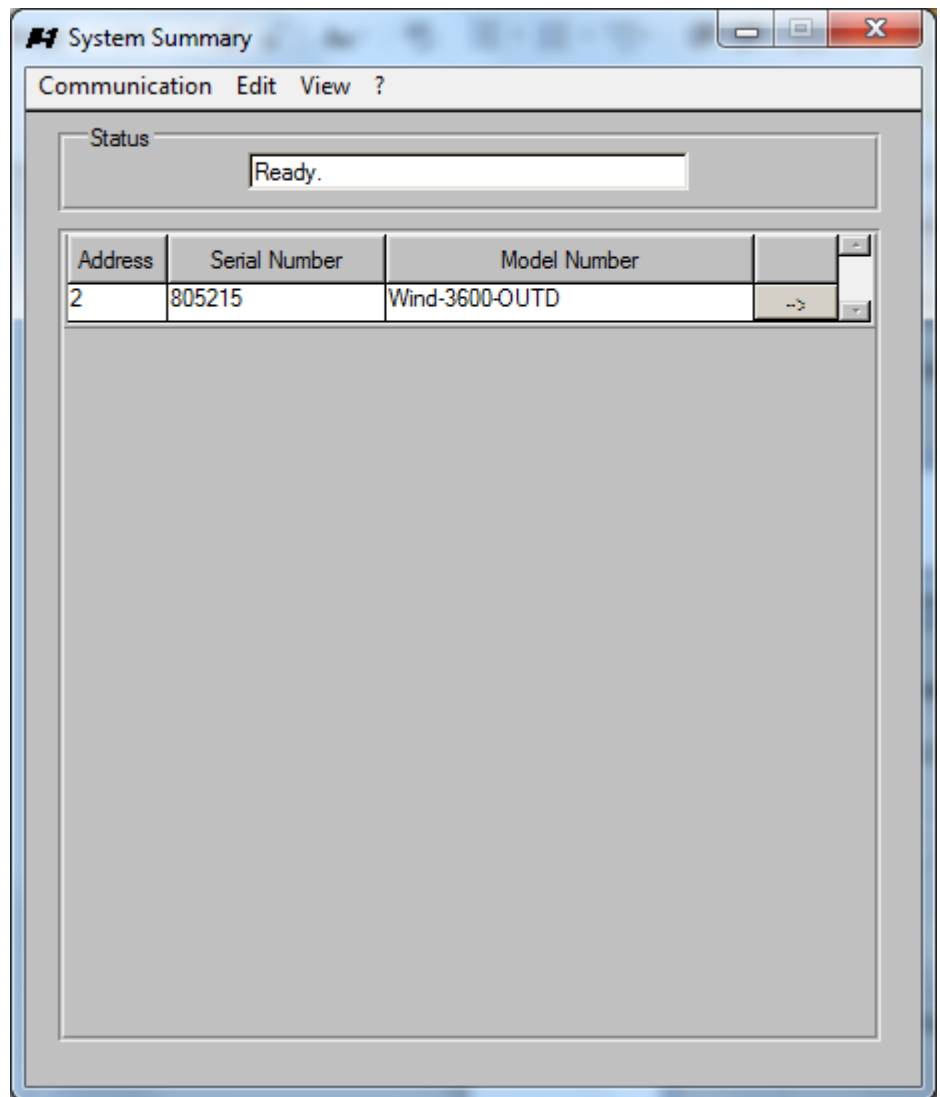
That should bring you to this screen; Select the COM port you wish to use, and select the number of inverters that are connected.

**Com Port** – Usually only one option is present in the drop-down menu. If you are unsure of which COM port to use, you can find this in your device manager

**Number of inverters** - If you are doing this on-site with three inverters daisy chained, you should set this to 3, otherwise set it to 1.

The System Summary screen will open next:

Select the inverter you wish to program/monitor and click the arrow (marked ->) next to it.



The software will ask what mode you wish to use:

If you are programming an inverter which has a transformer connected to it, you will need to select Advanced. Otherwise select Extended.

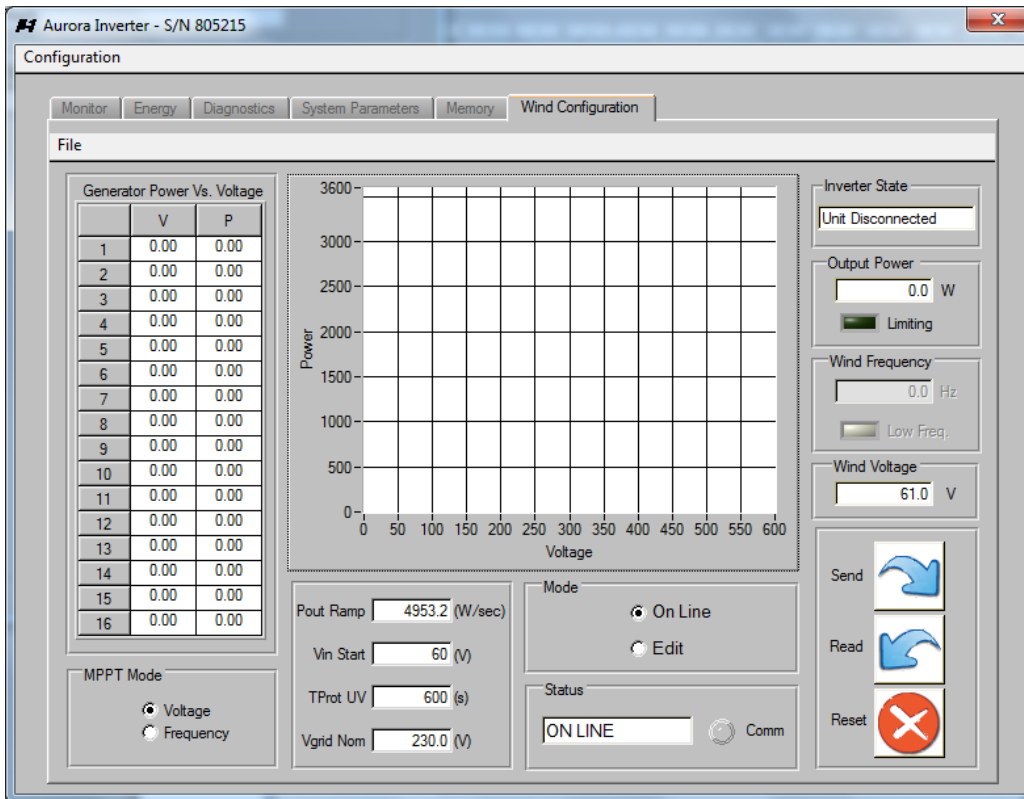
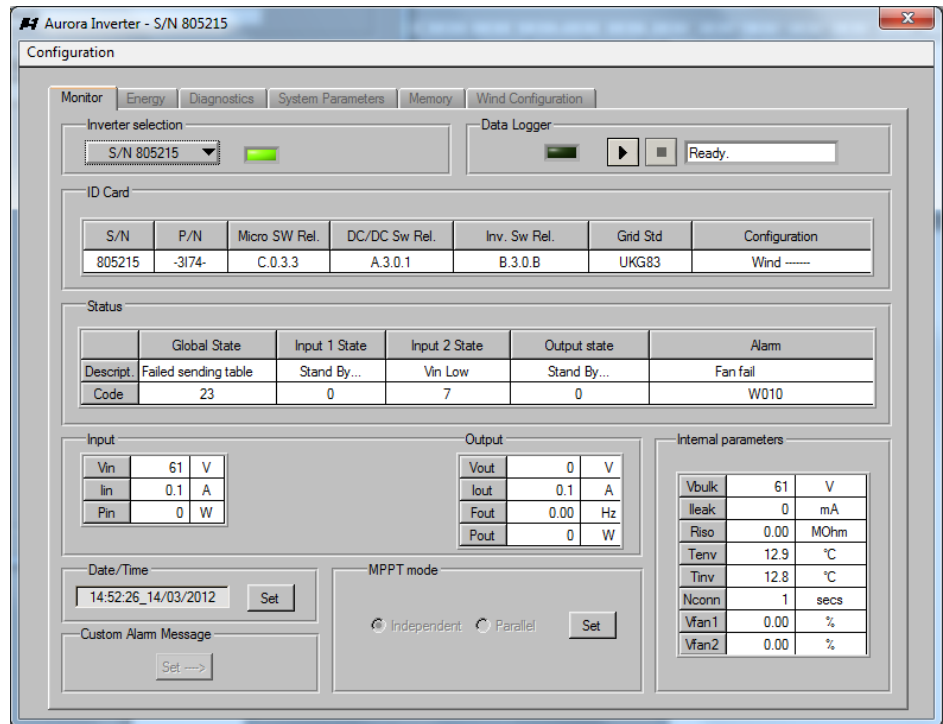
The password for extended mode is 05591. If you are using Advanced Mode, you will need the advanced password. We can supply this if we are provided with the serial number of the inverter. We only supply this data for inverters which are connected using a transformer.

The Monitor screen will load:

You can use this to monitor the inverter's output and input.

In the upper right corner there is a data logger function that allows the user to gather data. The configure tab at the top of this page allows you to configure the data logging function.

To program the inverter or upload a power curve select the wind configuration tab at the top right:



### Entering Power Curve Data

There are two ways to enter the parameters, manually, or by opening a file with the correct data.

### Manual Entry

To input a curve select Edit, double click in column1, row1 and enter the first voltage from your curve data and tab to the next cell enter value and so on, you do not need to fill all cells as 0 values will be ignored.

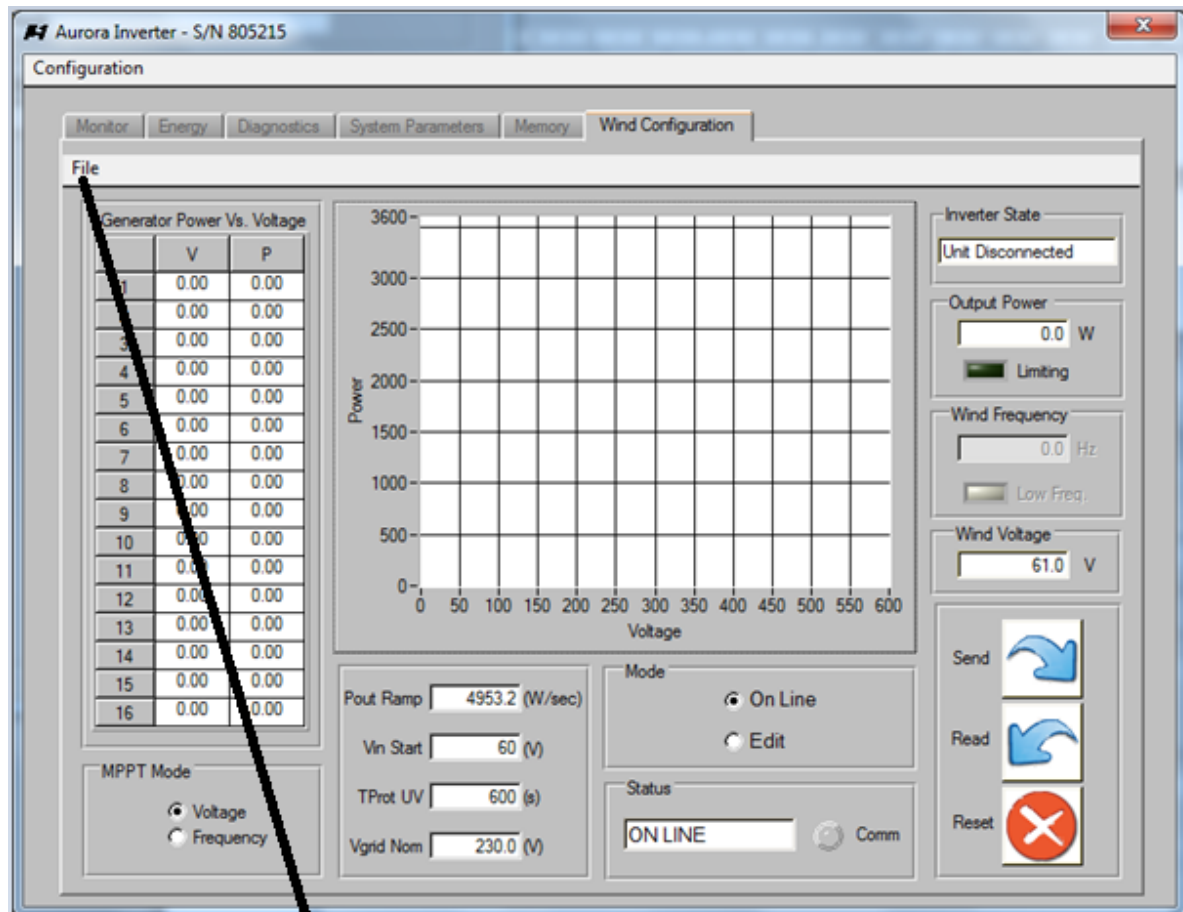
To load a previously used table select file, browse for your table and then load.

There are other settings available on this tab as follows;

- Pout Ramp is the rate at which the inverter can ramp up its power take off. Max setting is 9600watts/sec
- VinStart is the voltage at which the inverter will start inverting power.
- TProt UV – the inverter starts when it gets a voltage > 50V DC coming in from the generator circuit. However, once started, the inverter can be kept on stand-by for the length of time set by TProt UV (up to 1 hour)
- MPPT Mode – it is possible to use frequency rather than voltage to determine the power curve. This function only works when the unit is connected using an Aurora Wind Interface which has a frequency output to connect to the inverter.

Once you are happy with your power curve click Send. When sending is complete the Status bar will read Table Sent

## Loading a pre-written Power Curve Table



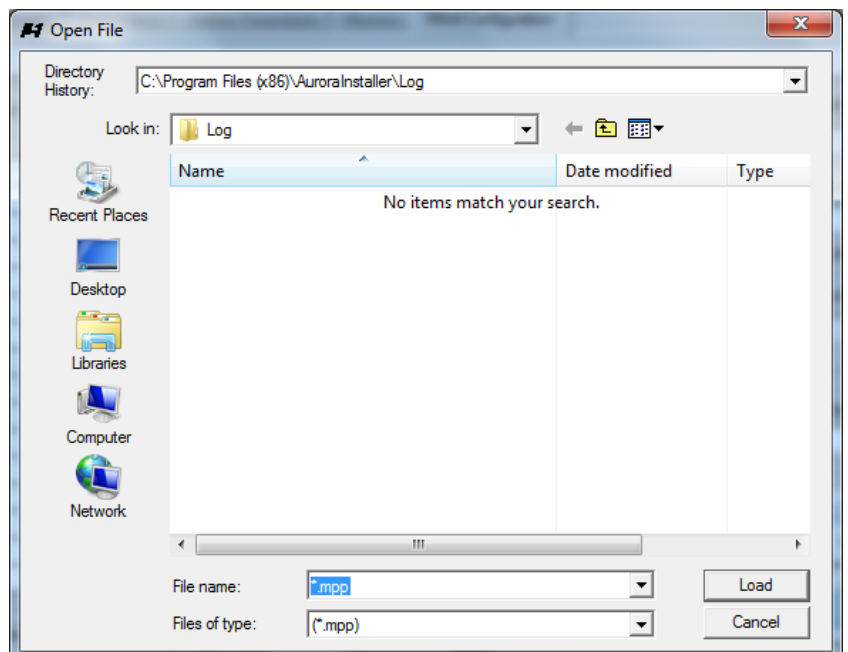
Press the FILE button here and select OPEN

This will open a box where you can locate the file for the inverter. This will be a file with the extension MPP. Browse to the location of the tables.

Double click on the file for the inverter you wish to programme. Inverters 2 and 3 are the ones with a transformer, inverter 1 is the inverter connected directly to the grid.

This will open up a power table and curve.

Click the SEND button near the bottom right and watch the status box. It should change to "Table Sent" momentarily.

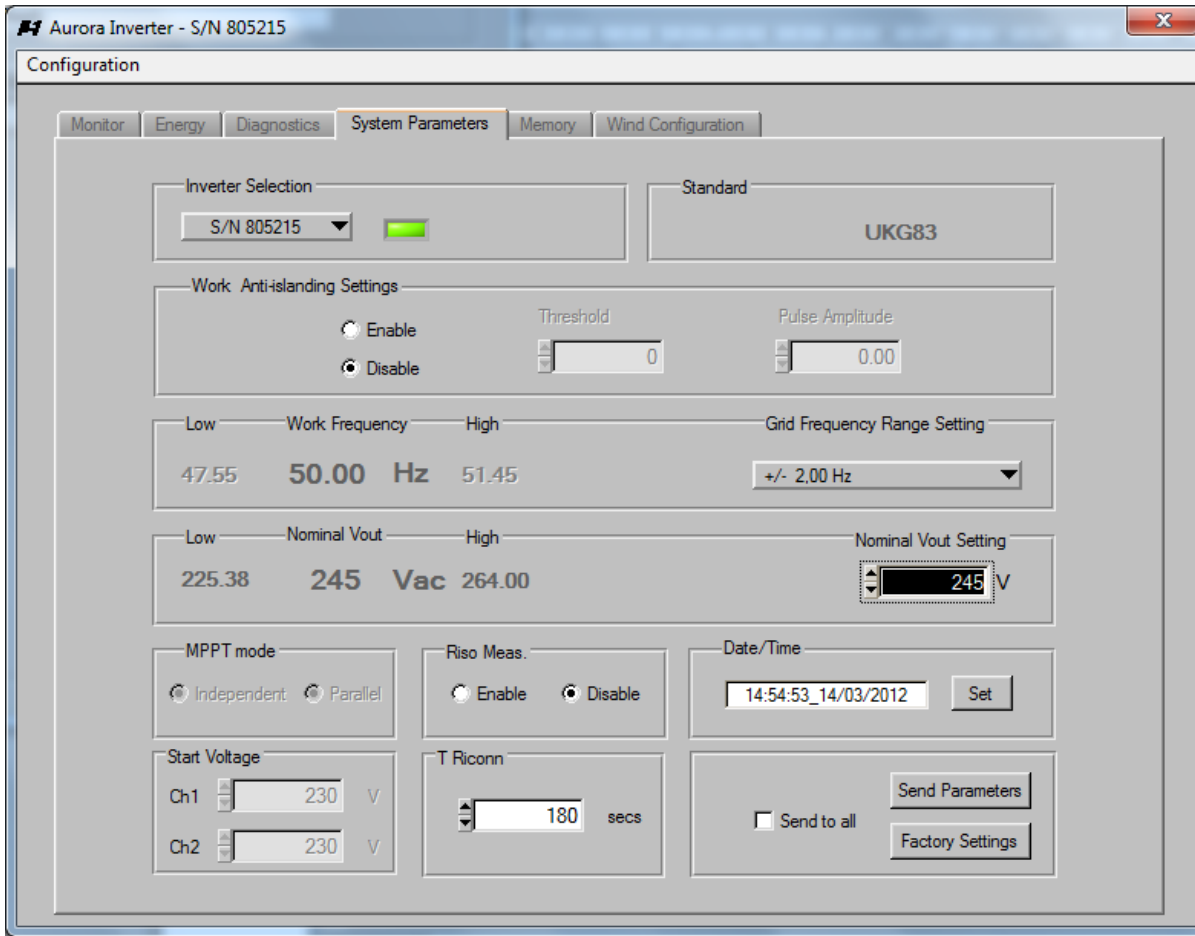


It is worth re-reading the table by clicking on the read button and verifying that the table has been read properly.

If you are working on number an inverter with no transformer, you may now exit the software. If you are working on inverters with transformers you must now change the system parameters as follows;

**FOR SAFETY REASONS, THE FOLLOWING PROCEDURES MUST ONLY BE CARRIED OUT ON AN INVERTER WHICH IS CONNECTED TO THE GRID VIA AN ISOLATING TRANSFORMER**

Select the System Parameters Tab



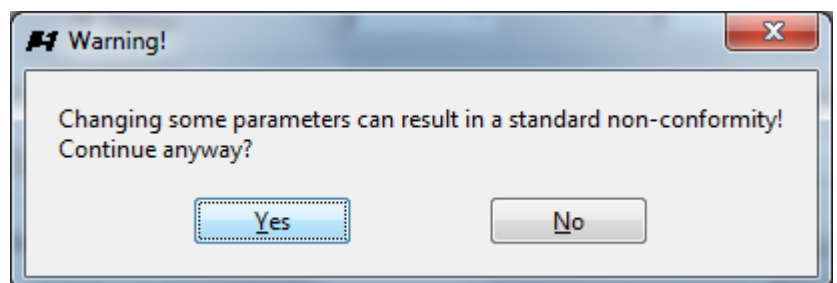
We normally do two changes here.

**Nominal Voltage** – the inverter will be connected to the OUTPUT side of the transformer. Its voltage will be slightly higher than the grid. We change the Nominal Vout Setting to 245 to prevent over-voltage trips.

**Riso Meas** – because we have a transformer, we do not measure Resistance of Isolation (RISO). Select the Disable tab for this.

Click on the Send Parameters tab near the bottom right. You will get the following warning screen;

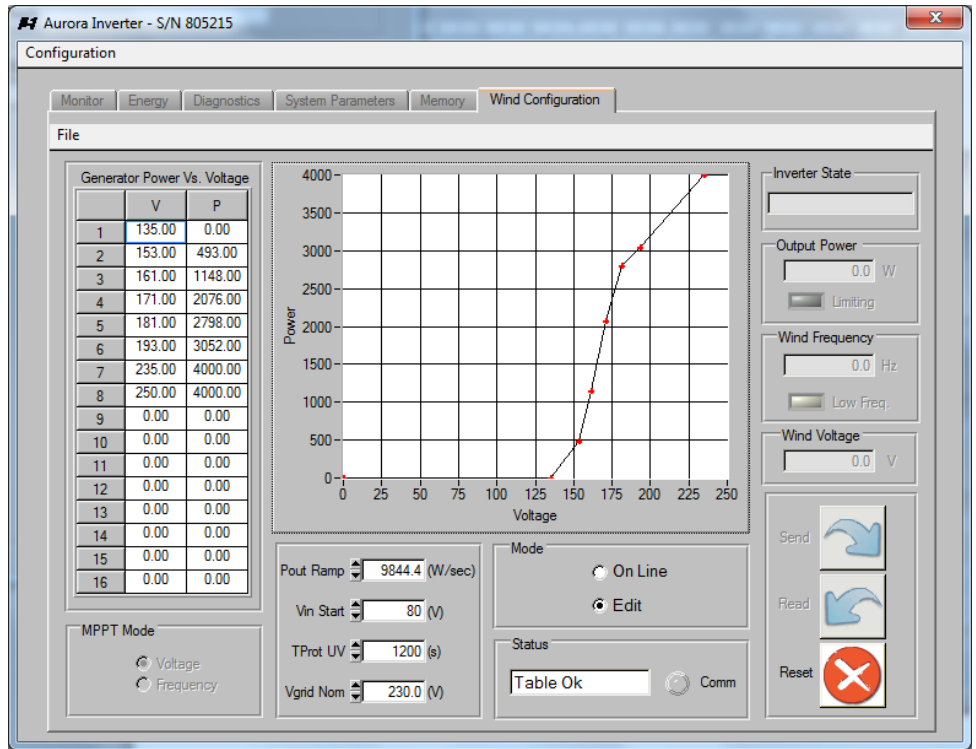
Click on YES.



Verify that Nominal Voltage has changed

You should now select the wind configuration tab and verify that the nominal voltage is 245. If not, do the following;

- Click on Edit
- Change VGrid Nom to 245V
- Click SEND
- Watch the Status until you see "Table sent"
- Click on Read
- Ensure that Vgrid Nom is at 245V



**Any time you change a parameter, you must repeat the procedure to disable RISO**

- Select System Parameters tab
- Ensure that nominal voltage is at 245
- Select Riso Meas Disable
- Click on Send Parameters
- Click Yes to the warning screen.