SOLAR RELAY

INVERTER CONTROL
with
FRONIUS SYMO / GEN 24

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Installation Overview

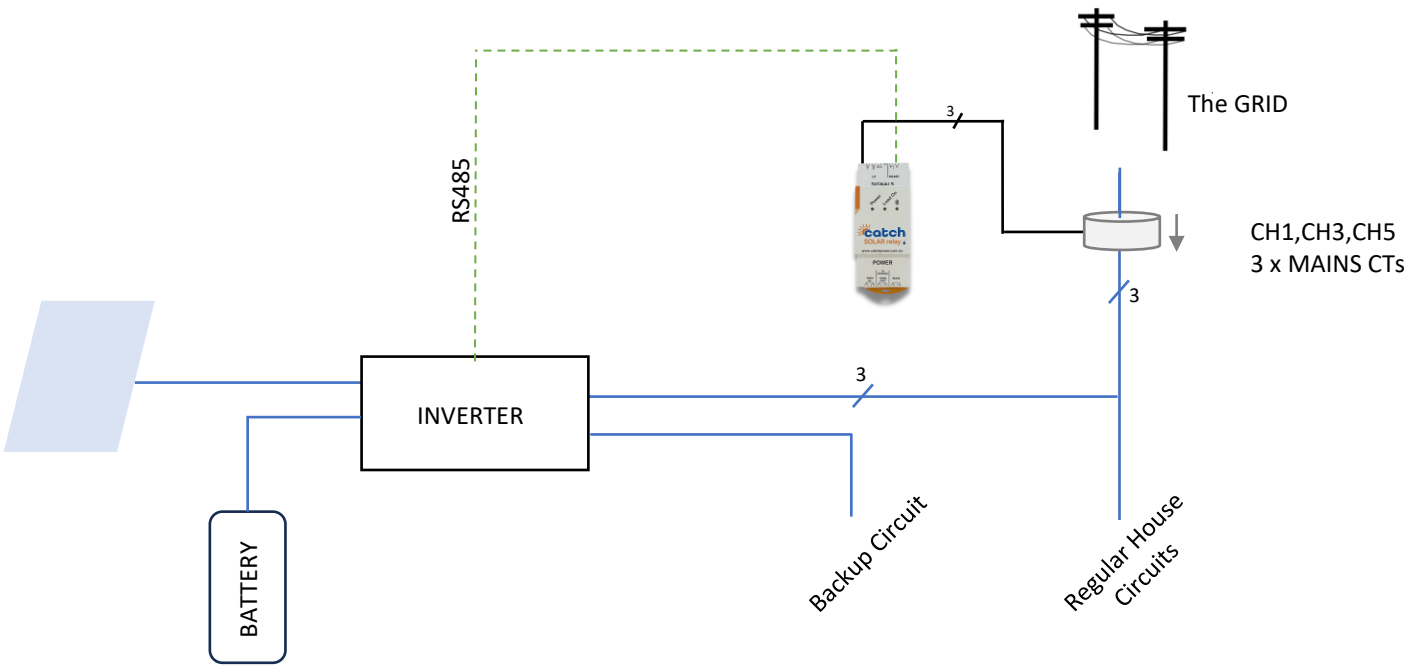
1. Install the Fronius Inverter as per the Fronius Installation Guide.
2. Install the CATCH Control as per the CATCH Electricians Guide.
3. Adjust the CATCH CT wiring as show in this document.
4. Connect the RS485 bus between the CATCH Control and the inverter as shown in this document.
5. Run the CATCH Commissioner wizard up to Step 6.
6. Complete the FRONIUS Commissioning as per Fronius install guide.
7. Setup the Fronius Inverter with a STATIC IP Address.
8. Turn on and configure modbus/TCP in the Fronius Inverter as outlined in this document.
9. Finish the CATCH Commissioner wizard.
10. Perform a SUNSPEC Scan in the CATCH Configurator to connect the CATCH Control to the Fronius inverter over the local network.

CATCH CT Arrangement

For Fronius installations it is not necessary to install Solar CTs. We will extract the solar production data from the SUNSPEC connection we make with the inverter.

You can use this CT to monitor another circuit if necessary.

If you do decide to use CT2,CT4, CT6 to monitor another consumption circuit make sure you specify the channel purpose as OTHER during the commissioning process.



CT1, CT3, CT5 to go around the MAINS

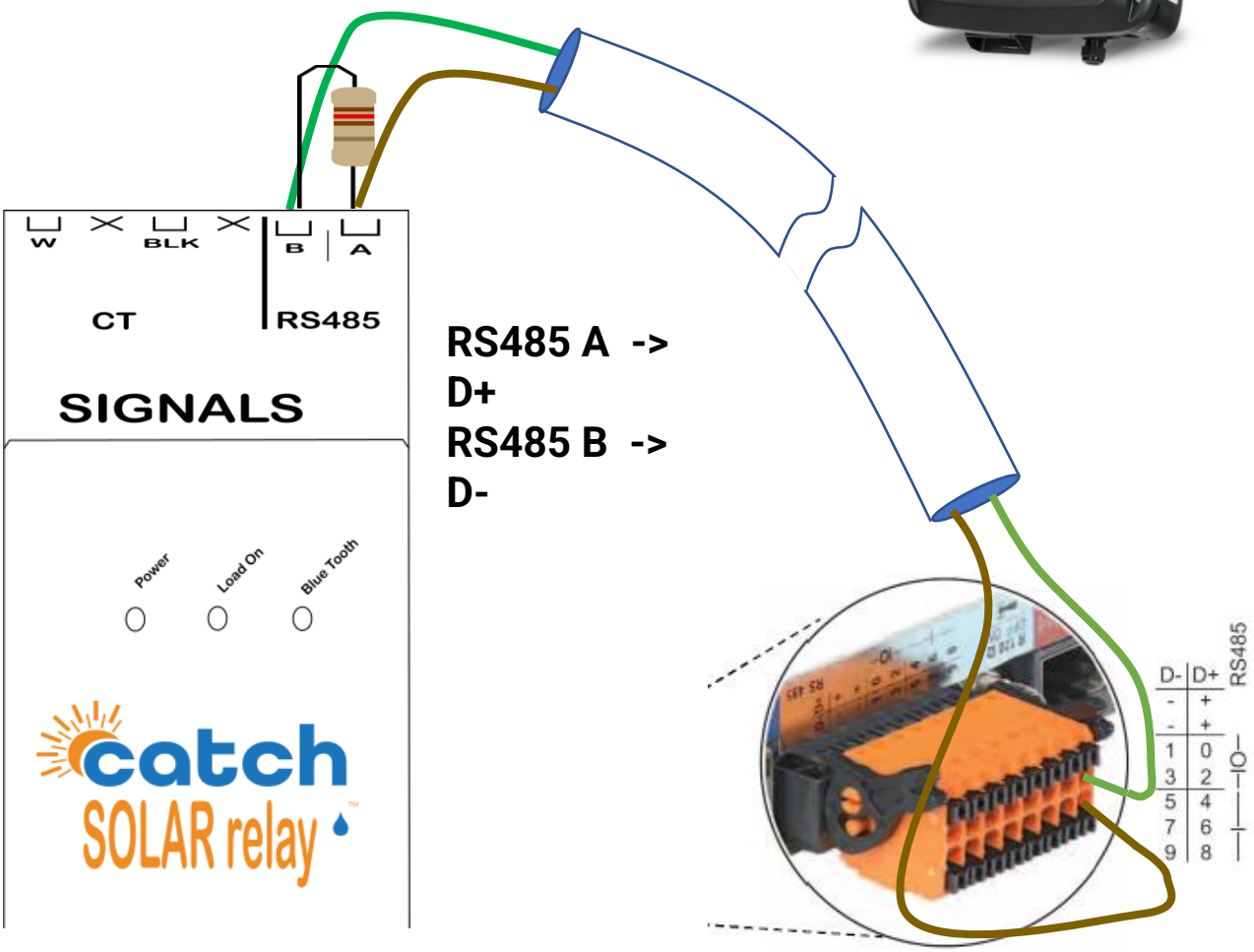
IMPORTANT

This guide discusses the specific wiring and configuration need to implement inverter control. Ensure the installation guide for both products is also followed.

Connecting the RS485 – FRONIUS SYMO

Ensure the data cable is rated for the voltages it will be in close proximity to.
A 120 Ohm terminating resistor may be required at the CATCH Relay terminals as shown in the diagram below if the cable run is longer than 10m.

Connect the RS485 Cable to the Fronius Data Manager 2 as shown.



IMPORTANT

This guide discusses the specific wiring and configuration need to implement inverter control. Ensure the installation guide for both products is also followed.

Connecting the RS485 – FRONIUS GEN 24

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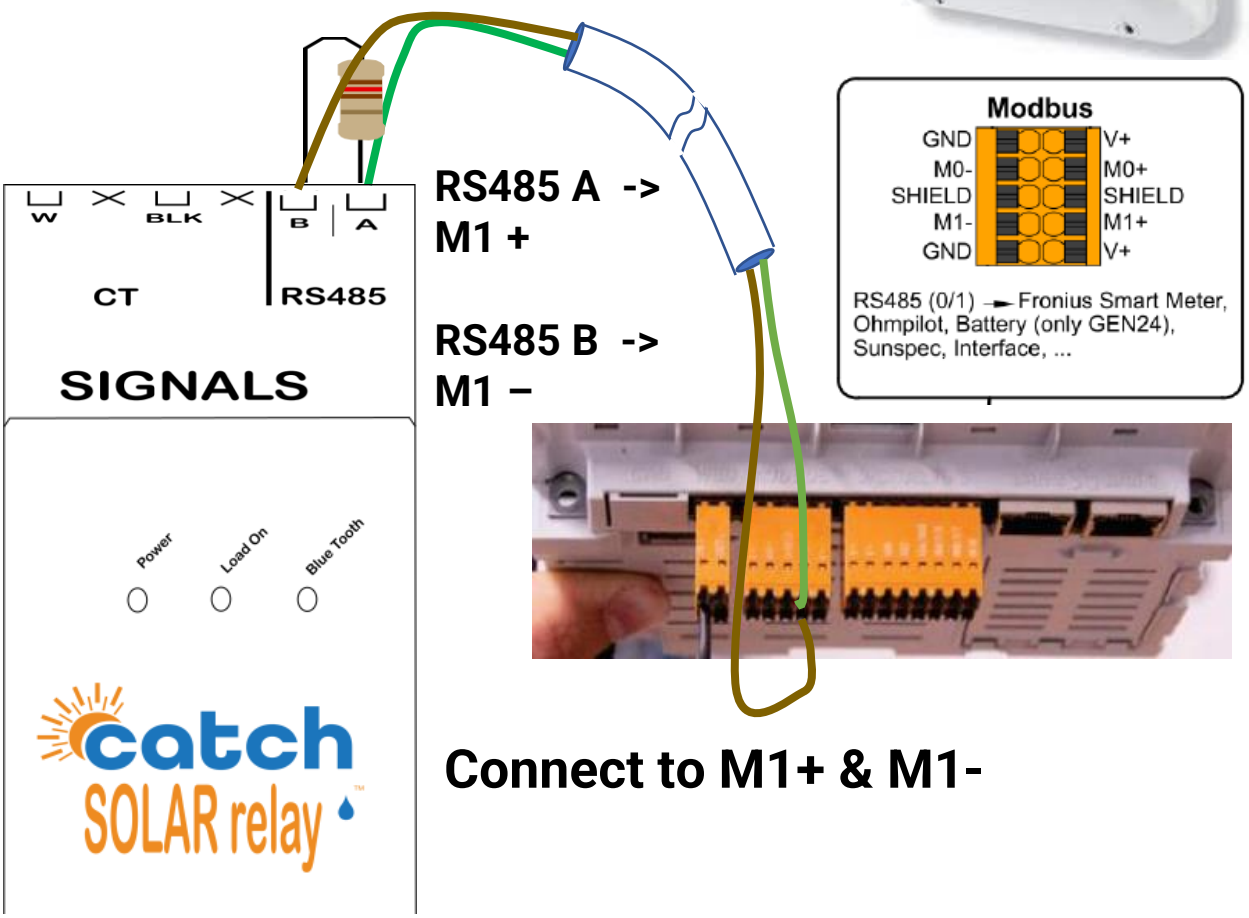
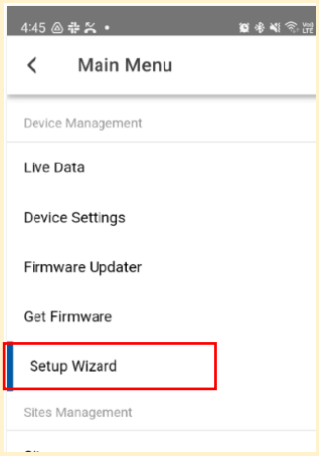
Connect the RS485 Cable to the Fronius Data Manager 2 as shown.



CATCH Commissioning Wizard

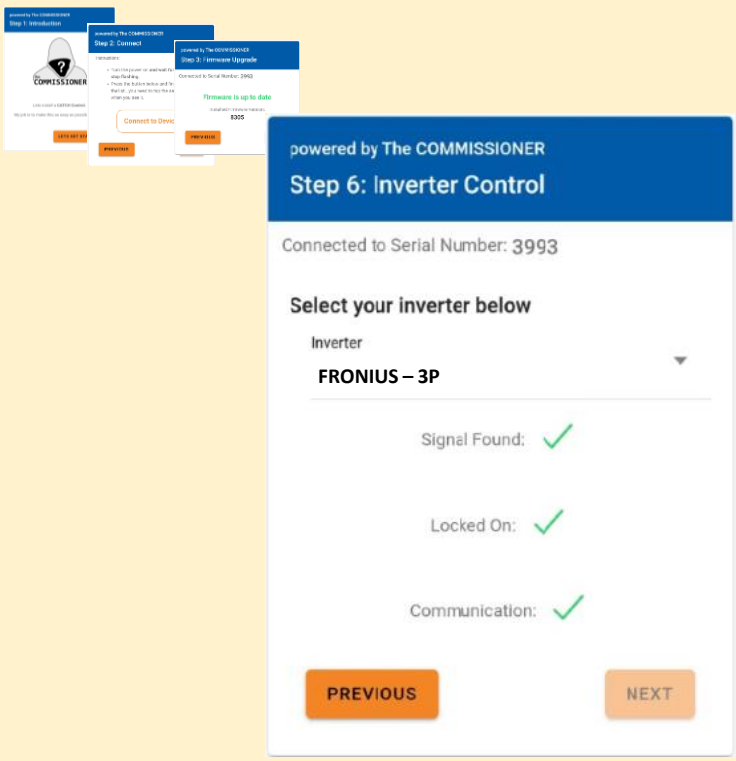
1. Log into the CATCH Configurator and run the Commissioner.

CATCH Power Configurator



2. Follow the Commissioner step by Step.

Step 6: Inverter Control
If you are installing a 3 Phase inverter choose **FRONIUS – 3P**



Choose: **FRONIUS – 3P**

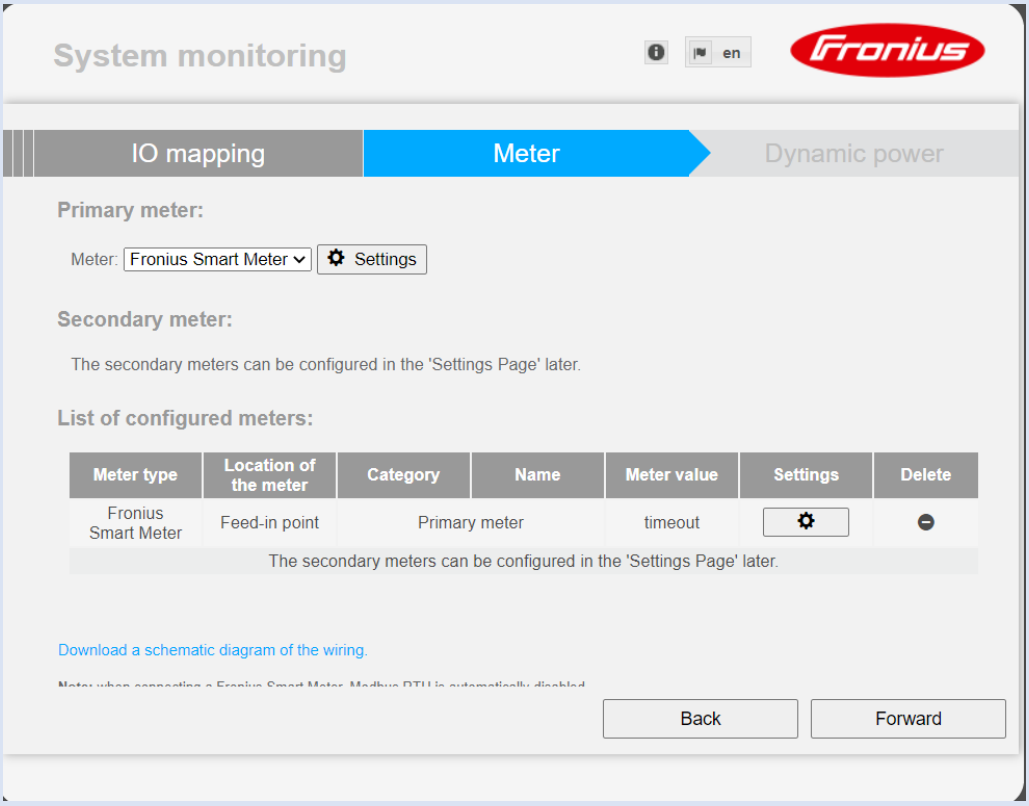
You will need to get All **GREEN** ticks before you can continue, but that wont happen until you commission the FRONIUS inverter, which is what we are going to do next.

Inverter Setup – PRIMO - METER

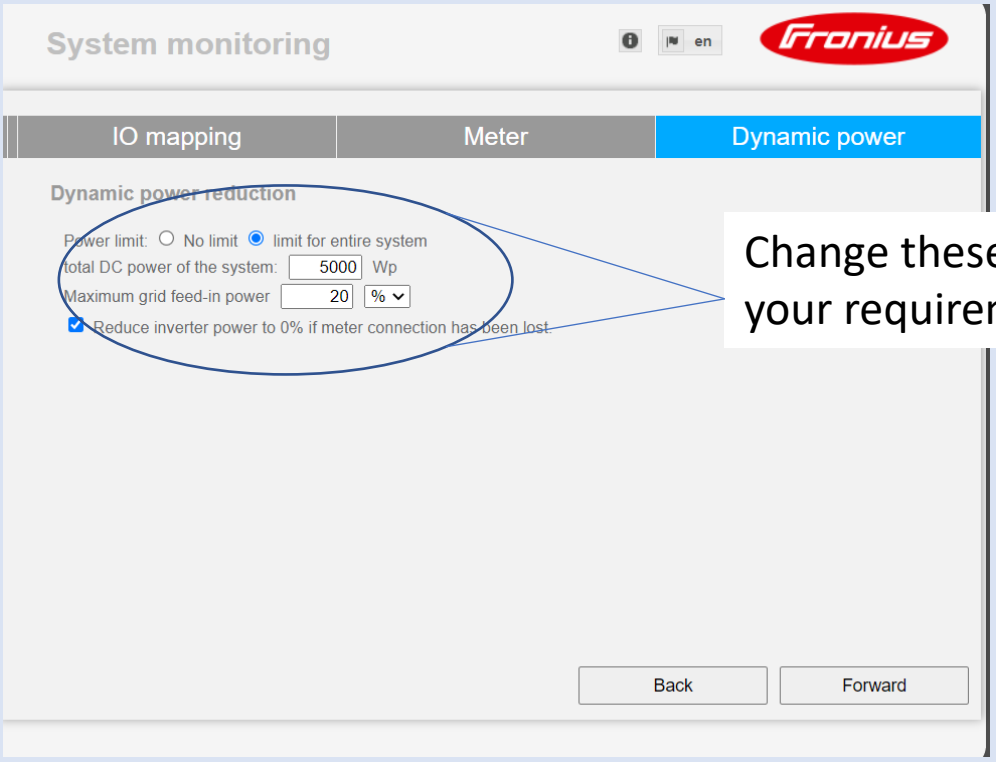
Setup the Inverter for export control exactly the same way you do with a regular Fronius Smart Meter.

1. Connect to the Web Configuration UI (http://192.168.250.181) and run the Technical Wizard.

2. When you get to the Meter setup enter the details as shown below.

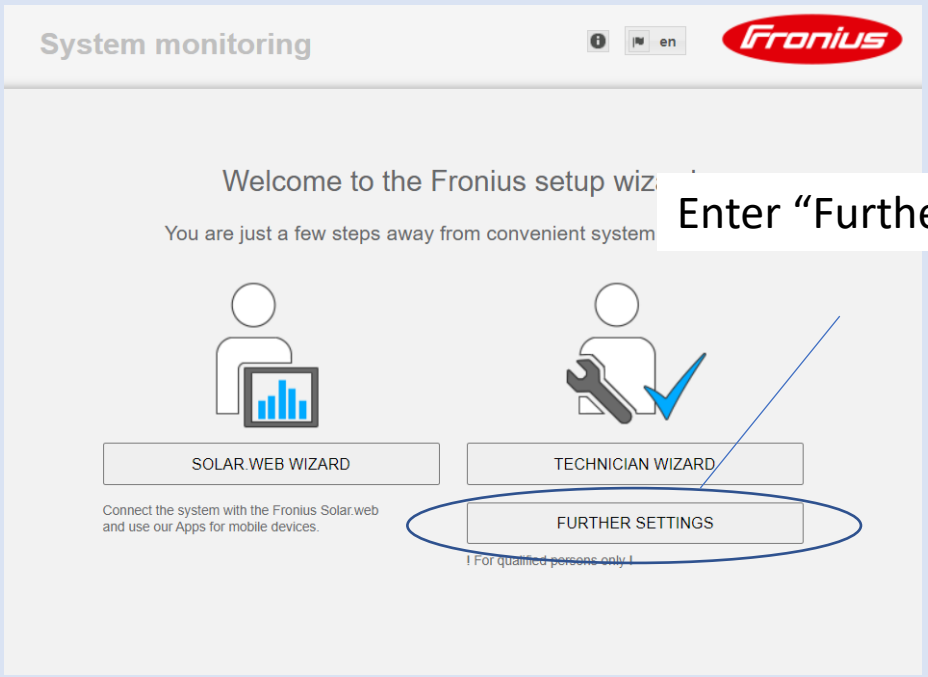


Inverter Setup – PRIMO - METER



Change these to suite your requirements

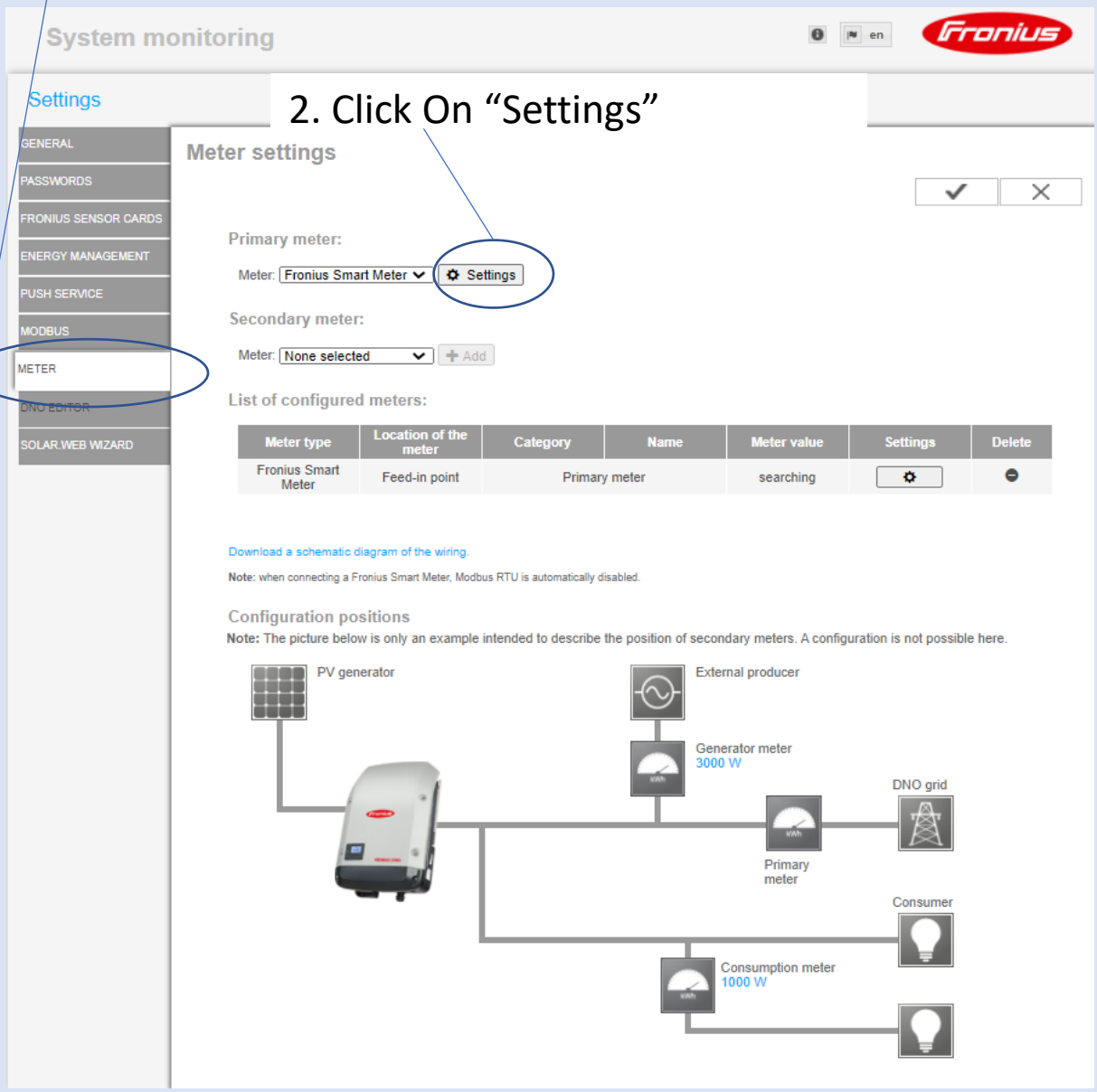
Inverter Setup – PRIMO - Meter



Enter “Further Settings”

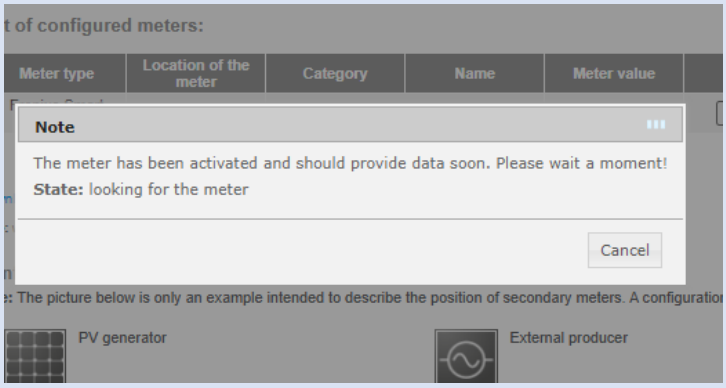
Inverter Setup – PRIMO - METER

1. Click On the Meter Tab

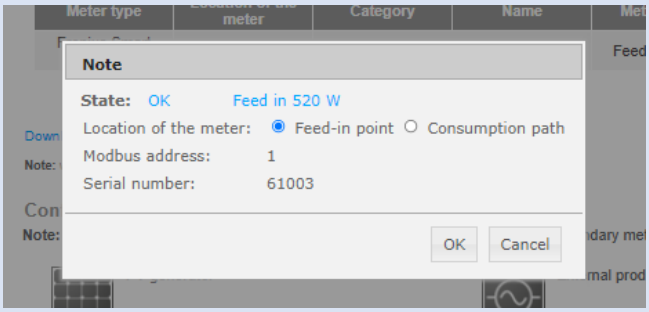


Inverter Setup – PRIMO - METER

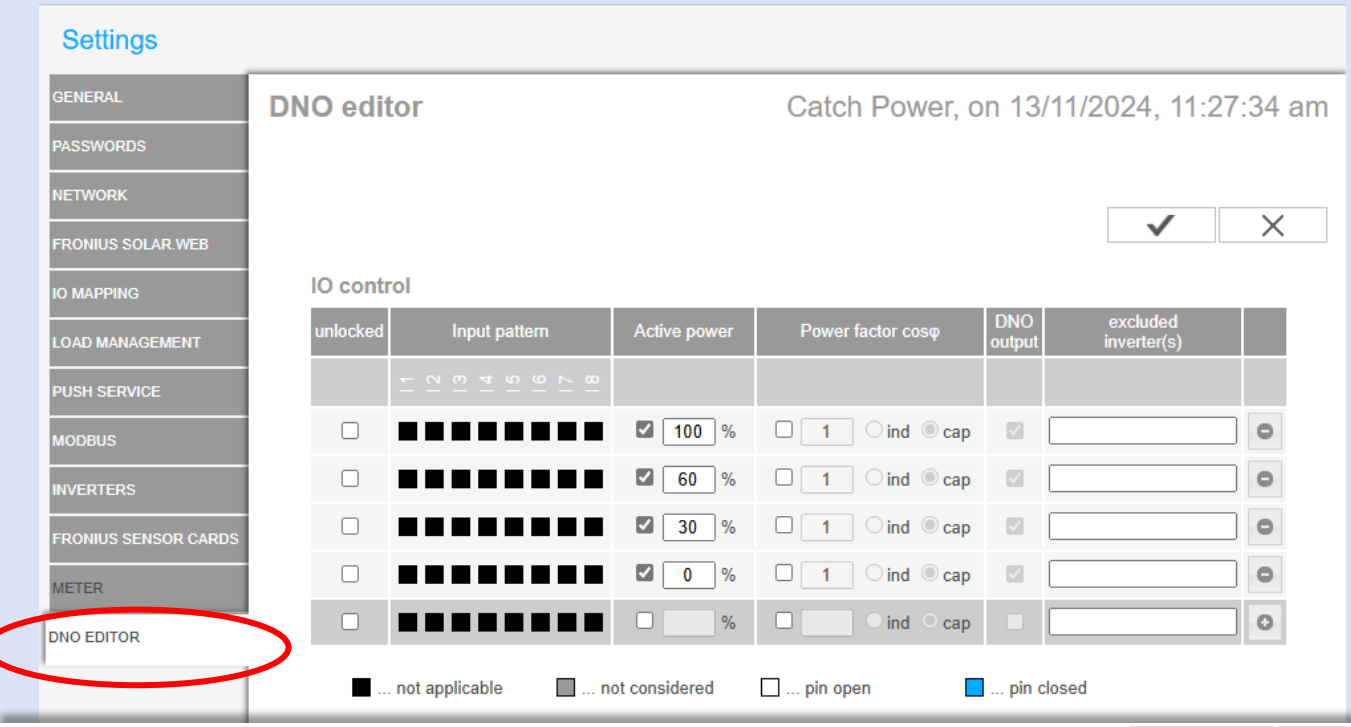
A message will appear as shown below. This will happen until the inverter has connected to the meter.

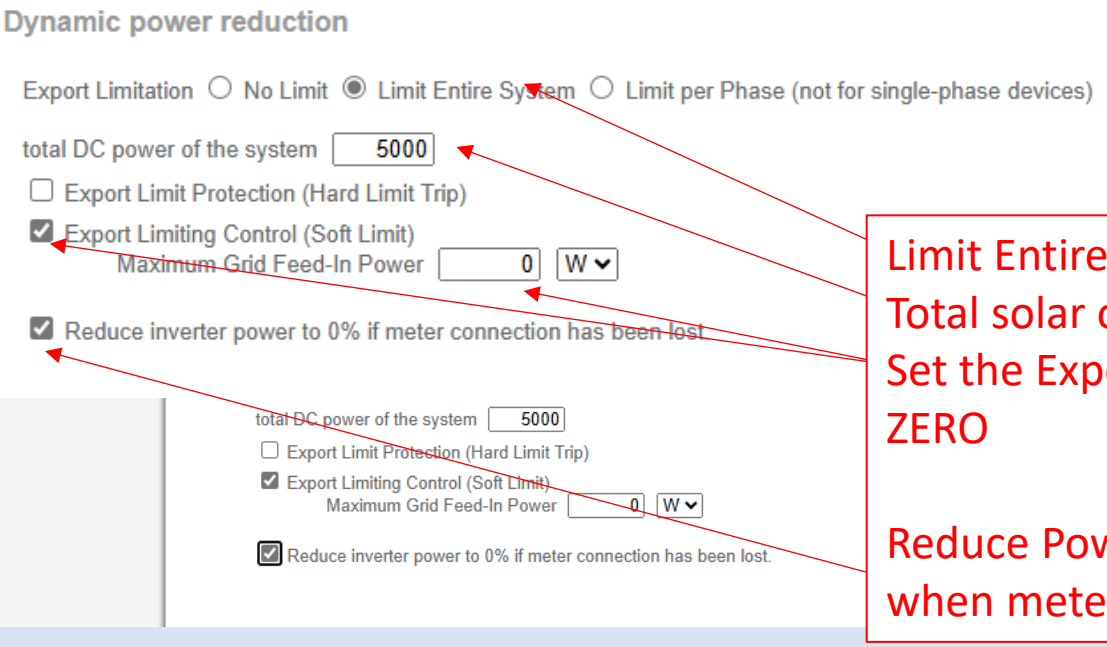


Once the inverter has successfully connected to the Solar Relay you will see this message.



Inverter Setup – PRIMO – ZERO EXPORT LIMIT

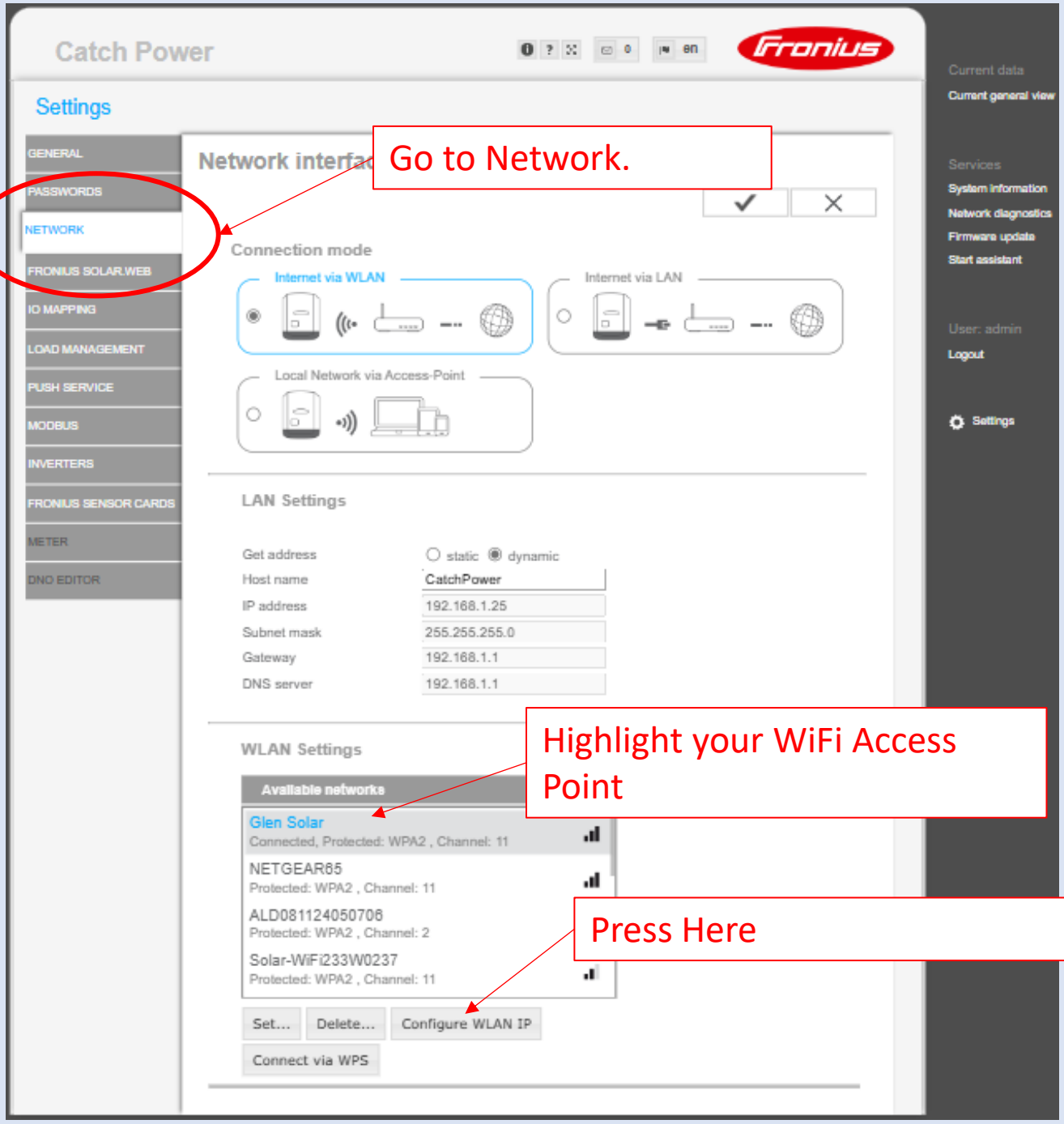




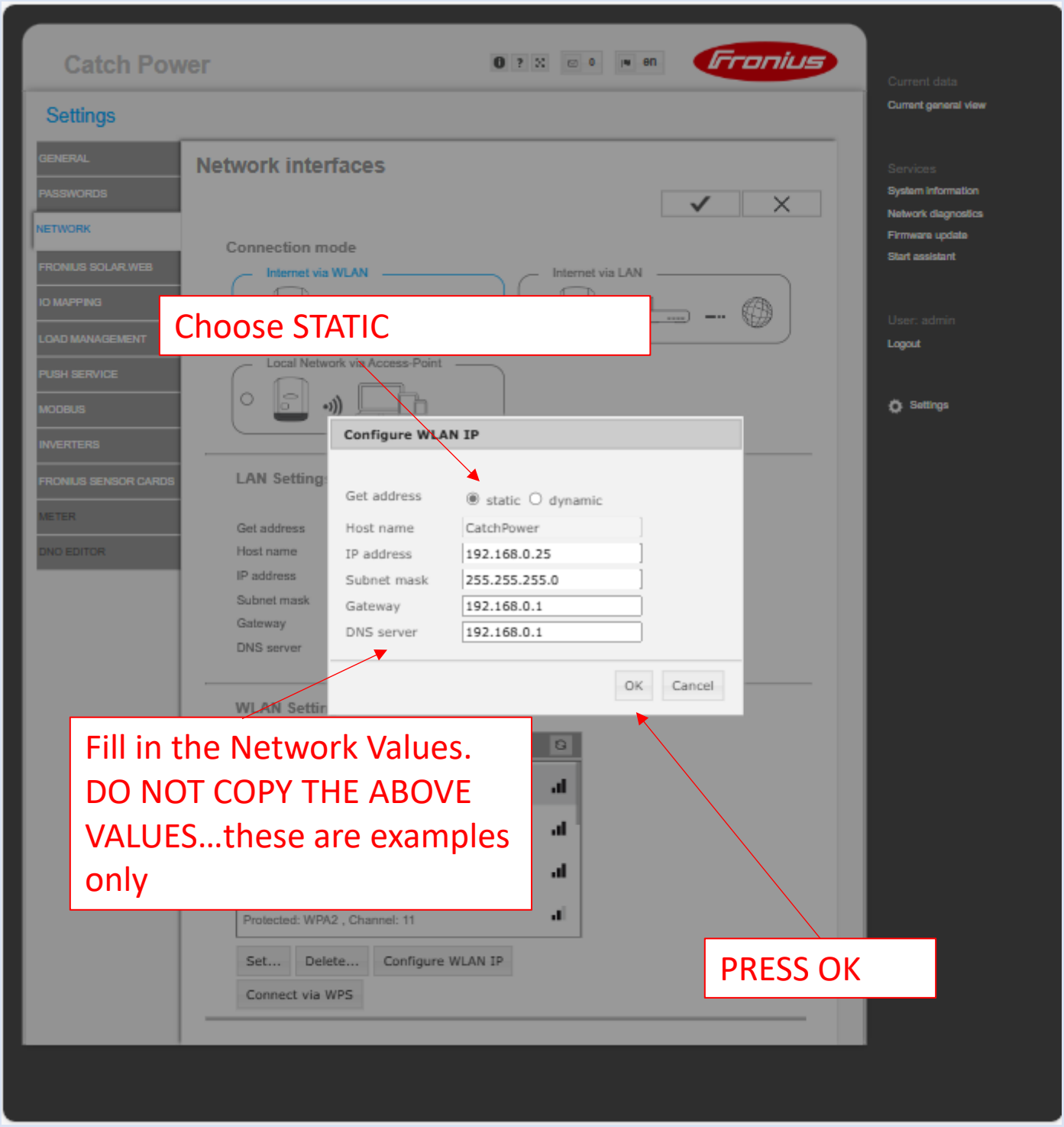
Limit Entire System
Total solar on premises
Set the Export limit to ZERO

Reduce Power to zero when meter is lost

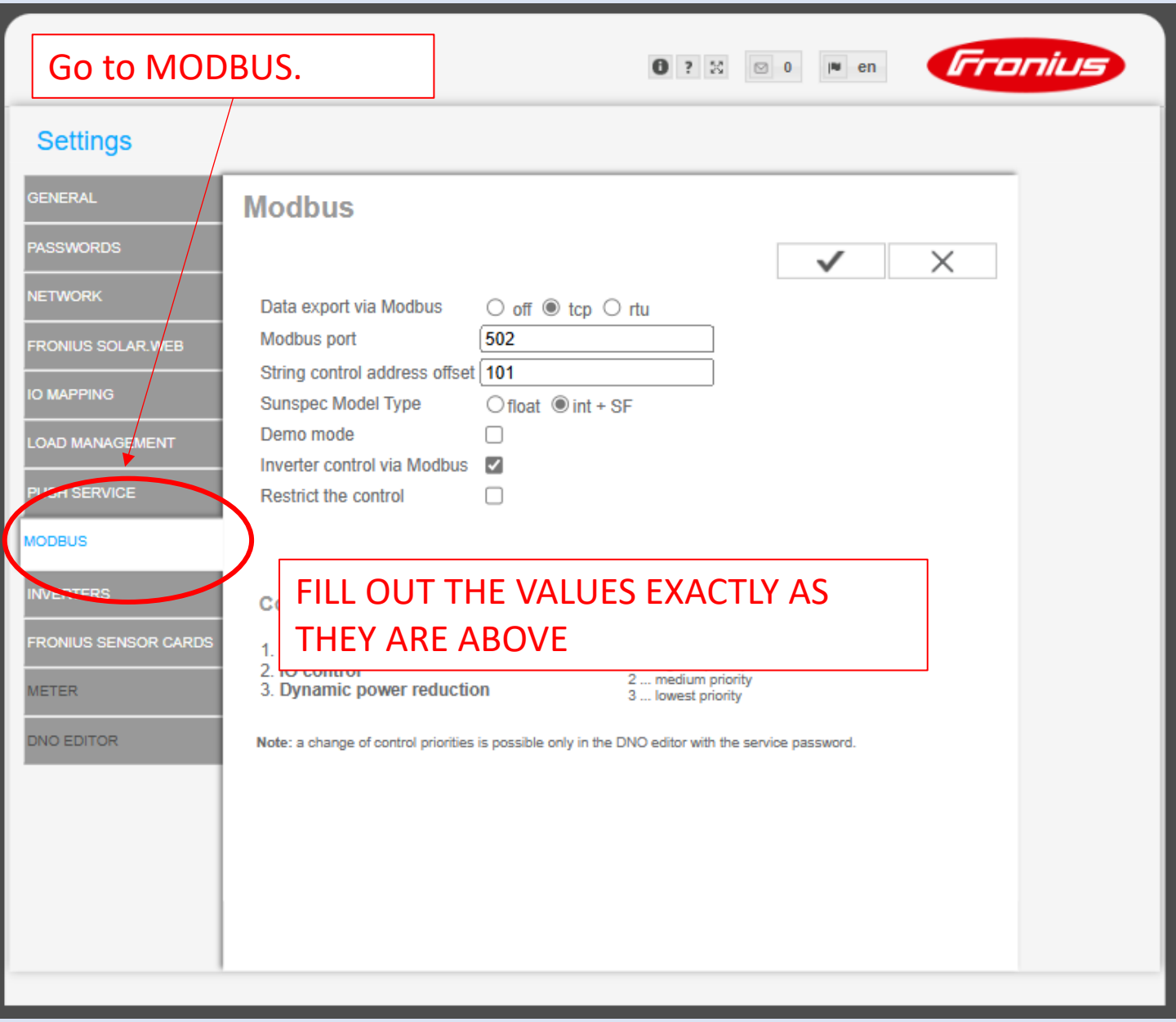
Inverter Setup - PRIMO – Set a static IP



Inverter Setup - PRIMO – Set a static IP

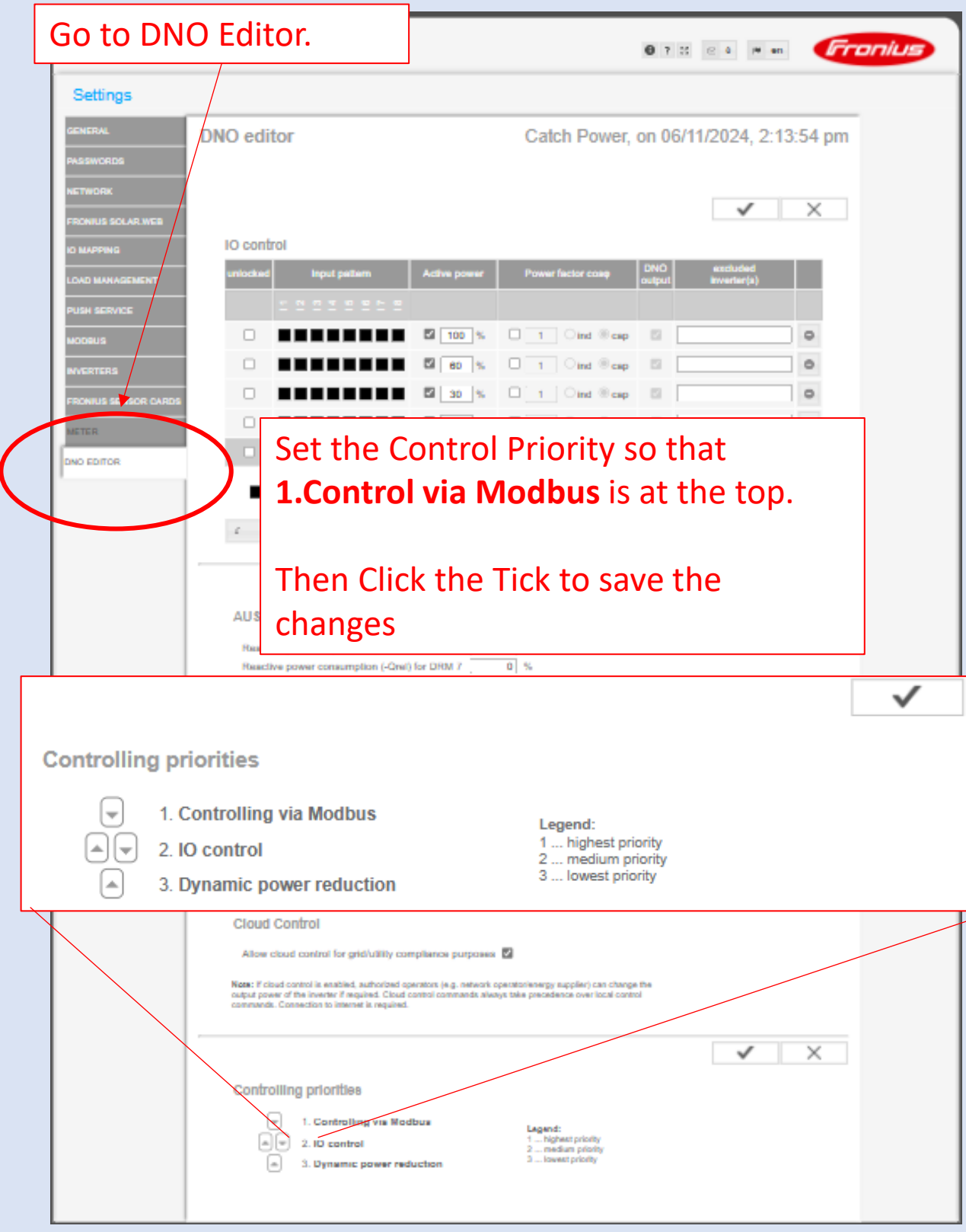


Inverter Setup - PRIMO – MODBUS/TCP



Inverter Setup - PRIMO – MODBUS/TCP

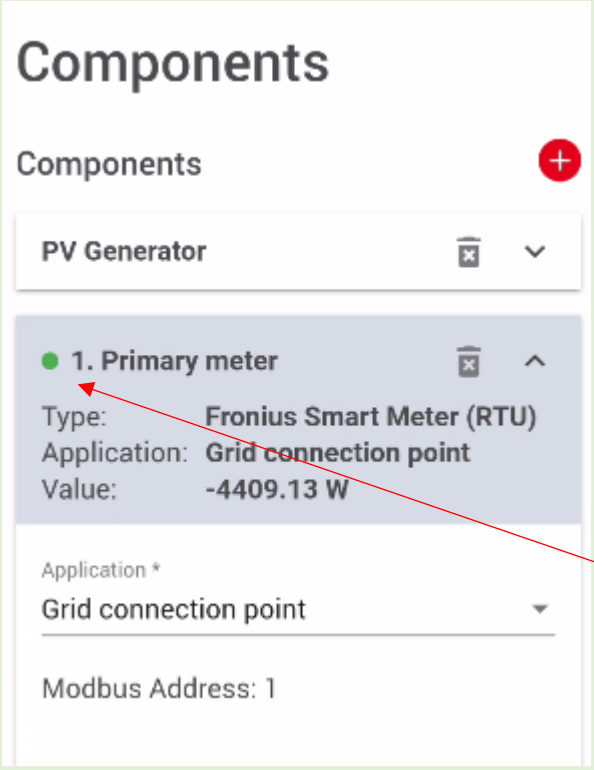
Go to DNO Editor.



Inverter Setup - GEN24 – METER

The setup is detailed using the Fronius **SOLAR.Start** phone APP

Navigate to **Device Configuration** -> **Components**



If the meter has not already been added. Press the red + and Choose “Power Meter”

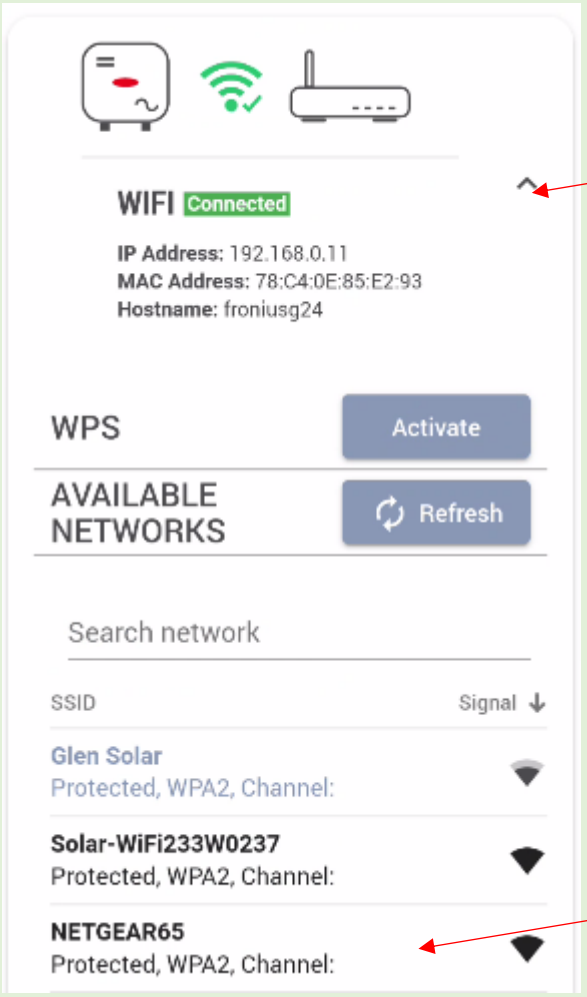
Application should be set to **Grid Connection Point**

A green Circle indicates the meter is communicating

Inverter Setup - GEN24 – STATIC IP

The setup is detailed using the Fronius **SOLAR.Start** phone APP

Navigate to **Communications** -> **Network**



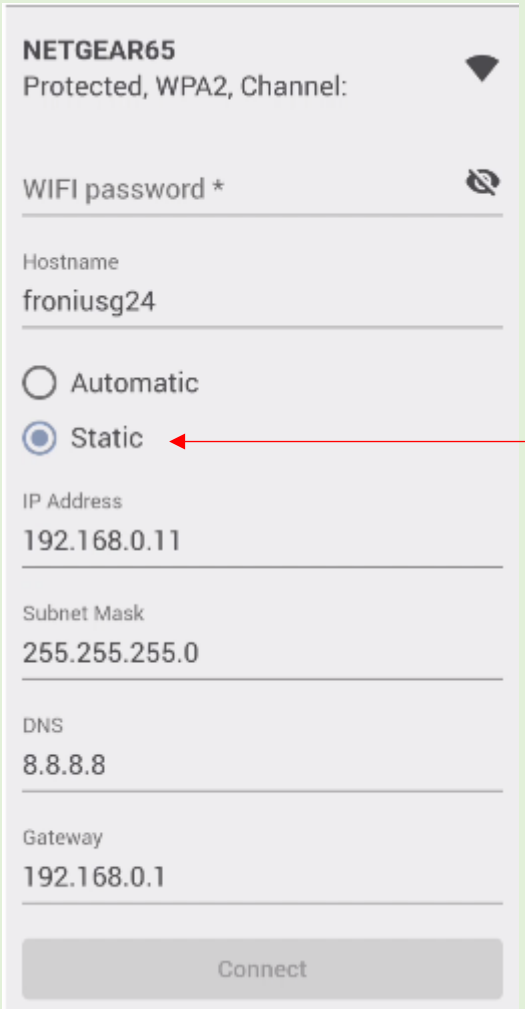
Expand the WiFi if the inverter is on the WiFi network, or expand the ETHERNET of the inverter is hardwired

Click on the WiFi Network that you want to set the static IP for. If you are already connected you will need to disconnect from the network first, then reconnect.

Inverter Setup - GEN24 – STATIC IP

The setup is detailed using the Fronius **SOLAR.Start** phone APP

Navigate to **Communications** -> **Network**



Fill in the WiFi password

Choose STATIC

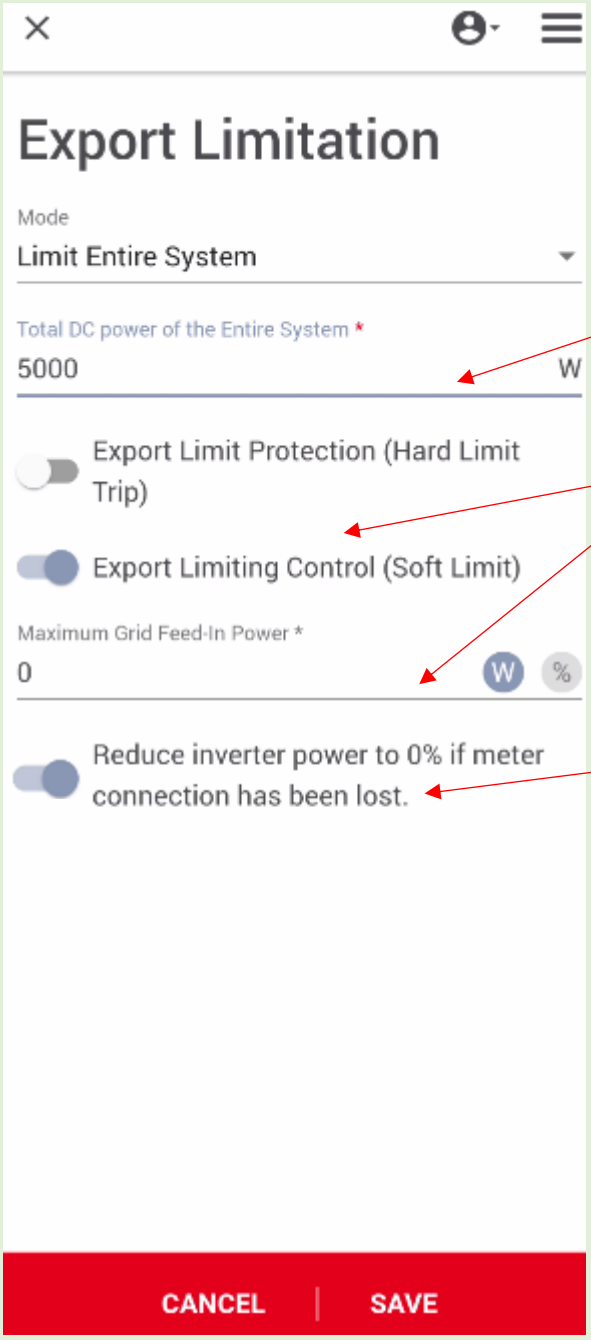
Specify the network details.

DO NOT USE THE VALUES YOU SEE HERE
These are examples ONLY.

Inverter Setup - GEN24 – SET EXPORT TO ZERO

The setup is detailed using the Fronius **SOLAR.Start** phone APP

Navigate to **Safety and Grid Regulations** -> **Export Limitation**



Put in the total size of ALL solar on site.

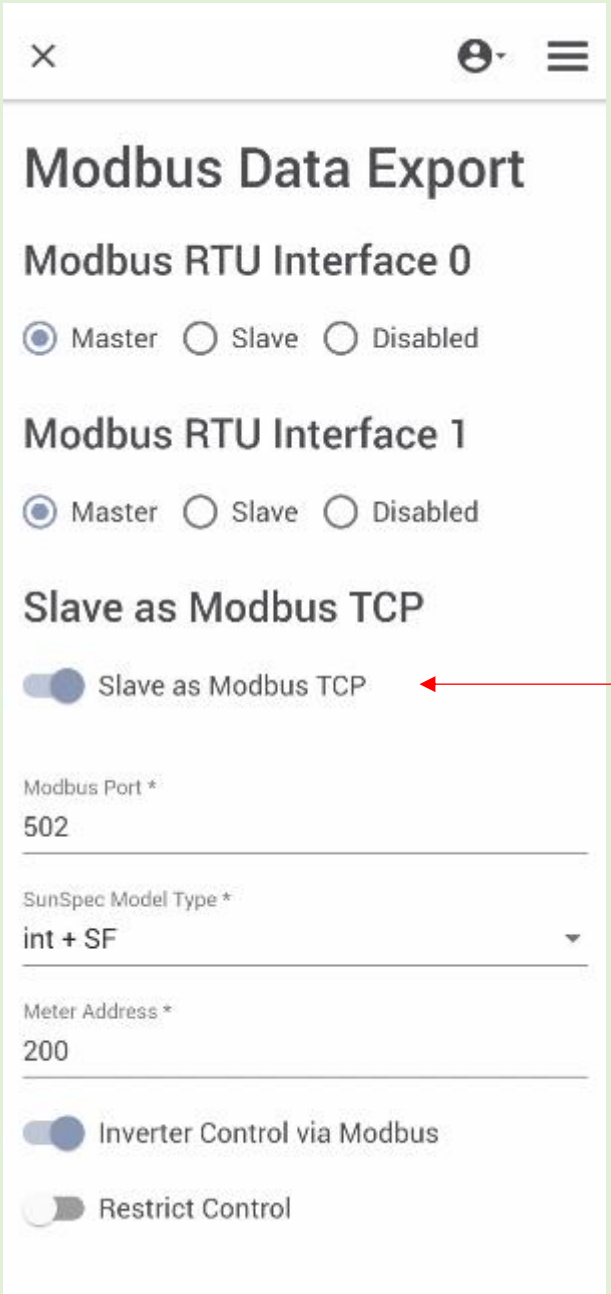
Turn on the Soft Limit, and set the export limit to ZERO

Turn this on

Inverter Setup - GEN24 – MODBUS/TCP

The setup is detailed using the Fronius **SOLAR.Start** phone APP

Navigate to **Communications** -> **Modbus**



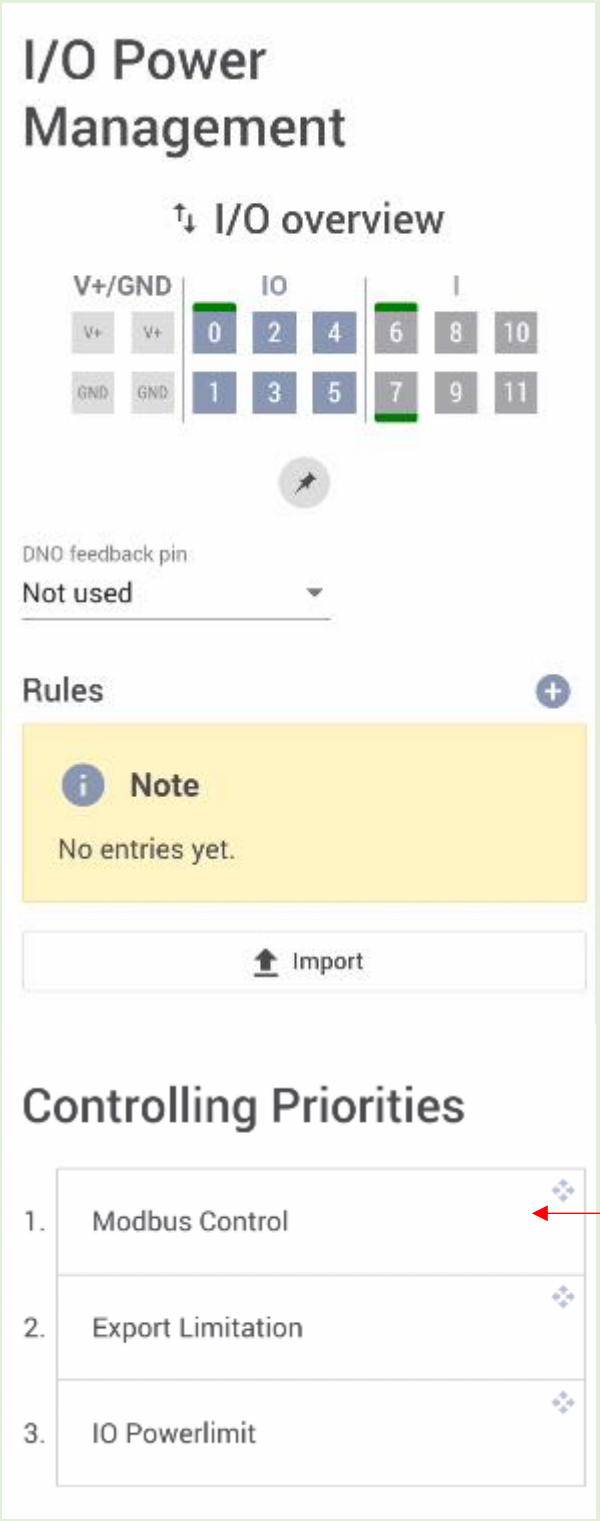
Turn on Modbus TCP

These values need to be exactly as you see here.

Inverter Setup - GEN24 – MODBUS/TCP

The setup is detailed using the Fronius **SOLAR.Start** phone APP

Navigate to **Safety and Grid Regulations** -> **I/O Power Management**

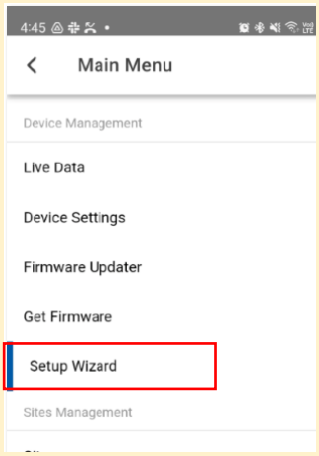


Make MODBUS Control the top priority

CATCH Commissioning Wizard

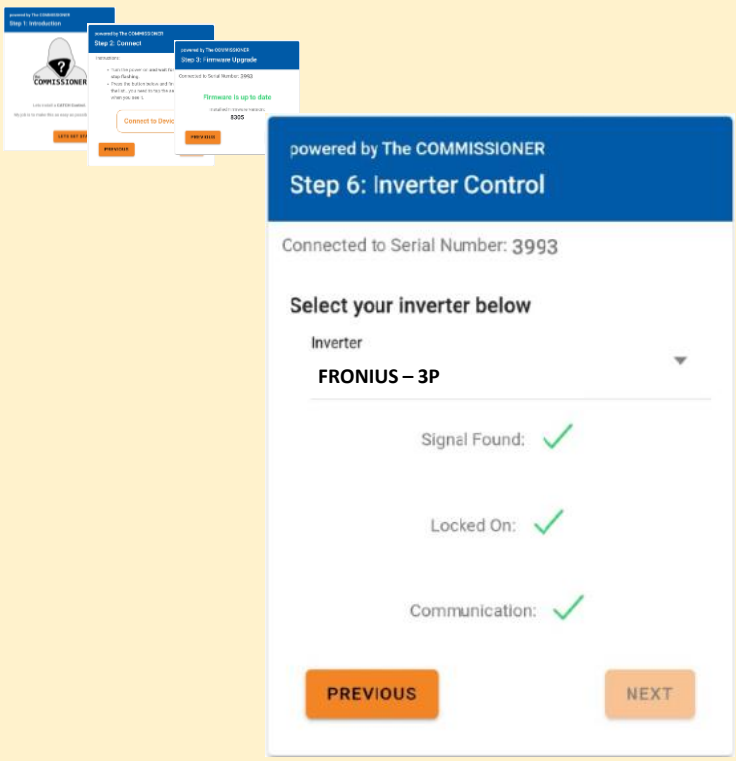
Now go back to the CATCH Configurator and restart the wizard.

1. Log into the CATCH Configurator and run the Commissioner.



2. Follow the Commissioner step by Step.

Step 6: Inverter Control
This should already be set to FRONIUS, when you get 3 green ticks you can continue the commissioning process



Choose: **FRONIUS – 3P**

You will need to get All **GREEN** ticks before you can continue.

CATCH Control Setup

Step 7: Channel Setup
You will need to make sure the channels are assign the way you installed them. If you followed the CT Arrangement above then the assignment will be:

MAINS: CH1, CH3, CH4

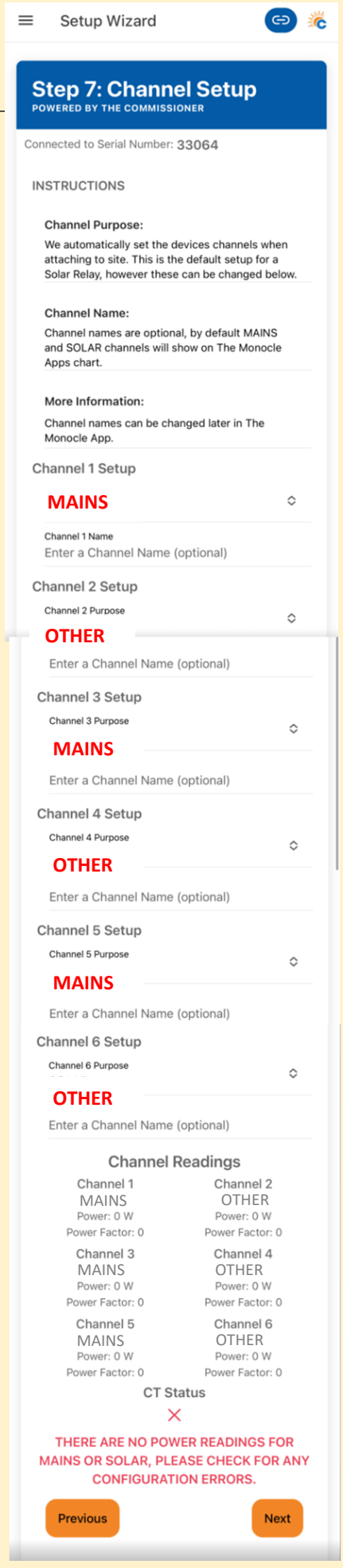
OTHER: CH2, CH4, CH6

The CT Channel readings appear below. The wizard will attempt to check the CT's for any errors, but it is not perfect. You may get a red cross when things are correct. If you are sure you are right you can move on.

<u>Things to Check yourself:</u>

Bad Connection:
If there is a bad connection on one or both CT wires you will get either ZERO or VERY HIGH readings for Amps.

Lower power factor:
This typically means the CT is on the wrong phase and needs to be moved. This is only true if you have power above 500W. When there is little to no power, power factor will be low (almost zero), and this is normal. But if you have power above 500W and low power factor this is an indicator you have the CT on the wrong phase. You can either remap it in the configurator setup or physically move the CT.



CATCH Control Setup

Step 7: Channel Setup..continued

<u>Things to Check yourself:</u>

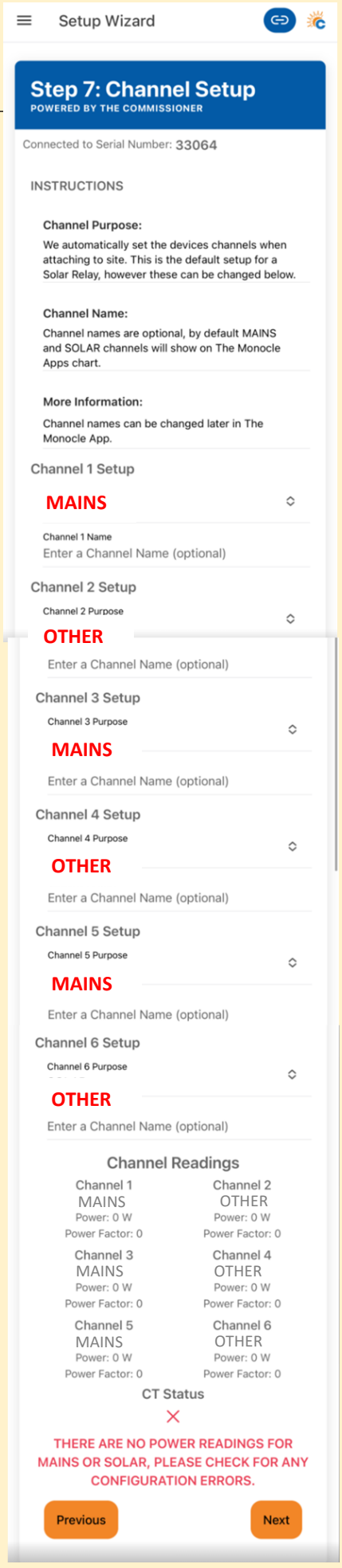
Incorrect Direction:
If the CT arrow is not pointing in the right direction your power numbers will be in the wrong direction.

With CATCH Control we show exporting power as a negative number and importing power as a positive number.

Pay special attention to the sign of the power numbers of each CT. The best way to check is to follow the procedure below:

1. Shut down all Solar and Battery systems.

   All MAINS ct's should show a POSITIVE power number.



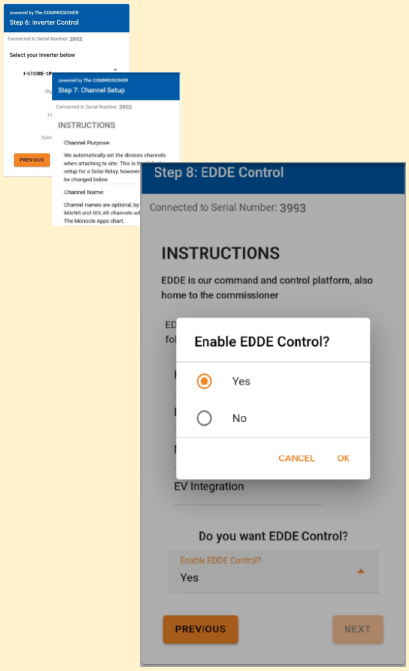
CATCH Commissioning Wizard

Now go back to the CATCH Configurator and restart the wizard.

Step 8: EDDE Control
choose if you want EDDE Control enabled.

You will need EDDE Control to be YES if you want any of the following features.

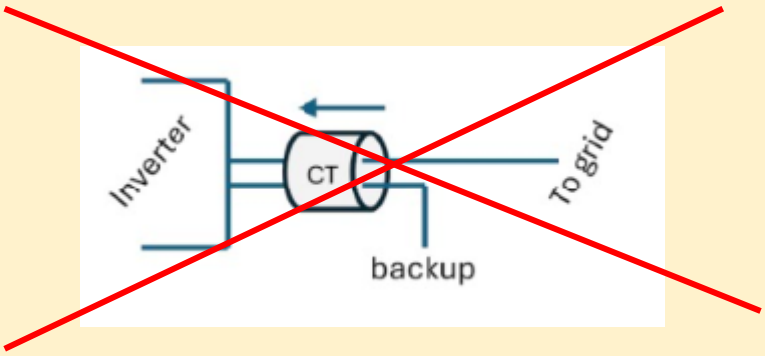
- Flexible Exports
- Inverter Control
- Market based pricing control such as AMBER curtailment
- EV Integration



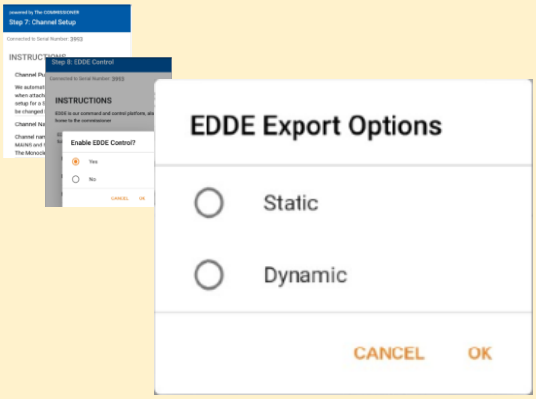
CATCH Commissioning Wizard

Step 9: EDDE Export Control
If you choose YES for EDDE Control we will take care of the site export limit, not the inverter.

IGNORE THE INSTRUCTIONS ABOUT THE SOLAR CT…YOU DO NOT NEED TO DO THIS.



Tell us how the export limit is to be managed.



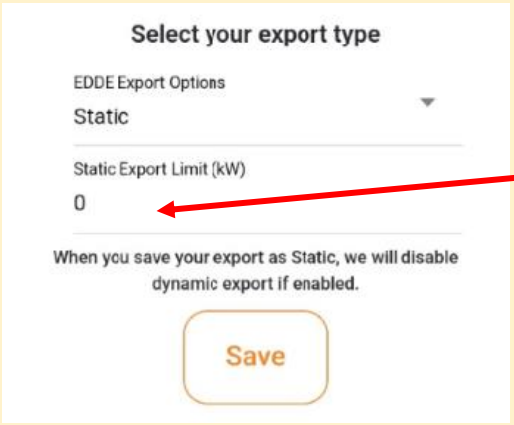
Static: Is when the DNSP tells you there is a fixed export limit. Example the connection application might say the site is limited to 5kW. This is a static export limit.

Dynamic: When you put the connection application in you would have nominated for the dynamic connection. The DNSP will adjust the export limit based on daily requirements.
You will need the NMI to complete the dynamic connection setup.

CATCH Commissioning Wizard

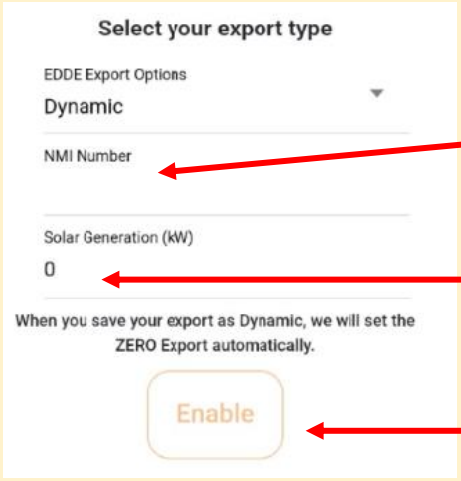
Step 9: EDDE Export Control..Continued

Static Export Configuration:



Fill out the export limit. For example if the site has a 5kw export limit type in 5 for the export limit and press **SAVE**

Dynamic Export Configuration:



Enter the customers NMI. This can be a 10 or 11 digit NMI.

Tells us the total amount of solar on site. Including any old systems.

Press Enable.

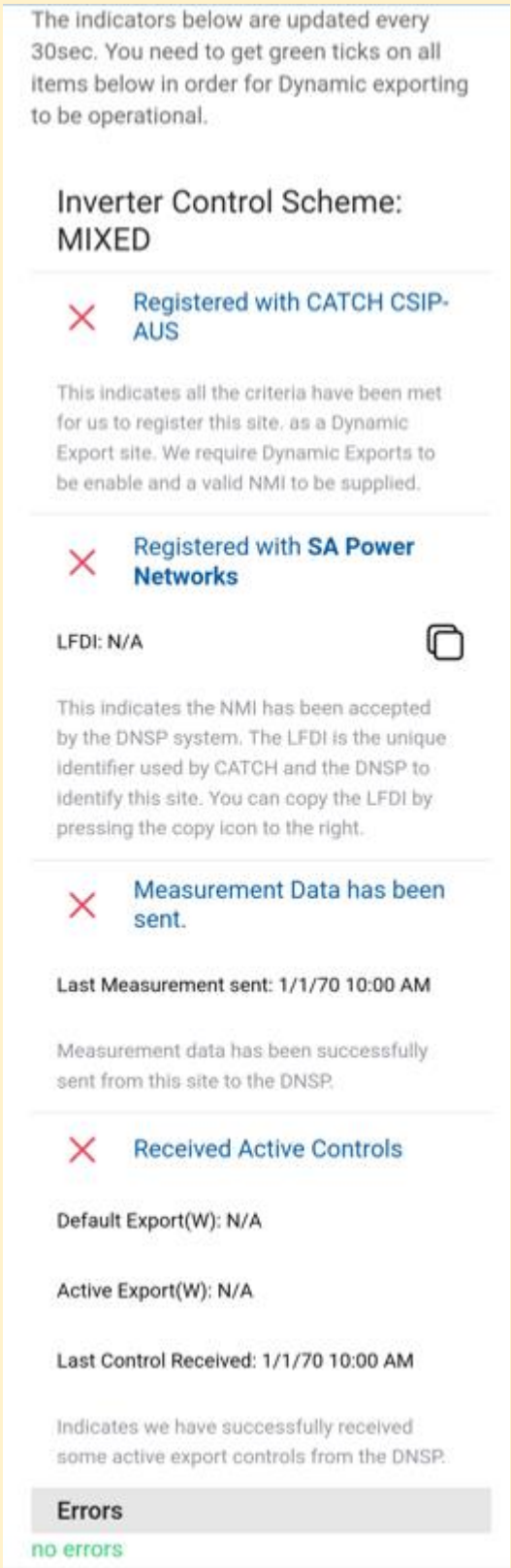
CATCH Commissioning Wizard

2. Follow the Commissioner step by Step.

Step 9: EDDE Export Control..Continued

<u>Dynamic Export Configuration - Continued:</u>

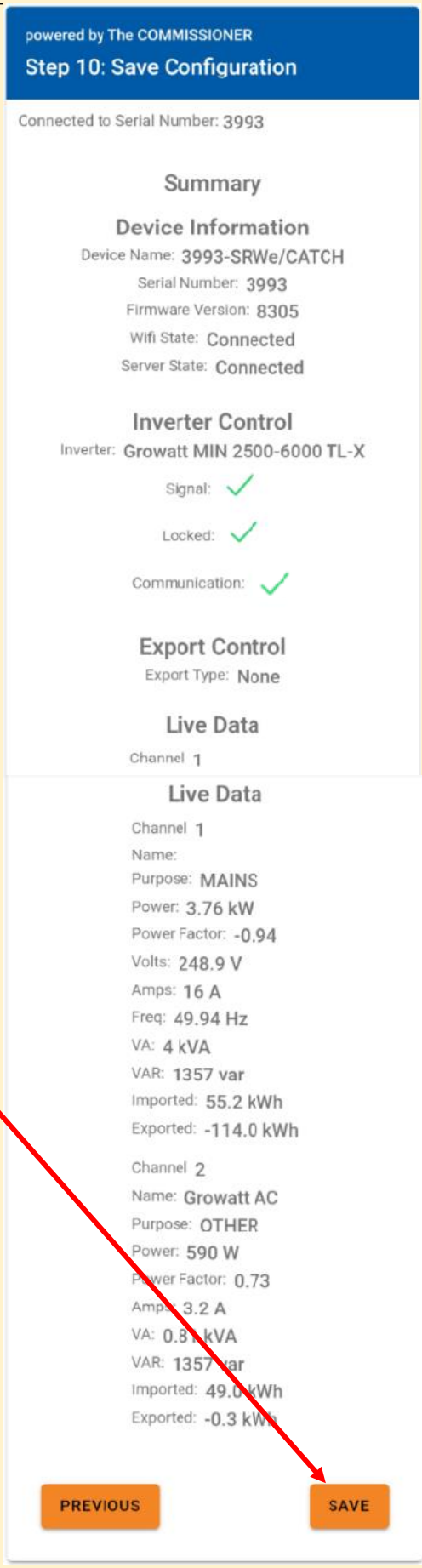
Once you have filled out the required information and pressed save the follow appears and shows you how the registration for dynamic exports is progressing… You want to see all green ticks for everything to be working.



CATCH Commissioning Wizard

Step 10: Save Configuration

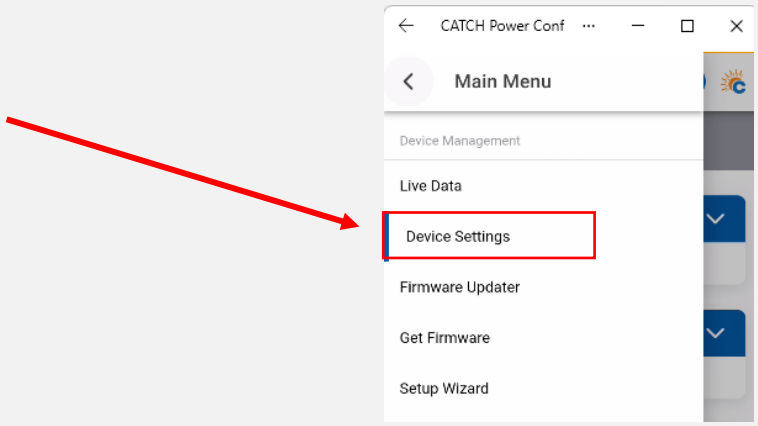
The final step is to review the configuration, and Press **SAVE**.



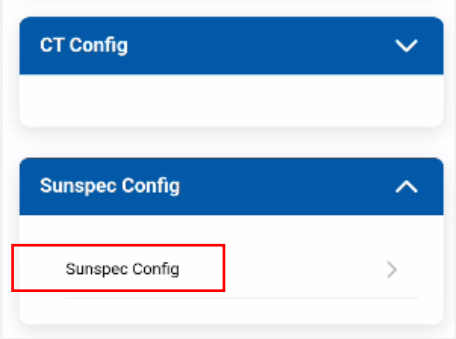
CATCH Configurator SUNSPEC SCAN

At this stage most of the CATCH Control is setup. You need to run a SUNSPEC scan in order to find the inverter on the network. We get the solar and battery data from the inverter via the local network.

Go to device Settings



Scroll down until you get to the Sunspec Config and click on the Menu Item



CATCH Configurator SUNSPEC SCAN

At this stage most of the CATCH Control is setup. You need to run a SUNSPEC scan in order to find the inverter on the network. We get the battery data from the inverter via the local network.

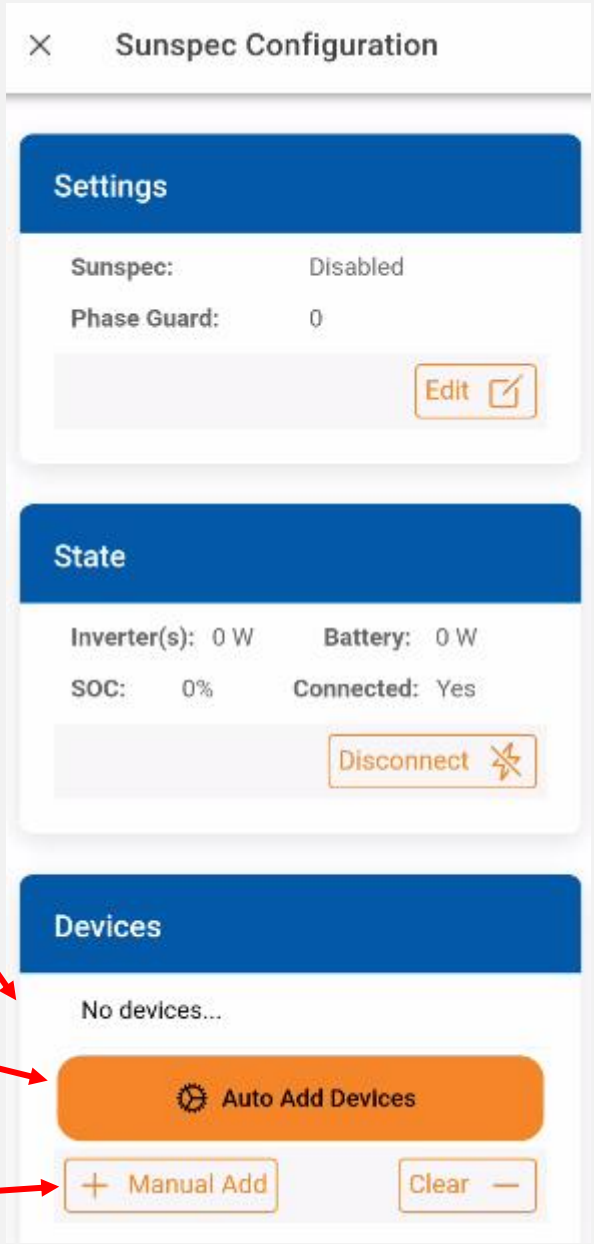
When you first come into the SUNSPEC screen all of the values are zero

and the devices screen says no devices..

You can connect to the Sungrow inverter by either AUTO SCANNING. Auto scanning can take several minutes to complete.

Or

if you know the IP Address you can manually add the inverter.

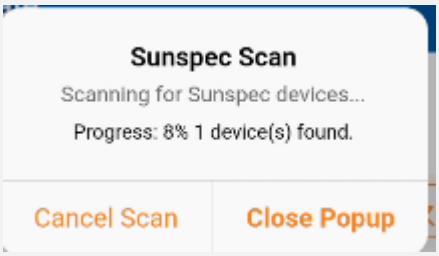


CATCH Configurator SUNSPEC SCAN

SUNSPEC - AUTO SCAN

A pop-up box displays and shows you the progress of the scan. As inverters are found you will notice the “device(s) found” increasing.

You can cancel the scan any time once your inverter is found.



SUNSPEC – MANUAL ADD

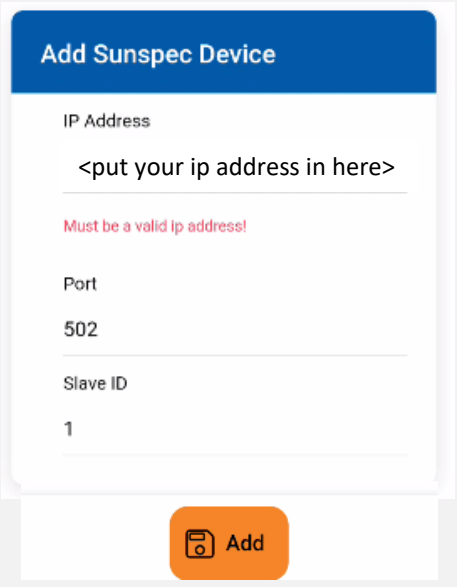
If you setup the inverter with a static IP address this is where you put the ip address in.

Make sure to set

- Port: 502
- Slave ID: 1

The press the **ADD** button.

All going well you will get a message saying 1 device(s) added.

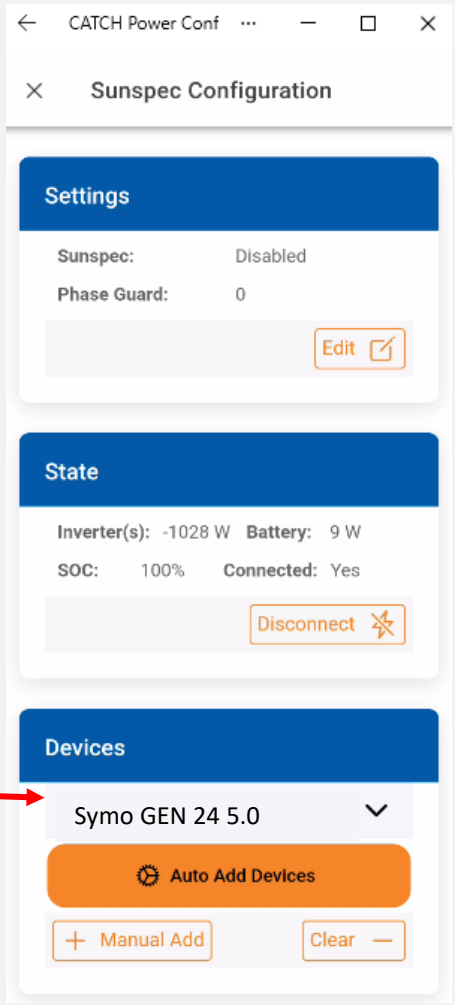


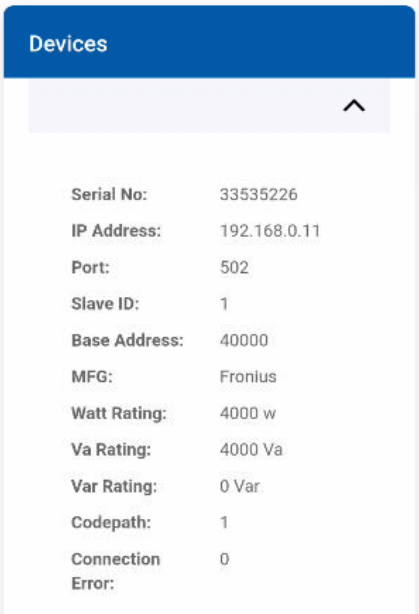
CATCH Configurator SUNSPEC SCAN

If the Sunspec device has been successfully added the Sunspec screen should like like this.

Inverter output, Battery SoC and Battery W should all have values

Click here to expand and the device should like below





CATCH Configurator SUNSPEC SCAN

MULTIPLE INVERTERS:

You have just been through the process of installing a single Fronius inverter. You can however connect up to 6 Fronius inverters using one CATCH Control. To do this just repeat the inverter configuration steps for each inverter, and using the MANUAL ADD in the sunspec Configuration to connect to the inverters.