Installing
CONTROL
with
SIG

MODEL(S)

SigEnStore EC x.x EP

Ver:	2.0.1
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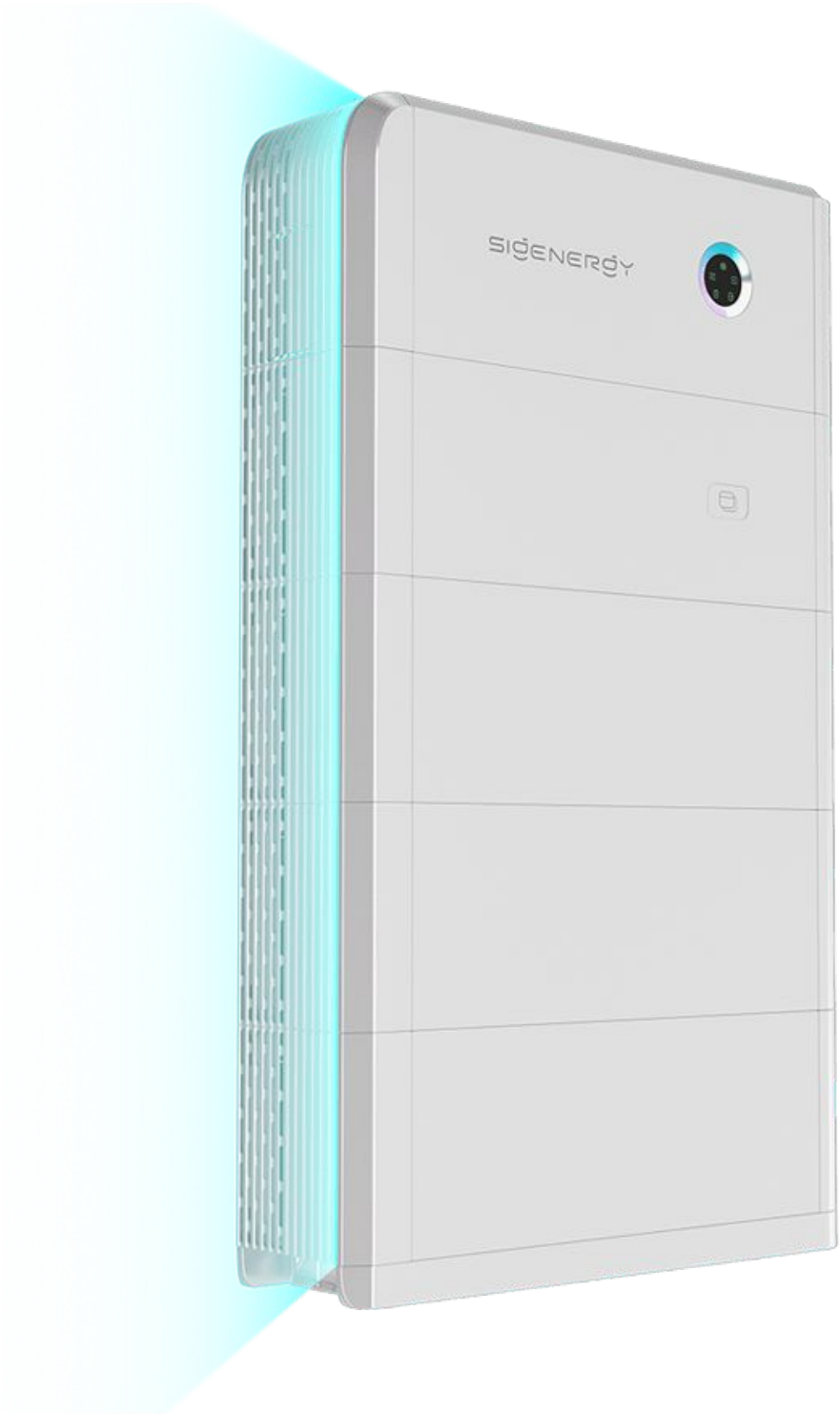
CATCH Power
A trademark of Project H Pty Ltd
180 Dumaresq Street
Glen Innes NSW 2370
Australia
p: +61 2 5700 5717
w: www.catchpower.com.au
e: sales@catchpower.com.au


SIGENERGY

Installation Overview

1. Install the inverter as per manufacturer's guidelines.

2. Install CATCH Control as per the Electricians Guide.

3. If you are using CATCH Control as an energy meter connect the RS485 as shown below.

4. Open the **Configurator App** and run the setup Wizard.

5. Place the CT's as outlined in Step 7 (Review and Test) of the setup wizard.

6. Follow the additional inverter commissioning steps as outlined below.

IMPORTANT:
If you choose yes to CATCH Control being the master device on site then TURN OFF ALL EXPORT LIMIT CONTROLS INSIDE THE INVERTER.

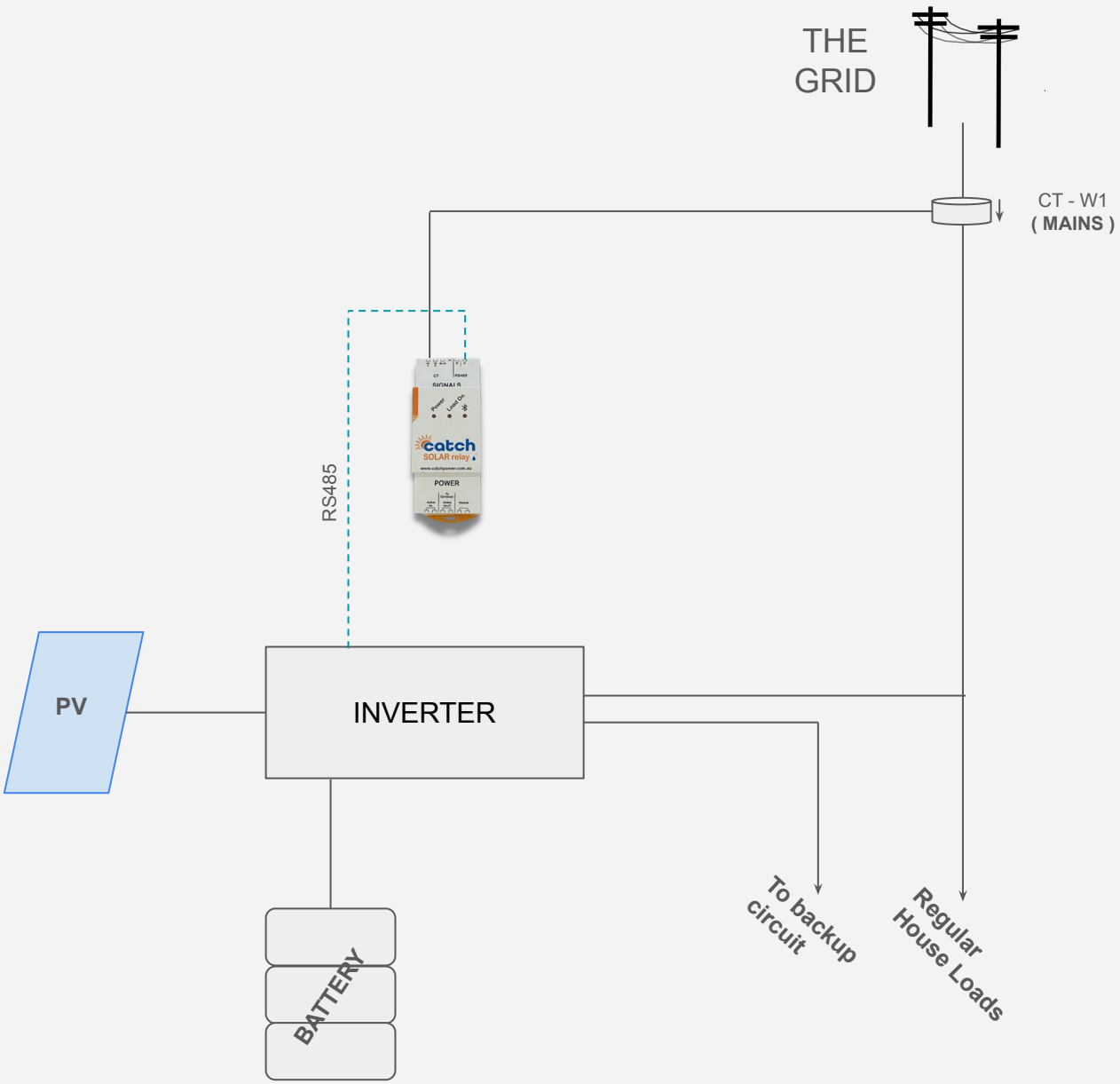
7. Use the wizard Step 7 (Review and Test) to guide you through the placement of CT's and the testing of load and inverter control.

CT Arrangement

For SIG installations it is not necessary to install the second CT (W2).

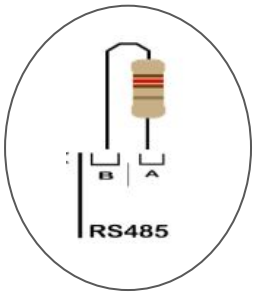
We will extract the solar production data from the SUNSPEC connection we make with the inverter.

You can use this CT to monitor another circuit if necessary.If you do decide to use W2 to monitor another consumption circuit make sure you specify the channel purpose as **OTHER** during the commissioning process.

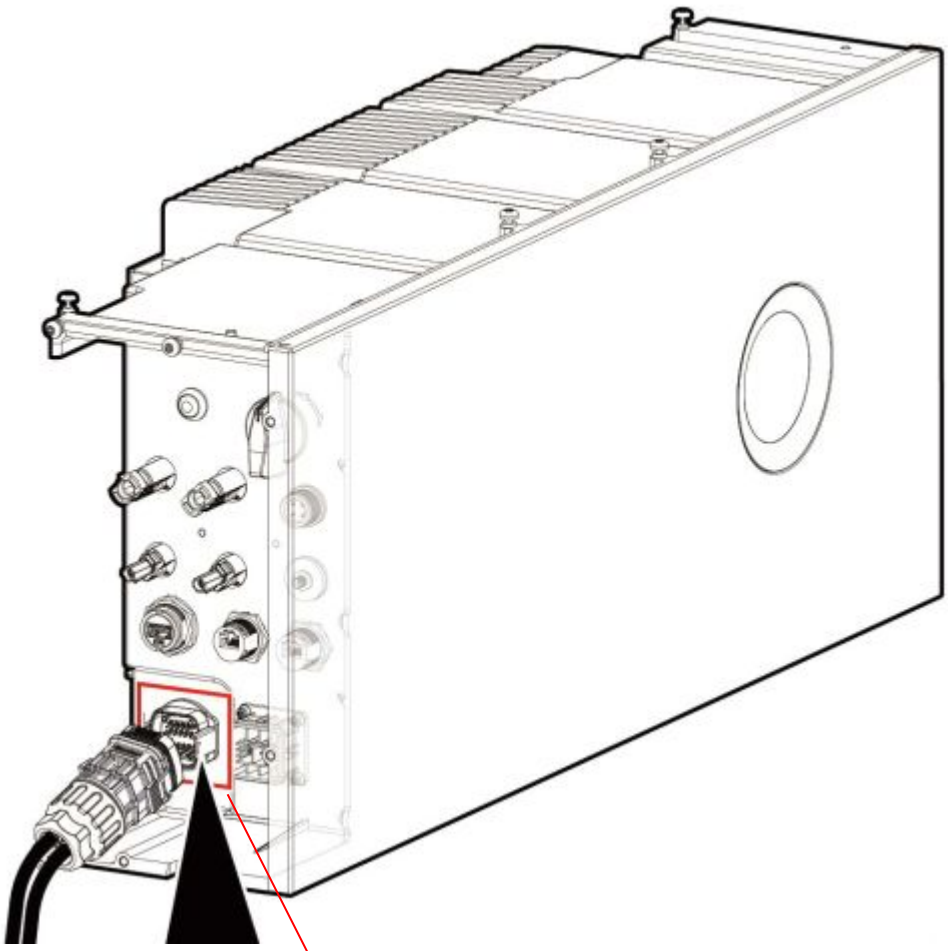


Connecting the RS485

Ensure the data cable is rated for the voltages it will be in close proximity to.

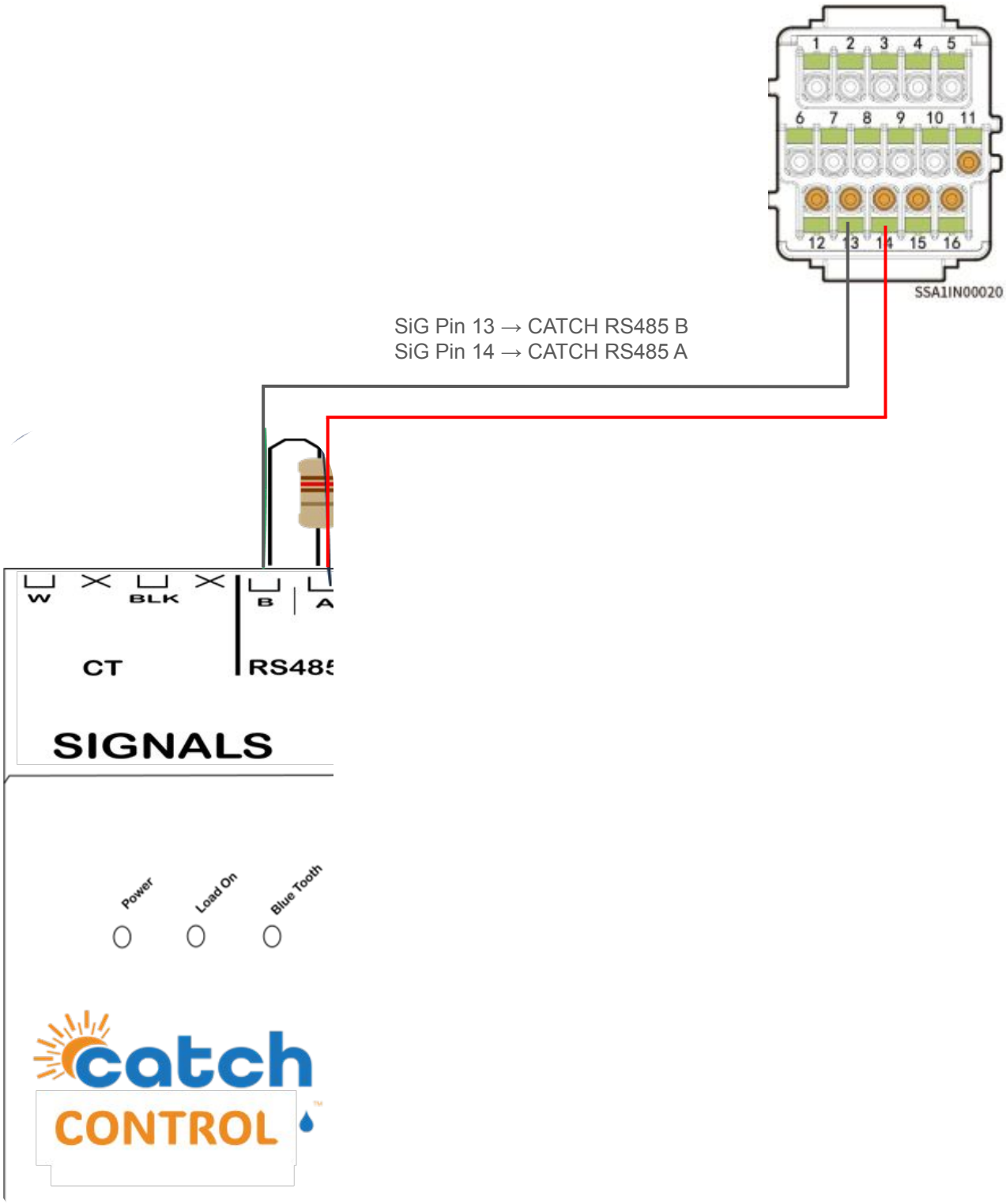


A 120 Ohm terminating resistor may be required at the CATCH Relay terminals as shown in the diagram below if the cable run is longer than 10m. The resistor is supplied as part of the product.



RS485 Meter is on this connector

Connecting the RS485



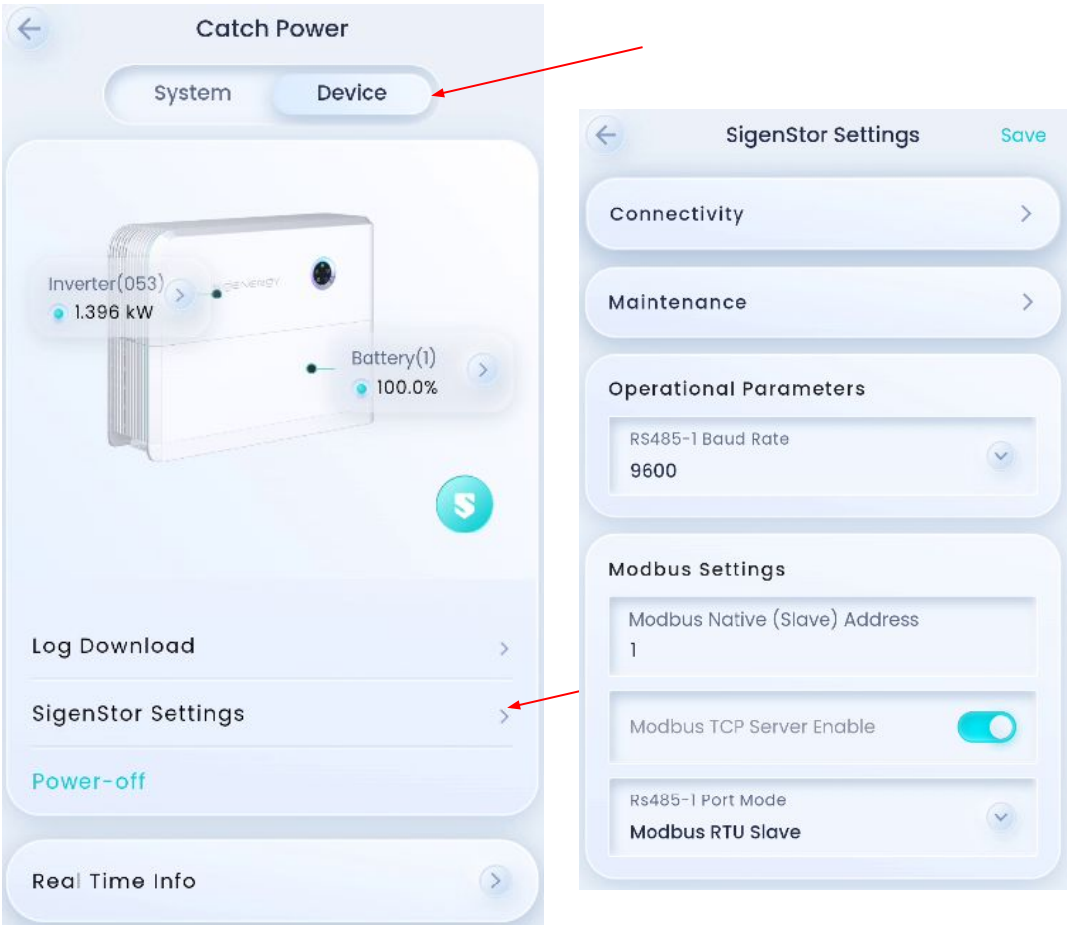
Inverter Setup

ETHERNET CABLE IS REQUIRED

CATCH Control uses the modbus/tcp registers. These are only available via a hardwired ethernet connection.

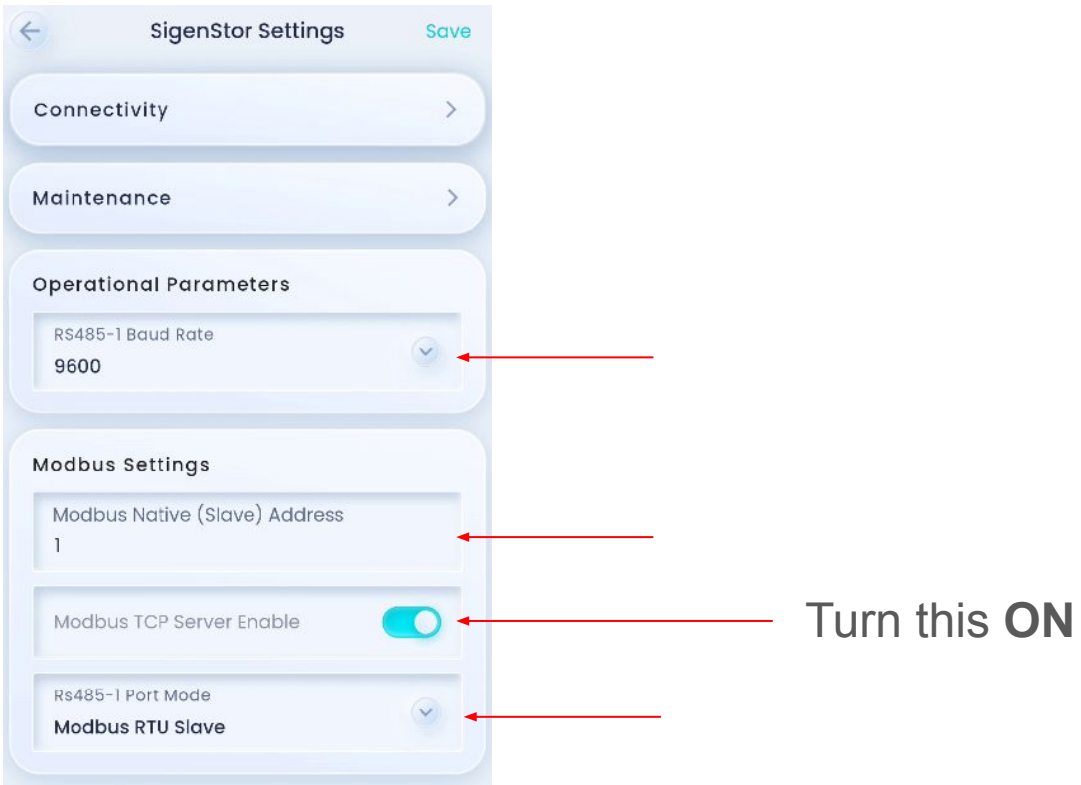
Log into the mySigen app

Turn on MODBUS/TCP



Inverter Setup

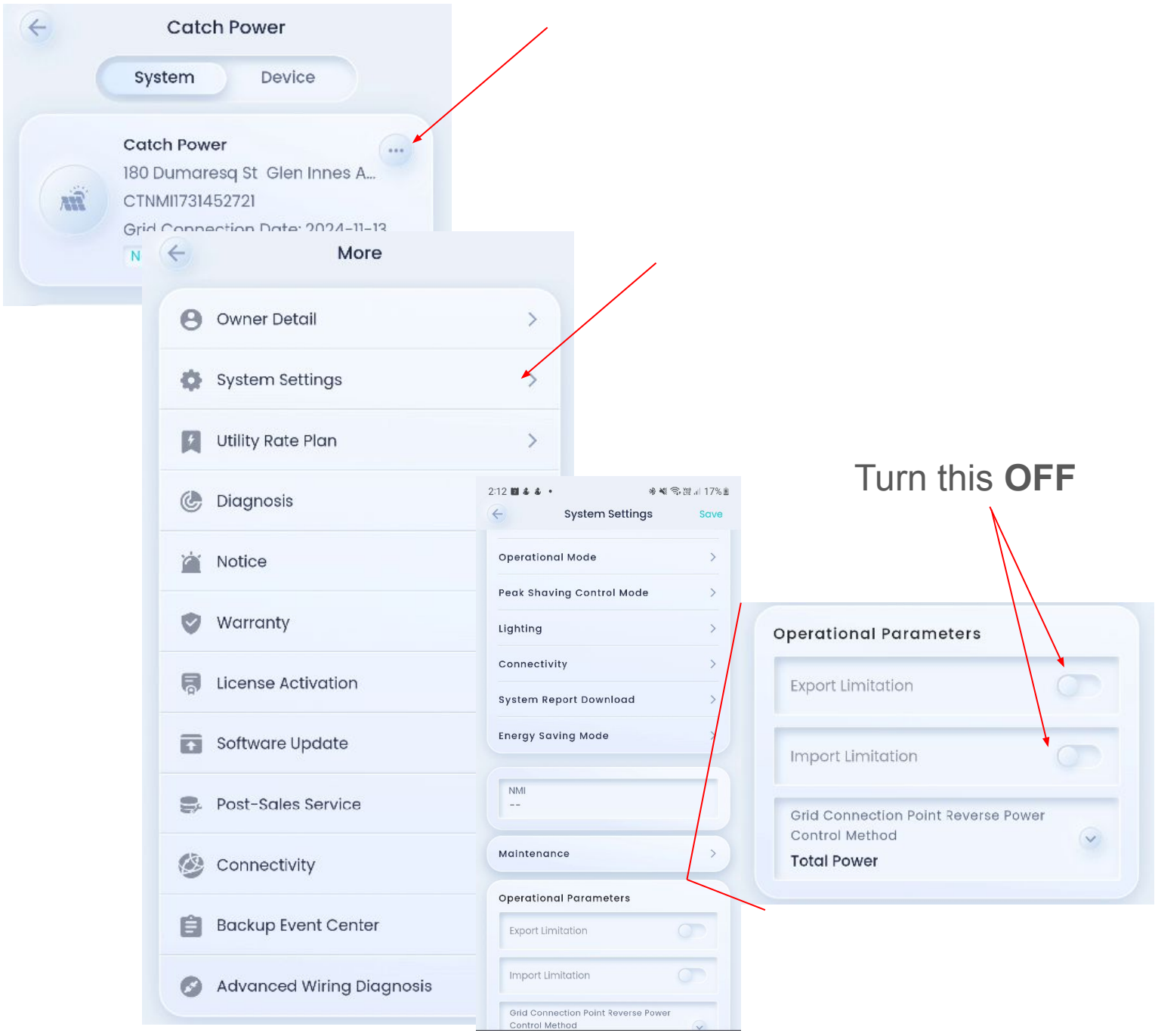
Turn ON modbus/tcp



Inverter Setup

Turn OFF all Inverter Export limits

This step is only required if you plan to make CATCH Control the Site **MASTER**



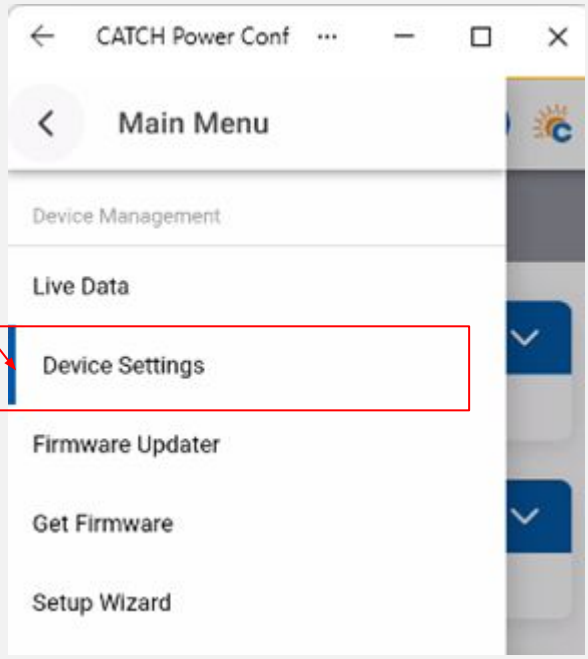
SUNSPEC Scanning

Sunspec scanning is a technique CATCH Control uses to talk with the inverter over the local network. We do this to get more information from the inverter that is typically available via RS485.

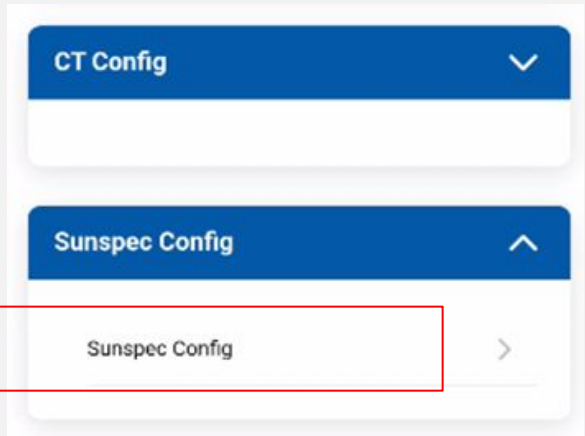
You are going to use the CATCH Power COnfigurator app to perform a sunspec scan.

SUNSPEC Scanning

TO run a SUNSPEC scan open the device settings page as shown.

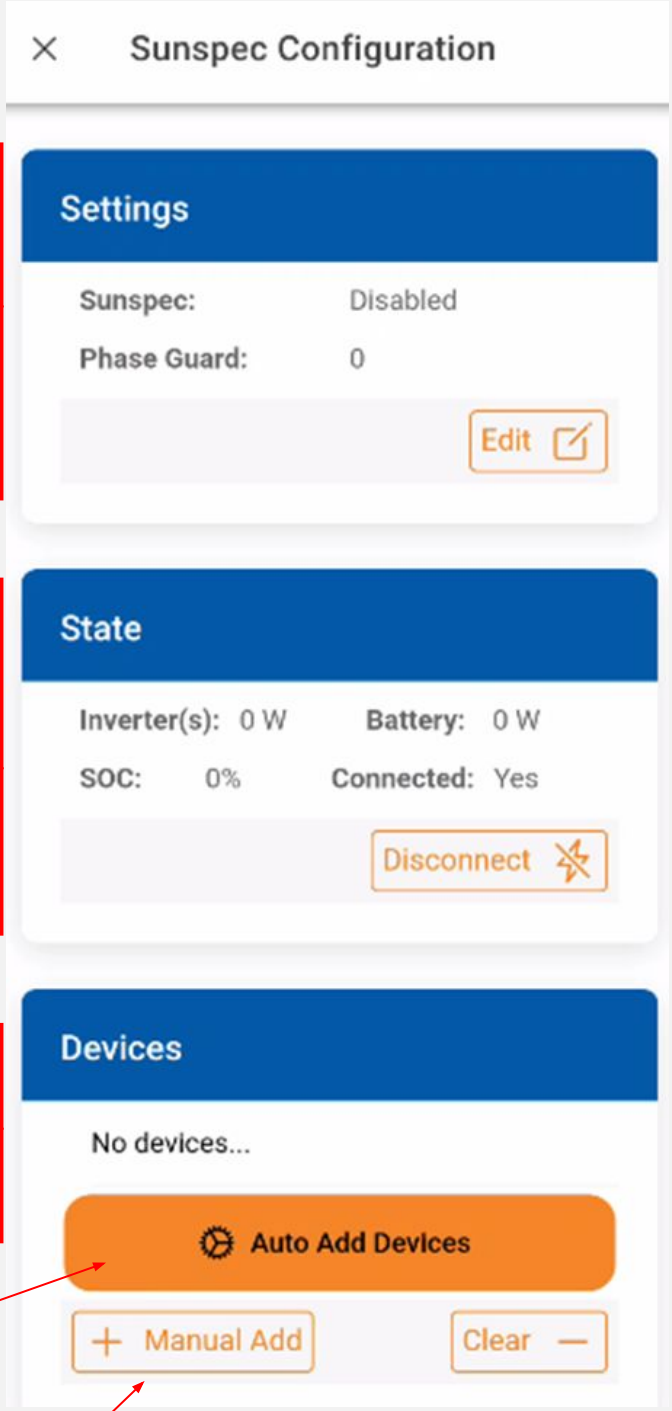


Scroll down until you get to the Sunspec Config and click on the Menu Item



SUNSPEC Scanning

The sunspec configuration screen is shown below. When you first come into the screen everything will be zero.



You can ignore this section of the sunspec config. This is for older installations that are no longer possible.

This gives you a summary of the battery and inverter output of all Sunspec connected devices being managed by this CATCH Control

This is where you will see all of the SUNSPEC connected devices being managed by this device.

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

- Or -

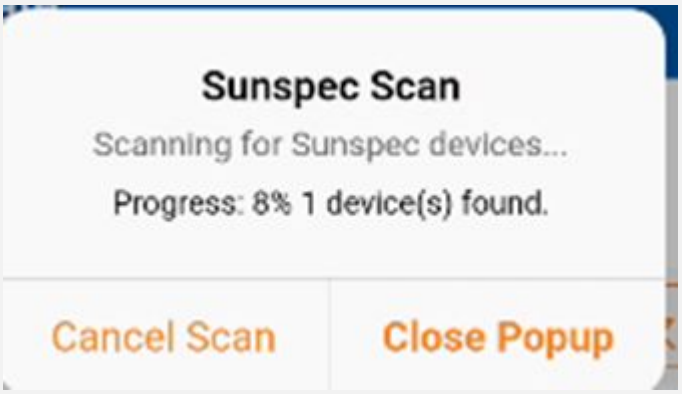
if you know the IP Address you can manually add the inverter.

SUNSPEC Scanning

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.



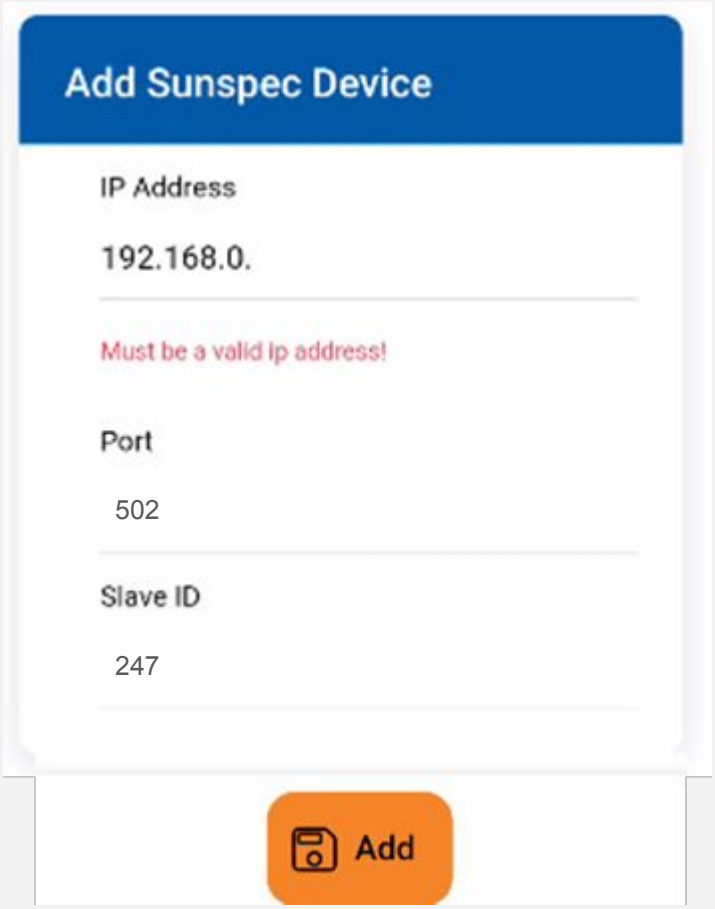
MANUAL ADD

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: **247**

The press the **ADD** button.

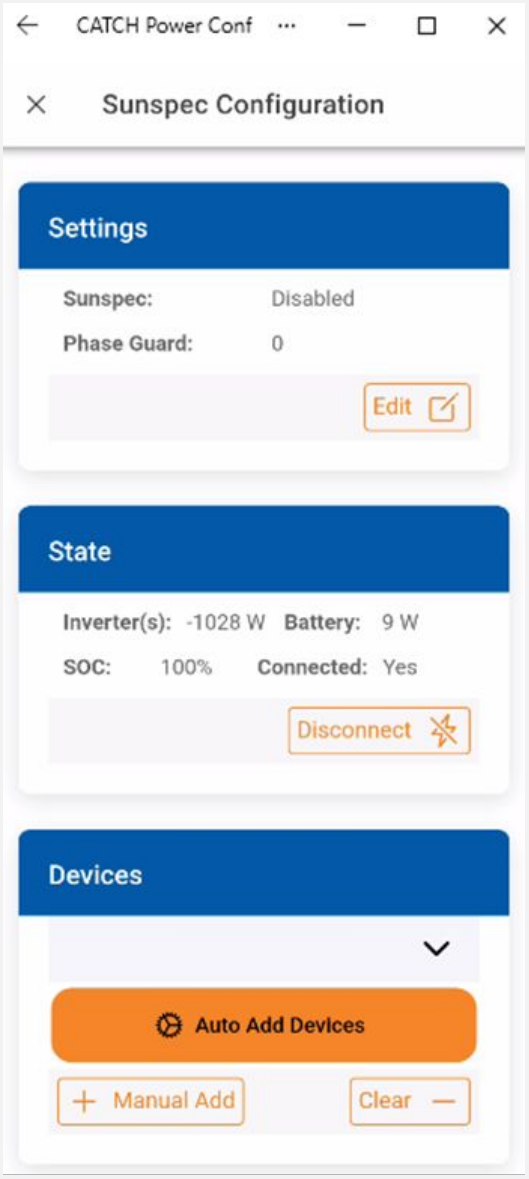
All going well you will get a message saying 1 device(s) added.



Occasionally you will have to try the auto-scan or Manual Add a couple of times before it connects. Sometimes the inverters will not allow a connection if they are busy doing something else.

SUNSPEC Scanning

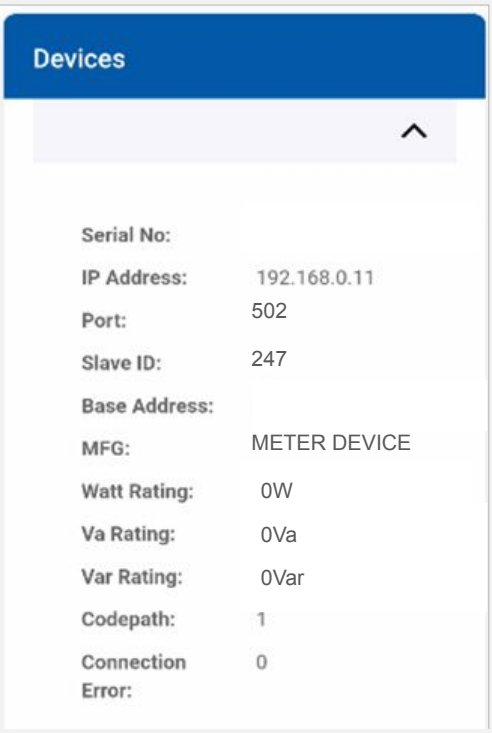
If CATCH Control successfully connected to the inverter the screen will look like below:



There will be inverter power. If there are batteries connected, the Soc and Battery W will have values.

Notice the MFG says **METER DEVICE**. This is how it needs to be. If you see anything else include SIG or any other variation you have not connected properly to the inverter. Is MUST SAY **METER DEVICE**

If you have picked up the wrong device. Follow the instruction below to clear the device and try again



SUNSPEC Scanning

Multiple Inverters

You have just been through the process of connecting a single inverter via SUNSPEC. You can connect up to 5 inverters to the once CATCH Control.

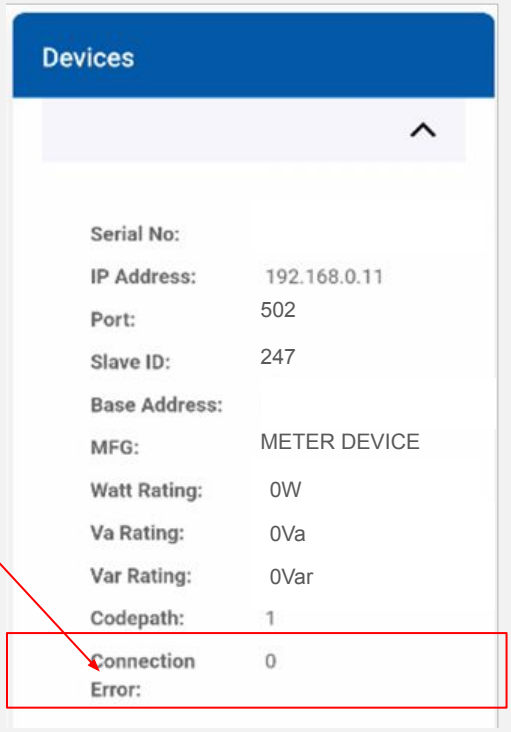
To do this just repeat the inverter configuration steps for each inverter, and using the MANUAL ADD in the sunspec Configuration to connect to the inverters.

Troubleshooting Connection Errors.

If you are installing for the first time, and CATCH Control cannot talk to the inverter then it will not add the device. If however CATCH Control could talk with the inverter when it was first installed but something has changed and now it cannot you can check the connection status on the Sunspec Config page as shown below.

A value of **ZERO** indicates that communications is **GOOD**

A value of **one** (1) indicates there is a communications fault..there is a connection problem.



The most common cause of this will be the inverter changing its IP address because it is not STATIC. To fix this you need to:

- Clear the existing Devices from the list.
  (see the next section to learn how to do this.)
- Run another Sunspec scan.

SUNSPEC Scanning

Clearing the SUNSPEC devices

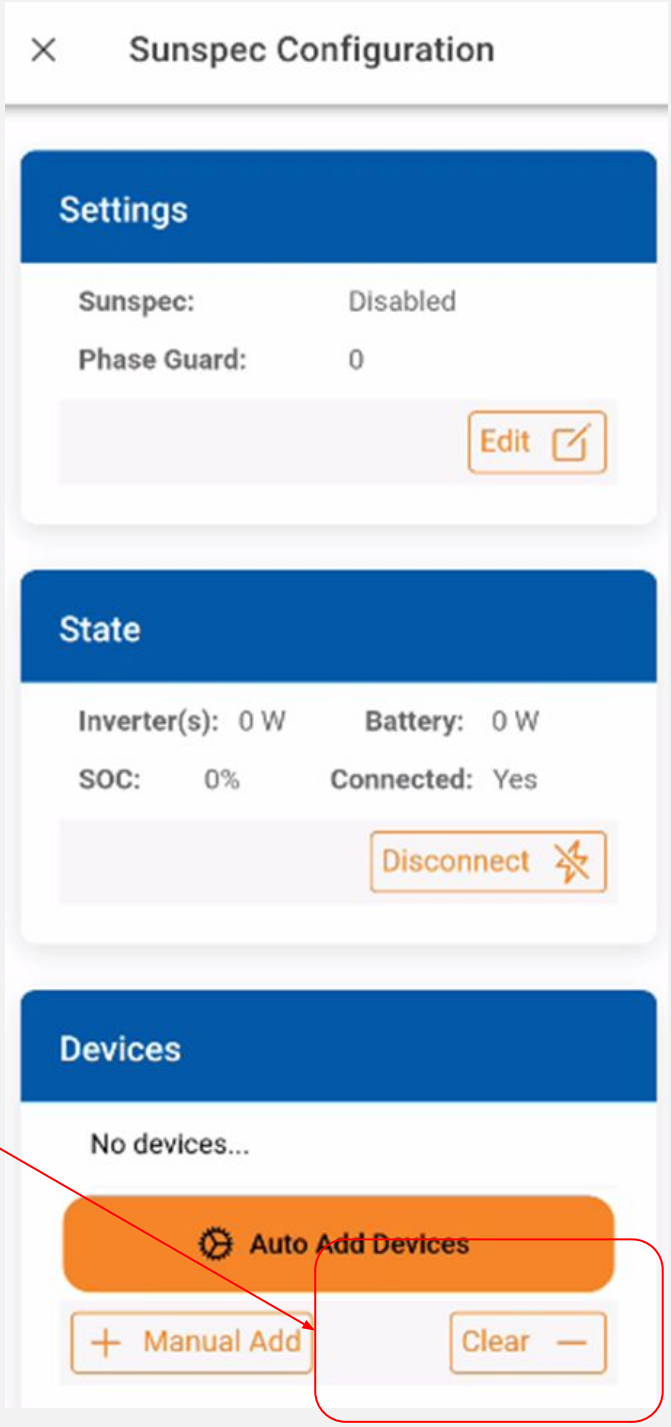
If you need to clear the list of SUNSPEC devices for some reason then follow these steps.

1) Press the Clear Button

2) Change the meter type in device settings to CATCH power, then back to SIG 1P

3) Power cycle to CATCH Control

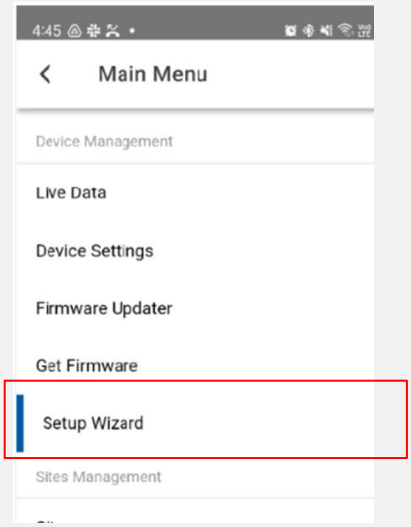
Press the **CLEAR** button

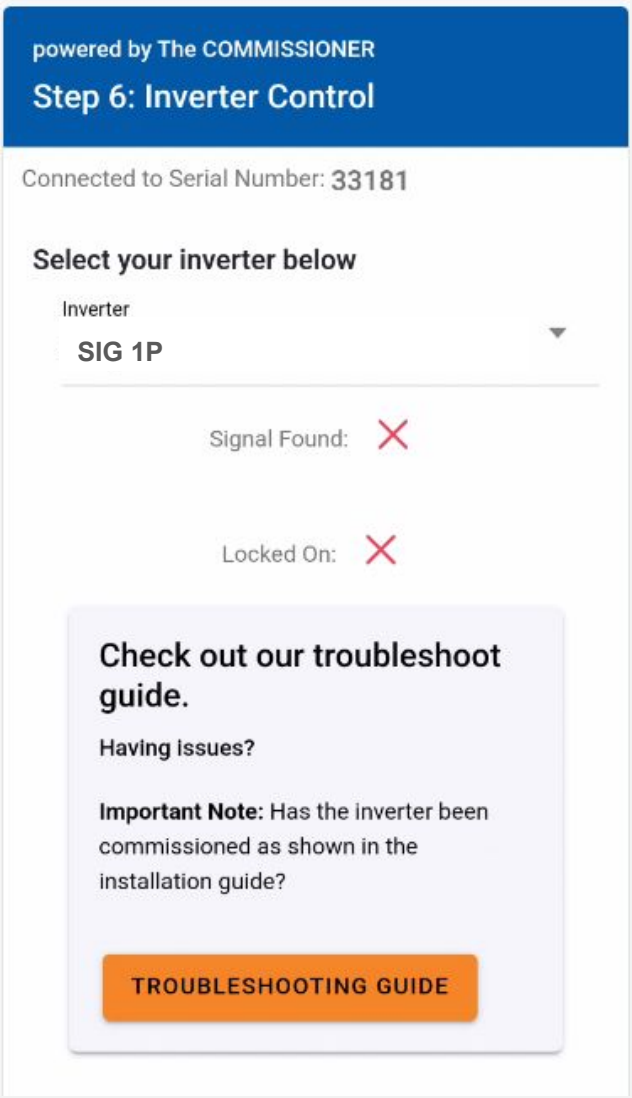


SUNSPEC Scanning

Clearing the SUNSPEC devices

Go to step 6 of the wizard and change the Inverter to **CATCH Power**, then change it back to SIG 1P

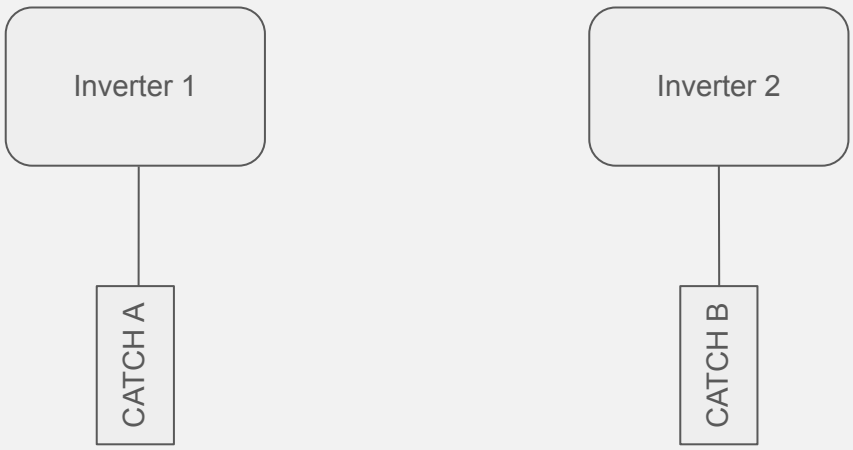




MUTLIPLE INVERTER
Sunspec Scanning

When you run a SUNSPEC scan on a CATCH Control it will find ALL inverters that have their Sunspec enabled.

In some situations this is NOT what you want. If you have multiple CATCH Controls on site and you want each device to be connected to a specific inverter then following this process. We have provided a diagram to accompany the explanation.



PROCEDURE:

1. Shutdown Inverter 2
2. Run sunspec scan on CATCH A
3. Confirm full control of inverter 1

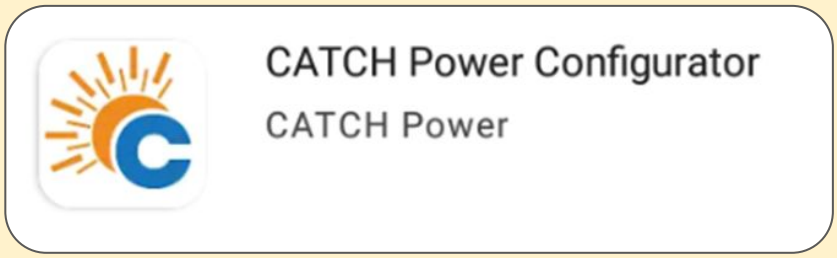
4. Shutdown Inverter 1 and Start Inverter 2
5. Run sunspec scan on CATCH B
6. COnfirm full control of inverter 2

7. Restart Inverter 1.

Commissioning Wizard - Steps 1-7

You will need your phone or tablet for the next steps. Go to the apps store or play store and download the **CATCH Configurator**.

If you haven't already you will need to setup an installer account. Check out the **Electricians Guide** on our website for details on how to do this.



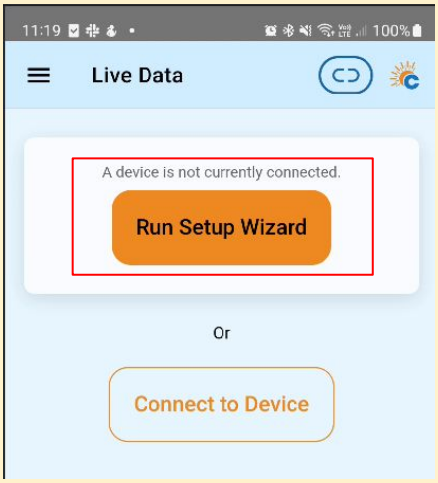
The first time you open **CATCH Configurator** you may get asked to grant grant permissions to the App. **YOU HAVE TO SAY YES**

We use the Bluetooth on your phone, which requires location service permission.

If you accidentally said NO, then uninstall the app and reinstall.

Commissioning Wizard

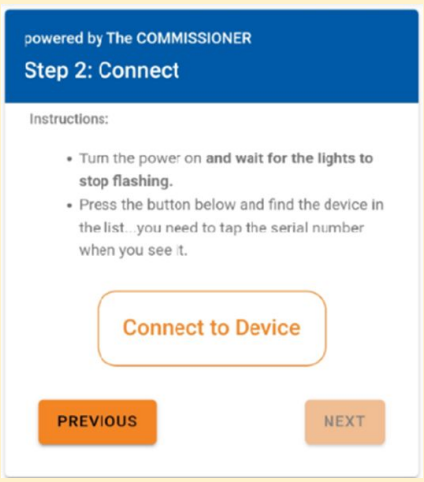
Step 2 - Connecting to the CATCH Control



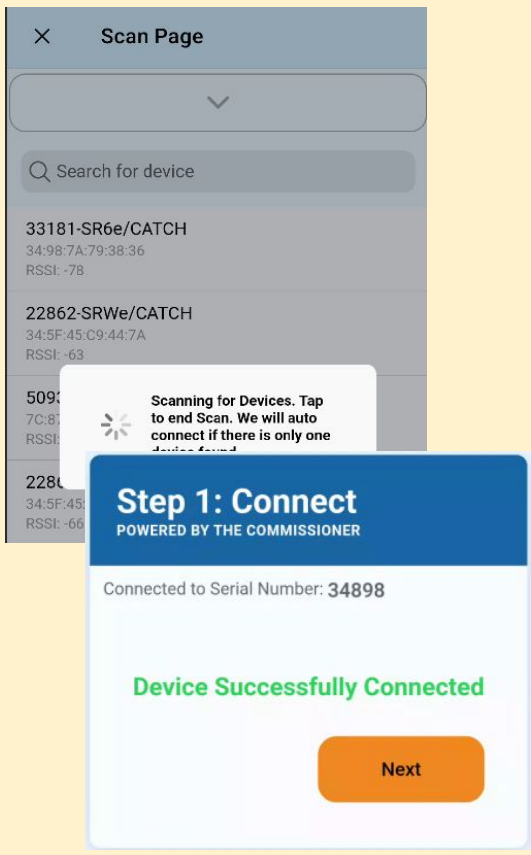
The first time you scan for a device you may get asked to grant some permissions to the App. **YOU HAVE TO SAY YES**

We use the Bluetooth on your phone, which requires location service permission.

If you accidentally said NO, then uninstall the app and reinstall.



Stand close to the CATCH Control and press the “Connect to Device” button.

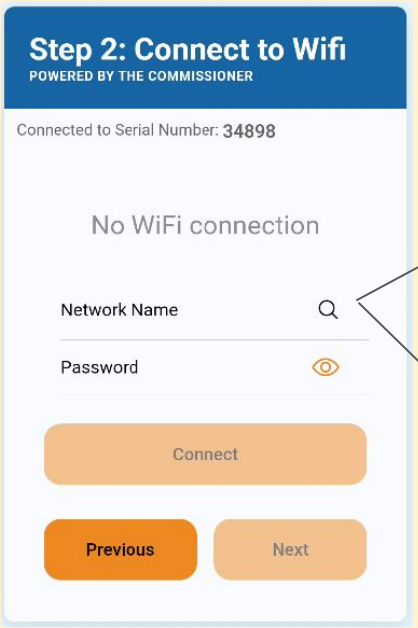


The device will appear in the list. The device serial number is identifiable by its serial number.

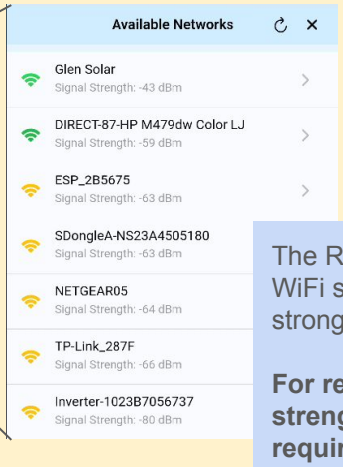
Commissioning Wizard

Step 2 - WiFi Connection

CATCH Control requires a Good strong WiFi Signal in order to do its job. This step walks you through connecting to the customers WiFi system.

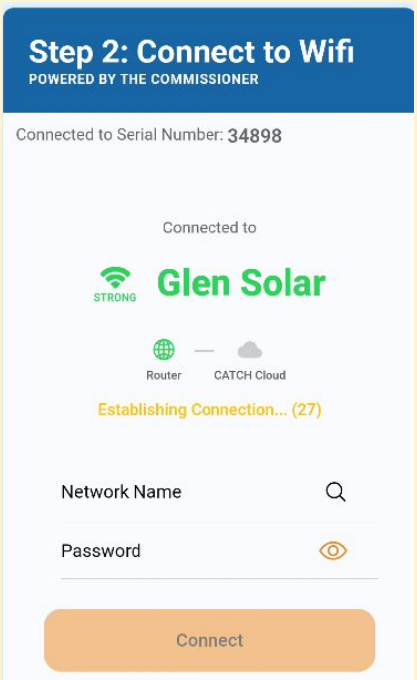


You can either type the Access Point into this field or you can search for it.



The RSSI field tells you how strong the WiFi signal is. The LESS negative the stronger then signal.

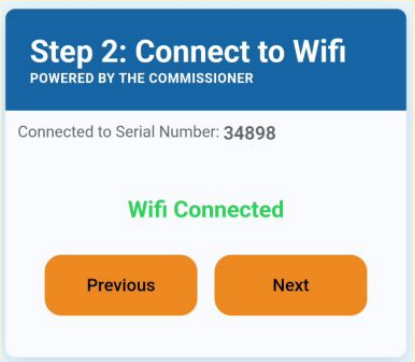
For reliable operations a WiFi signal strength if -80dB or greater is required.



What happens if you Access Point is not in the list:

- Swipe down on the WiFi Scan screen to trigger a rescan (ie try again)
- CATCH Control only works on 2.4Ghz WiFi networks. Is the network 5GHz?

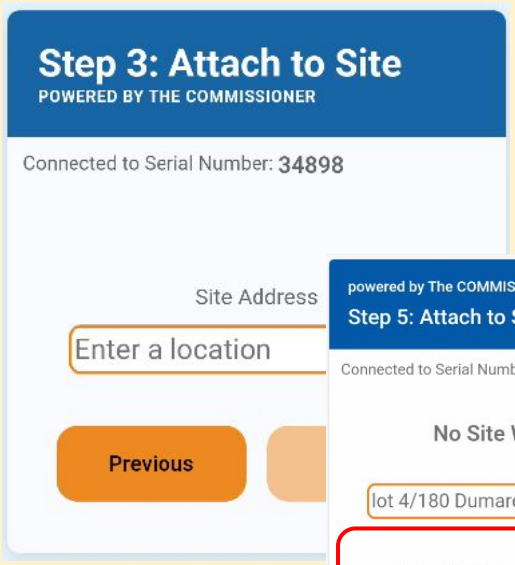
If you cannot see the network in the list you can always just type the Access Point name in manually and ignore trying to scan.

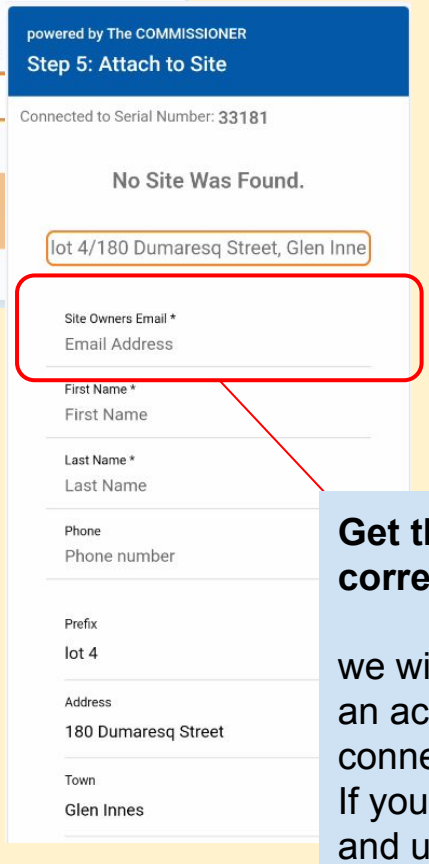


Commissioning Wizard

Step 3 - Attach the CONTROL to a site

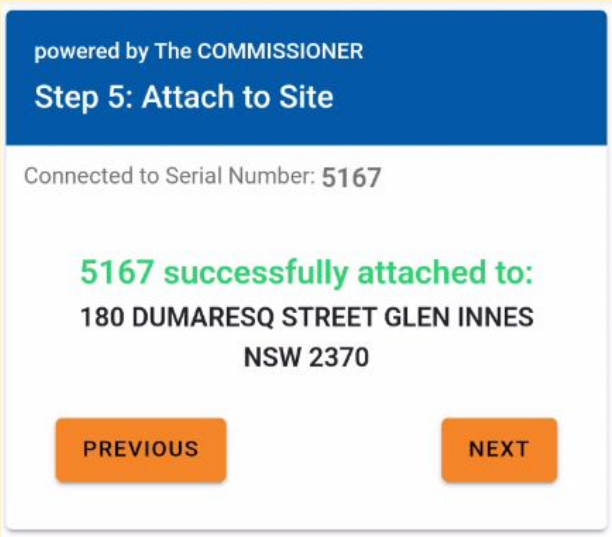
All CATCH Controls need to be attached to site.





Get the Site owners email address correct!!

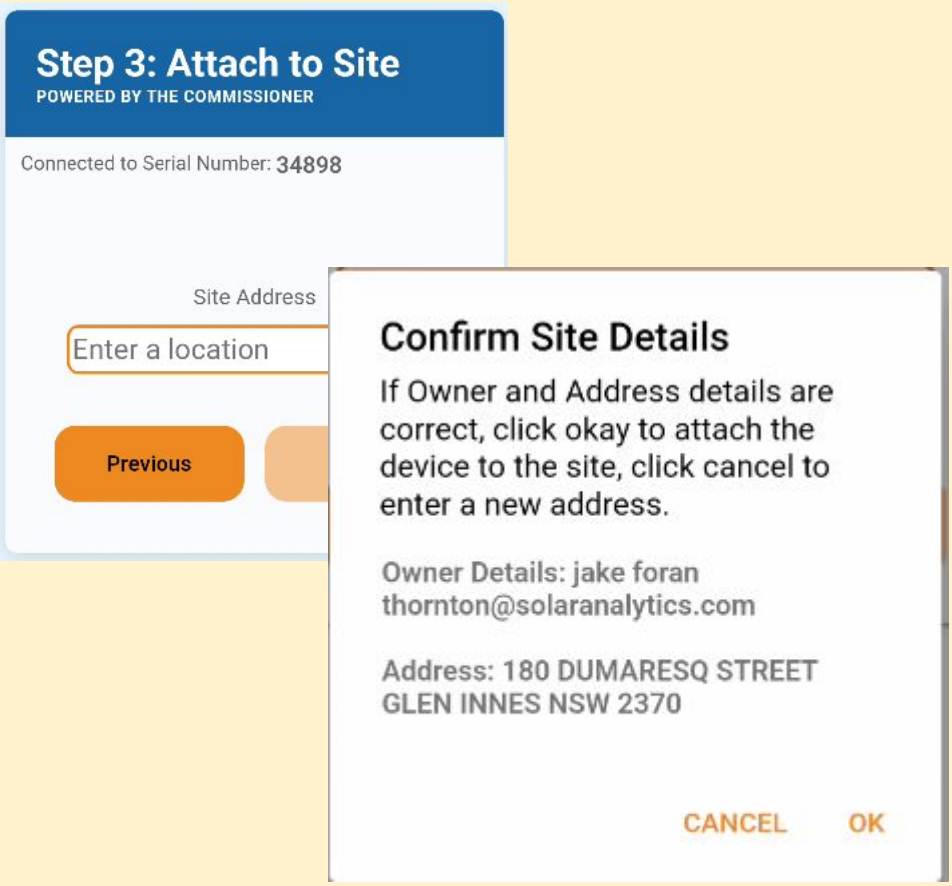
we will send out a welcome email with an access code that they can use to get connected into the Monocle.
If you get this wrong it is a pain for you and us to fix the problem…

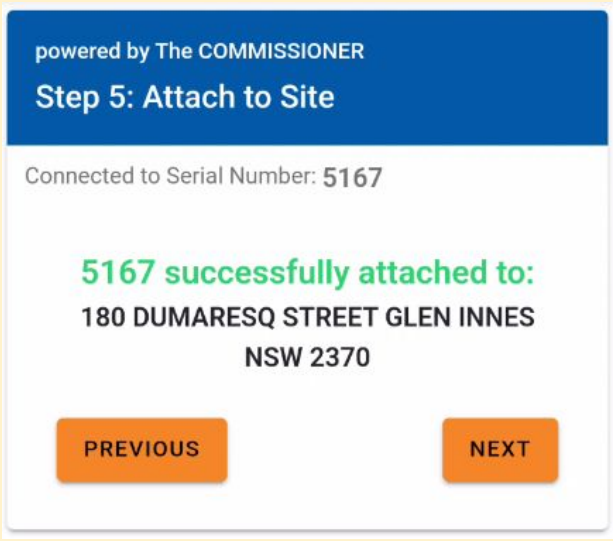


Commissioning Wizard

Step 3 - Attach the CONTROL to a site

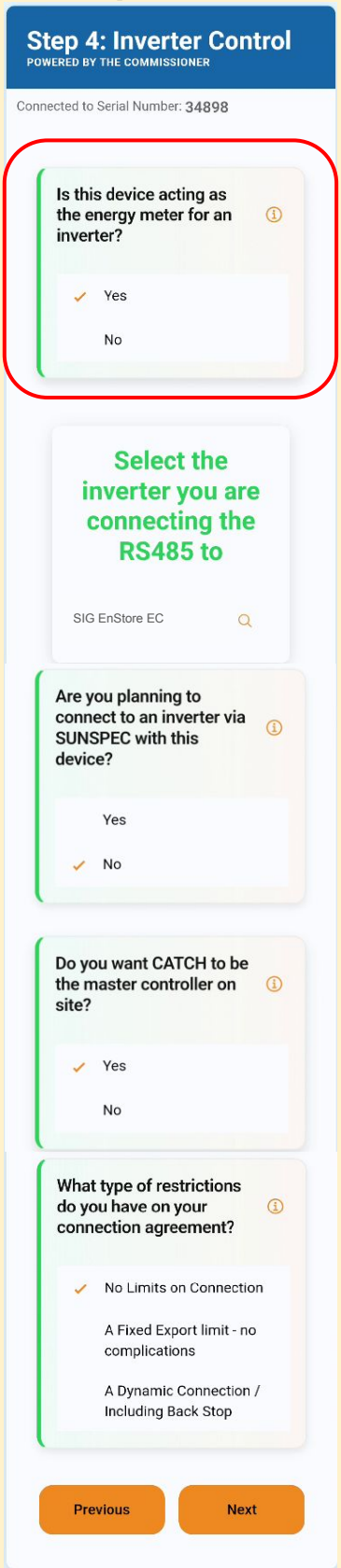
If you are attaching a new device to an existing site you will see this appear. Confirm the details and press OK. The device will then be attached to the site.





Commissioning Wizard

Step 4 - inverter Control

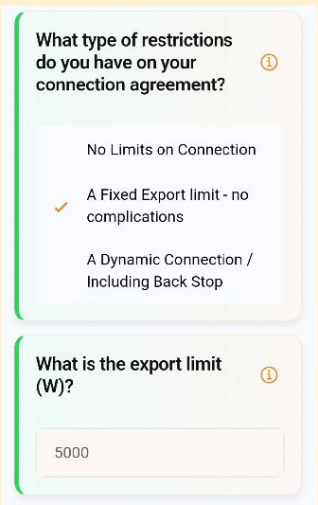


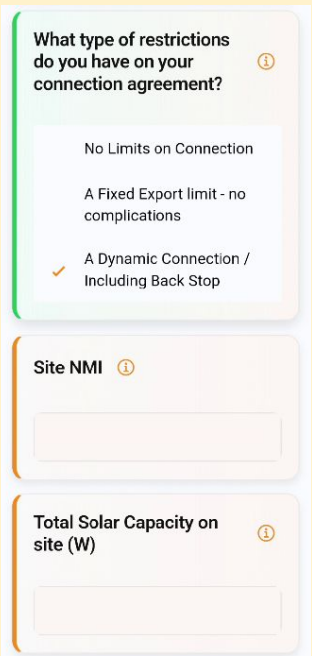
Tell us what you are planning to do with any solar inverters on site.

Catch CONTROL can act as the energy meter for many inverters. If you plan to use the device as an energy choose **yes** here. Using catch CONTROL as the energy meter as many benefits, these include:

- Space saving in the switchboard.
- Advance inverter control is available.

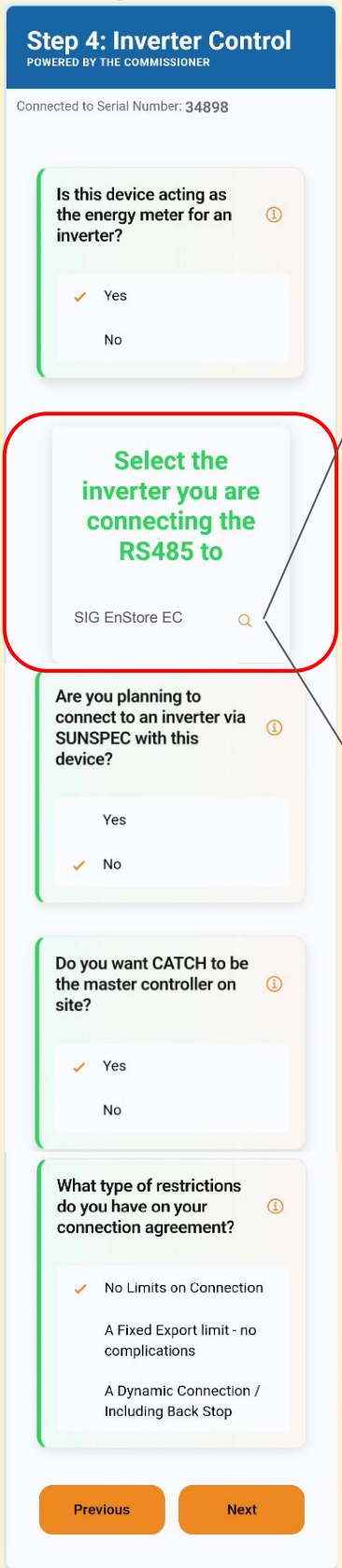
If you choose to say yes to being the energy there are a number of options available to you.

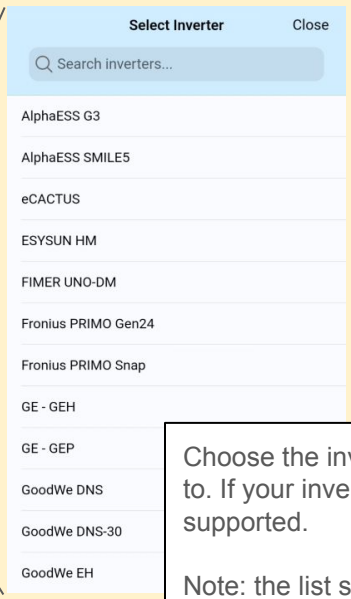




Commissioning Wizard

Step 4 - inverter Control



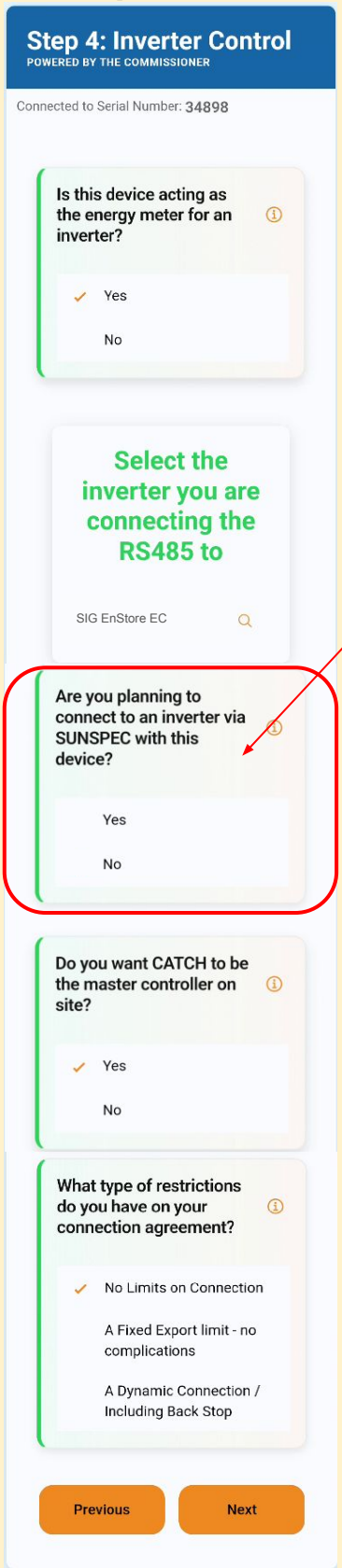


Choose the inverter that we are connecting to. If your inverter is not in the list it is not supported.

Note: the list shown here is just a small subset of available inverters.

Commissioning Wizard

Step 4 - inverter Control



Choose **YES** Here.

What is SunSpec

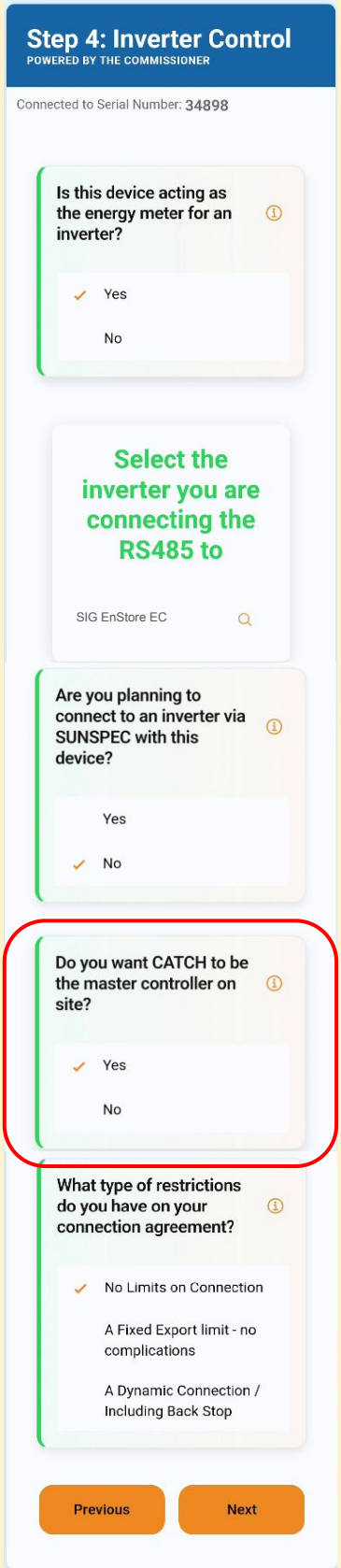
Sunspec is a method used to extract battery and other information from an inverter. It is also possible to control inverters via Sunspec.

If you are answering NO to this question the there is nothing for you to do once you have completed the wizard.

If you answer YES to this question you will need to run a sunspec scan before the installation is complete. There are details further down in this guide that show you how to do this.

Commissioning Wizard

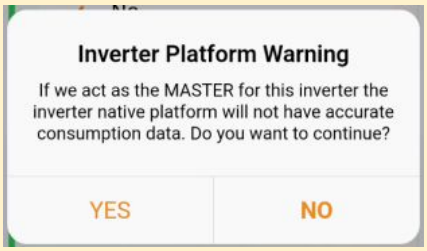
Step 4 - inverter Control



When CATCH Control is **not** the master of the site it will act as a regular passive energy meter. In this mode more advanced control features are not possible.

When CATCH Control **IS** the master of the site it is able to control the charging and discharging of batteries as well as control the amount of solar being produced at any given moment.

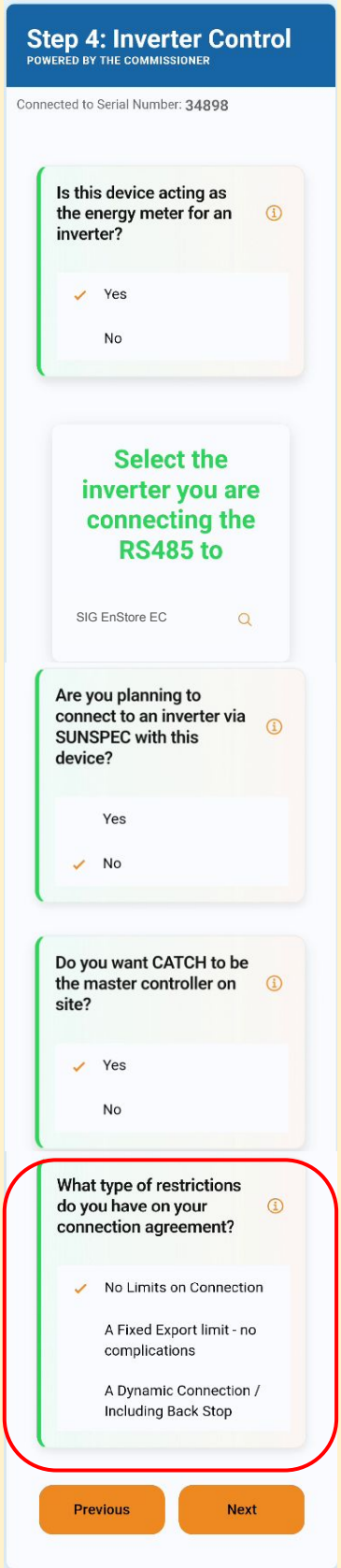
Depending on the inverter you chose above you might see this message pop up.



This indicates that master control will result in the inverters native monitoring platform not getting correct consumption data. This does not affect the operation of the inverter, but the consumption data in the app will not be correct.

Commissioning Wizard

Step 4 - inverter Control



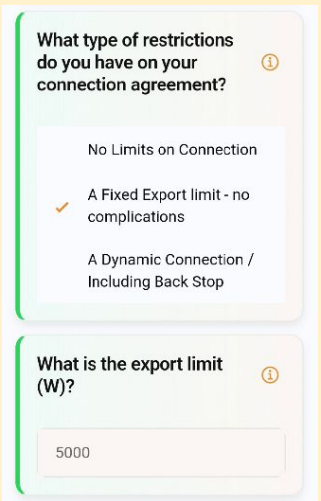
When CATCH Control is the master controller on site you need to tell us about the export limits on site. There are three possible options:

No Limits:
This means there is no export limit on site. We do not require any further information.

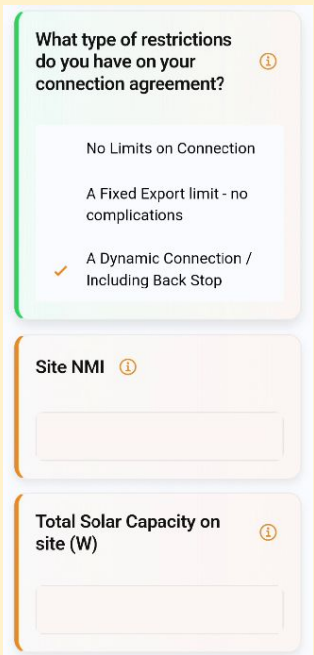
Fixed Export Limit:
This is the traditional type of limit given by the DNSP, where the export limit is a statically set value and will never change. For this type of connection we just need to know the export limit.

Dynamic Connection:
This type of connection is know as a Flexible exports in QLD, or Dynamic in South Australia, and is also known as a Backstop Connection. If you have nominated CATCH as provide this is the connection type you will need to choose.

Fixed Export limit data



Dynamic Connection data



Commissioning Wizard

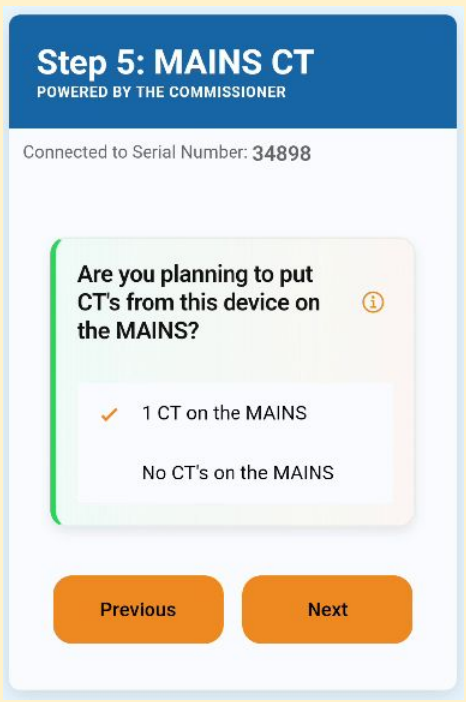
Step 5 - MAINS CT

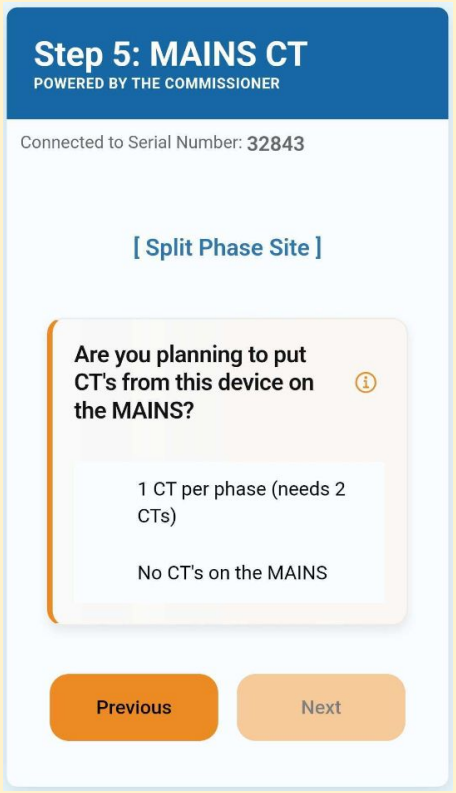
All CATCH Control devices need to know about the power flow in and out of the MAINS.
The mains power flow does not necessarily have to come from this device.
If you have multiple devices on site part or all of the MAINS power flow can come from other devices on site.

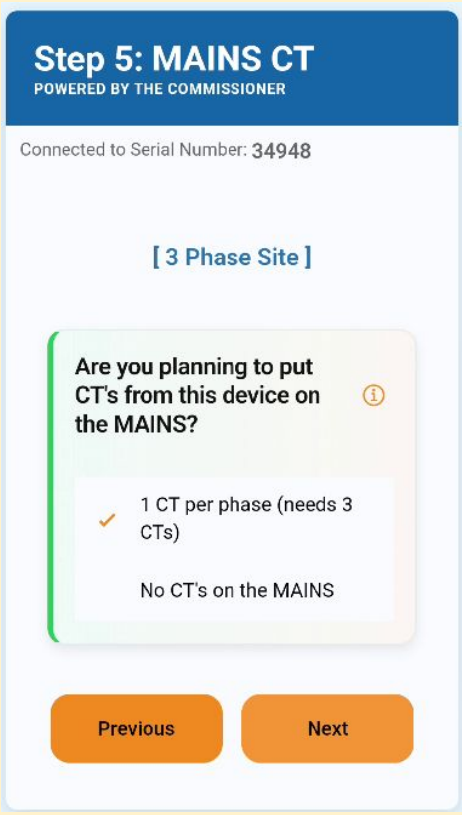
CATCH Control Auto detects whether it is installed on a Single Phase , Split Phase, or 3 phase installation.

All you need to do is decide if this device is going to use its CT's to measurement the MAINS.

In a multi phase installation it is possible to use multiple single phase CATCH Controls to measure the MAINS. But you need one device per phase.

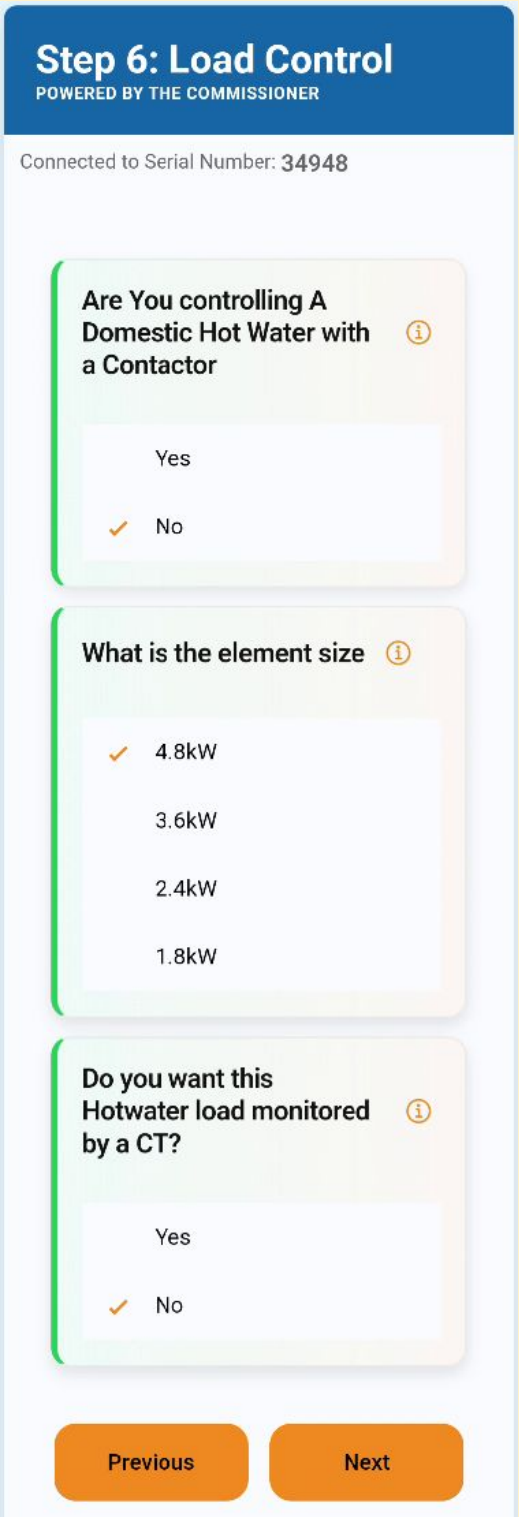






Commissioning Wizard

Step 6 - Load Control



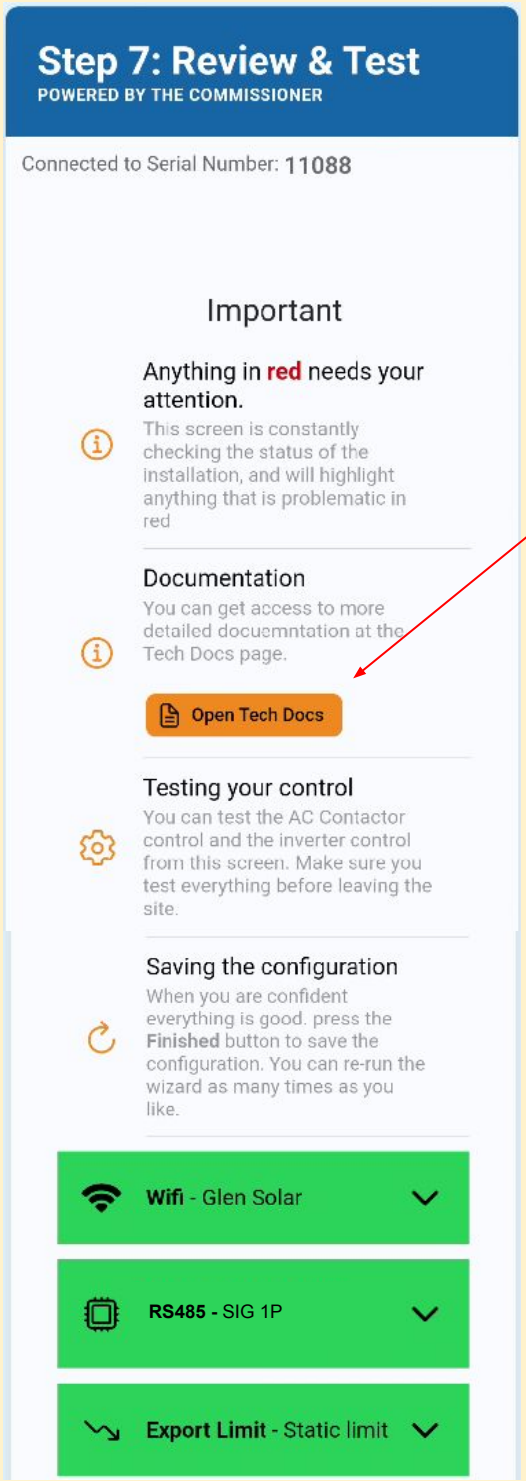
If you are planning to control hot water answer yes to this question. The wizard will auto configure the device output to be optimal for Hot Water control

Tell us how big the element in the hot water service is. This allows the wizard to setup the best parameters for turning the hot water on and off.

If there are enough CT's choose yes to this. It will allow the hot water load to be shown in the monocle and it will also allow the hot water to be excluded from battery discharge.

Commissioning Wizard

Step 7 - Review and Test



From this step in the wizard you can check to see if everything is communicating, you can adjust CT's and make sure they are right, you can also test load control and inverter control.

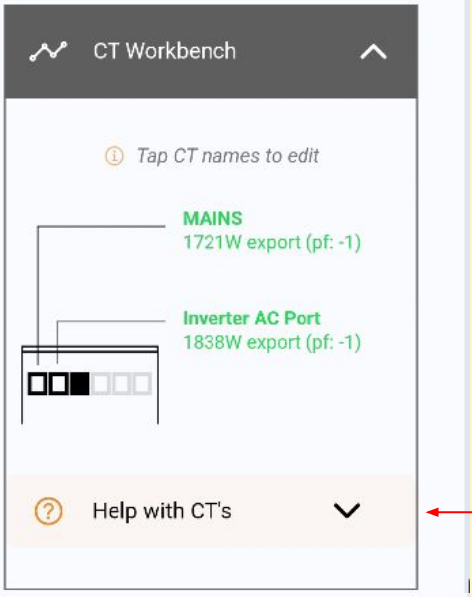
If you need instant access to the detailed documentation. Press here.

SubSystem Status indicators. Tell you at a glance if everything is communicating correctly. GREEN is GOOD…RED is BAD

Depending on the options chosen in the Wizard you will have up to three subsystems as shown here.

Commissioning Wizard

Step 7 - Review and Test

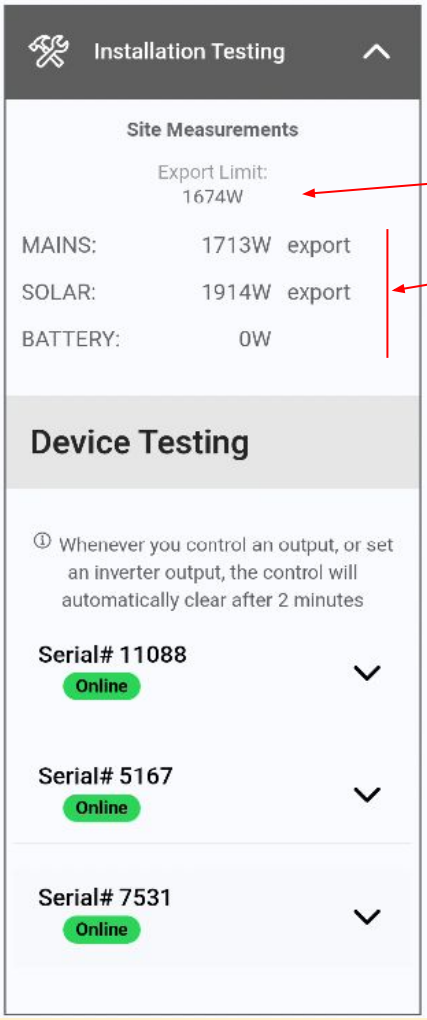


The CT workbench shows you how the CT's on the device need to be laid out.

The wizard is monitoring the CT's and if it finds a suspicious reading it will turn red. Tap on the name to open up the details.

You can also attach names and labels to some of the CT's by tapping on the CT name.

If you need additional help with CT placement detailed scenarios can be seen here.



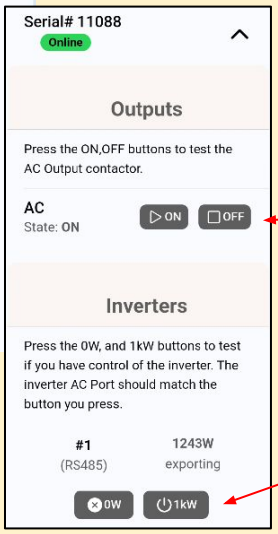
The installation testing region gives you an overview of the entire site.

The export limit for the site

Site level power readings

If any of the site level power numbers do not look correct to the wizard they will turn red with an explanation of the problem below the reading

A list of devices registered on the site appear below. Each device can have its load outputs turned on and off, and any inverters we are acting as the master for can be tested for control

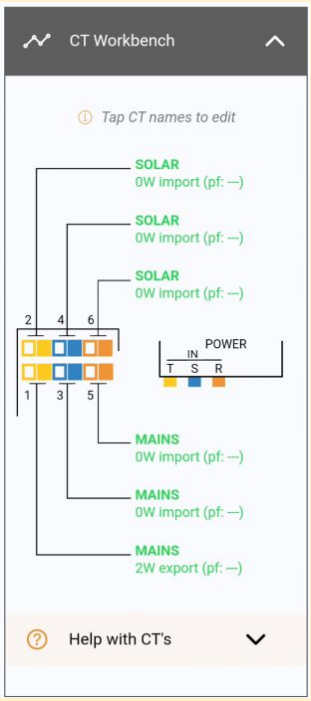


Turn the AC Contactor ON/OFF by pressing these buttons

Set the inverter output to zero, or ramp it to 1kw. Use this to ensure that we have adequate control

Commissioning Wizard

Step 7 - CT Workbench



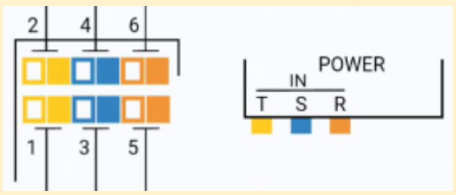
The CT workbench is especially useful in the 6 Channel device where there are multiple phases involved.

The CT diagram for both 2 Channel and 6 Channel CATCH Controls shows a schematic look down at the top of the device.

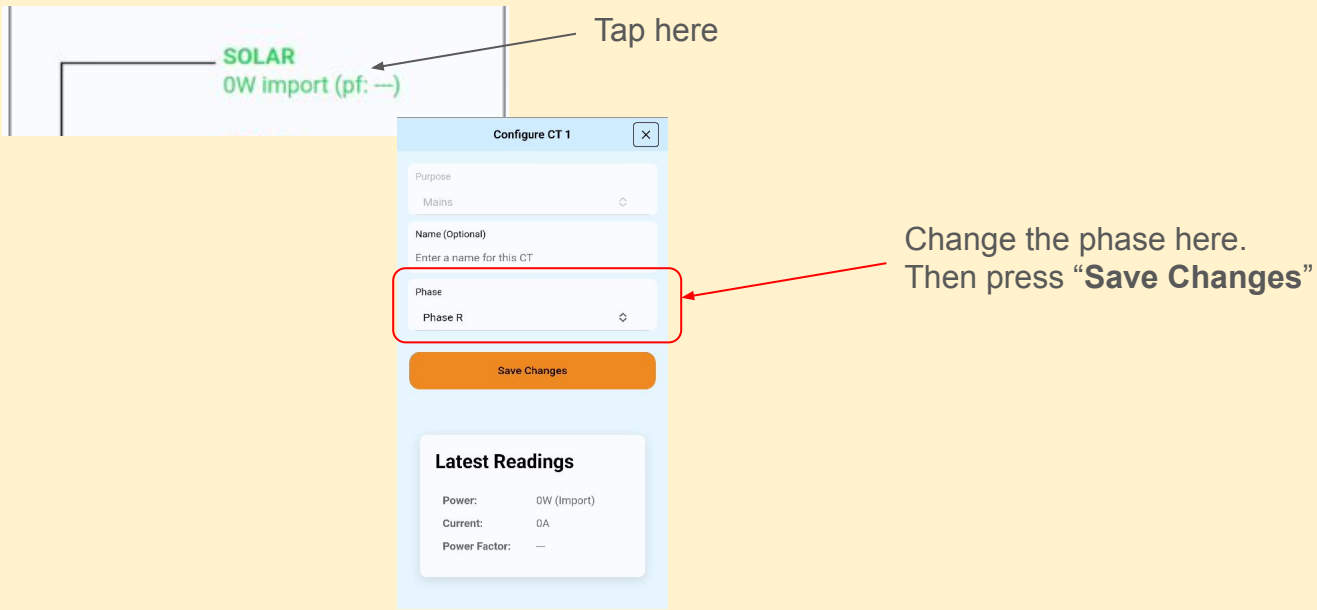
Is you work your way through the wizard CTs are being allocated for specific purposes. The preallocated CT's cannot be changed, however any unused CT's you can allocate yourself.

Phase Mapping

All CT's are phased mapped for you. You can see at a glance which CT's are mapped to which phase by looking at the colour coding.



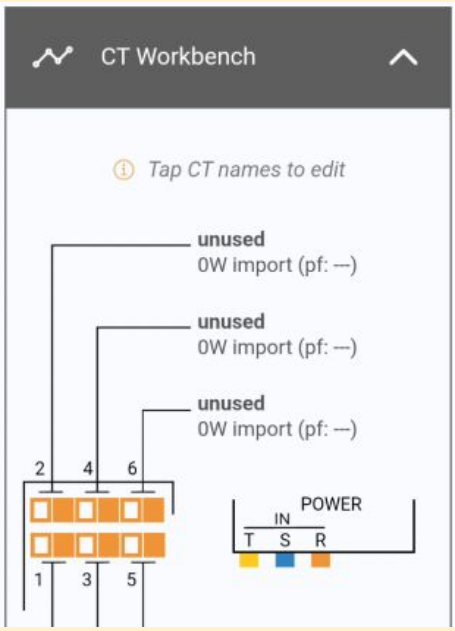
You can change the phase allocation of a CT at any time by tapping on the CT name



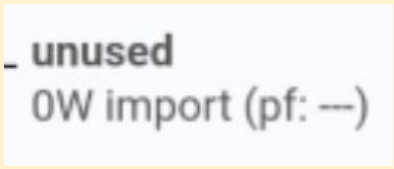
Commissioning Wizard

Step 7 - CT Workbench

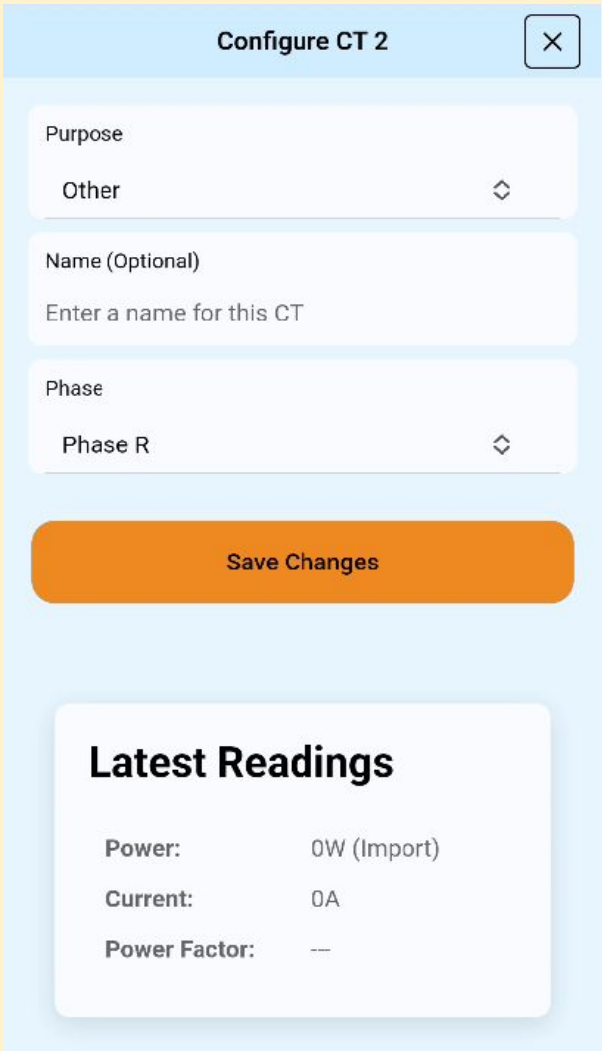
Un-used CTs



Any CT's that are unused as part of the system configuration look like this.



To allocate the CT to monitoring something Tap on the CT name to bring up the CT editor.



Purpose:
This tells the system what the CT is monitoring. You can choose one of two values:

SOLAR:
indicates the CT is being used to monitor the output of other solar systems that may be on site.

OTHER:
Use this for monitoring loads.

Name:
If you want the CT measurements to appear on the graphs in the monocle you can provide a name for the channel.

APPENDIX A
Firmware Upgrade Troubleshooting

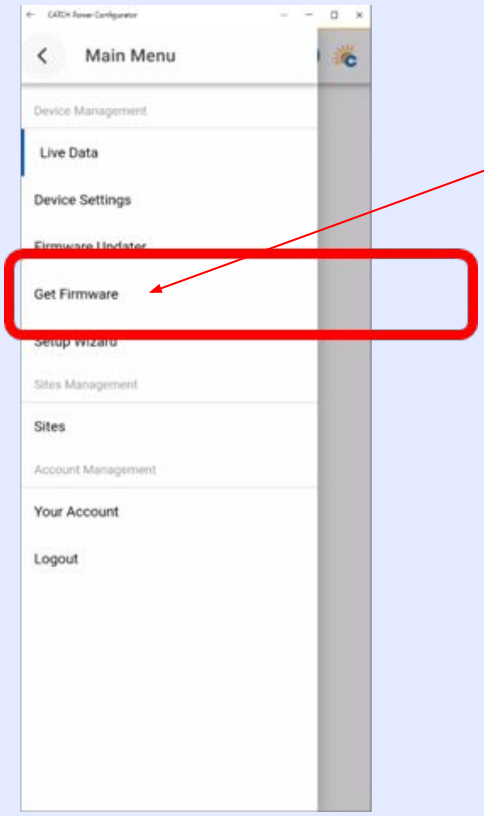
Firmware Upgrading

You are going to use the CATCH Power Configurator app to perform a firmware upgrade..

The installation wizard will typically run firmware upgrades automatically for you. If you are having trouble, or for some other reason you wish to run a manual firmware upgrade this is a step by step guide on how to do this.

Firmware Upgrading

Downloading the firmware



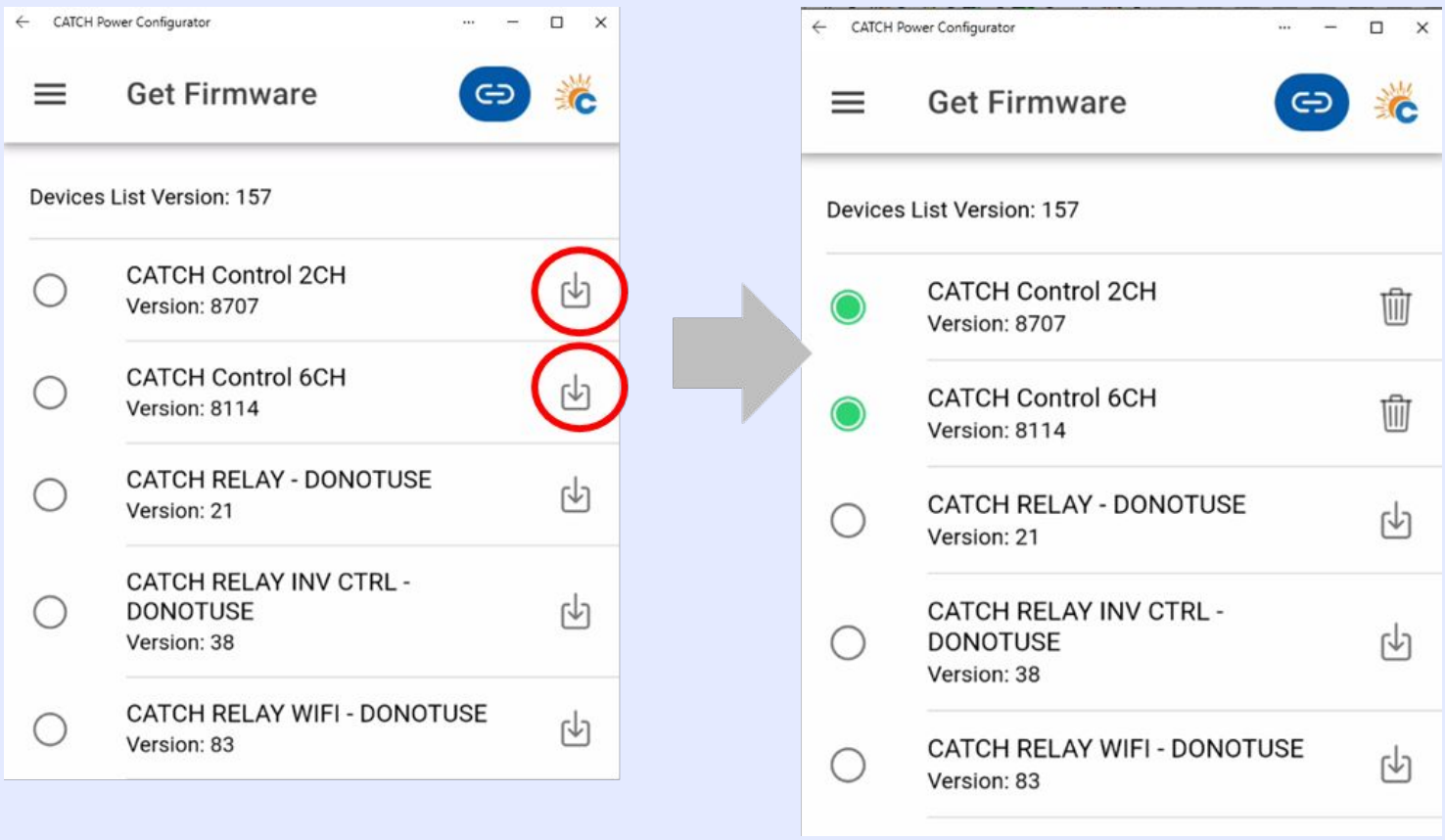
Navigate to the **Get Firmware** page

For 2 Channel firmware click on the "**CATCH Control 2CH**" download button.

For 6 Channel firmware click on the "**CATCH Control 6CH**" download button

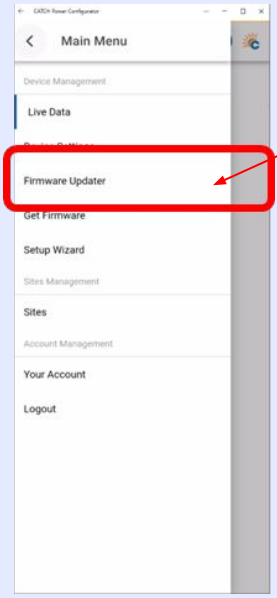
Green circles indicate a successfully downloaded firmware.

YOU WILL NEED INTERNET ACCESS TO DO THIS.



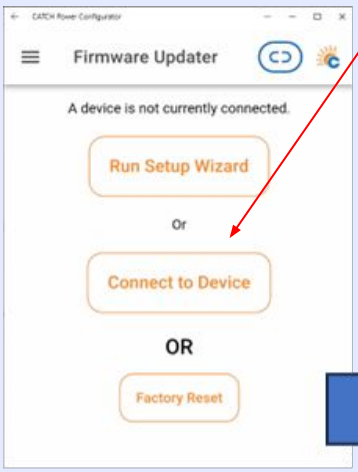
Firmware Upgrading

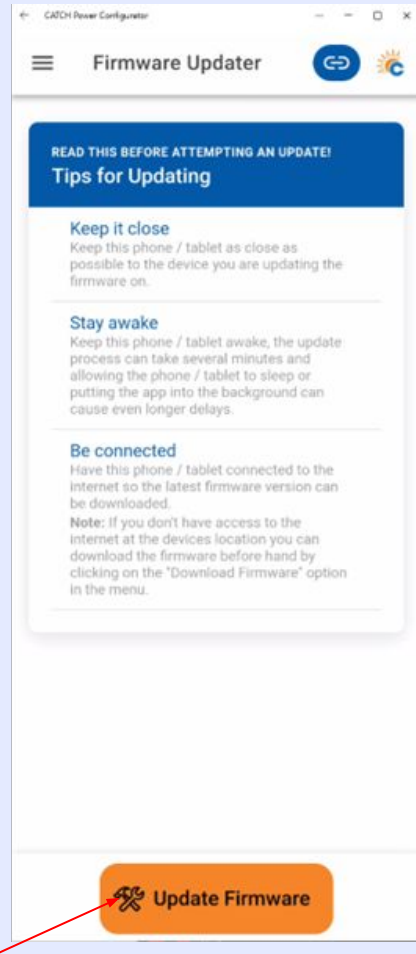
Run the firmware Upgrade



1 Navigate to **“FIrmware Updater”**

2 Press the **“Connect to Device”**

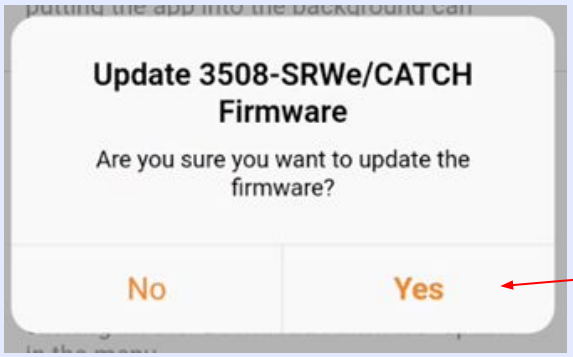




3 Press the **“Update Firmware”**

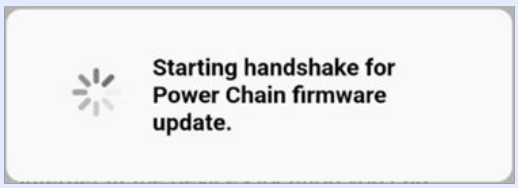
Firmware Upgrading

Run the firmware Upgrade

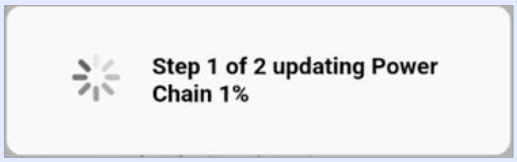


You will be asked to confirm that you want to upgrade the device.

The following screens will keep you updated about the upgrading process

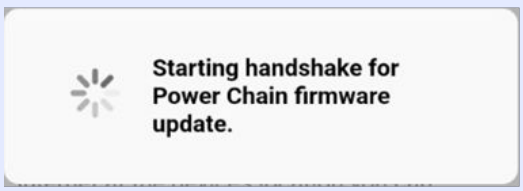


Stage 1 starts with a hand shaking operation between the phone and the device.

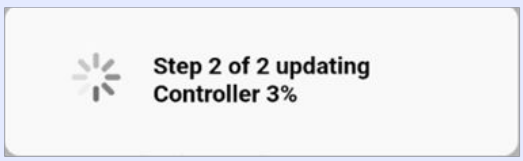


After a few seconds the stage 1 firmware transfer starts. This should count up every few seconds

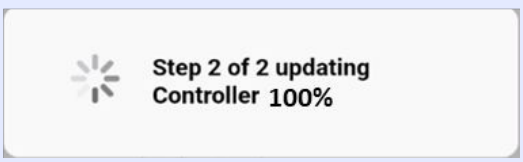
When step 1 gets to 100% it will take 20-30 sec to move on.



Stage 2 is starting. At this point you should see the power light and the Bluetooth light on the device start to flash on and off. The flashing will continue until the entire process is finished.



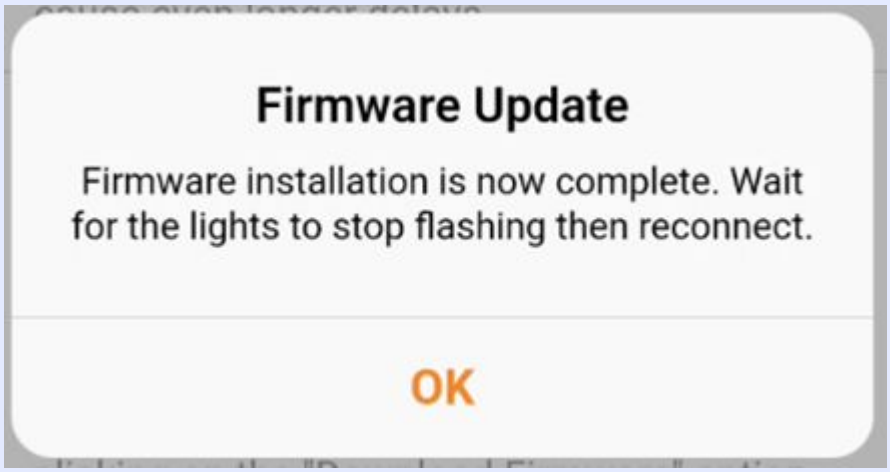
The Stage 2 transfer starts. The Load On Light will turn on indicating stage 2 firmware is being transferred.



The Stage 2 transfer is complete.

Firmware Upgrading

Run the firmware Upgrade



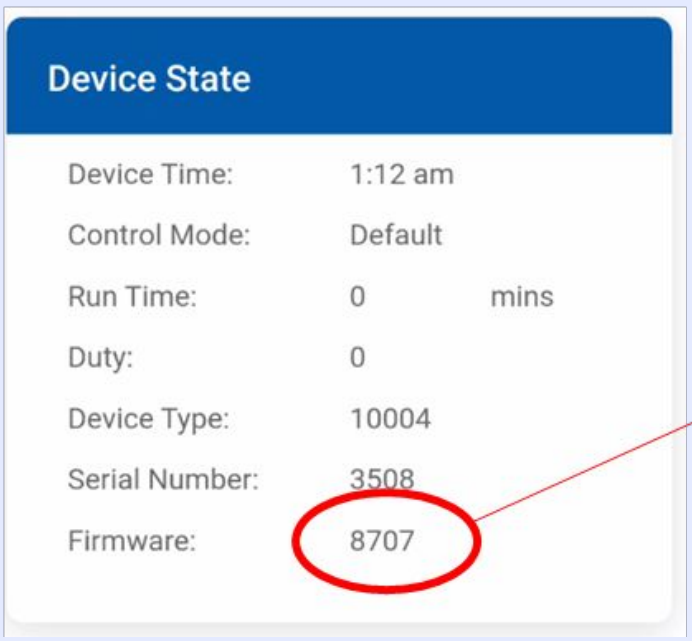
If all goes well, you should see this message indicating the firmware upgrade is complete. When this message appears the Bluetooth and power light will remain flashing for another 50sec, and the Load On light will turn off. Once the Power and Bluetooth light stop flashing you will be disconnected from the device.

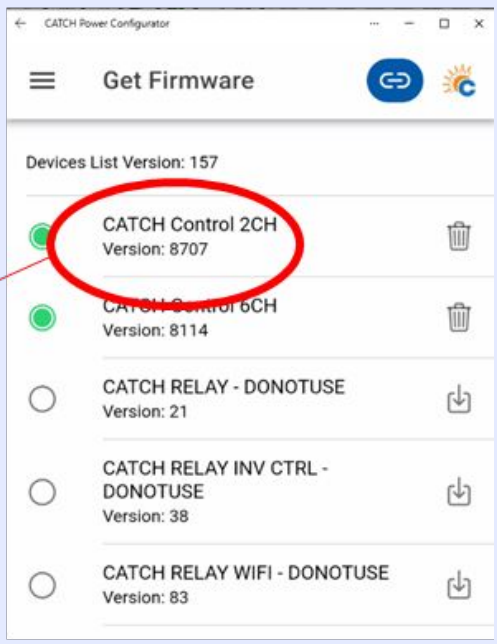
You can now reconnect and continue your setup.

Confirming the upgrade was successful.

When you log back into the app go the “Live Data” screen and confirm the firmware version is the same as in the “Get Firmware” screen.

Live Data





Firmware Upgrading

Upgrade Failures

If at any stage the firmware upgrade fails. Follow the steps below.

1. Shutdown the Configurator App.
2. Power off the CATCH Control.
3. Turn Power back on to the CATCH Control.
4. Open the Configurator and start the process from the being as described above.

How to tell if there is a failure?

Occasionally your phone will decide to do something in the background and upset the transfer of firmware. If this happens it will result in a firmware upgrade failure.

Usually you will get an error message stating the firmware upgrade failed, however if the failure occurs during the first or second stage handshake the app will hang.

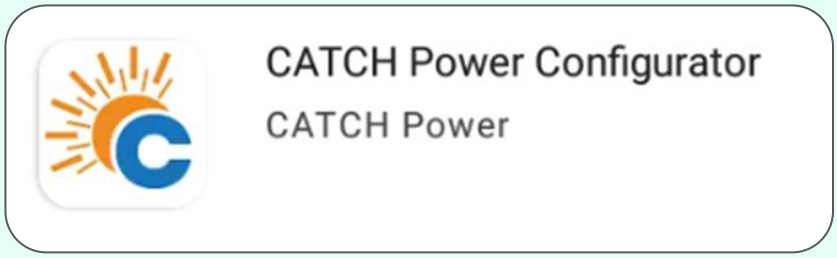
Another indicator of firmware failure is that the power and Bluetooth light flash continuously. They should stop flashing after 50 seconds if the upgrade was successful.

If either of the above situations occur follow the failure steps above.

APPENDIX B
RS485 Troubleshooting

RS485 Troubleshooting

You are going to use the CATCH Power Configurator app as part of this troubleshooting process

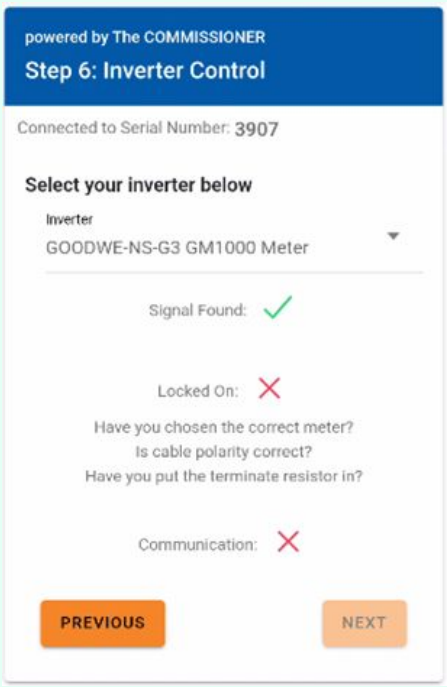


Purpose:
This is an electricians guide to fixing RS485 Communications issues.

How to tell if you have a problem:
Using the CATCH Configurator you can identify if there is an RS485 problem two ways.

Configurator -> **Live Data**
A Good RS485 connection that is correctly setup will have **Locked On** = 1.

This is an example of a bad setup, or a bad connection.



Configurator -> Wizard
You should have all green ticks.

This is an example of a bad setup, or a bad connection.

RS485 Troubleshooting

SO…YOU HAVE A PROBLEM

It will be one of 3 things:

- Not plugged into the correct inverter terminals
- A Bad electrical connection
- Not setup Correctly

NOT PLUGGED INTO THE CORRECT PORT

The easiest way to check this is to re-read the instructions and be very sure you have it right…However if you are still not sure then set your multi-meter onto **Volts – DC** and put your multimeter probes onto the inverter terminals.

You should see one of two things.
A fixed voltage in the order of 3.0 – 5.0V. This indicates an idle RS485 wire..ie you are on an RS485 terminal but its not transmitting.

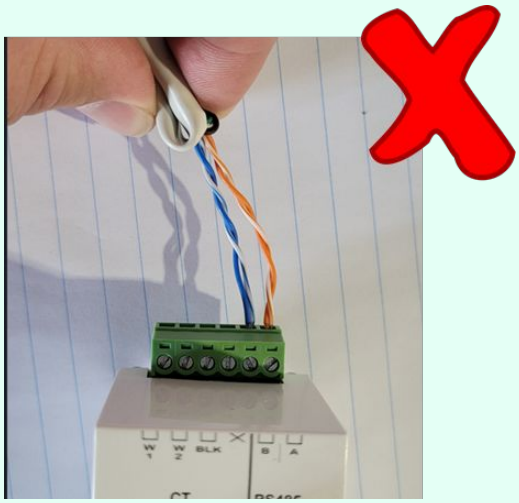
A voltage that is jumping all over the place. The voltage will be small but it will be jumping around. This indicates an RS485 bus where the inverter is transmitting a signal.

RS485 Troubleshooting

A BAD ELECTRICAL CONNECTION

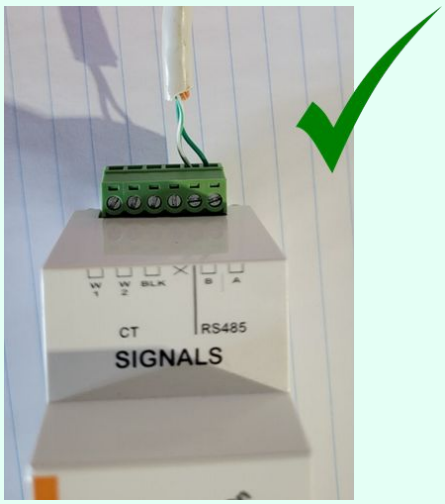
The first piece of advice is don't disconnect everything…unless you really need to. By connecting/disconnecting you are moving the goal posts. Use your meter to work out if there is a connection issue.

Firstly about the wiring. Most people will use CAT6 cable for RS485 runs, and that is perfectly OK, but there are a couple of things to note.



DO NOT DO THIS!!

DON'T USE TWO PAIRS LIKE THIS
I know more seems like it should be better. But you change the characteristic impedance of the cable and things won't work.



THIS IS CORRECT

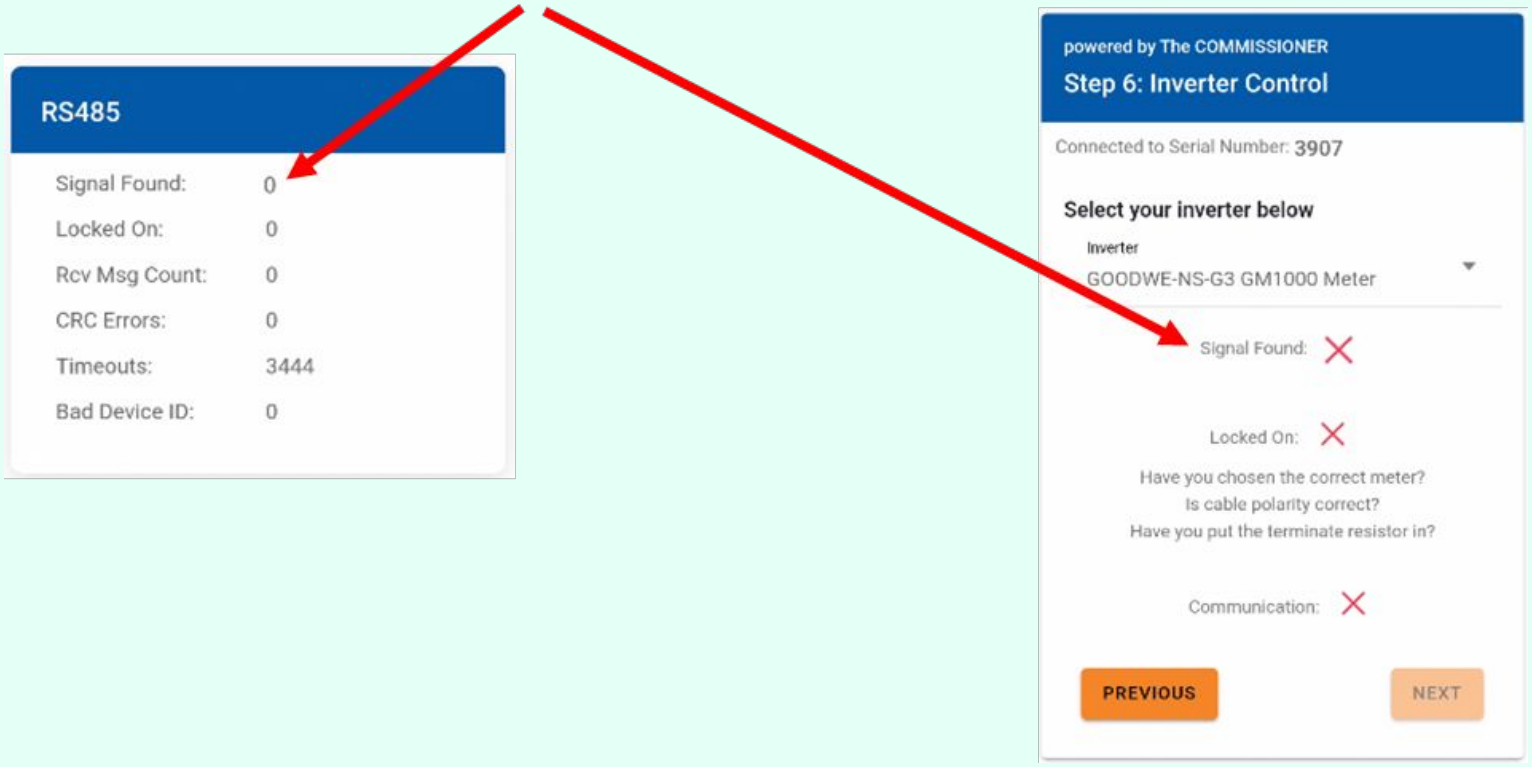
Just use a single Pair. Leave the others

RS485 Troubleshooting

A BAD ELECTRICAL CONNECTION

open the catch Configurator and go to the live data page or go to step 6 of the commissioning wizard. If there is no signal found you have a connection problem.

If you have confirmed you are plugged into the right slot on the inverter, this Indicates a bad connection



1. Put your multimeter on volts DC and put your probes on the Catch Control A/B terminal screws.

   If you measure a constant voltage in the range of 3-5V the connection is good but the inverter is not transmitting. There is a problem in the inverter setup.

   If you read no voltage (or something very small) then you have a connection problem.

2. take the multimeter over to the inverter and measure at the rs485 connection point at the inverter. If you are measuring a voltage here you now know the issue is either a connection or a broken wire.

RS485 Troubleshooting

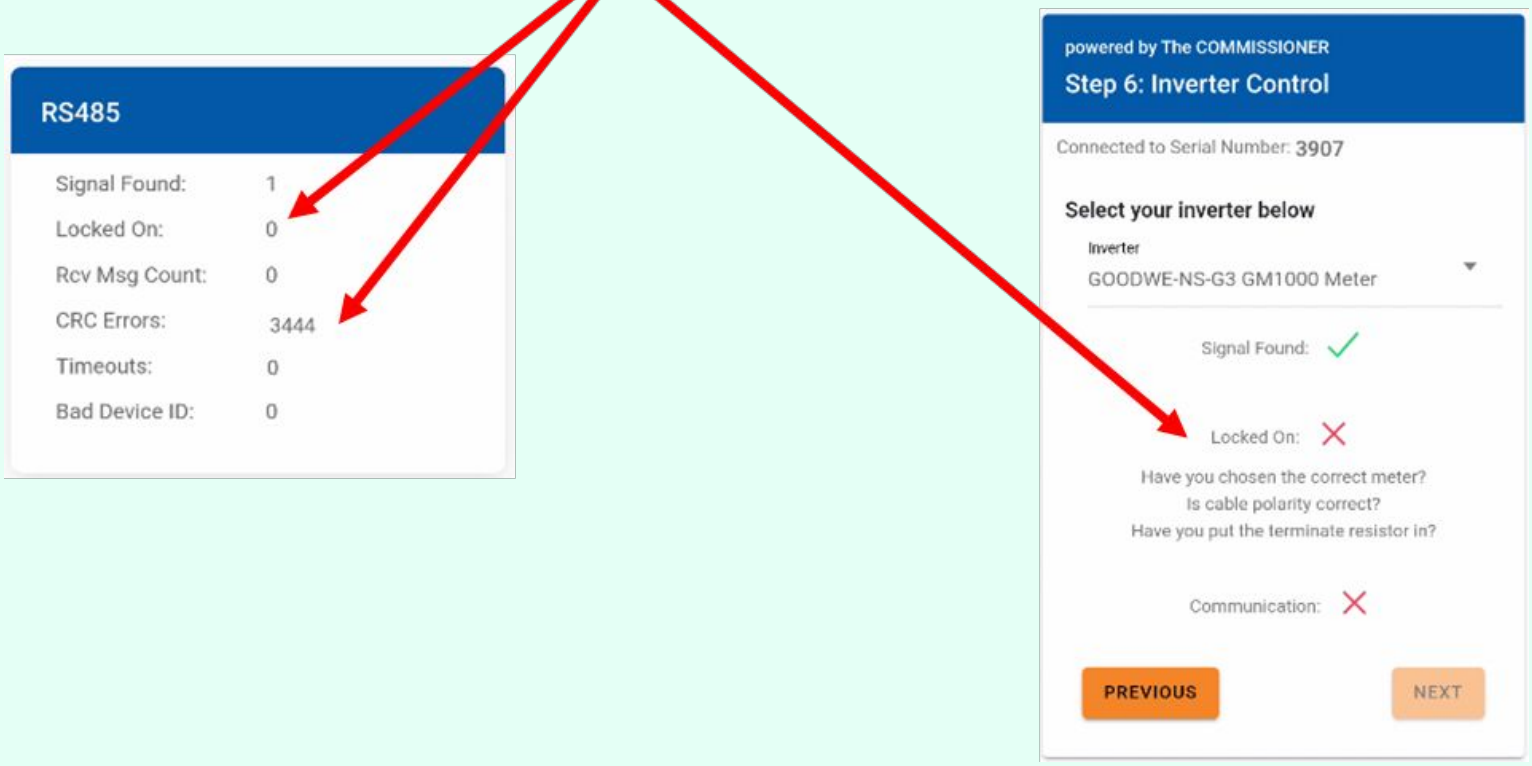
INCORRECT SETUP

Open the Configurator app and go to the rs485 info on the Live Data page.

You should now see signal found.

if the locked on is not equal to 1 there is still a problem.

Signal has now been found, But has not locked on.



1. Make sure you have the polarity correct. Check your A's and B's.
2. Make sure you have chosen the correct meter for the inverter you are connecting to.
3. Restart the inverter by shutting down the A/C, DC, and any batteries that are connected. Wait 2 minutes, then restart the inverter.

RS485 Troubleshooting

CORRECT SETUP

If you made it to here the setup is now correct. The screens below show you what a correct setup looks like

Locked on should stay at **1**, and the Rcv Msg Count should be climbing. The other fields can have non zero values and that is OK. As long as the CRC Errors is not climbing. Timeouts and Bad Device ID may be increasing, and that does not indicate a problem.