Unboxing and setup

In the package you will see the CG200 and 2 x 5L of Calibration solutions.
Set up the unit on a flat surface, **with the screen facing upwards, you will notice a "this way up" arrow on the side of the unit.**
keep the solutions on the same level or near enough if you can, the pumps are not very good at pulling up solutions from a distance. You will need a container for the waste solutions
Insert the Low or Solution 1 tube (left on the rear) into Solution 1(Low), you can make a hole in the lid if preferred. Do the same for Solution 2 (High). Insert the sample into your sample, or tank. On first use you could insert into Solution 2 for a test run.
Press "initialize", this will prime the tubes with solution.
Press condition, check that the mV readings in the main drop down window are stable, if they are noisy or moving around a lot when the pump has stopped filling it means the solution has not made it to the flow cell, press stop and press condition again. Check the tubes are fully inserted to the solutions and no kinks or blockages in the tubing. If all looks good, the conditioning will take 30 minutes. Have a coffee break
Run a sample, this will initiate a calibration. You will hear the pumps working.
Check the slopes (m values- press small down arrow on the left of the screen, you will see more details below). The slopes should be between 20 and 60 mV, positive for positive ions and negative for negative ions (NO_3^-, HPO_4^{2-}, Cl^-) with the divalent ions Ca^{2+} and mg^{2+} ~30mv and monovalent ions ~59.
If the slopes (m values) are not around these values, it means the solutions have not fully filled the tubes and reached the sensors. Don't worry press calibrate again. Sometimes on first use it can take 2 attempts for all the tubes to be fully primed. If the slopes look good, measure solution 2, you should get values close to the label on the bottle, if all is fine, proceed to taking real samples. Any questions email info@aptisens.com or arrange a call back.

Status Bar with Button Bar and Calibration Bar

The Status Bar displays the device's current status, if you tap on the Status Bar, it will display the current mV readings being read by the probe, the Button Bar, with the same buttons as described on the Home Screen is also displayed, and the Calibration Bar showing the current calibration date and time and solution used, tapping it also displays the m values for each ion, just as it does on the Home Screen.

Probe Tab

The Probe Tab contains settings for the Probe.

Here you can set the Auto Sample, Auto Clean and Auto Condition Intervals.

If your device supports multiple calibration solutions, here you can choose the calibration solution you are using, otherwise the calibration solution you are currently using is displayed.

Network Tab

The Network Tab contains settings for the Network.

On the Wi-Fi Network section, you can Scan for wireless networks, and join them from the device, or if you need to enter a username or password for the network.

You can also enable the Hotspot here, which sets the device IP to 192.168.42.100 and the name of the hotspot is the Hostname, the Hotspot is protected by a password. You can connect to the device via the hotspot to enter passwords, or change the hostname or IP address.

You can disable the Hotspot too if you do not want it enabled.

On the Ethernet Network section, you can Enable DHCP on the device, or over the web interface, you can set the device's Static IP Address.

System Tab

The System Tab contains settings for the Device.

You can check for updates here and safely Shutdown the device, the version number is displayed here.

If your tests are not displaying to the correct time, you can change your timezone here.

If you are having trouble connecting to Wi-Fi, you may have to set the country you are using the device in, you can do this here.

How to connect it to wifi
The CleanGrowAuto system can be connected to a wired network by using an ethernet cable
To connect the device wirelessly the following must be done

1. To connect the CleanGrowAuto system first you must go over to the system and turn on the hotspot to do this select the home button in the top left and go to 'setup' as shown in the image below
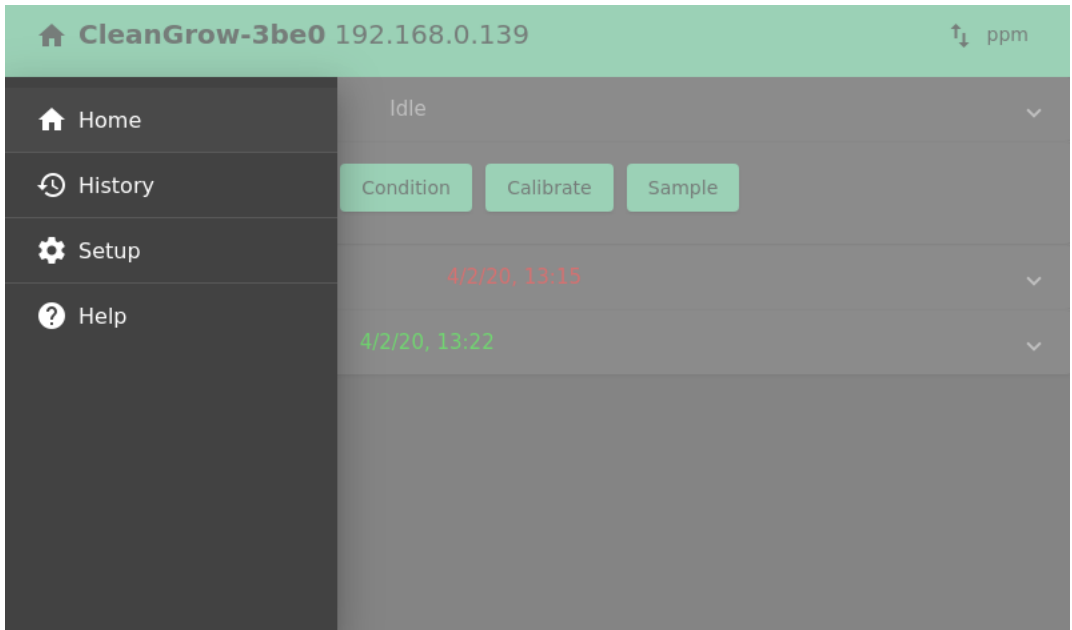
2. Once in the 'setup' menu go to the 'network' tab select 'enable hotspot' then select 'yes' as shown below
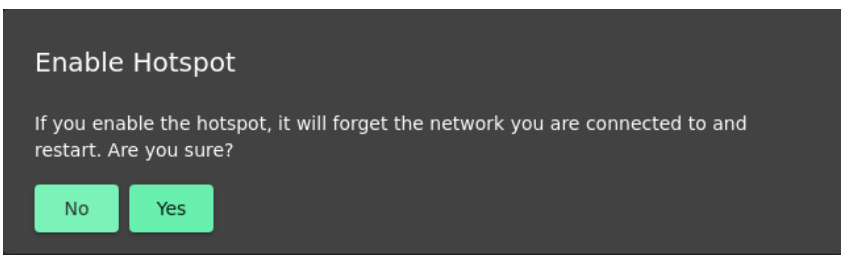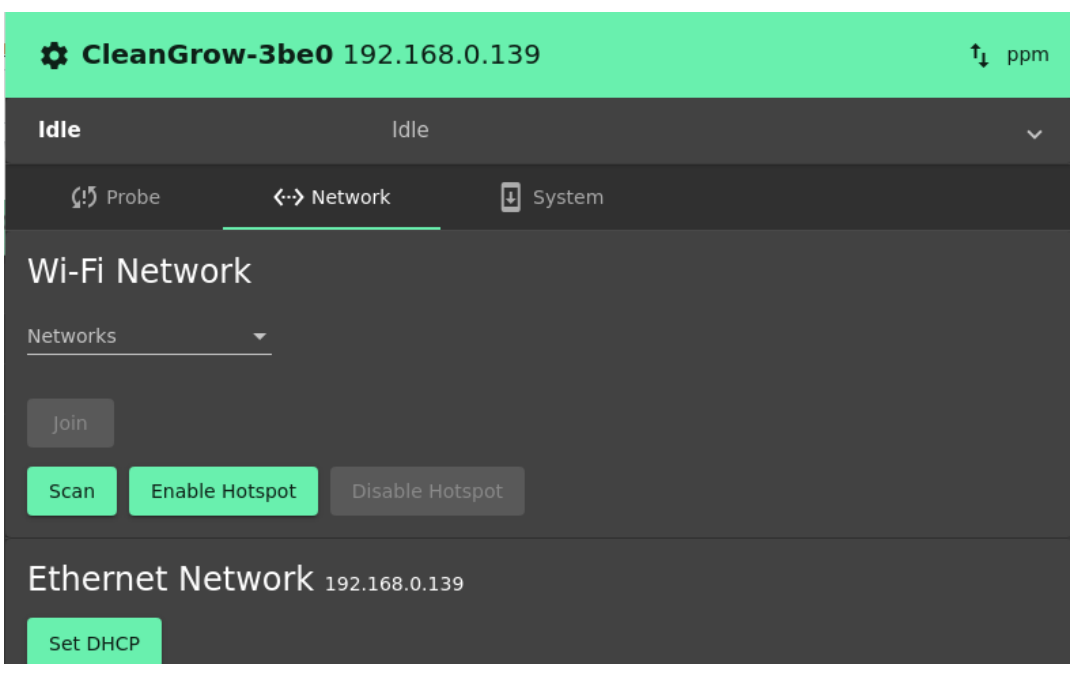
3. After this has been done the CleanGrowAuto device will then restart and show a new ip address at the top of its screen like in the image below


4. Using a computer or mobile device join the network that will have the same name displayed at the top of your device for example the one above is CleanGrow-3be0 and use the default password '*cleangrow*'
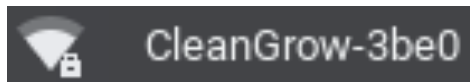

5. Then open up a web browser and type in the IP address found at the top of your sensor, the example IP from above is 192.168.42.100 and should be typed in as shown below
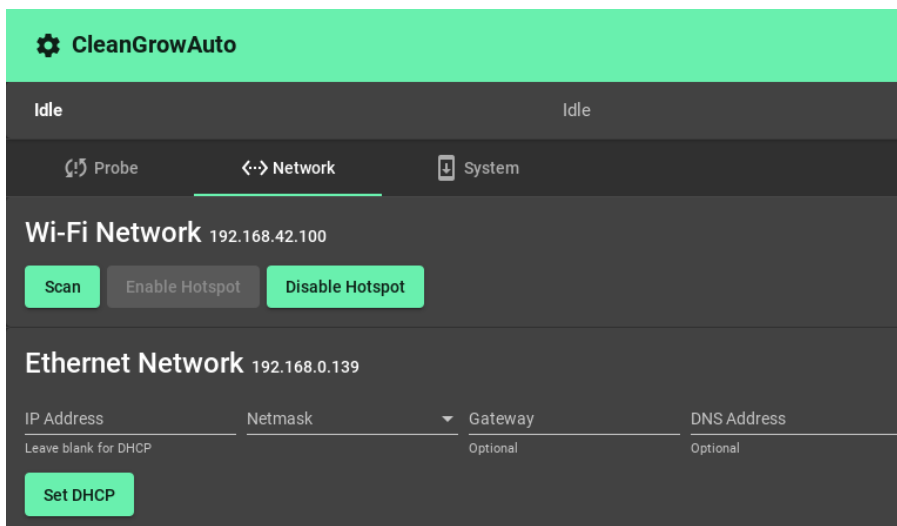

6. This should lead you to a web page containing information on your sensor like the image below
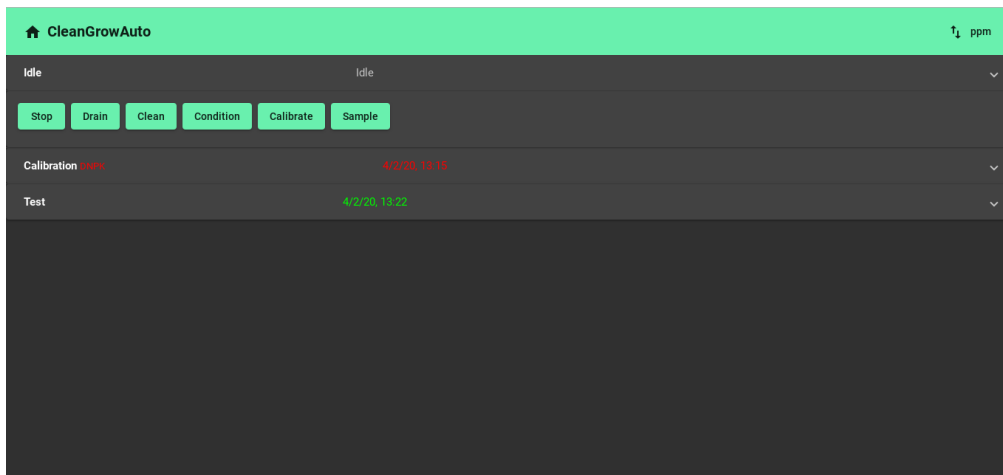
7. Once your at this page you need to make your way to the network settings like before, this is done by going to the home button in the top left of the screen and selecting setup
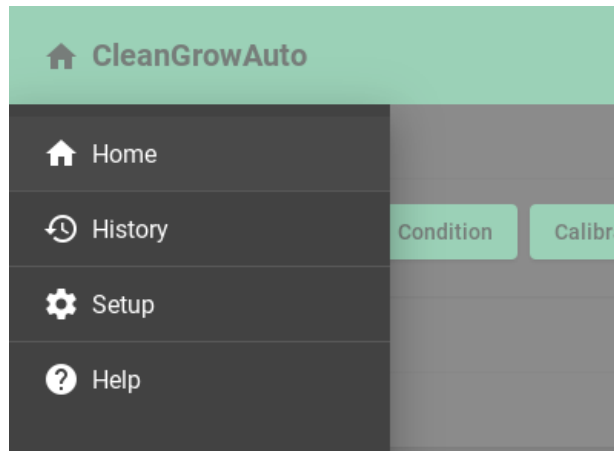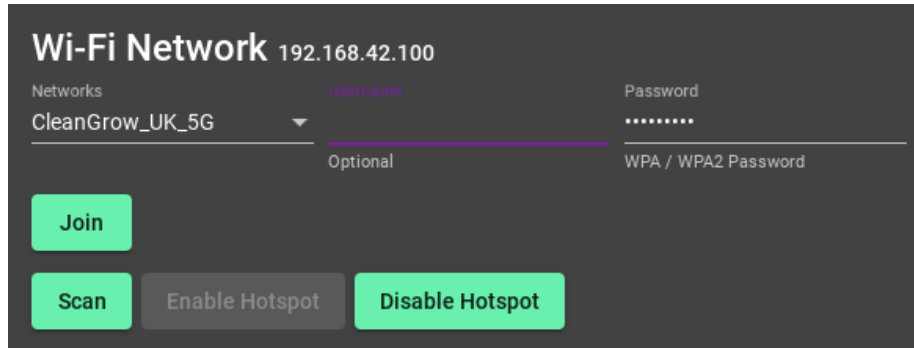

8. Once in setup select the network button to go to the network tab and select the scan button
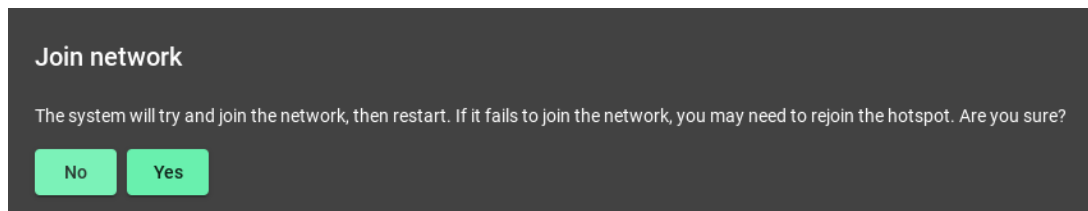

9. Once the networks have been scanned it will come up with options for where you would like to join, select your network and type in your username and password, if a

username or password is not needed to join the network then leave there tabs blank as shown below

10. Once you have typed your information into the device it will come up with the message displayed below,

When you are ready select 'yes' and the system will restart connected to the network instead of the hotspot. If it fails to join the network it will do as it says above and restart connecting back to the hotspot it may take a few minutes

11. Once it has restarted a new IP address (e.g. 192.168.0.143) should appear at the top of the screen and it should now be connected to the new network.

<p style="text-align:center;">Usage</p>

The unit can be used either from its touch screen or from a wireless web browser connected to the same network by typing in its IP address (displayed at the top of the unit) into the internet.

How to calibrate

The method is the same whether you do it from a browser or from the touchscreen

1. First either go to the touchscreen or the webpage which will look like the image below
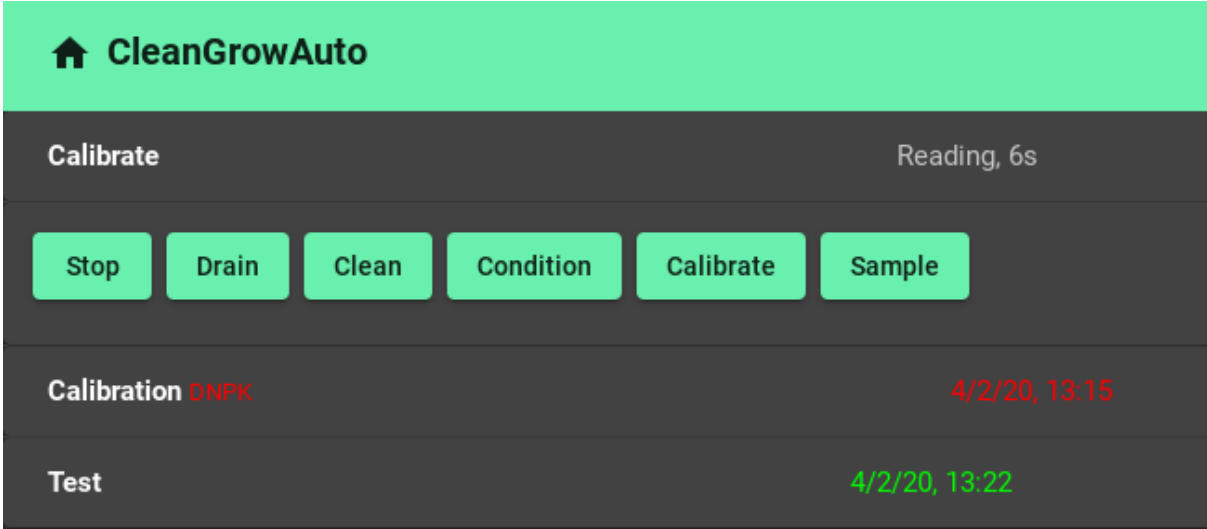
2. To calibrate the unit select the 'calibrate' button and the device will calibrate automatically, if there are any problems then the 'stop' button can be used to stop the calibration immediately
3. By clicking the drop down arrow found on the right of the screen next to calibraition you will be able to see the results of the calibration as you can see below
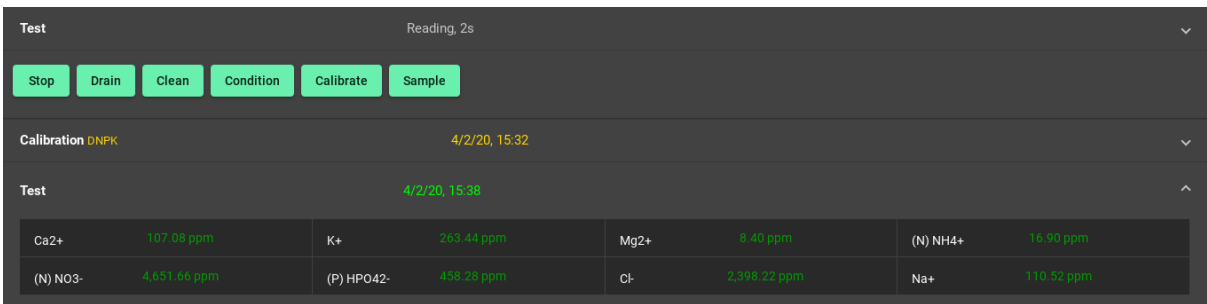

The device should auto calibrate every 20 minutes if the sample takes longer than 20 minutes to test completely

How to Test/sample

Again both in browser and on the touchscreen the two methods are identical
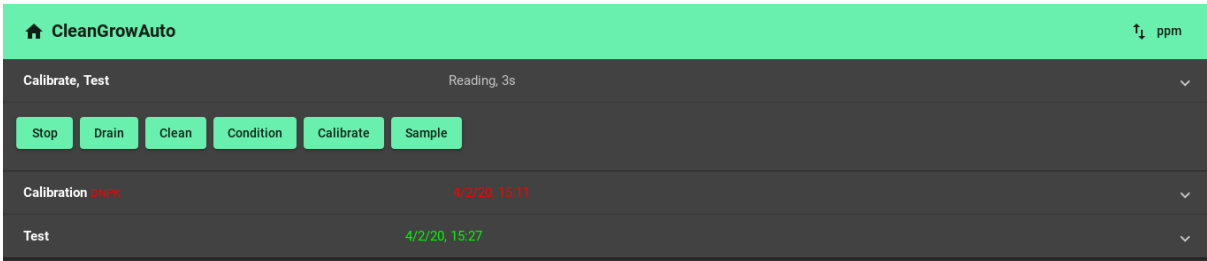
1. To test/sample just select the 'sample' button as shown above, if the unit has done 5 tests or not calibrated for 30 minutes it will calibrate before taking your sample
2. If the sampling needs to be stopped at any point then selecting the 'stop' button will cancel the test and stop
3. To see the test results use the drop down arrow on the right of the 'test' icon and the results will be shown as shown in the image below

| Test | | Reading, 2s | | ⌄ |
Stop	Drain	Clean	Condition	Calibrate	Sample
Calibration DNPK		4/2/20, 15:32		⌄
Test		4/2/20, 15:38		⌃
Ca2+	107.08 ppm	K+	263.44 ppm	Mg2+	8.40 ppm	(N) NH4+	16.90 ppm
(N) NO3-	4,651.66 ppm	(P) HPO42-	458.28 ppm	Cl-	2,398.22 ppm	Na+	110.52 ppm

4. You can also set the unit to also sample in setup which is talked about in the setup part of the manual

How to use the history page

Again this is the same for both the web browser or the touch screen

1. To find the history page use the home tab in the top left of the screen and select 'history' to go to the history tab as shown below
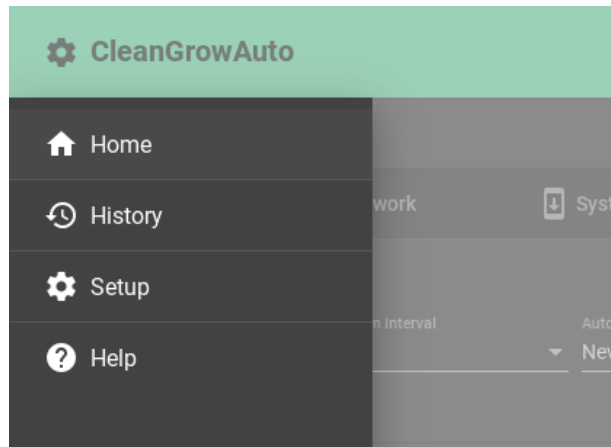

2. The history tab looks like the image below and allows you to see all previous results, to see more of the results you can select the '>' or the '<' arrows in the bottom right of the screen to see more results

3. If you are on a browser you can download the results as either a tab or a CSV file which will download straight to your computer or mobile, you can do this by either selecting the 'exsport all (CVS)' tab or the 'exsport all (Tab)' buttons

<u>How to use the setup page</u>
The setup page can be found using the homepage and then selecting the 'setup' icon and should look like the image below
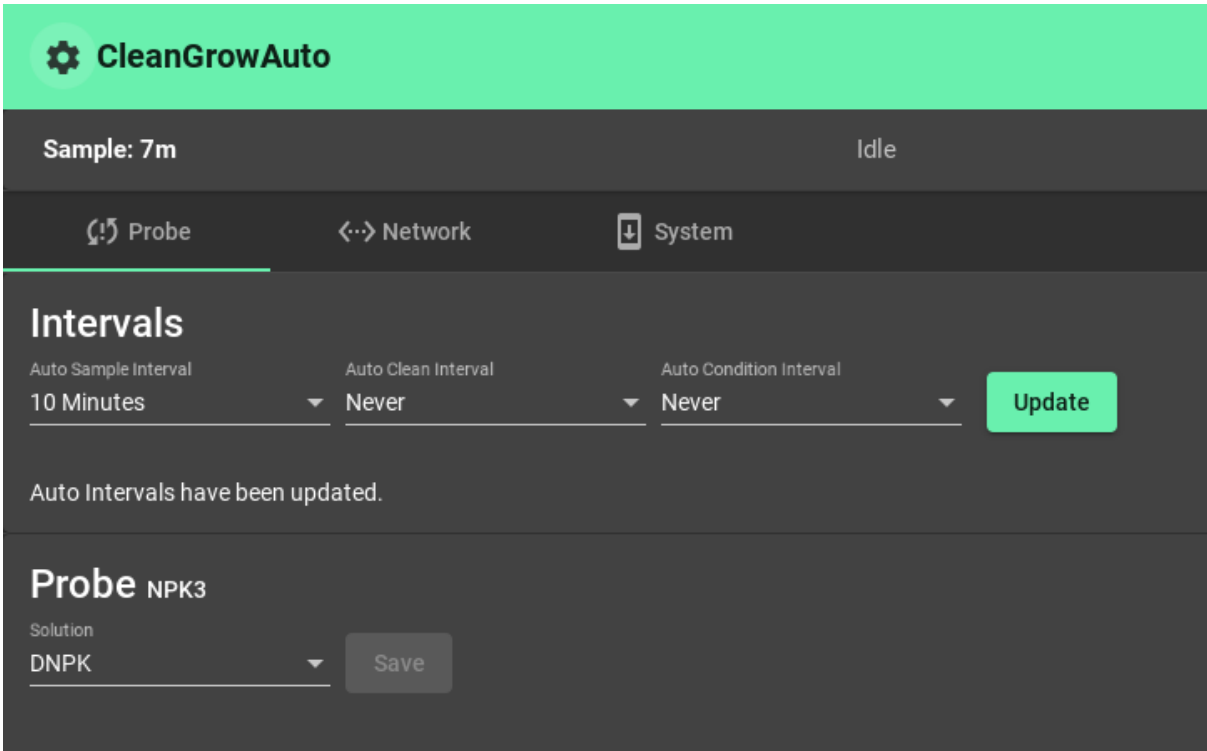
The setup page can be used to set your sensor on regular samples, conditionings and how regularly it should clean itself

1. To set these select the one you want and click on the drop down tab (the small arrow near the item you've selected)
2. It will then drop down with different options for how regularly you want to use the function you selected (as shown below) you can then select how regularly you want to use the function
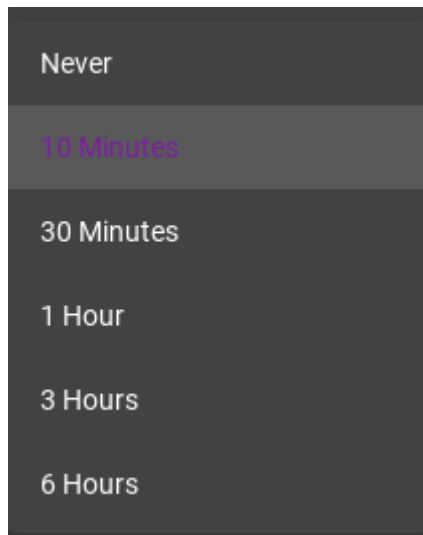
3. Once you have decided on how regularly you want your functions to complete their tasks you press the update button (shown below in the bottom right) and it will update the device with the new settings
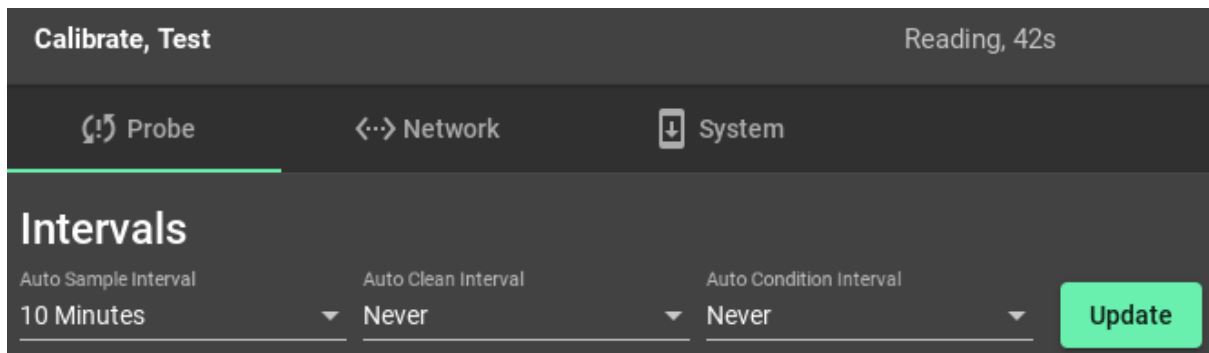
You can also change the model of probe you are using by selecting the probe section of the screen in the bottom left (looks like the image below) and clicking the drop down before selecting the model and pressing save
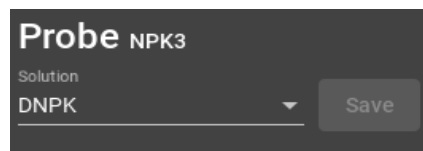
If you need to change the time of your unit this can be done in the 'system' part of the setup settings found as one of the tabs on the top of the screen (should look like the image below)
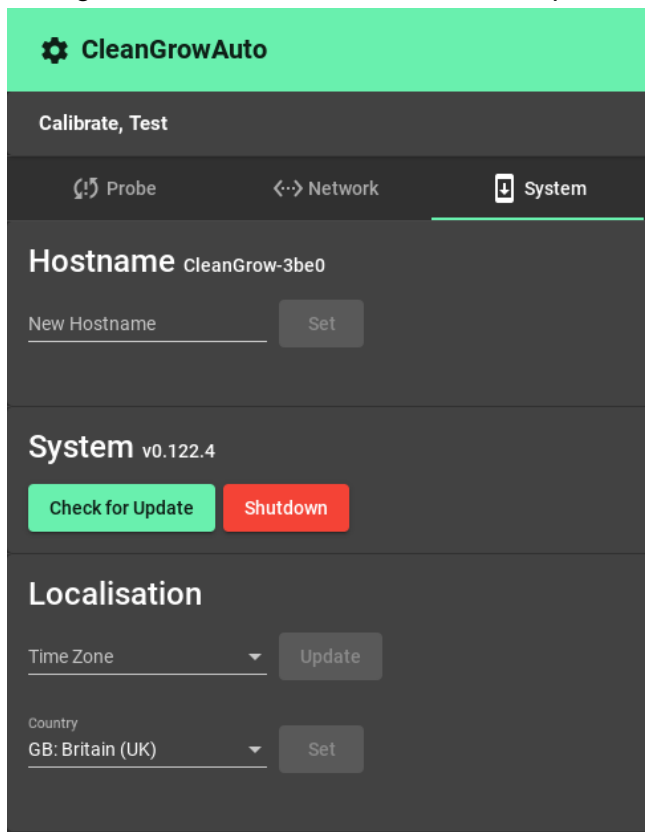
● Here you can change the time by selecting the different time tabs
● You can also check for updates by selecting the 'check for updates button
● If the machine is not being used and needs shutting down you can select 'shutdown' to close down the unit
● You can also change the name of the device by selecting the 'new hostname' tab and typing in the correct name you want
● The network part of setup has been described in the "connecting the CleanGrowAuto system to your wifi" part of the manual

Cleaning and Maintenance

Nutrient solutions can cause a build up of biofouling.
If you are putting the unit away for some time, use the clean function. When you press shutdown it will also give you the option to press clean.
If you have biofouling or putting the unit away, make a solution of water with a few drops of H202 or similar solution e.g HOCL (Watermax available from www.cleangrow.com) then put the sample tube into this solution and press clean.
If the unit has not been used for some time, on start-up press initialize again and do a condition step.

Conditioning

The sensors dry out when not used, especially the reference electrode. A conditioning step helps to re-hydrate and prime all the sensors for a stable response when the unit is sampling.
It is a good idea to auto-schedule a conditioning step every few days if it is installed near a tank for auto sampling.

Any Questions at all, email info@aptisens.com or skype 'cleangrow' for an immediate response