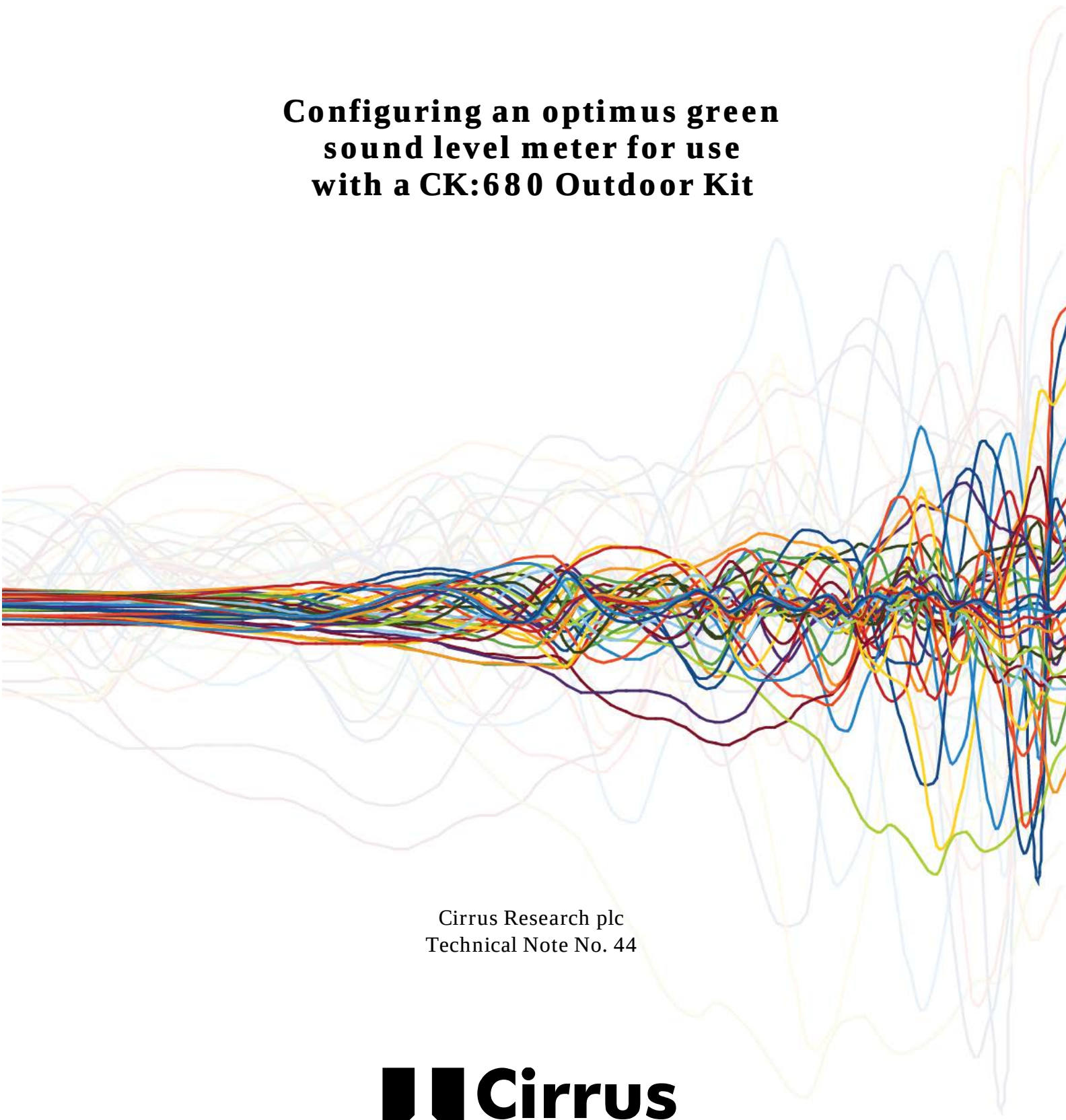
Configuring an optimus green sound level meter for use with a CK:680 Outdoor Kit



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This symbol is shown where important instructions or information are displayed.

Please ensure that you read any information and follow the instructions.

1 Configuring an existing optimus green for modem and GPS use

The following instructions are for configuring an existing optimus green instrument for use with an outdoor kit with modem and GPS (CK:680).

If you have bought a complete kit which includes a new optimus green, it will already be configured for modem and GPS use. Please read the following steps to ensure that the instrument is correctly configured.

Your optimus green needs to be configured using NoiseTools before plugging in the outdoor kit with modem and GPS.

If these configuration options are not set correctly, it will not be possible to communicate with the optimus via the modem.

Below is a checklist with details of each section following in this manual.

1.1 Quick Check List

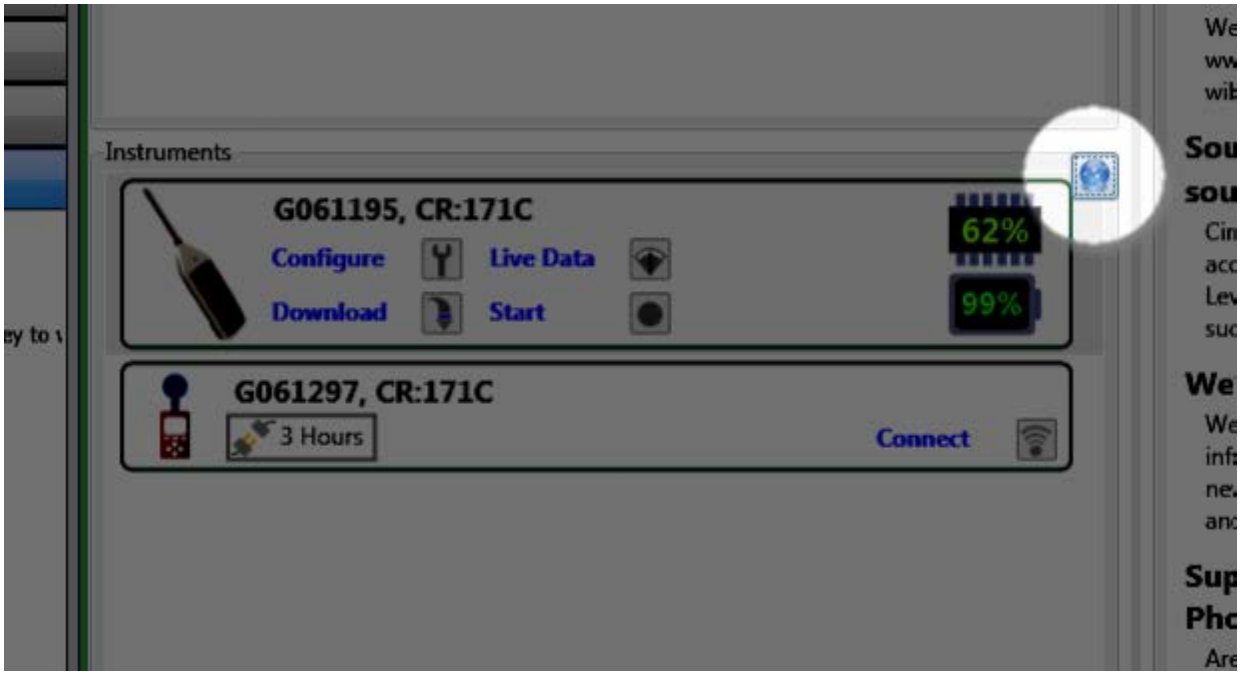
	Step 1	Initial Configuration of NoiseTools
	Step 2	Check configuration of communication ports
	Step 3	Check that NoiseTools can connect to the optimus remotely
	Step 4	Check the NoiseTools can configure & download measurements remotely
	Step 5	Deploy the CK:680 & optimus

2 Initial configuration

Connect the optimus sound level meter to a PC running the NoiseTools software using the USB connection on the Interface Box.

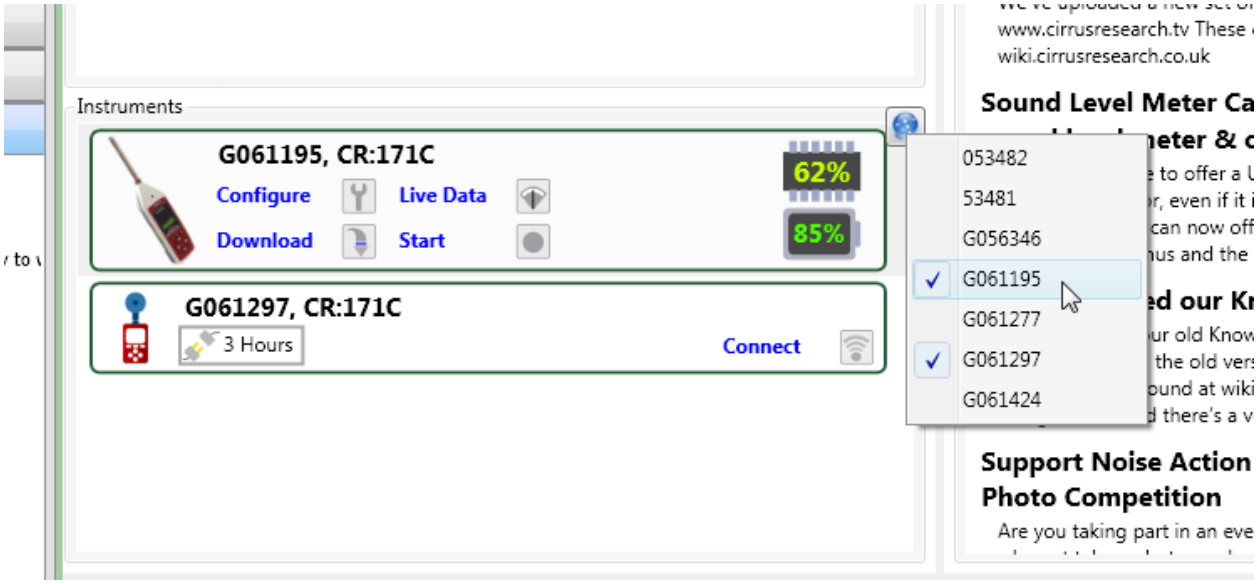
> The optimus sound level meter must be connected via USB before these configuration steps can be carried out.

Click on the world icon at the top right of the instrument pane to see a list of instruments.



The serial number of the instrument connected via USB will be shown in the list.

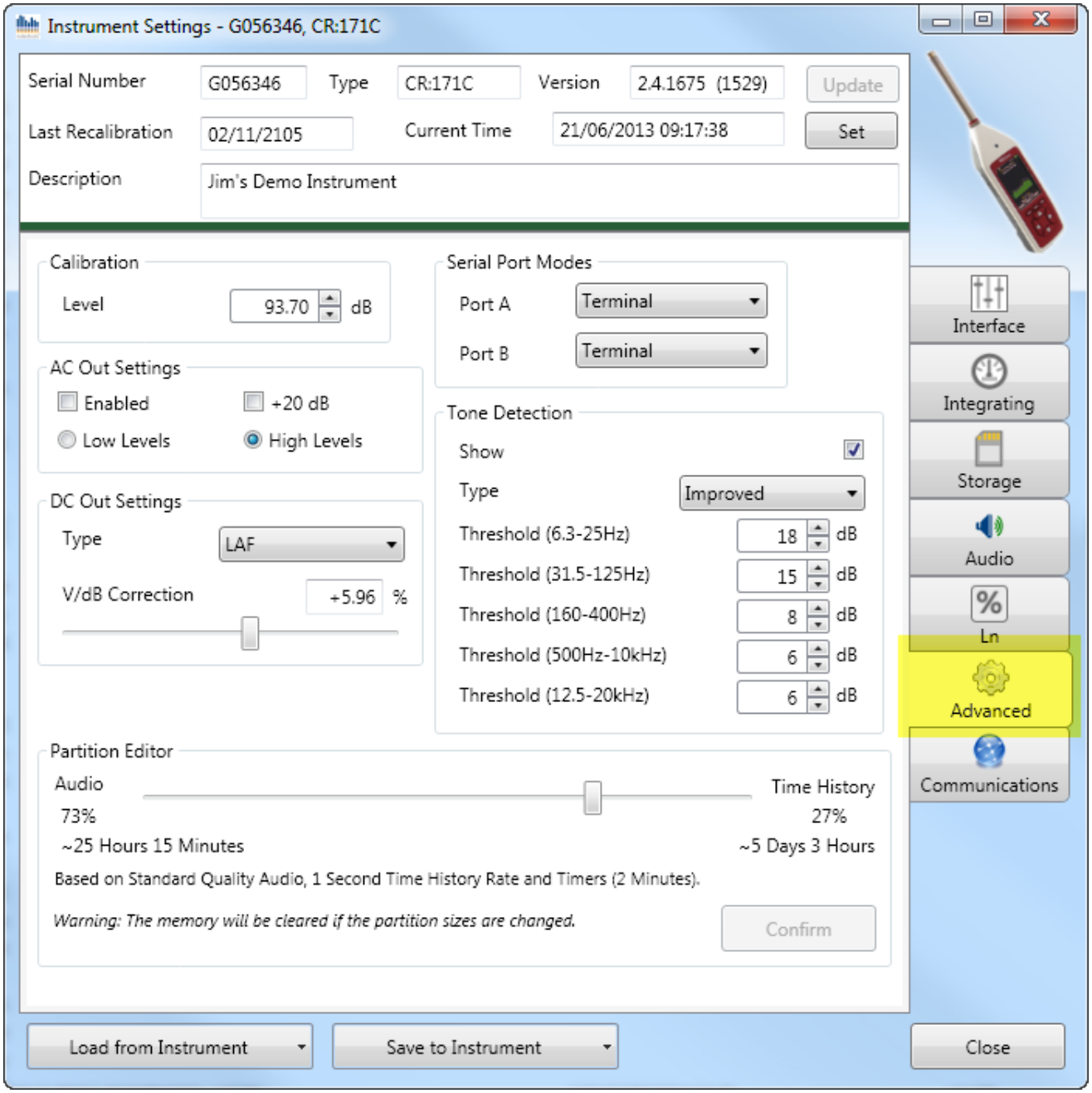
Check the tick box to select the instrument for remote connection.



When the instrument is ticked, it will appear the next time that the NoiseTools software is run and the remote connection will be available.

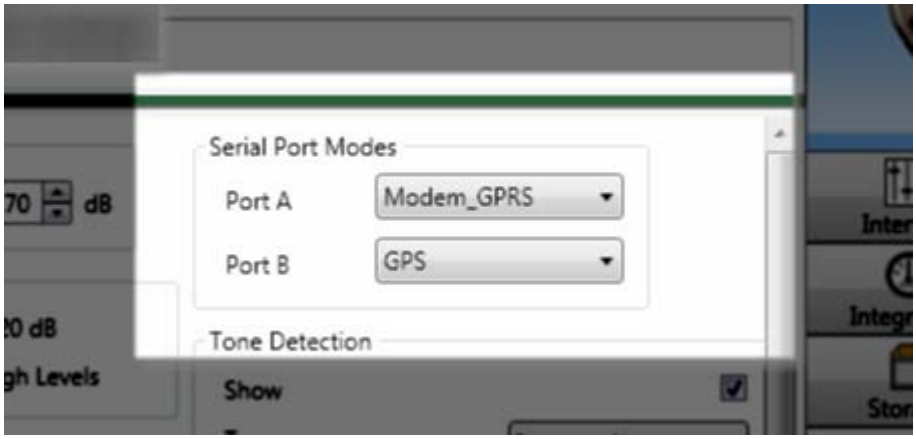
2.1 Check the configuration of the communication ports in the optimus

In the NoiseTools software, click on the ‘configure’, then on the ‘advanced’ tab.



The serial ports need to be set to - Port A: Modem_GPRS / Port B: GPS.

If the Port A and Port B settings are not correct, click the options and select Modem_GPRS and GPS accordingly.



Communication port settings can only be changed while the optimus is connected to a PC via USB.

These settings cannot be changed when the instrument is connected to NoiseTools remotely.

Click **'save to instrument'** on the configuration window and the optimus screen will update to show the new settings (Port A: Modem, Port B: GPS).

You are now ready to connect to the instrument via modem over the internet. The optimus can be connected to the CK:680 outdoor kit and installed remotely.

Before deploying the CK:680, always test the communication with the CK:680 to ensure that the NoiseTools software can connect to and download data from the optimus sound level meter.

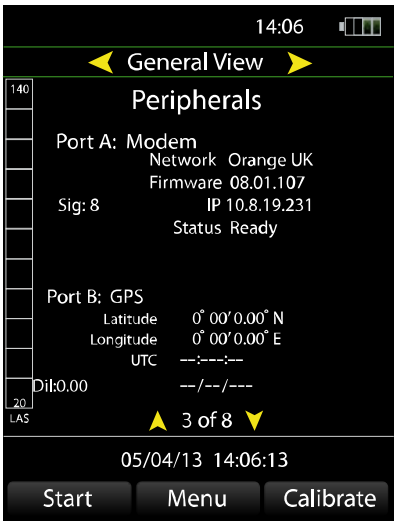
In the NoiseTools software, the 'communications' tab on the 'configuration' popup window is used to set details for email and twitter messages, and notification number(s) to receive alerts direct to a mobile phone.

Web services other than Twitter can be used – please contact Cirrus for advice.

3 Connecting to the modem and GPS

Select General View, Page 3 on the optimus to show the status of the modem connection.

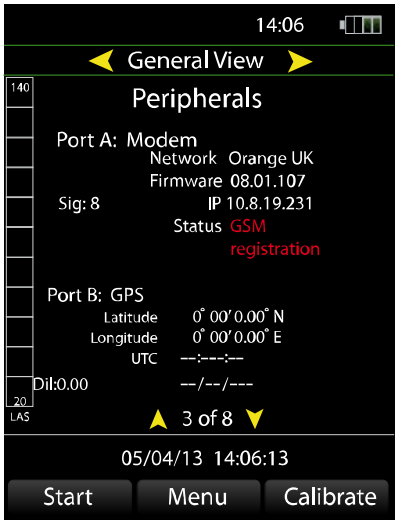
Once the sound level meter detects that it is plugged into a kit, the optimus will attempt to connect to the network so no user input is needed.



In the Port A: Modem section, the status of the connection will be shown using one of the following messages:

- Initializing Modem
- Registering
- Ready
- Transferring Data
- Sending SMS
- Disconnected

If the optimus encounters an error during this communication, it will display this information as an error code. This will be shown in **red** in the Port A: Modem section next to the status.



The error codes are:

- SIM error
- GSM registration error
- GPRS registration error
- Configuration error
- Initializing modem error
- Instrument registering error
- SMS error

This information can be used to diagnose connection problems between the CK:680 and the Optimus Cloud server.

The instrument will keep trying to connect until it gets a good signal, so this may take a while in poor signal areas.

Once the SIM card is checked and the 3G network connection is secure, the optimus will register with the Optimus Cloud server so it can be contacted remotely. When the instrument is ready for connection to the NoiseTools software, the antenna icon will turn white.

If there are any problems, there will be a red error message displayed on the screen. If this should happen make a note of the code number and contact Cirrus for advice.

3.1 3G/GPRS Signal Indicators

The icons at the top of the instrument display show the current status of the cellular data network connection.

3.1.1 Network connection type

The type of network available is displayed next to the signal strength.

3G data connection

GPRS data connection

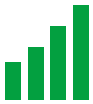
3.1.2 Signal strength

The signal strength is shown using 5 bars and the antenna icon.

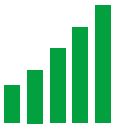
Very poor signal strength

Poor signal strength

Medium signal strength



High signal strength



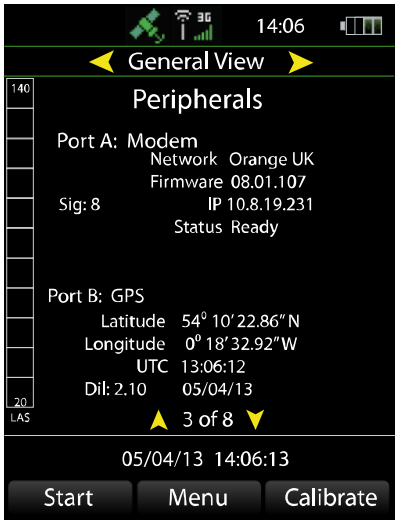
Full signal strength

The antenna icon will show in white when the modem has been successfully setup and a connection is available.

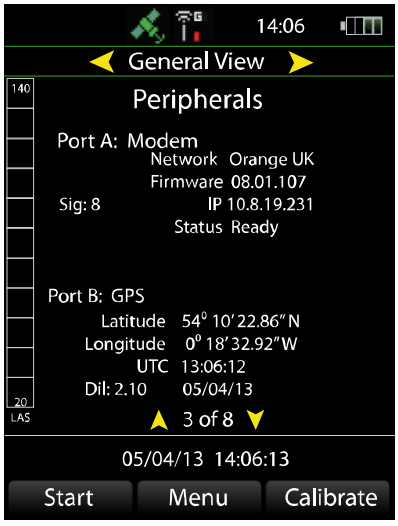
The modem has been successfully configured

No data connection is available or system initialising

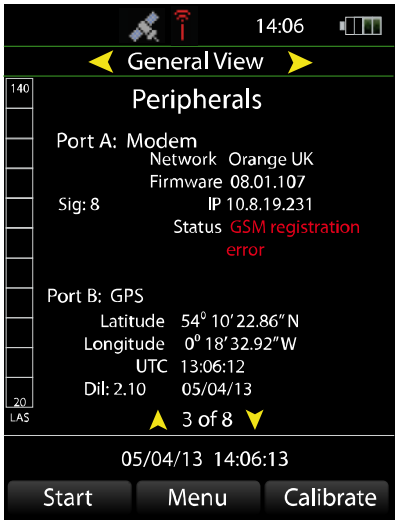
Examples of the different status displays are shown below.



A full 3G signal is available and the modem has been successfully configured



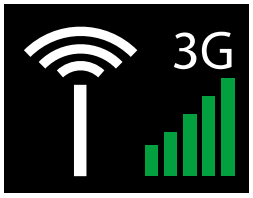
A weak GPRS signal is available and the modem has been successfully configured



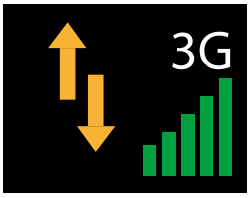
No signal is available

3.1.3 Data communication

When data is being transferred from the CK:680, yellow arrows replace the antenna icon to show that communication is in progress.



System ready for data transfer

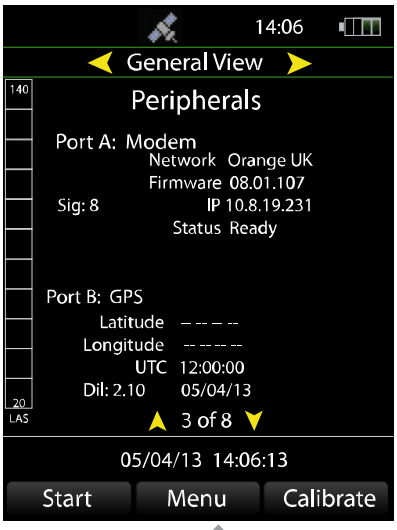


Data transfer in progress

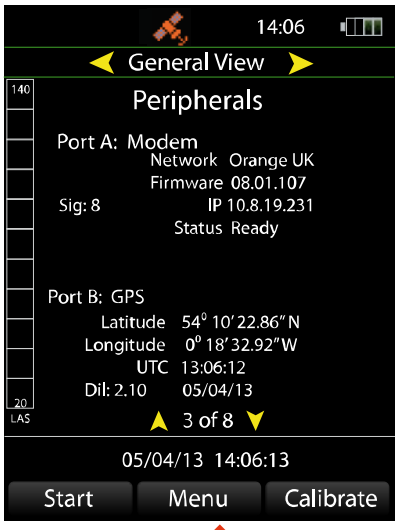
3.2 GPS Signal

When a measurement is started (either on the instrument, remotely triggered, or on a timer) the GPS location is recorded.

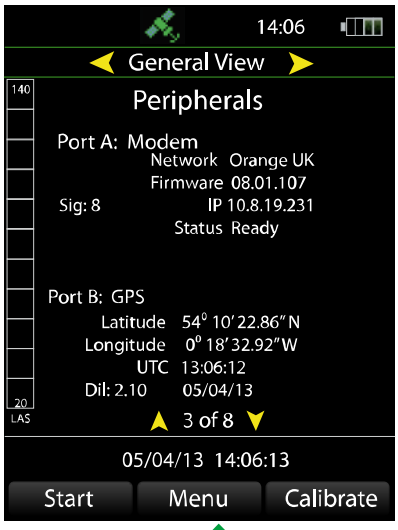
The satellite icon at the top of the instrument display shows the current status of the GPS signal strength.



No GPS signal available



Poor GPS signal



Good GPS signal

The current UTC time and date are also read from the GPS signal and the instrument's clock is also adjusted at the start of each measurement using the information from the GPS signal.

The GPS clock will adjust the seconds and minutes on the optimus clock to within half an hour to match UTC. This corrects for any drift automatically. The date and time must be set by the user to the correct local date and time before the measurement session.

The UTC time and date can be updated when there is only 1 satellite available to the GPS receiver. This will allow the time and date in the optimus to be set automatically.

The UTC (time) shown on the display for port B is the GPS clock, not the optimus clock, and will show 12:00:00 until GPS contact has been made.

The GPS location is available when 3 or more satellites are available to the GPS receiver. This will allow the measurement location to be recorded.

When the fix is satisfactory, the GPS is turned off to save power.
If no fix can be made within 2 minutes the GPS turns off with no location recorded. For repeated timed measurements, the GPS will turn on at the beginning of each measurement.

This means that every measurement has an accurate GPS location (if possible) so it doesn't matter if the kit has been moved around between measurements.

GPS position accuracy is approximately ten metres under optimum conditions. Nearby obstacles can block signals from some satellites and cause greater inaccuracy. The best orientation of the kit case is with the handle upwards, facing open sky.

Whenever the optimus is not recording a measurement, the GPS is on and the location is displayed on the instrument screen on General View, Page 3, under Port B/GPS. This can be used to accurately position the instrument at a pre-determined location

3.3 Improving the signal

The modem automatically uses the best available data rate (GPRS or 3G). If reception is poor, there are a few measures you can take to improve the signal.

Try moving the kit by a few metres, positioning it higher off the ground, keeping it away from nearby obstacles or rotating it by ninety degrees

The GPS will find the time and date first, and then the location. In poor signal areas this can also take a few minutes.

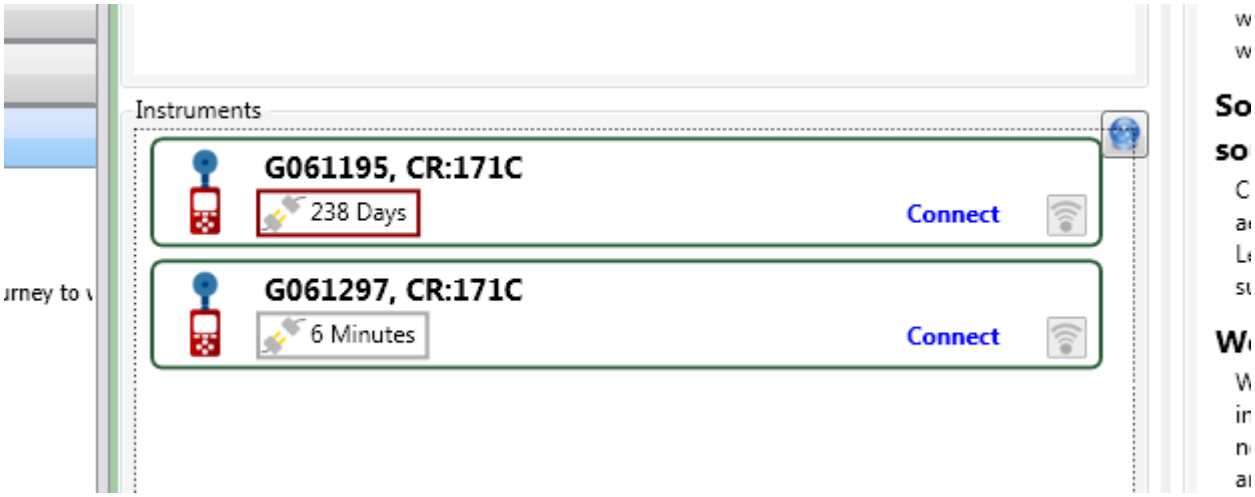
If the battery pack in the case remains plugged in, the GPS will remember the last location and (if necessary) will find the new location much more quickly than from a cold start.

4 Operating your optimus remotely via NoiseTools

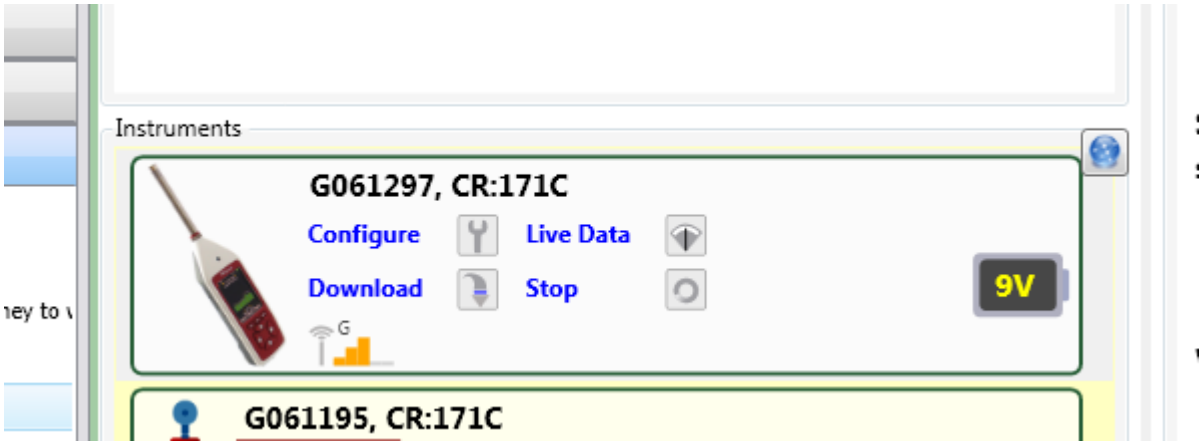
When NoiseTools is running, it checks once every minute to find instruments listed on the Optimus Cloud servers that are associated with your PC. (The association is made when the optimus is plugged into your PC via USB).

Click on the ‘connect’ button next to any instrument listed to create a direct internet link to your optimus.

Depending on the connection strength, it can take a few seconds for the instrument status to update, so seeing ‘start’ does not necessarily mean that the optimus is not measuring.



When the optimus is measuring, the word ‘stop’ will appear next to an animated circle icon.



4.1 Live Data

Clicking on ‘Live Data’ will bring up live noise levels from your optimus, displayed as animated gauges (Live Data ‘basic’ tab) or a time history chart (Live Data ‘time history’ tab), sent from the instrument at a rate of one second.

Leaving the Live Data window running for long periods will not cause any problems to either the optimus or NoiseTools, but as it requires continuous data transmission over the internet it could be expensive if your SIM account charges for data transfer.

The Live Data window must be closed using the ‘X’ in the top right hand corner to stop the data transmission. Minimising the window using the ‘–‘ button will NOT stop the transfer of data, it will only hide the window.

Note: no data is transferred under other NoiseTools conditions. The serial number and status information is sent once only when the connection is established.

4.2 Configuring the instrument remotely

Clicking on ‘configure’ brings up the same dialogue used to setup the instrument at the beginning.

Some setting changes will only take effect when a new measurement is started, but Trigger settings (‘Audio’ tab, check ‘enable’ and change the settings as needed) and SMS details (‘Communications’ tab, then enter a new number for SMS alerts) will be updated as soon as you save changes to the instrument.

4.3 Download

Clicking ‘download’ brings up a window which will retrieve a list of recent measurements from your optimus. Depending on your connection speed, this may take a few moments.

There is a ‘select all’ button, or you can select a range of measurements by holding the shift button down whilst clicking on the first and last items in the range. To choose a selection of individual measurements, hold down the control button while clicking on the items you want.

The most recent measurements will be shown at first, with an ‘older measurements’ button if you need previous data. Check boxes next to each measurement show if voice tags or audio recordings are available to download.

Note: choosing to download Time History and/or Audio can be time consuming, depending on your connection speed, and can lead to large amounts of data transfer which can be expensive depending on your SMS account charges.

In NoiseTools, measurements from the last two days are shown in the recent measurements section of the start tab, and measurements from the last ten days are in the recent tree.

4.4 ‘World’ icon (map)

This brings up a window showing the GPS position of the kit on a street map. Clicking away from the map or clicking the map button again will close the map window.

4.5 Storing the available instruments in the Optimus Cloud

The CK:680/optimus combination, can in conjunction with the Optimus Cloud Server, allow email and Twitter messages to be sent when triggers are activated in the instrument.

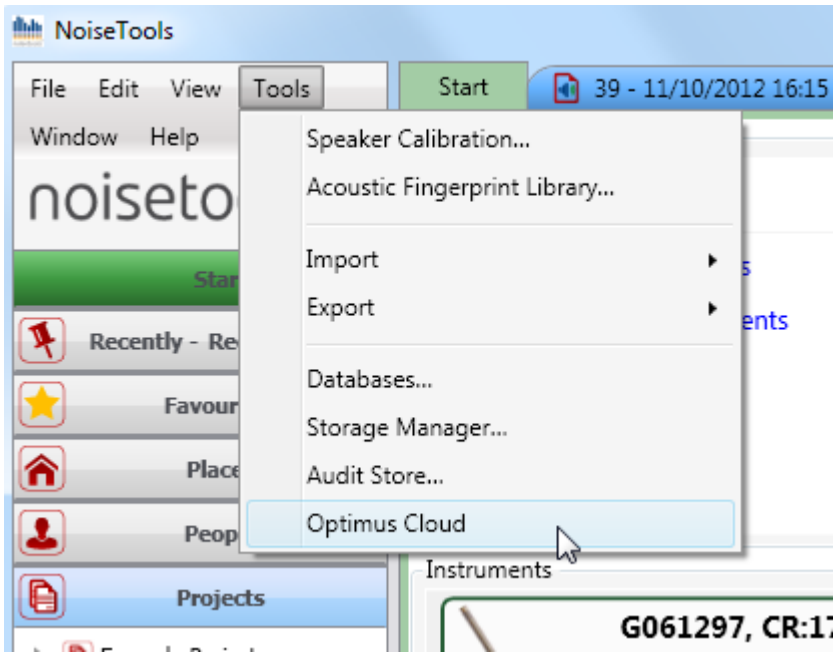
To allow this to happen, the instrument must be registered with the Optimus Cloud.

Follow the instructions below if this feature is required.

When you attempt to connect to a remote instrument, the NoiseTools software will communicate with the Optimus Cloud server to verify that the instrument is available and that you are the owner of that optimus.

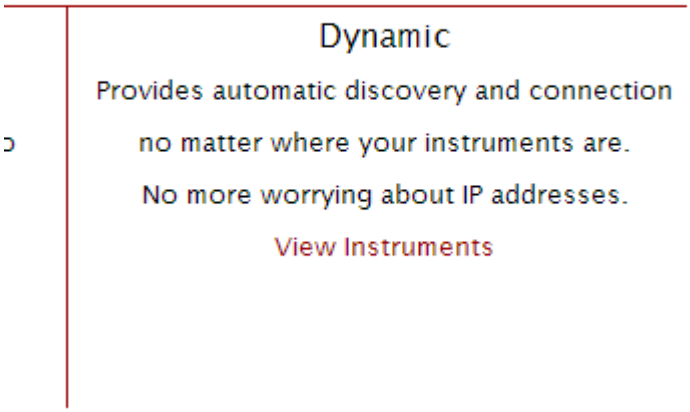
The details of your instruments must be stored in the Optimus Cloud before a connection can be made.

Click the Tools, Optimus Cloud menu.

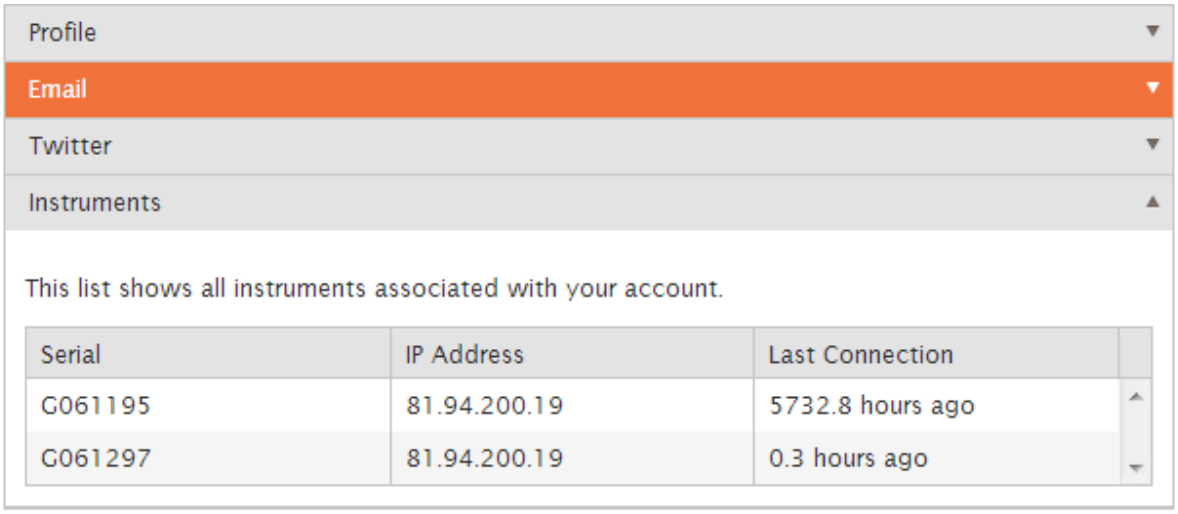


If you have an existing Optimus Cloud account, click Login otherwise register a new account.

When you have logged in, the details of your instruments are automatically uploaded to the server. Click on the View Instruments link in the Dynamic section.



This will show the instruments that are associated with your account and when the last connection was made.



Close the window and log out of the Optimus Cloud

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