

# Environmental Noise Measurement Kits



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The latest environmental noise measurement kits from Cirrus are designed for use with the Optimus Sound Level Meters and combine to provide a fully weather-protected system for outdoor noise measurements.

Both the sound level meter and the measurement microphone are protected against adverse weather conditions and can be transported inside the robust, secure case.

For longer-term measurements, external power can be connected to the kits allowing for operation over extended periods of time.

For remote access to the instrument, the CK:685 kits include a GPS receiver and modem which, when used with the Optimus Cloud, allow for measurements to be downloaded to the NoiseTools software, the instrument configured and alerts sent when pre-set noise conditions are met.

Alerts can be sent directly to the Optimus Cloud Notification App, via email or SMS<sup>1</sup> text, all of which can be easily configured by logging into the Optimus Cloud.

The case also has space for the sound level meter, outdoor microphone (and 10m cable), an acoustic calibrator, documentation and other accessories that may be needed such as batteries and download cables.



Applications & Features

Applications

- Unattended outdoor noise measurements
- Noise monitoring in remote areas
- Construction site noise monitoring
- Environmental impact assessments
- Wind Farm noise monitoring

Features

- Provides weather protection for the sound level meter & measurement microphone
- Easy to transport & install with a secure, lockable case
- Flexible power options using internal batteries & external battery or mains power

Additional features with the CK:685B version

- Live data connection to the Optimus Cloud for real-time alerts & notifications
- Download measurements remotely to the NoiseTools software
- GPS location data stored with each measurement
- Modem with worldwide certification

Additional features provided by the Optimus Green Sound Level Meters:

- Options of Class 1 or Class 2 instruments
- Type Approved Class 1 Instruments\*
- Acoustic Fingerprint triggers with markers & audio recordings
- Level, Rate-of-change, Frequency or Tonal noise based triggers\*
- 1:1 & 1:3 Octave Bands\*
- Tonal noise detection\*
- Data logging of all parameters simultaneously
- 4GB standard memory with 32GB option
- Triggered audio recording with pre & post triggers

\* Dependent upon instrument type



## Applications for the Environmental Noise Measurement Kits

### Unattended environmental noise measurements

The environmental noise measurement kits provide weather protection for the sound level meter and the microphone, allowing for noise measurements over long periods where the equipment is unattended.

This allows effective, accurate noise measurements to be made where it's not possible to have staff on-site with the equipment at all times.

### Noise monitoring in remote locations

In many environmental noise monitoring applications, having the ability to download measurements remotely, when the equipment is located far away, can be vital.

The CK:685B variants include the remote communication option and allow for measurement data to be downloaded, the instrument configured and real-time alerts to be sent to the Optimus Cloud Notification App.

### Construction site noise monitoring

For construction sites, real-time alerts when pre-set noise limits have been exceeded, or are close to being exceeded, can be an effective noise control process.

As this information can be provided in real-time, either to staff on-site or to a remote office, it can enable site managers to investigate the source of the noise and to take quick, effective actions to remedy the issue.

The Optimus Cloud Notification App provides real-time notifications and alerts, allowing for effective control of construction site noise levels.

### Environmental Impact Assessments

For environmental impact assessments such as a BS4142 application, measurements when noise sources are not operating, over a weekend for example, can be critical in determining if there is significant impact when the site is in operation.

By using an environmental noise measurement kit, data can be gathered over extended periods when sites are not operating, allowing more robust assessments to be made.

### Wind farm noise monitoring

Logging data over long periods before, during and after the construction of a wind farm can often be the only way to effectively judge the impact of operations and the environmental noise measurement kits can assist in this task.

The advanced triggers in the Optimus sound level meters can provide real-time alerts when overall levels or specific frequencies are exceeded as well as when tonal noise is detected.

## Inside the Environmental Noise Measurement Kits



The case supplied with each variant of the environmental kit is fully weather proof with rugged and secure locks, robust connectors for the microphone and external power.

Within the case is custom designed foam with cutout and inserts that safely and securely hold all of the standard parts of a kit.

Additional space is provided for a standard instrument preamplifier and acoustic calibrator, allowing the environmental kits to be used in place of a standard sound level meter kit case.

This allows all of the items needed to setup and deploy the kit to be carried in a single, secure case.

The modem is fitted, along with an internal antenna for both the cellular communications and the GPS receiver, into the case and is held securely with easy access to the SIM card carrier.

The kit uses internal antennae for the modem and GPS receiver, removing the need for external cables and making the kit more secure and robust when in use.

## Remote communications & the Optimus Cloud

The Optimus Cloud is a web-based platform that allows Cirrus noise measurement instruments to communicate with either the NoiseTools desktop software, the Optimus Cloud Notifications App or a web page on a handheld device such as a smartphone or tablet.

The Optimus Cloud also allows alerts and notifications to be sent via Email or SMS<sup>1</sup> text.

The CK:685B version of the environmental noise monitoring kit include a GPS receiver and modem which allow measurements to be downloaded, via the Optimus Cloud, to the NoiseTools software.

In addition to the remote communications and alerts, the CK:685B also includes a GPS receiver.

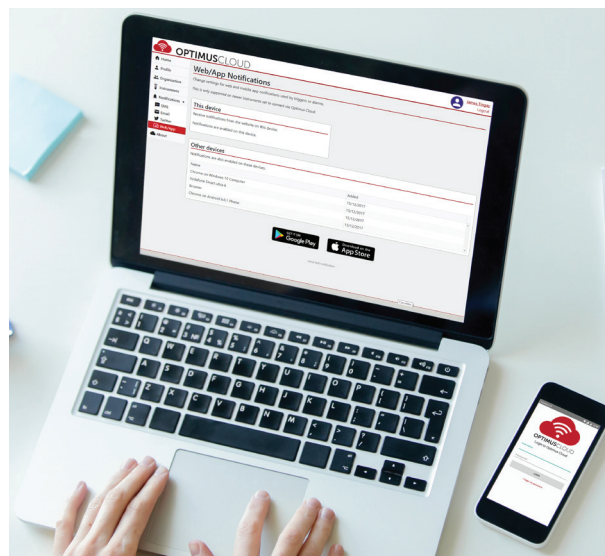
Location data from the GPS is stored alongside the acoustic data and the GPS signal is also used to ensure that the instrument clock is correct at all times.

If more than one instrument is being used, for example to determine noise emissions at the boundary of a site as well as at the nearest home, having the time stamps of all measurements synchronised can be essential. The time data from the GPS receiver ensures that this happened automatically.

Measurements that have been made using a GPS-equipped environmental noise measurement kit can also be displayed on a map within the NoiseTools software.

By combining the Optimus Cloud with an industry-standard modem with multi-network certifications, a standard SIM card with a data connection can be used in the CK:685B kit, removing the need for specialised data connections or complex setup processes.

Also supported is the Optimus Dynamic connection method which, when used with an M2M-enabled SIM card with a public IP address, allows for communication directly between the Optimus and the NoiseTools software.



## Triggers, Alerts & Notifications

The Optimus Green Sound Level Meters provide a system of trigger templates, known as Acoustic Fingerprint, which can be configured to activate when a range of conditions or rules are met.

The instruments support up to 5 simultaneous templates which can be built from up to 20 rules.

These rules can be based on any parameter that the instrument provides from a simple dB level from any current acoustic parameter (such as  $L_{Aeq}$  or  $L_{AFmax}$ ) through to 1:3 octave bands or tonal noise detection.

Rules can be combined into a sophisticated template using a combination of parameters allowing almost any noise source to be detected and recorded.

When a template is triggered, the instrument will automatically mark the measured data and where available, send information to the Optimus Cloud.

The Optimus Cloud can then push details of the template that has been triggered directly to the Notification App or send an Email or SMS<sup>1</sup> Text.

In addition to the markers and notifications, audio recordings can also be made when a template is triggered. This option can be enabled or disabled as required and includes both pre and post trigger periods.





Powering the Environmental Noise Measurement Kits

The environmental noise measurement kits can be powered by either internal batteries or from an external power source such as a 12v battery, solar power or a mains power supply.

Internal battery power

The kits are supplied, as standard, with a 2 x 12v 14Ah batteries.

The typical operating times for the kits with 1 or 2 batteries are shown below:

| Kit Type                  | Battery Life with 1 x CB:673 Battery | Battery Life with 2 x CB:673 Batteries |
|---------------------------|--------------------------------------|--|
| CK:675B (No Modem or GPS) | > 6 days                             | > 12 days                              |
| CK:685B with Modem & GPS  | > 4 days                             | > 8 days                               |

Battery operating durations are given as typical values and may be affected by environmental conditions such as the ambient temperature and by the age and condition of the batteries.

External power

The kits can be powered from a range of external sources which allow operation over long periods. This can be essential for long term continuous monitoring projects or where it is not possible to access the equipment on a regular basis to replace or recharge the internal battery power.

External power in the range of 12-18v DC can be connected to the kit via the input socket on the side of the case. The optional ZL:673 cable can be used to connect external batteries to the case.

Mains power

Where mains power is available, the CU:612 External Power Supply can be used. This provides a stable power source to the kit and can be used alongside an internal battery, further extending the operating life of the system.

Battery Type

The kits can accommodate up to 2 of the CB:673 12V batteries which provide power to the Sound Level Meter, Outdoor Microphone and where fitted, the modem and GPS receiver.

The spaces in the case are designed to take a 12v/14Ah battery with dimensions of 151mm x 98mm x 100mm and which provide 6.35mm tags (Faston 250).

Examples of suitable batteries include:

|           |                                 |
|-----------|---------------------------------|
| Panasonic | LC-CA1215P with Faston 250 tags |
| MK        | ES14-12                         |



## Instrument Compatibility

The kits have been designed to be used with the Optimus Green Sound Level Meters and can be used with instruments with firmware version v3.0 shipped from 1st February 2018.

Instruments with firmware version 2.9 or earlier will need to be updated to version 3.0. Please contact Cirrus Research for details of update options.

## Ordering Information

The environmental measurement kits can be ordered with or without the Modem/GPS option or with and without one internal battery pack/charger using the following product codes.

| Code    | Description                         | Modem/GPS included | Battery & Charger included |
|---------|-------------------------------------|--------------------|----------------------------|
| CK:675B | Environmental Noise Measurement Kit | No                 | Yes                        |
| CK:685B | Environmental Noise Measurement Kit | Yes                | Yes                        |

## Standard kit contents

All kits includes, as standard, the following:

- Weatherproof Case
- MK:172 Outdoor Microphone with 10m cable & UA:253 windshield with hydrophobic coating
- 2 x CB:673 Batteries & Battery Charger
- User Manual
- Certificate of Conformance

## Notes

Please note that the kits do not contain a sound level meter or acoustic calibrator.

## Options & Accessories

A range of options and accessories are available to enhance or extend the capabilities of the environmental noise measurement kits.

| Code   | Description  |
|--------|--|
| CB:673 | Replacement 14Ah Lead Acid Battery for CK:675B/685B  |
|        |  |
| ZL:671 | 5m Microphone Extension Cable  |
| ZL:672 | 10m Microphone Extension Cable   |
| ZL:673 | External Power Cable with Crocodile Clips for external 12v battery                                   |
| CU:612 | External Weatherproof Power Supply - Specify Plug Type:<br>110V 16A<br>UK Type<br>US Type<br>EU Type |
| UA:253 | Replacement Windshield for MK:172 Outdoor Microphone   |
| CT:9   | Tripod for Outdoor Microphone  |

## Modem Approvals (CK:685B)

The CK:685B version of the environmental noise measurement kit include a modem for remote data connection to the Optimus Cloud. This modem provides multi-region approvals and certifications and can be used with a standard SIM card.

|                 |   |
|-----------------|---|
| Modem Type      | Multitech MultiConnect MTC-H5-B0-1  |
| Compliance      | FCC Class B (US), IC (Canada), R&TTE (EU Economic Area, A-Tick (Australia/NZ), and IFT (Mexico)     |
| Safety          | UL 60950-1 (US), cUL 60950-1 (Canada), IEC60950-1 (EU Economic Area), AS/NZS 60950-1 (Australia/NZ) |
| Network Support | PTCRB, GCF approved module, AT&T, T-Mobile, Rogers, Bell, EU carriers<br>Pending: Telus, Telstra    |
| SIM Card Type   | Mini SIM; 1.8v & 3V   |

## Specifications

|                       |  |   |
|-----------------------|--|---|
| Acoustic Measurements | Determined by Optimus Green Sound Level Meter  |   |
| Microphone Capsule    | From Optimus Sound Level Meter<br>The microphone capsule provided with the sound level meter should be used with the MK:172 outdoor microphone to maintain the calibrated measurement chain. |   |
| Connectors            | Microphone input from MK:172 Outdoor Microphone  |   |
|                       | External Power   |   |
| External power        | 12-18v DC  |   |
| Weight & dimensions   |  |   |
| CK:675B               | 465x180x355mm  | 14.1 kg/31 lbs including 2 x CB:673 batteries, charger & MK:172 Outdoor Microphone        |
| CK:685B               | 465x180x355mm  | 14.5 kg/32 lbs including modem, 2 x CB:673 batteries, charger & MK:172 Outdoor Microphone |
| CB:673 Battery        | 4.4 kg/9.7 lbs   |   |
| MK:172 Microphone     | 335mm with 75mm UA:253 coated windshield & birdspike.<br>Includes 10m cable with connector   |   |

For detailed specifications for the Optimus Sound Level Meters, please refer to the appropriate product data sheet which can be downloaded from the Cirrus Research website at [www.cirrusresearch.co.uk/library](http://www.cirrusresearch.co.uk/library)

Dimensions & weights do not include the optional CT:9 Tripod.

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## Notes

1. Additional charges may apply for SMS messages sent via the Optimus Cloud.



Acoustic House  
Bridlington Road  
Hunmanby  
North Yorkshire  
YO14 0PH  
United Kingdom

T: 0845 230 2434  
T: +44 1723 891655  
F: +44 1723 891742  
E: [sales@cirrusresearch.co.uk](mailto:sales@cirrusresearch.co.uk)  
W: [www.cirrusresearch.co.uk](http://www.cirrusresearch.co.uk)



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