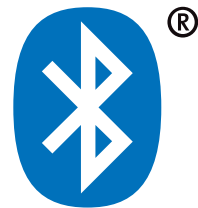


doseB▲dge⁵

The new generation of noise dosimeter

CR:120A doseBadge⁵ Noise Dosimeter User Manual



This manual, the software to which it relates, the
program code and drawings are all:

© Copyright Cirrus Research plc 1989-2017

The content of this manual, any illustrations, technical information and descriptions within this document were correct at the time of going to print. Cirrus Research plc reserves the right to make any changes necessary, without notice, in line with the policy of continuing product development and improvement.

No part of this publication may be duplicated, reprinted, stored in a data processing system or transmitted by electronic, mechanical, photographic or other means, or recorded, translated, edited, abridged or expanded without the prior written consent of Cirrus Research plc.

No liability is accepted for any inaccuracies or omissions in this manual, although due care has been taken to ensure that it is complete and accurate as possible.

Accessories supplied by Cirrus Research plc have been designed for use with the instrumentation manufactured by Cirrus Research plc. No responsibility is accepted for damage caused by the use of any other parts or accessories.

In order to take account of a policy of continual development, Cirrus Research plc reserves the right to change any of the information contained in this publication without prior notice.

Produced by Cirrus Research plc, Acoustic House, Bridlington Road, Hunmanby, North Yorkshire, YO14 0PH, United Kingdom.

Cirrus Research plc, the Cirrus Research plc Logo, doseBadge, DOSEBADGE, Optimus, Revo, VoiceTag, AuditStore, Acoustic Fingerprint, the NoiseTools Logo and the Noise-Hub Logo are either registered trademarks or trademarks of Cirrus Research plc in the United Kingdom and/or other countries.

The Bluetooth® word mark and logos are registered trademarks owned by the Bluetooth SIG, Inc. and any use of such marks by Cirrus Research plc is under license. Other trademarks and trade names are those of their respective owners.

All other trademarks acknowledged.

© Copyright Cirrus Research plc 2017

Reference Number 10/17/CR:120A/C/EN

Document Printing Date Monday, 16 October 2017

Introduction.....	6
Information, Safety & Warnings.....	7
Getting to know the doseBadge⁵	8
The CR:120A doseBadge ⁵	8
The RC:120A dBConnect.....	9
The CU:120A doseBadge ⁵ Dock	10
Quick start.....	11
Charging the doseBadge⁵	12
Connecting to the doseBadge⁵	13
Connecting to the NoiseTools software.....	13
Connecting to the RC:120A dBConnect	13
Connecting to the dBLink App.....	13
Configuring the doseBadge⁵	14
Configuration overview.....	14
Integrator settings	14
Octave Band Filters.....	14
Configuring via NoiseTools	15
Configuring via the dBLink App.....	23
Clearing the memory	24
Calibrating the doseBadge⁵.....	24
Setting the calibration level	24
Removing the windshield	24
Connecting the acoustic calibrator	25
Post-measurement calibration	27
Attaching & removing the doseBadge⁵	28
Where to position the doseBadge ⁵	28
Starting a measurement.....	29
Scheduled measurements.....	29
Starting a measurement with NoiseTools.....	29
Starting a measurement with the RC:120A dBConnect.....	30
Starting a measurement with the dBLink App	30
Measurement running indication	31
Pausing a measurement.....	31
Pausing a measurement with the RC:120A dBConnect.....	31
Pausing a measurement with the dBLink App	31
Using scheduled measurements	32
Pause indication	32
Mid-shift readings.....	32
Using the RC:120A dBConnect	32
Using the dBLink App.....	33
Stopping a measurement	34
Stopping a measurement with NoiseTools.....	34
Stopping a measurement with the RC:120A dBConnect.....	34

Stopping a measurement with the dBLink App	34
Scheduled measurements	35
Downloading measurements.....	35
Downloading to NoiseTools	35
Viewing measurements with the dBLink App.....	38
Viewing measurements on the RC:120A dBConnect	38
Storing & transport instruments	39
Transport Mode	39
Configuring scheduled measurements.....	41
Adding a timed measurement.....	41
Adding a pause to the measurement.....	42
Example configurations for the scheduled measurements	42
The RC:120A dBConnect	45
Switching on the RC:120A dBConnect	45
Connecting to a doseBadge ⁵	45
Controlling the doseBadge ⁵ with the RC:120A dBConnect	46
RC:120A dBConnect settings	53
Replacing the batteries	54
Factory Reset	54
The dBLink App.....	55
Connecting to the doseBadge ⁵	55
Configuring the doseBadge ⁵	56
Starting a measurement	58
Mid-shift readings.....	59
Pausing a measurement	60
Stopping a measurement.....	61
Viewing measurements.....	61
Clearing the memory	62
Specifications	63
Applicable Standards.....	63
Measurement Range (Typical)	63
Visual Indication of Status.....	63
Measurement Functions.....	63
Configuration Options.....	64
Measurement Control	65
Shock/Tamper Sensor	65
Calibration.....	65
Memory	65
Power.....	65
Communication	66
Weight & Dimensions	66
Temperature	66
Humidity.....	67
Software.....	67

CR:51x Acoustic Calibrator	67
Safety Information for the CU:120A Dock.....	67
Glossary of Terms.....	68
Preset Integrator Settings	68
Support & Troubleshooting.....	69
LED Indicators on the doseBadge ⁵	69
Resetting the doseBadge ⁵	70
Calibration failure.....	71
Declarations.....	72
CE Declaration of Conformity	72
Bluetooth® Connectivity	73
FCC/Industry Canada.....	73
Product Guarantee & Extended Warranty.....	74
Cirrus Research Offices.....	76

Introduction

The doseBadge⁵ is the result over 20 year's development of the original doseBadge concept and maintains the unique features of the doseBadge including:

- No cables, controls or display
- Simple setup, deployment & data download
- Robust, rugged design with a secure, internal microphone capsule.

The doseBadge⁵ advances the concept with a range of new functions & features including:

- L_{Ceq} - L_{Aeq} measurements for HML (C-A)
- 1:1 octave band filters (63Hz to 8kHz)
- Storage of multiple measurements with
 - Up to 80 hours of Time History Data (6 Channels)
 - Up to 40 individual measurements
- 1 second data logging of all integrators, peak channels & 1:1 octave band filters (where fitted)
- Scheduled, automatic timed measurements with daily timers
- Remote communication to the dBLink App (Android & iOS) and the doseBadge⁵ RC:120A dBConnect View measurements & configure the doseBadge⁵ with the dBLink App for mobile devices
- Tap sensor to protect your measurements from external impacts
- Up to 4 simultaneous integrators & 2 peak channels
- Allocate doseBadge⁵ instruments to individual users to track measurements easily & effectively
- Internal microphone with automatic calibration
- Visual indication of Dose exceedence with user defined levels
- 60dB to 143dB measurement range

The doseBadge⁵ has been designed to allow noise exposure measurements to be made in accordance with a wide range of standards, regulations and guidelines such as:

- CFR 1910.95 Occupational Noise Exposure
- ISO 9612:2009 Acoustics – Determination of occupational noise exposure – Engineering method
- HSE Document L108 Controlling Noise at Work – Guidance on Regulations

The doseBadge⁵ is capable of measuring up to 4 simultaneous integrators and 2 Peak channels at the same time with data logging available for all channels and so can be configured to meet any combination of occupational noise standards.

Where the CR:120A has the octave band filters enabled, the instrument will measure and store the overall unweighted Leq for each octave band (31Hz to 8kHz) as well a time history, or noise profile, for each band throughout the measurement.








Quick settings can be applied through the NoiseTools software to enable the appropriate channels and settings for a number of pre-set configurations which makes deployment of the doseBadge⁵ quick and straight forward.

In addition to the pre-set configurations, users can create custom settings to meet specific applications or as regulations change.

The doseBadge⁵ uses Bluetooth® connectivity to either the RC:120A dBConnect or to the dBLink App (which is available for Android and iOS devices). This allows measurements to be controlled and data viewed without having to disturb or interrupt the worker.

In addition to the remote connectivity, measurements can be controlled via the NoiseTools software (when units are attached to the CU:120A Dock) or by using the scheduled timers.

Information, Safety & Warnings

	This product is not approved for intrinsically safe operation and must not be used in hazardous areas or zones.
	<p>The CR:120A doseBadge⁵, RC:120A dBConnect and CU:120A Dock contain no user serviceable parts.</p> <p>Do not open the product case as this will invalidate the product warranty and may cause damage to the instrument.</p> <p>Replacement of the battery in the CR:120A doseBadge⁵ must only be carried out by authorised service personnel.</p>
	The normal operation of the CR:120A doseBadge ⁵ is with the windshield attached.
	The materials used in the CR:120A doseBadge ⁵ , RC:120A dBConnect and CU:120A Dock should only be cleaned using a damp cloth. Do not use solvent or chemical based cleaners.
	When the Bluetooth® communication is enabled, care must be taken to avoid interference with sensitive electronic equipment, for example in safety critical areas, aviation or medical environments.
	<p>The CU:120A Dock contains small (<1cm³) Neodymium & Samarium Cobalt magnets that are used to secure the CR:120A doseBadge⁵ units to the Dock.</p> <p>Keep a safe distance (50mm+) between the magnets and all objects that can be damaged by magnetism. These include mechanical watches, heart pacemakers, CRT monitors, credit cards and magnetically stored media. See page 67 for more information.</p>
	The doseBadge ⁵ is shipped with the 1:1 Octave Band Filter option disabled. This must be enabled before the octave band filters will measure and store data. Please see page

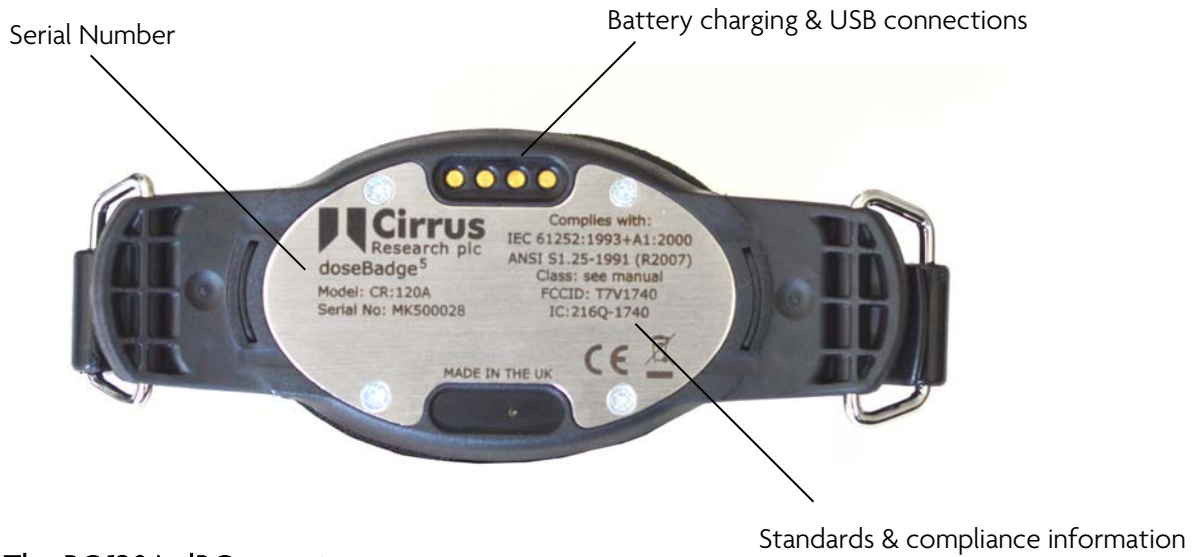
Getting to know the doseBadge⁵

The CR:120A doseBadge⁵

The CR:120A doseBadge⁵ is supplied complete with a windshield (which is secured to the carrier) and mounting clips to attach the instrument to a person whose noise exposure is to be measured.



Each doseBadge⁵ instrument is identified by a unique serial number that is shown on the information plate on the underside of the instrument.



The RC:120A dBConnect

The RC:120A dBConnect is supplied with a wrist strap and 2 x AAA/LR03 batteries. The battery compartment is on the back on the unit along with the serial number and compliance information.

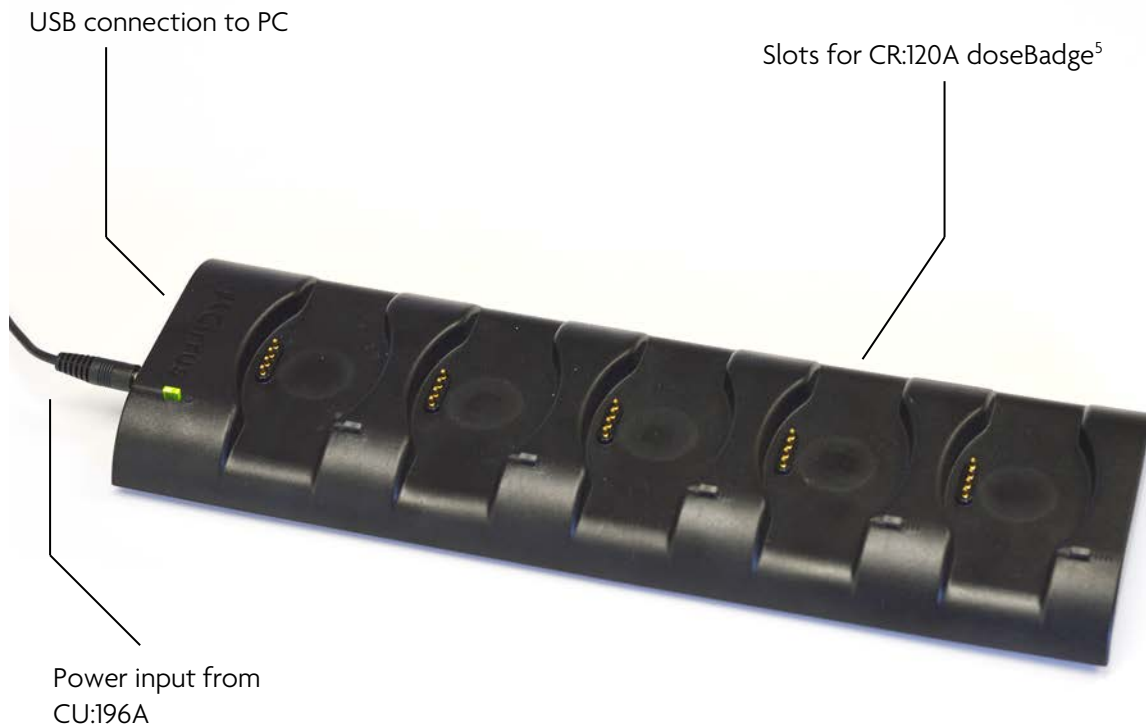


The CU:120A doseBadge⁵ Dock

The CU:120A doseBadge⁵ Dock is supplied used with the CU:196A Mains Power Supply and a standard USB cable (Type A to Type B).

There are 5 slots, each of which can accommodate a CR:120A doseBadge⁵ instrument. All of the slots provide charging and download functions.

The serial number of the Dock is shown on the label on the underside.



Quick start

Step	Action	Optional actions	See page
1	Charge the doseBadge ⁵		12
2		Clear the memory	24
3	Configure the integrators & peak channels	Check the configuration	14
4		Program scheduled timers	15
		Allocate instruments to a person, place or project	17
	Enable or disable the octave band filters		Octave Band Mode ²³
5	Calibrate the doseBadge ⁵		24
6	Attach to the worker		27
7	Start the measurement		28
8		Pause the measurement	30
9		View mid-shift readings	32
10	Stop the measurement		33
11	Remove from the worker		27
12	Check the calibration		24
13	Download the measurement data		35

Charging the doseBadge⁵

The doseBadge⁵ is charged using the CU:120A doseBadge⁵ Dock.

The doseBadge⁵ instruments are intelligent and store information about the amount of charge that has been put into and taken out of the batteries. This allows the instrument to maintain optimum battery performance for as long as possible.

The CU:120A Dock allows up to five CR:120A instruments to be charged at the same time and also allows measurements to be downloaded to the NoiseTools software via the USB connection.

Typically, the CU:120A Dock will charge a doseBadge⁵ from flat in around 3 hours.

Connect the CU:196A mains power supply to the power socket on the Dock and to a suitable supply. The Green LED on the Dock will indicate that power is connected.

The USB connection is used to download measurements from the connected instruments to the NoiseTools software.



Connect a doseBadge⁵ to any of the docking points. Each docking point has a magnetic base that ensures that the connection between the doseBadge⁵ and the Dock is secure.

The Blue LED next to each docking point will show when the connection has been made. The indicators on the doseBadge⁵ units will show the charging status as follows:



Charging: Solid Orange



Fully Charged: Solid Green

The level of the battery can also be checked in the NoiseTools software, on the dBLink App or through the RC:120A dBConnect.

Charging should be carried out where the ambient temperature is between +15°C and +30°C (+59°F to +86°F). Charging at higher temperatures may increase the charge time required or may result in a failure to fully charge. Please note that the CU:120A Dock must be powered for data downloaded to be possible.

Connecting to the doseBadge⁵

The doseBadge⁵ can be connected to a number of different controllers which allow the measurements to be started, paused and stopped and also allow the instruments to be configured.

The doseBadge⁵ can be connected to the NoiseTools software via USB, via Bluetooth® to the RC:120A dBConnect and via Bluetooth® to the dBLink App.

Connecting to the NoiseTools software

Connection to the NoiseTools software is through the CU:120A Dock which connects to a PC via a USB connection. See page 15 for details of configuring the doseBadge⁵ via NoiseTools and page 35 for details of downloading data into NoiseTools.

Connecting to the RC:120A dBConnect

The connection between the RC:120A dBConnect and the doseBadge⁵ is via Bluetooth®.

See page 45 for details of connecting to and using the RC:120A dBConnect.

Connecting to the dBLink App

Connection to the dBLink App is via Bluetooth®. Ensure that the Bluetooth® is enabled on the mobile device.

See page 55 for details of connecting to and using the dBLink App.

Configuring the doseBadge⁵

Configuration overview

The doseBadge⁵ is an advanced noise measurement instrument and can provide up to 4 independent integrators, 2 independent Peak channels and up to 4 independent maximum SPL channels.

In many applications, the configuration of the doseBadge⁵ will not change once it has been setup for the first time but any of the configuration options can be adjusted to allow the instrument to meet any noise measurement standard or regulation.

The most comprehensive configuration options are available through the NoiseTools software. A limited set of options are available through the dBLink App and the RC:120A dBConnect allows the scheduled timers to be enabled or disabled.

Integrator settings

Integrators are at the heart of any noise dosimeter and the doseBadge⁵ is no different. The advantage of the doseBadge⁵ is that it allows up to 4 independent integrators to be run at the same time, each of which can be individually tailored as needed.

Full control over the exchange rate, time weighting, frequency weighting, threshold level, criterion time, criterion level and upper limit threshold are provided for each integrator.

A number of pre-set integrators are provided covering most applications and these are referred to as ISO LAeq, ISO LCEq, OSHA HC, OSHA PEL, OSHA HC/C (C-weighted), MSHA HC, MSHA PEL, ACGIH and Custom.

Detailed configuration of these can be found on page 68.

Octave Band Filters

The doseBadge⁵ can provide for the measurement of noise levels in octave bands from 63Hz to 8kHz with both the overall and real-time data being measured and stored.

This information can be used in the NoiseTools software to determine the suitability of hearing protection and noise control measures.

doseBadge⁵ instruments that have the octave band filter capability are delivered with this switched off to maximise battery life.

This option must be enabled from within the NoiseTools software.

See page 23 for details of configuring the octave band filters.

The screenshot displays a configuration window with three sections:

- Tamper & Dose Warnings**:
 - Tamper Detection Threshold: High (dropdown menu)
 - Dose Exceedance Warning: ISO LAeq (dropdown menu)
 - 75% (dropdown menu)
- Bluetooth connection settings**:
 - Enable Bluetooth connection: ☒ (checkbox)
 - Allows connection to the doseBadge⁵ Wand and dBLink App (text)
- Octave settings**:
 - Enable Octave measurement: ☒ (checkbox)

Scheduled measurements

Scheduled measurements are a new feature in the doseBadge⁵ that give the user more control over when measurements are made.

There may be situations where it is not possible for the person responsible for making noise measurements to be present to start, pause or stop the instrument.

The doseBadge⁵ can be pre-programmed to start and stop allowing the measurements to be made without the need for that person to be present.

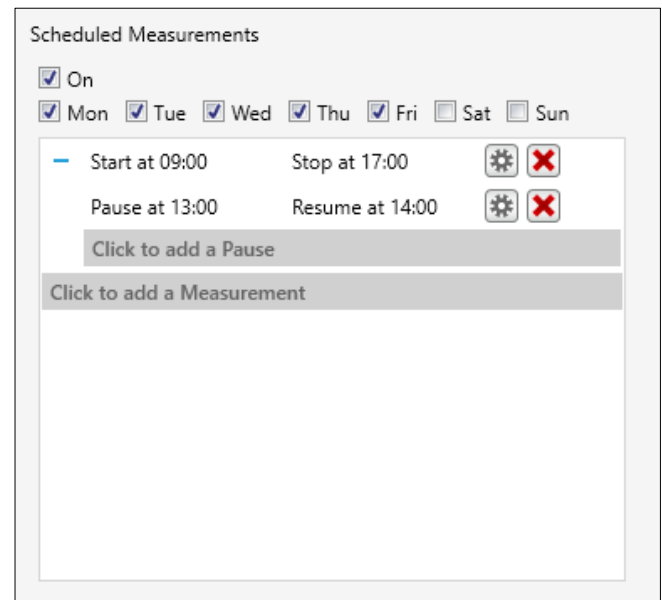
The doseBadge⁵ has no controls, cables or displays so the wearer cannot tamper with the scheduled measurements.

The timers can be enabled on different days of the week (to exclude weekends for example).

Up to three timed periods can be programmed allowing breaks to be automatically excluded (where standards require this).

If scheduled measurements are enabled, they will only be active when the doseBadge⁵ is removed from a powered Dock. This allows timers to be enabled and used only when instruments are needed.

See page 41 for details of configuring the scheduled timers.



Configuring via NoiseTools

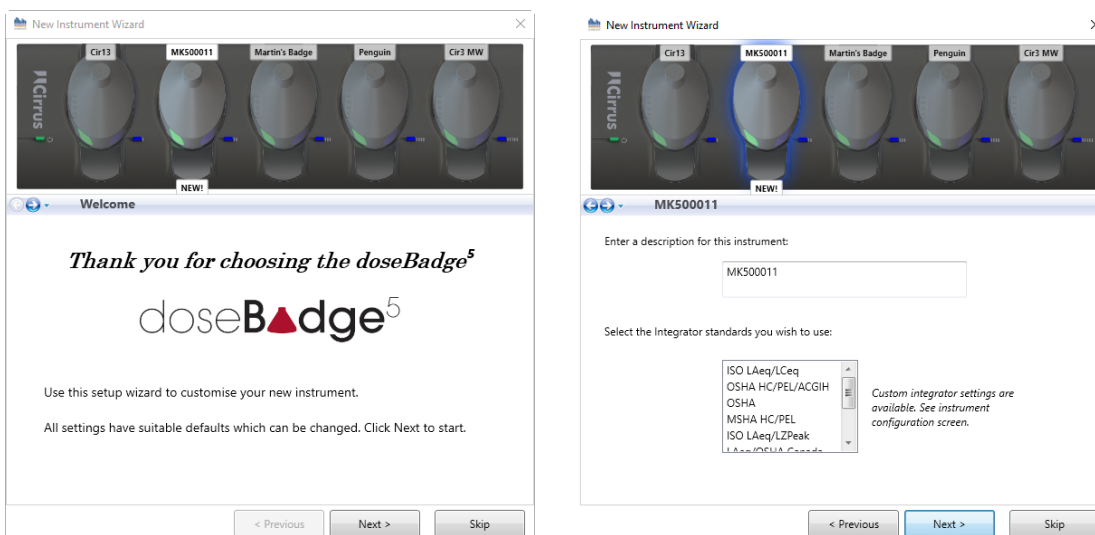
The NoiseTools software allows all of the configuration options within the doseBadge⁵ to be adjusted.

Settings can be transferred between instruments and doseBadge⁵ units can be allocated to a person, project and place before measurements are made. This information is downloaded with the measurement data once the measurement is complete.

New Instrument Wizard

When a doseBadge⁵ is connected to an installation of NoiseTools that has not seen the badge before, the New Instrument Wizard will run.

The wizard allows for the quick setup of new instruments and allows a pre-set integrator configuration to be loaded into the instruments. The name of the instrument can also be changed.



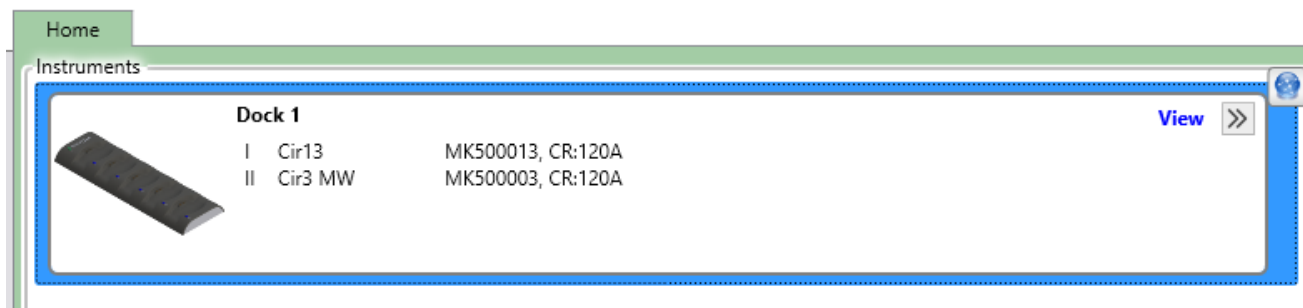
If more than one instrument is connected, each can be configured in turn and the settings saved to the doseBadge⁵ units.

For experienced users, the New Instrument Wizard can be skipped.

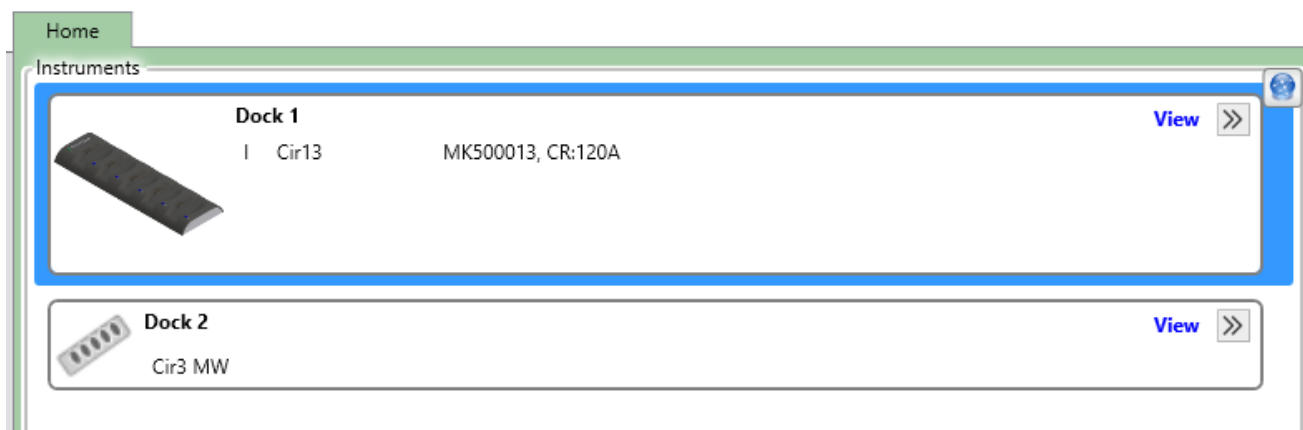
The Dock View

When a doseBadge⁵ is connected to a powered CU:120A Dock and the Dock is connected to the NoiseTools software via a USB cable, the Dock will appear in the Instrument window.

If more than one doseBadge⁵ unit is connected to the Dock, each instrument will be shown with its serial number as shown below:



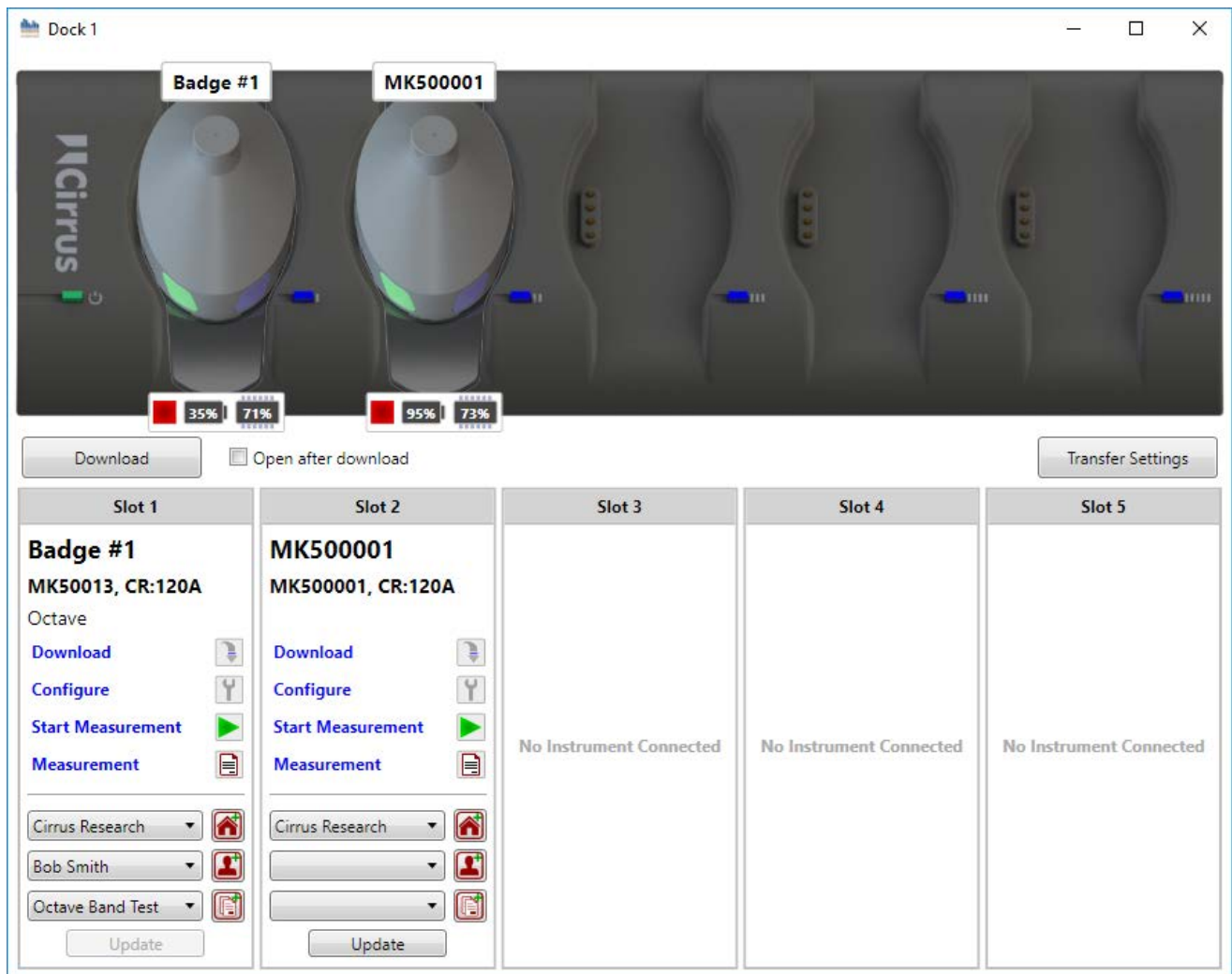
If multiple CU:120A docks are connected to the NoiseTools software, these will be visible in the main NoiseTools window:



Click on the View link to open the Dock View.

In the example below, 2 individual doseBadge⁵ units are connected to the dock.

The instrument shown on the left, MK50013, has the octave band feature enabled as indicated by the word Octave below the instrument name and serial number.



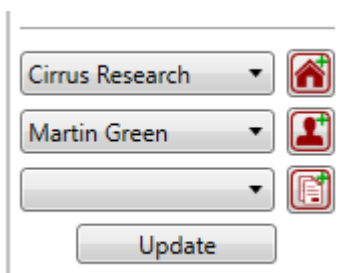
Person, Place & Project

Each doseBadge⁵ can be individually assigned to a person before measurements are made.

Alternatively, measurements can be assigned either at the point of download into NoiseTools or afterwards when the measurements are analysed.

This information is stored along with the measurement data in the NoiseTools database, allowing the measurement information to be sorted, filtered and searched quickly and effectively.

As well as allocating a badge to a specific person, badges can be allocated to a place. For example, the place may be a building or part of a site where the person is working.



The badge can also be assigned to a project. For example, if a set of measurements are being taken after some new equipment has been installed, this can be referenced as a project.

To pre-assign any of these functions, select the required name from the pull-down list. If the required information is not available, a new person, place or project can be entered by selecting the icons to the side of the pull-down lists. Click the Update button to program the new information into the badge.

Transfer Settings

Settings can be copied from one badge to any others that are connected to the Dock using the Transfer Settings option.

To transfer settings from one badge to others that are connected to the Dock, select the source badge (which will be highlighted in blue) and from the Transfer Settings button, select From Selected Instrument.

The setting will be copied from the source badge to the other badges on the Dock.


Settings can also be loaded from a saved configuration file. This can be applied to one or all badges on the dock.

The following options are available by clicking the Configure link for each connected doseBadge⁵ instrument. Any changes must be saved to the instrument by pressing the Save to Instrument button:

Name

Each doseBadge⁵ instrument can be named to aid in identification. This is in addition to the serial number which is unique to every instrument.

This is also in addition to any Person, Place or Project that have been assigned to the instruments.

Instrument Settings - Cir13			
Serial Number	MK500013	Current Time	23/08/2016 16:54:34
Type	CR:120A	Last Recalibration	15/07/2016
Version	 1.0.1352	Name	<input type="text" value="Cir13"/>

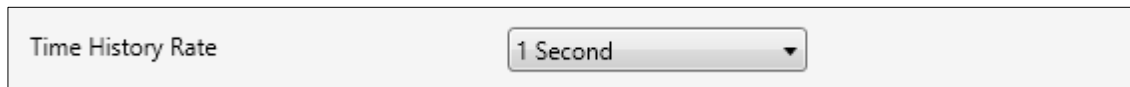
To change the name of the instrument, enter the information into the Name field and save the changes.

Storage

The storage options allow for the configuration of the following:

Time history rate

Throughout a measurement the doseBadge⁵ is logging the noise data at a specified rate. This information is used in the NoiseTools software to display the graphs of noise vs time.

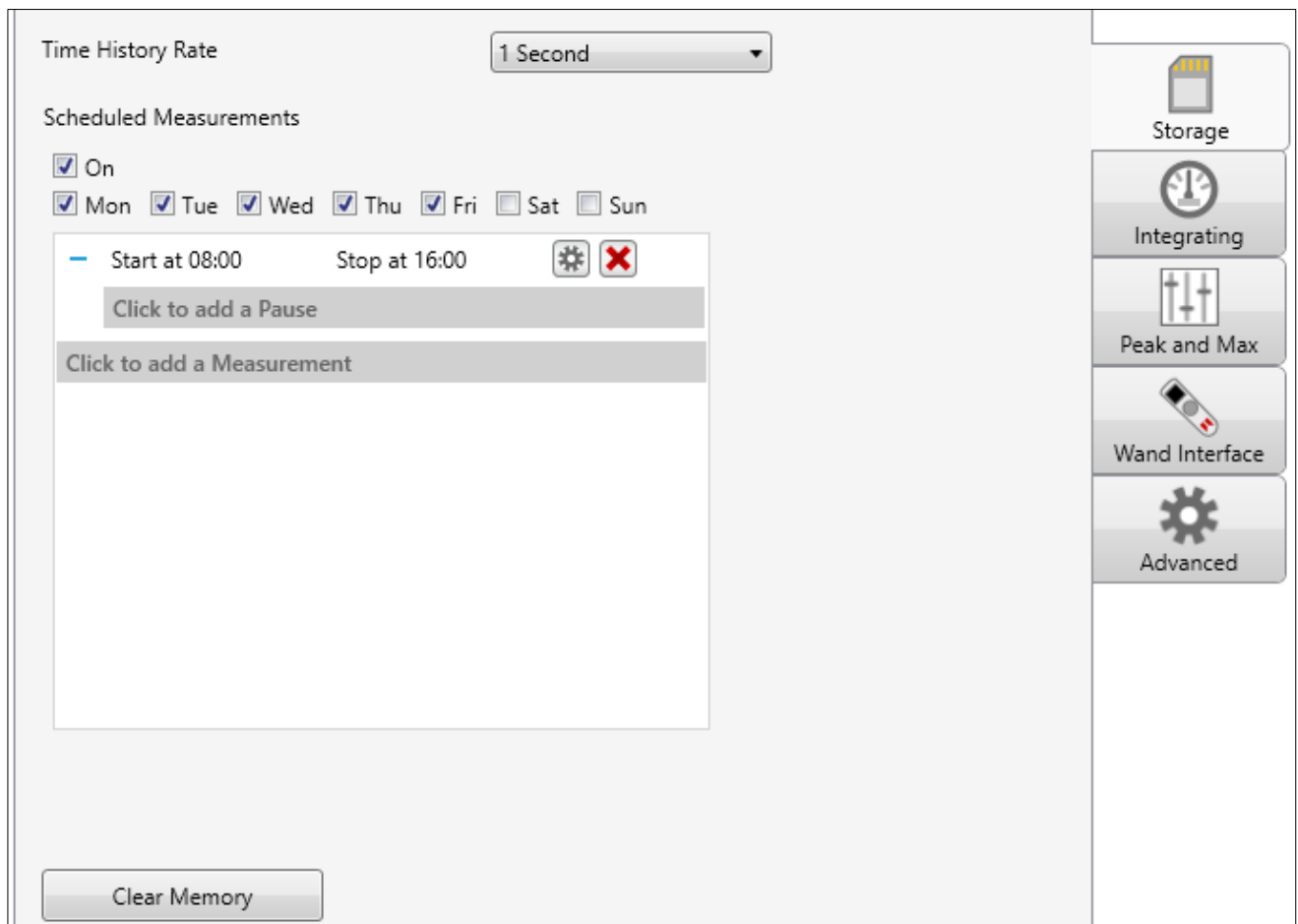
A screenshot of a software interface showing a configuration option. On the left, the text "Time History Rate" is displayed. To its right is a dropdown menu with "1 Second" selected and a downward arrow.

The sample period for the data logging can be selected to be either 1 second or 1 minute and this affects all data logging channels.

Scheduled measurements

Scheduled measurements are a powerful feature of the doseBadge⁵. It allows measurements to be started, paused and stopped automatically without the need for user intervention.

Up to 3 periods can be set during the day allowing breaks to be accommodated (where regulations require) and the schedules can be enabled or disabled for different days of the week.

A screenshot of a software interface for configuring scheduled measurements. The main area has a "Time History Rate" dropdown set to "1 Second". Below it, the "Scheduled Measurements" section has a checked "On" checkbox and checkboxes for days of the week: Mon, Tue, Wed, Thu, Fri (all checked), and Sat, Sun (unchecked). There are two buttons: "Click to add a Pause" and "Click to add a Measurement". Above the "Click to add a Measurement" button, it says "Start at 08:00" and "Stop at 16:00" with a settings gear icon and a red X icon. At the bottom left is a "Clear Memory" button. On the right side, there is a vertical sidebar with five icons and labels: "Storage" (SD card icon), "Integrating" (gauge icon), "Peak and Max" (sliders icon), "Wand Interface" (wand icon), and "Advanced" (gear icon).

For more details of setting scheduled measurements, please see page 41

Note that when the doseBadge⁵ is attached to a powered Dock, the scheduled measurements will not be active. Remove the doseBadge⁵ from the Dock to active the scheduled measurements.

Clear memory

This allows the memory of the selected doseBadge⁵ to be cleared. Ensure that any measurements required have been downloaded.

Confirmation is required before the memory is cleared. Once the memory has been cleared, measurements cannot be retrieved.

Integrating

Integrators are at the heart of any noise dosimeter and the doseBadge⁵ is no different. Up to 4 independent integrators can be run at any time and these can be chosen from a pre-set list or customised as required.

Pre-set integrators

To choose a pre-set integrator, pull down the selection options and choose the required pre-set.

If an integrator is not required, choose Disabled from the selection list.

See page 68 for details of the pre-set integrators.

Custom integrators

To customise an integrator, select Custom from the drop-down list and select the required parameters.

See page 68 for details of the options available for custom integrators.

Select an Integrator to view the settings

Integrator 1	ISO LAeq
Integrator 2	OSHA HC
Integrator 3	OSHA PEL
Integrator 4	Disabled

Peak & Maximum





The doseBadge⁵ allows up to 2 independent Peak channels to be measured and logged along with up to 4 independent SPL max values.

For the Peak channels, the overall value and data logging values are stored.

For the SPL max values, the overall values are stored.

To add a Peak or SPL Max value, click on the “Click to add a Peak type” or “Click to add an SPL Max type” and choose from the drop-down selection options:

Peak Data Types	SPL Max Data Types
LCPeak	LAFMax
Click to add a Peak type	Click to add an SPL Max type

Peak Data Types	SPL Max Data Types
LCPeak 	LAFMax 
LAPeak 	LASMax 
Click to add a Peak type	Click to add an SPL Max type

RC:120A dBConnect Interface

The RC:120A dBConnect Interface allows the user to define what information is displayed by an RC:120A dBConnect when a measurement is read from a doseBadge⁵ instrument.

The RC:120A dBConnect can display up to 5 pages of acoustic values in addition to the calibration information and measurement summary information.

On each page the RC:120A dBConnect can display one of three types of information:

1. The “Integrator template” contains the name of the integrator (e.g. ISO, OSHA PEL, ACGIH, etc.) and two acoustic values (e.g LAeq, Lavg, TWA, exposure, dose, etc.).
2. The “Values only template” contains two acoustic values not linked to an integrator channel (e.g. LCPeak).
3. The “Big number template” contains one large acoustic value linked to an integrator channel (e.g. dose, exposure).

Customise the pages displayed when connected to a Wand.

Page 1	Page 2	Page 3	Page 4
Layout 3 Integrator 1 Value LAeq	Layout 2 Integrator 1 Value 1 LAeq Value 2 Exposure	Layout 2 Integrator 2 Value 1 Lavg Value 2 Dose	Layout 2 Integrator 3 Value 1 Lavg Value 2 Dose
Preview ISO LAeq 108.1 LAeq dB	Preview ISO LAeq LAeq 108.1 dB Exposure 1.18 Pa ² h	Preview OSHA HC Lavg 108.1 dB Dose 92.9 %	Preview OSHA PEL Lavg 108.1 dB Dose 92.9 %

Click to add a Page

To add a new page, click the “Click to add a page” button at the bottom of the screen and select the type of screen required.

Select the data type for that screen from the drop-down options. Pages can be deleted using the red X button.

Please note that the pages shown on the RC:120A dBConnect do not affect the measurement data stored by the instrument which is defined in the Storage, Integrating and Peak/Max tabs.

Advanced

The advanced tab allows for some detailed functions to be configured.

Calibration Level <input type="text" value="94.00"/>	Tamper & Dose Warnings Tamper Detection Threshold <input type="text" value="High"/> Dose Exceedance Warning <input type="text" value="ISO LAeq"/> <input type="text" value="75%"/>
Bluetooth connection settings Enable Bluetooth connection <input checked="" type="checkbox"/> <i>Allows connection to the doseBadge⁵ Wand and dBLink App</i>	
Octave settings Enable Octave measurement <input checked="" type="checkbox"/>	

Calibration

This setting allows the calibration level that the doseBadge⁵ is expecting to be adjusted to suit the acoustic calibrator being used. By default, this is set to 114dB to suit the CR:518 acoustic calibrator.

Tamper & Dose Warning

The doseBadge⁵ can be programmed to display a visual warning when either of the following conditions are met:

- **Tamper**

The doseBadge⁵ contains an accelerometer which can be used to indicate when the instrument has been knocked or has been subject to an impact. This can affect the validity of noise measurements and so it is useful to know when this occurred. The measurement data can be recalculated to exclude areas where the tamper sensor has been activated.

If this option is enabled, the time history graph will be marked to show when the sensor was activated.

- **Dose Warning**

The doseBadge⁵ can indicate with the Red LED when a pre-set % dose level has been exceeded. The channel used for the calculation and the level can be configured. The available channels are defined by which integrator channels are enabled.

Bluetooth® connection settings

This allows the Bluetooth® connection to be enabled or disabled in the instrument. This may be required when the equipment is to be used in a sensitive area or is to be transported by air.

For transport, use the Transport Mode described below.

If the doseBadge⁵ has factory set to disable Bluetooth, this option will not appear.

Octave Band Mode

The doseBadge⁵ provides for the measurement of 1:1 octave bands from 63Hz to 8kHz both in terms of an overall unweighted Leq and as time history samples (typically 1 second samples) that can be downloaded into the NoiseTools software.

This allows the doseBadge⁵ to be used in the selection of hearing protection using the NoiseTools software.

Enabling the Octave measurement option will allow the doseBadge⁵ to measure, log and download the octave band measurement data.

If this setting is disabled, the instrument will measure all of the other parameters.

If the doseBadge⁵ instrument does not have the Octave Band Filters feature, this option will not appear.

Note that enabling the Octave measurements will reduce the available battery life from approximately 20 hours to approximately 12 hours.

Please note that these are typical values for when the batteries are new.

The doseBadge⁵ is shipped with the Octave Band Filters disabled as standard.

Transport Mode

The doseBadge⁵ can be set into Transport Mode for shipping and storage. See page 39 for more information.

Configuring via the dBLink App

The following items can be configured from the dBLink App:

- Instrument Name
 - Place – This information is downloaded into NoiseTools along with the measurement
 - Person (first & last name) - This information is downloaded into NoiseTools along with the measurement
-

- Project - This information is downloaded into NoiseTools along with the measurement
- Clock (synchronise the clock in the doseBadge⁵ to the mobile device)
- Clear the instruments memory
- Select the integrators
 - Up to 4 independent integrators can be enabled at any time
- Select the SPL Max settings
 - Up to 4 independent SPL Max values can be enabled at any time
- Select the Peak channels
 - Up to 2 independent Peak channels can be enabled at any time
- Enable or disable scheduled measurements
- Add a scheduled measurement

See page 57 for details of configuring the doseBadge⁵ from the dBLink App.

Clearing the memory

The memory of the doseBadge⁵ can be cleared using either the NoiseTools software (see page 15), the RC:120A dBConnect unit (see page 51) or the dBLink App (see page 62).

Calibrating the doseBadge⁵

It is good practice, and often a mandatory requirement, that a noise measurement instrument is calibrated both before and after a measurement is made.

The doseBadge⁵ records the time and level of calibrations which can be viewed in the NoiseTools software, via the RC:120A dBConnect or via the dBLink App.

Setting the calibration level

The calibration level of the doseBadge⁵ is nominally set to 114dB to match the CR:518 acoustic calibrator but the level can be changed to suit other calibrators such as the Cirrus CR:514 or CR:515 which provide a level of 94dB.

To change or check the level, connect the doseBadge⁵ to the NoiseTools software via the CU:120A Dock and go to the Configure menu. Adjust the calibration level as required and save the changes to the instrument.

See page 14 for details of configuring the doseBadge⁵ via NoiseTools.

The doseBadge⁵ will not enter calibration mode if a measurement is running or paused. Ensure that the instrument is stopped before calibrating (if the Blue LED is flashing, the instrument is running or is in pause mode).

Removing the windshield

The windshield is secured to the doseBadge⁵ using a plastic carrier. To remove the windshield, carefully press on the sides of the windshield carrier and pull the assembly away from the body of the instrument.

Do not pull the foam windshield as this may cause damage.



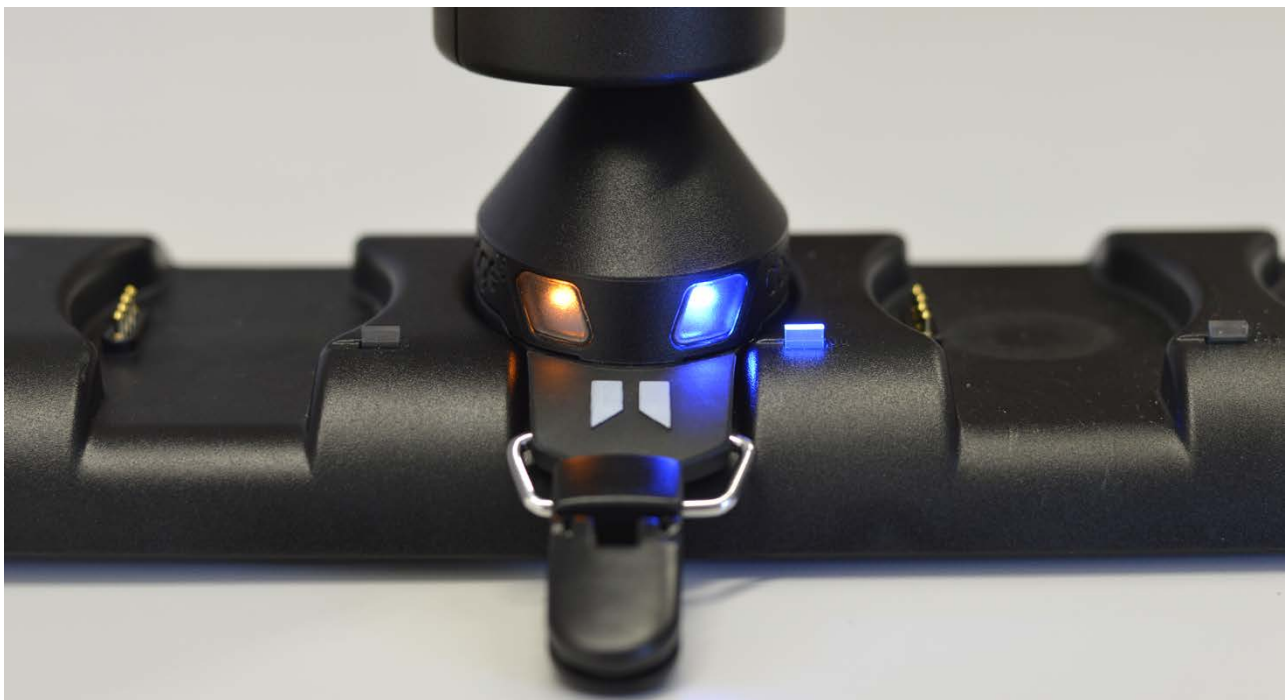
Connecting the acoustic calibrator

Connect the acoustic calibrator to the doseBadge⁵ microphone and switch on the calibrator.



The doseBadge⁵ will automatically detect the acoustic signal from the calibrator and will start the calibration process. If the level provided by the acoustic calibrator is within the tolerances acceptable to the doseBadge⁵, the instrument will calibrate.

When calibration is complete, the Blue LED on the doseBadge⁵ will show for 5 seconds. If the calibration fails, the Red LED on the doseBadge⁵ will show for 5 seconds. See page 69 for troubleshooting if the calibration fails.



When the calibration is complete, remove the acoustic calibrator and replace the windshield.

To re-attach the windshield, press the assembly back onto the body of the doseBadge⁵ taking care to ensure that it is securely located. The doseBadge⁵ is ready for use.

Post-measurement calibration

The doseBadge⁵ allows for a calibration to be carried out after a measurement has been completed.

Many occupational standards and regulations require a post-measurement calibration to be carried out and for the differences between the pre- and post measurement calibration levels to be reviewed.

To carry out a post measurement calibration, follow the same process as for the pre-measurement calibration.

The second calibration is recorded by the instrument and can be viewed in NoiseTools, on the dBLink App or on the RC:120A dBConnect.

In the example below, the measurement has been downloaded into NoiseTools. The pre- and post measurement calibration information is shown in the summary view:

Name	3
Start Time	26 August 2016 13:00:14
End Time	26 August 2016 14:22:38
Duration	1 Hours 22 Minutes 24 Seconds
Instrument	MK50013
Calibration	Before: 26/08/2016 12:58:23 After: 26/08/2016 14:24:37

Clicking on the arrow or the details tab shows the detailed information with the time, date, level and offsets.

^ Calibration		
Last Factory Calibration	16/07/2016	
^ Calibration Before		
Time	26/08/2016 12:58:23	
Level	94.0 dB	
Offset	0.28 dB	
^ Calibration After		
Time	26/08/2016 14:24:37	
Level	94.0 dB	
Offset	0.20 dB	

For applications where the drift between calibrations is required, this can be calculated from the difference between the Calibration Before Offset and the Calibration After Offset.

In this example, the drift is $0.28\text{dB} - 0.20\text{dB} = 0.08\text{dB}$.

Attaching & removing the doseBadge⁵

Where to position the doseBadge⁵

You should consult any local regulations or standards for specific information about the positioning of noise dosimeters but it is recommended that the doseBadge⁵ is mounted close to the ear, typically within 10-15cm (4" to 6").

This will help to avoid reflections from the head which can affect measurements.

The microphone should be as vertical as possible and the windshield should always be attached before measurements are started.

Avoid handling the doseBadge⁵ when it is running and storing data.

Physical impacts upon the doseBadge⁵ can affect the measurements and so the doseBadge⁵ will record impacts using the internal accelerometer. When the sensor is activated, the time history data is marked and this can be seen in the NoiseTools software.

If the noise sources to be measured appear to be coming from one direction, it is recommended that the instrument is mounted onto the shoulder closest to the source.

When the doseBadge⁵ is measuring, keep clothing away from the windshield and microphone to avoid any unwanted noise being recorded.

Clip the doseBadge⁵ onto the clothing using the mounting clips and ensure that the unit is secure.



To remove the doseBadge⁵, ensure that the instrument is stopped (The blue LED will flash when the instrument is measuring).

Release the clips and remove the doseBadge⁵.

Starting a measurement

Scheduled measurements

If scheduled measurements have been configured and enabled in the doseBadge⁵ unit, they will be active once the instrument has been removed from the Dock.

Remove the doseBadge⁵ from the Dock and connect to the worker. Measurements will start, pause and stop as defined in the scheduled measurement settings. See page 41 for details of configuring scheduled measurements.

Note that when the doseBadge⁵ is connected to a powered CU:120A Dock, the scheduled measurements will not be activated.

Starting a measurement with NoiseTools

Measurements can be started and stopped through the NoiseTools software.



The status of any doseBadge⁵ instruments that are connected to the Dock are displayed in the Dock window as shown on the left.

In this example the instrument is stopped. The red Stop icon below the image of the doseBadge⁵ shows this.

Also available is the current battery charge and the free memory in the instrument.

In this example the battery is fully charged (100%) and 91% of the available memory is free.

To start a measurement, press the green Start arrow and the instrument will begin a new measurement.

The green arrow will become a red Stop button allowing measurements to be stopped manually.

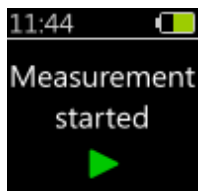
Starting a measurement with the RC:120A dBConnect

Connect to the doseBadge⁵ instrument and select the measure option as shown below:

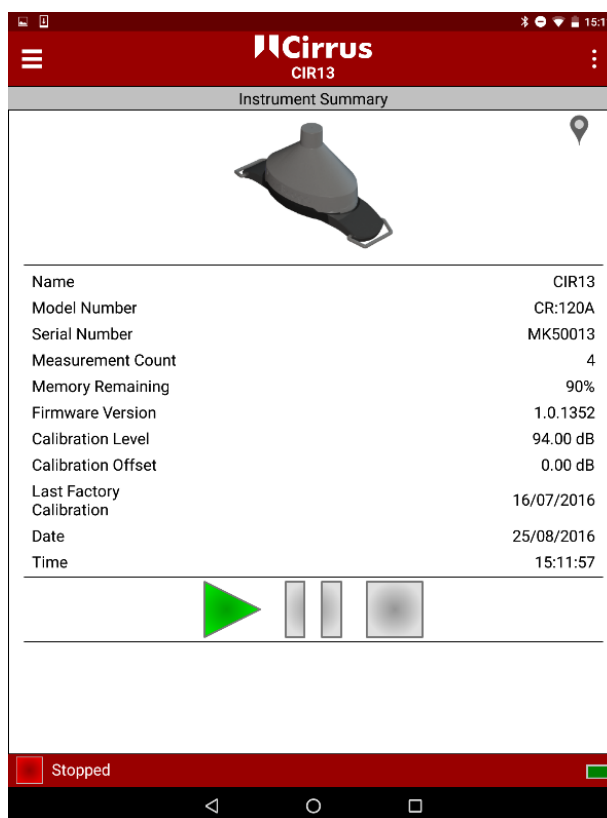
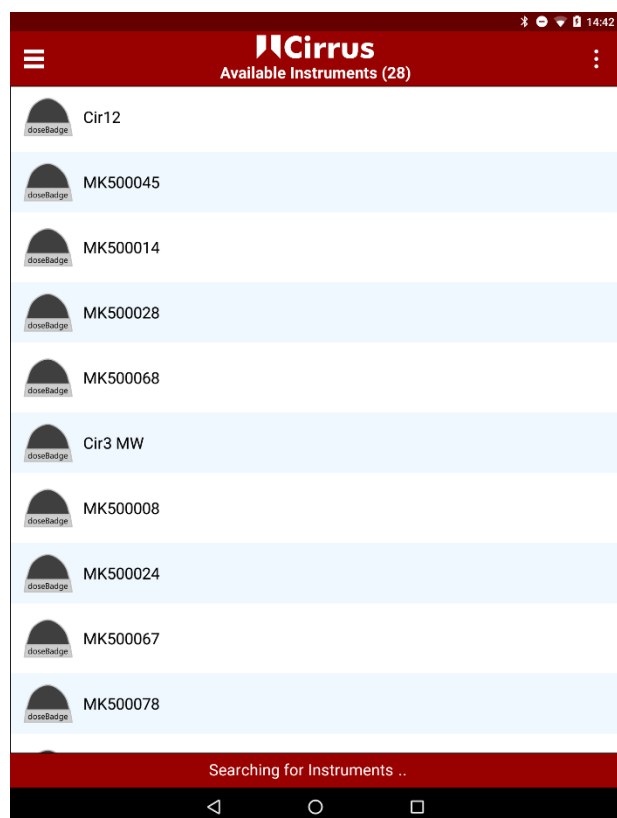


When the instrument is not measuring, the only option is to start a measurement.

Pressing the Left button will start a measurement and a confirmation will appear for a few seconds.



Starting a measurement with the dBLink App



To start a measurement with the dBLink App, connect to the required instrument from the instrument discovery window and press the Green run button.

Press again to confirm.

The measurement will start and the available options will change from Start to Pause and Stop.

In this example, the top instrument is ready to start and the bottom instrument is already running. The Pause and Stop options are available.

Measurement running indication

When a doseBadge⁵ instrument is running, the Blue LED will flash every 2 seconds.

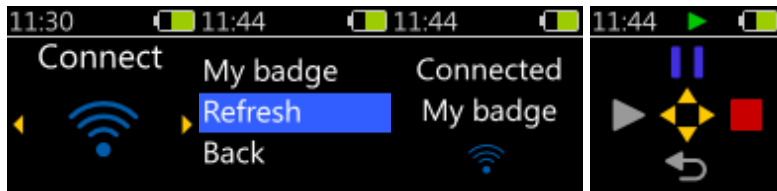
See page 69 for details of the LED status indicators.

Pausing a measurement

When the doseBadge⁵ unit is running and measuring data, the Blue LED will flash every 2 seconds. The measurement can be paused using a number of different methods as described below.

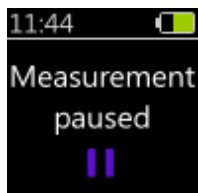
Pausing a measurement with the RC:120A dBConnect

Connect to the doseBadge⁵ instrument and select the measure option as shown below:



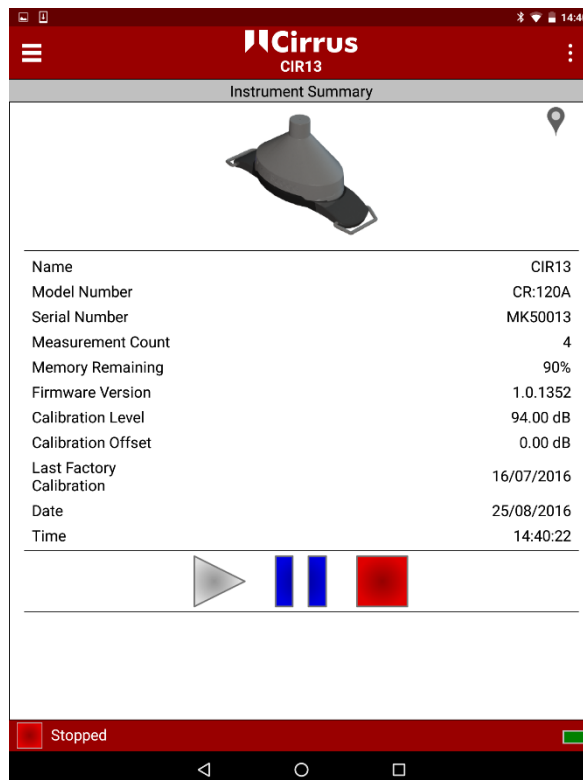
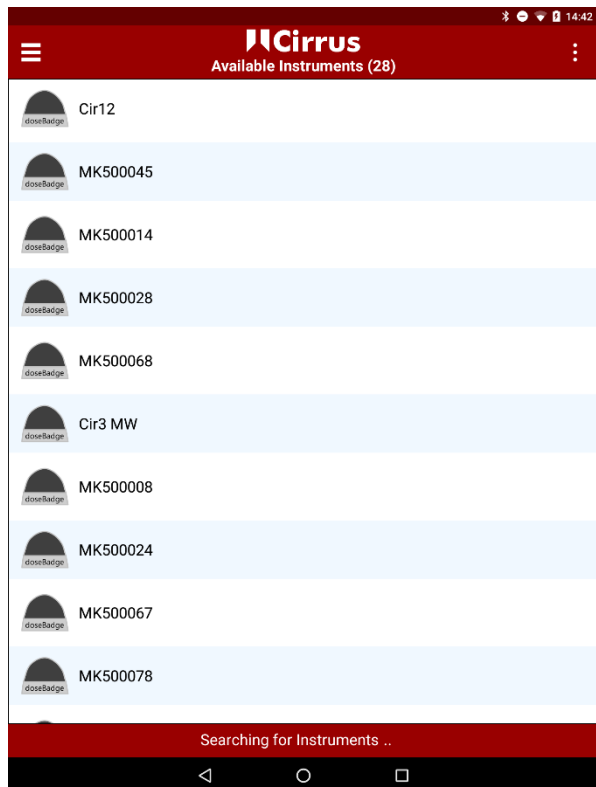
When the instrument is measuring, the options are to either pause it or stop it. The small green “Recording” icon in the status bar indicates that the instrument is measuring.

Pressing the Up button will pause the measurement and a confirmation will appear for a few seconds.



Pausing a measurement with the dBLink App

To pause a measurement with the dBLink App, connect to the required instrument that is running and from the instrument discovery window, press the blue pause button. Press again to confirm.



The status of the instrument is shown by the Green run, Blue pause and Red Stop buttons.

Using scheduled measurements

If a scheduled pause has been programmed into the instrument, this will be activated at the appropriate time.

Pause indication

When a doseBadge⁵ instrument is paused, the Blue LED will flash every 5 seconds.

See page 69 for details of the LED status indicators.

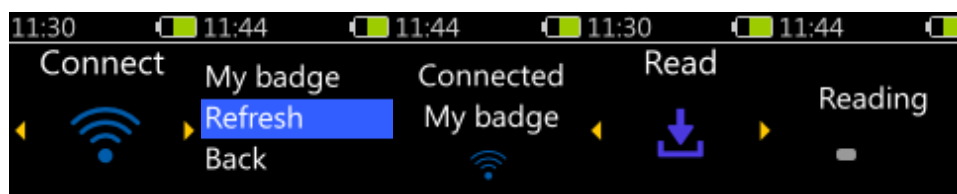
Mid-shift readings

It can be useful to view the accumulated noise exposure whilst a measurement is in progress. This is commonly known as a mid-shift reading.

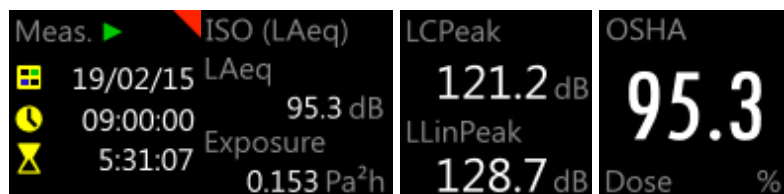
The doseBadge⁵ allows measurements to be viewed whilst in progress using either the RC:120A dBConnect or the dBLink App as described below.

Using the RC:120A dBConnect

Connect to the doseBadge⁵ instrument and select the Read option as shown below:



The RC:120A dBConnect will read the current measurement information from the doseBadge⁵. Use the left and right keys to move between the information for the current measurement:

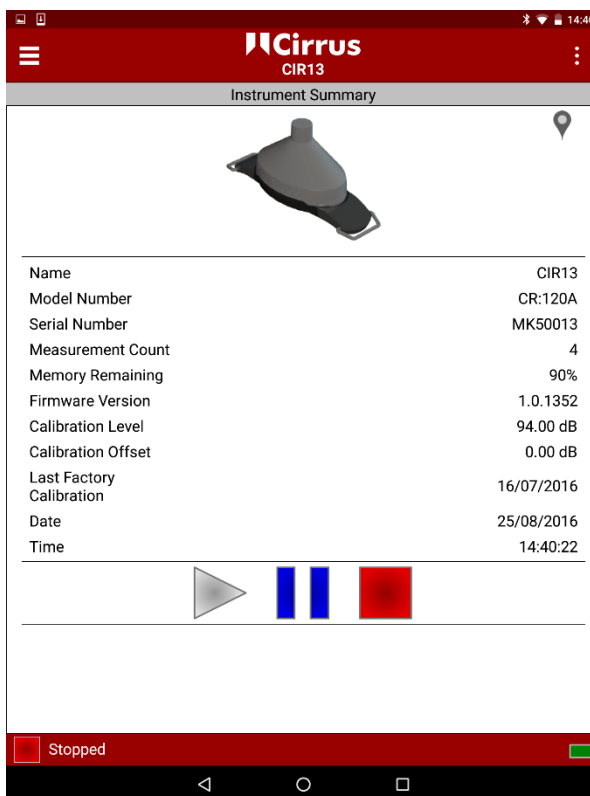
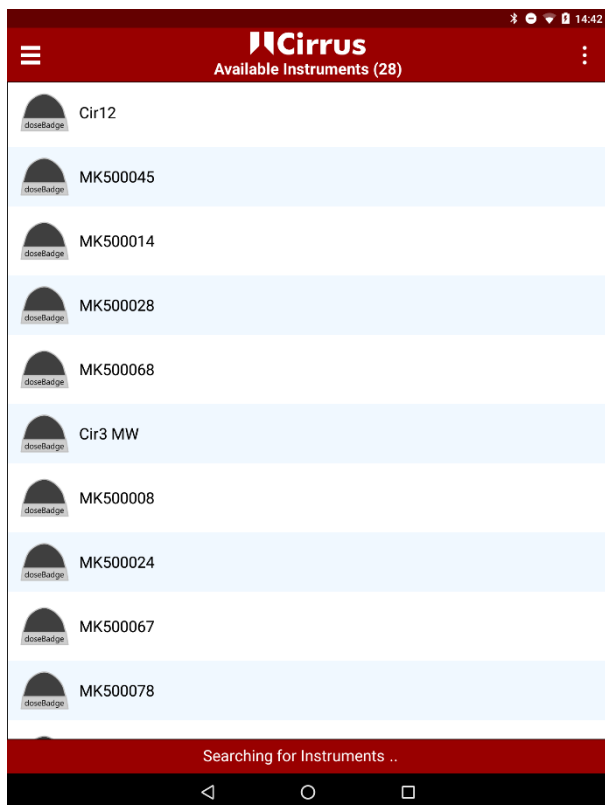


The word Meas. and the green icon shows that the badge is running and that this is a mid-shift reading.

Press the round center key to exit from the reading.

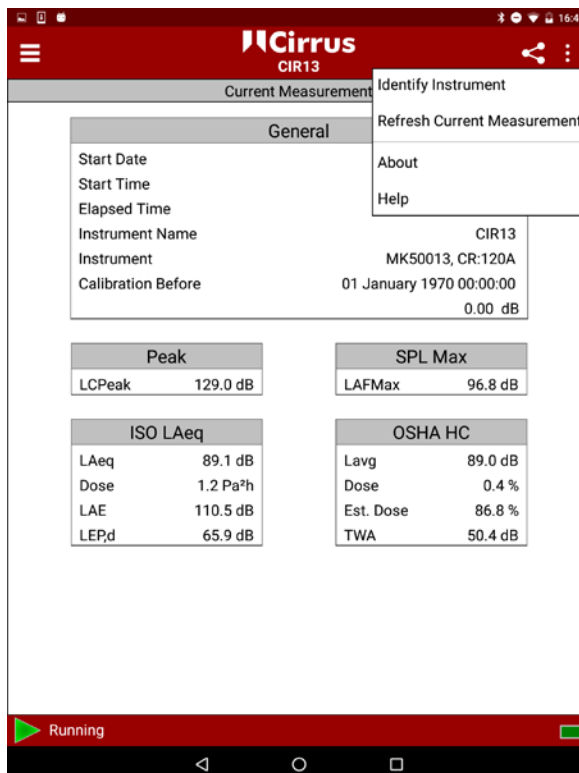
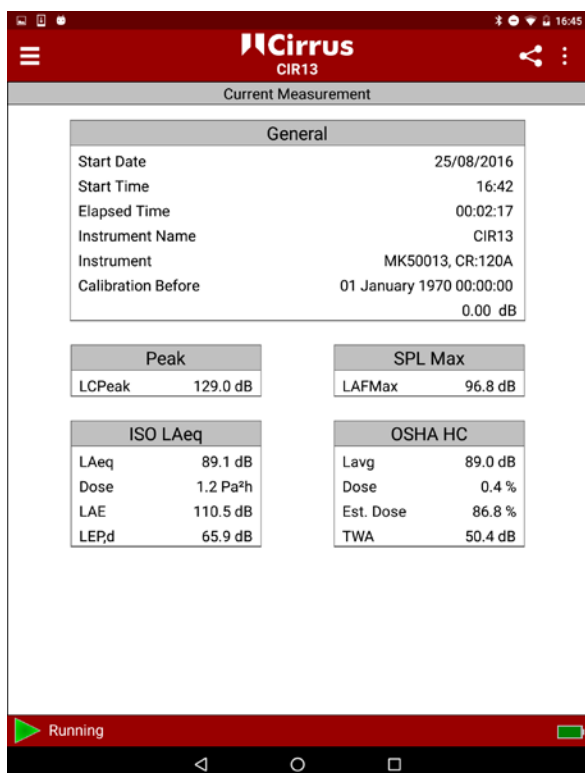
Using the dBLink App

To view the measurement status of an instrument whilst it is running, connect to the badge and select it from the discovery window.



If the badge is running, the current measurement data will be displayed below the badge information.

The measurement data for the first integrator is displayed on this screen. To view the measurement data for other integrators, select the badge and swipe to view the Current Measurement screen or use the menu to select the View Measurements option.



The current information can be refreshed by selecting the menu in the top right selecting Refresh Current Measurement.

Please note that to reduce power consumption, the data is not refreshed automatically. Pressing the refresh icon will load the current measurement data again.

Stopping a measurement

Stopping a measurement with NoiseTools

To stop a measurement through NoiseTools, connect the doseBadge5 to the Dock and from the Dock window, press the Stop a Measurement link and the status will change from Running to Stopped.

Stopping a measurement with the RC:120A dBConnect

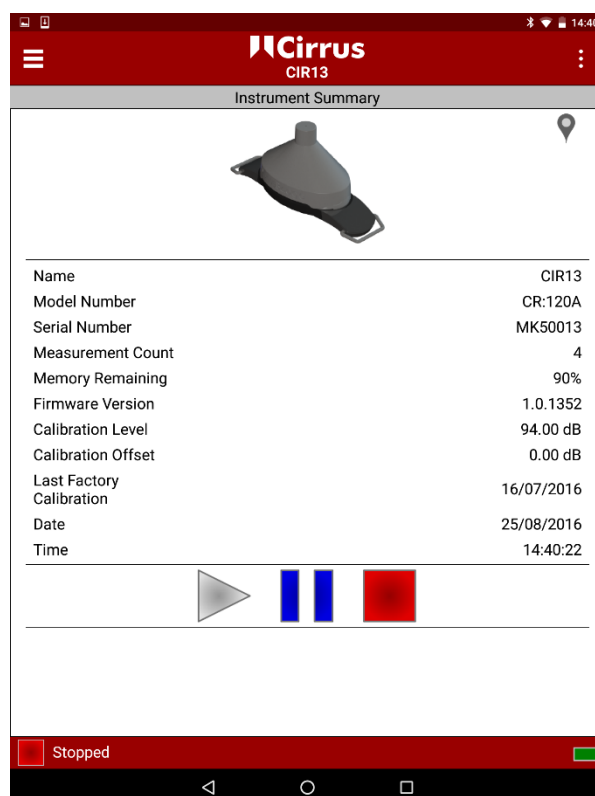
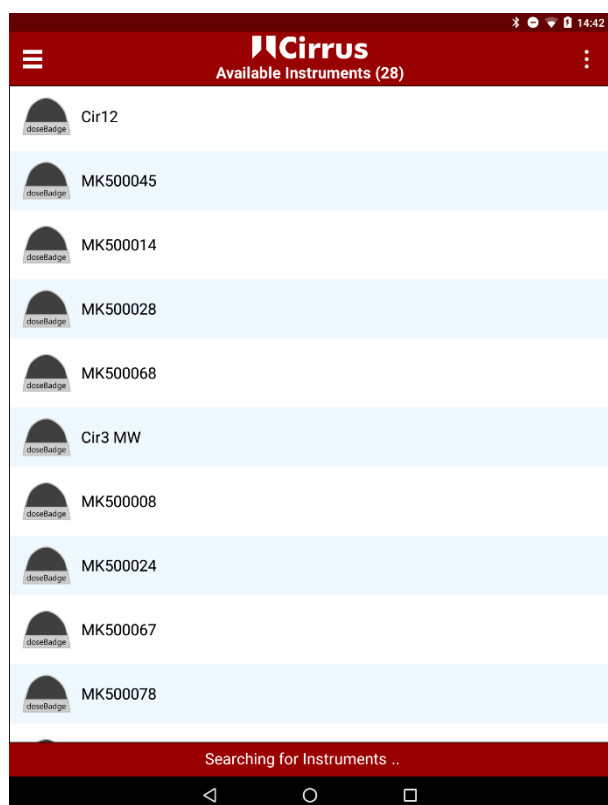
When the instrument is measuring, the options are to either pause it or stop it. The small green “Recording” icon in the status bar indicates that the instrument is measuring.

Pressing the Right button will stop the measurement and a confirmation will appear for a few seconds.



Stopping a measurement with the dBLink App

To stop a measurement with the dBLink App, connect to the required instrument that is running and from the instrument discovery window, press the red stop button. Press again to confirm.



The status of the instrument is shown by the Green run, Blue pause and Red Stop buttons.

Scheduled measurements

If a scheduled stop has been programmed into the instrument, this will be activated at the appropriate time and the instrument will end. The measurement data will be stored in the instrument ready for download or viewing.

Downloading measurements

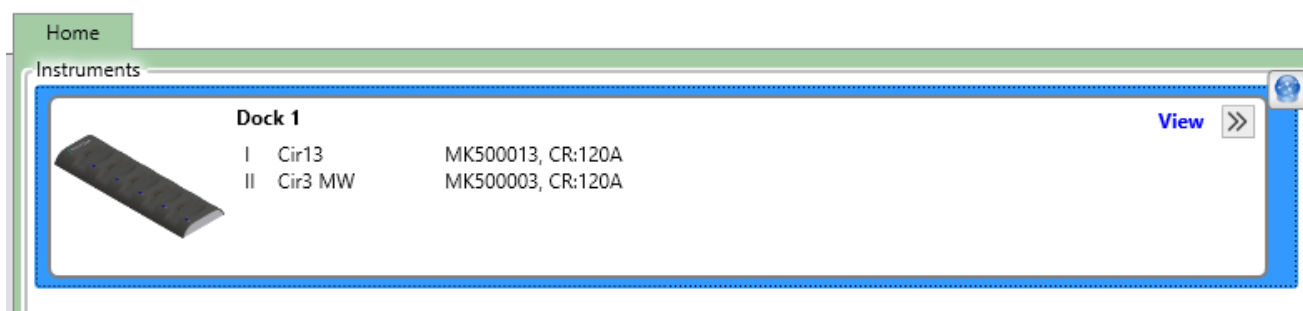
Downloading to NoiseTools

The NoiseTools software allows measurement data to be downloaded, analysed and measurement reports created.

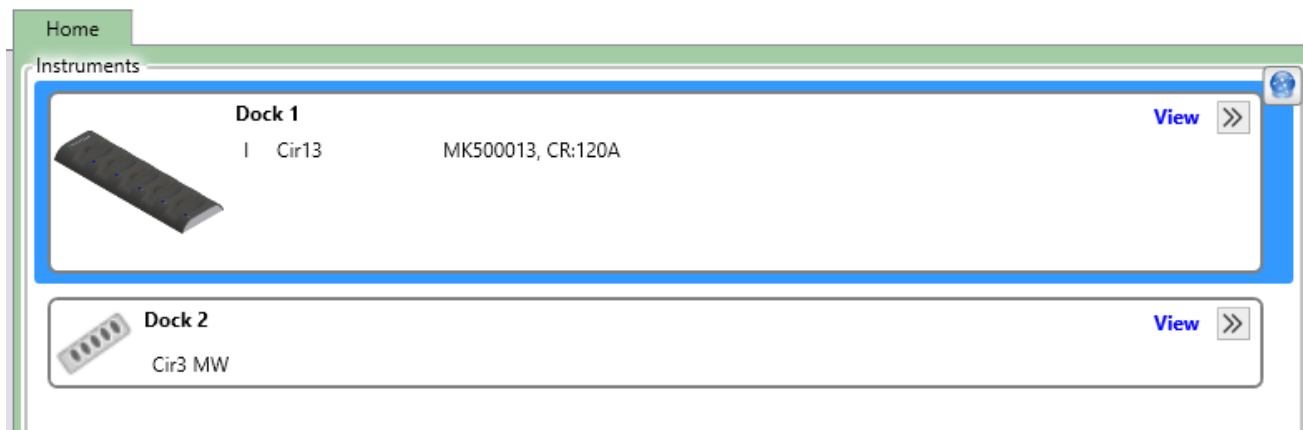
For further information on using NoiseTools, please refer to the online documentation, training videos and support information. See page 69 for more details.

When a doseBadge⁵ is connected to a powered CU:120A Dock and the Dock is connected to the NoiseTools software via a USB cable, the Dock will appear in the Instrument window.

If more than one doseBadge⁵ unit is connected to the Dock, each instrument will be shown with its serial number as shown below:

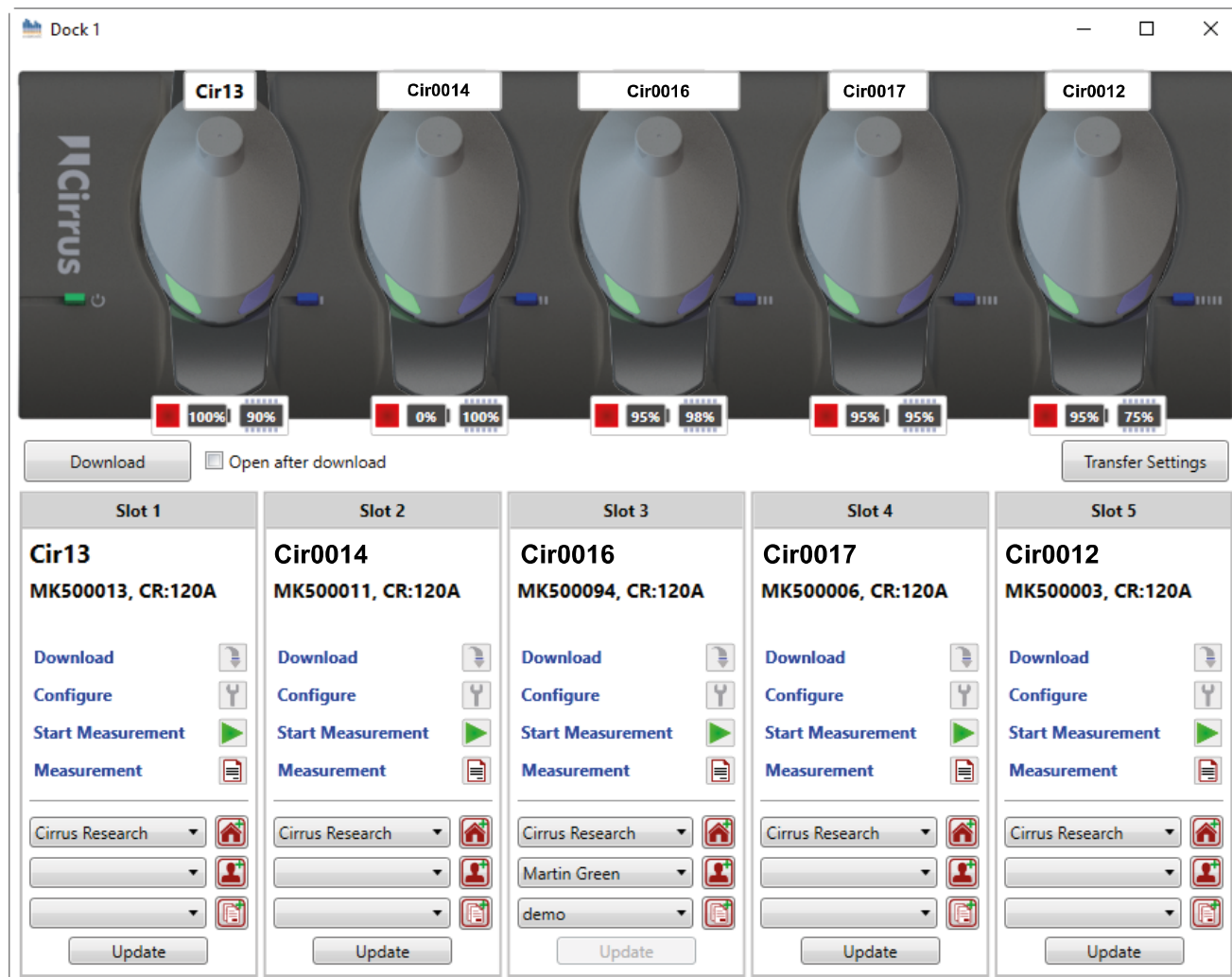


If multiple CU:120A docks are connected to the NoiseTools software, these will be visible in the main NoiseTools window:



Click on the View link to open the Dock View.

In the example below, 5 individual doseBadge⁵ units are connected to the dock:



Download all measurements

This function will download all measurements from all connected instruments and stored them into the database.

Where a person, project or place has been allocated to an instrument, these will be added to the appropriate measurement.

Click the Open After Download option to open all measurements when the download has completed.

The progress of the download is shown by a green bar. Close the download window when the process is complete.

Download selected measurements

To download measurements from an instrument, click the Download link for each doseBadge⁵.

To download selected measurements from individual instruments, use the Download link within the appropriate slot.

This will open the measurement list which shows details of the measurements stored in the instrument.

Any or all measurements can be selected and the place, person and project to be allocated to each measurement can be changed.

Number or Name	Date	Time	Duration
1	25/08/2016	16:42:32	00:15:50
2	25/08/2016	16:59:00	00:01:00

Options

☐ Group downloaded measurements Paused ☐ Open after download Select All

Organise into Categories

Place: Cirrus Research Person: Bob Smith Project: Noise Exposure

Download Cancel

The Group downloaded measurements option allows a number of measurements to be grouped together for analysis, comparison and reporting. The measurement group can be named as required.

The Open after download option allows any measurements to be opened automatically in NoiseTools once the download has completed.

Number or Name	Date	Time	Duration
1	25/08/2016	16:42:32	00:15:50
2	25/08/2016	16:59:00	00:01:00

Options

☒ Group downloaded measurements Group ☒ Open after download Select All

Organise into Categories

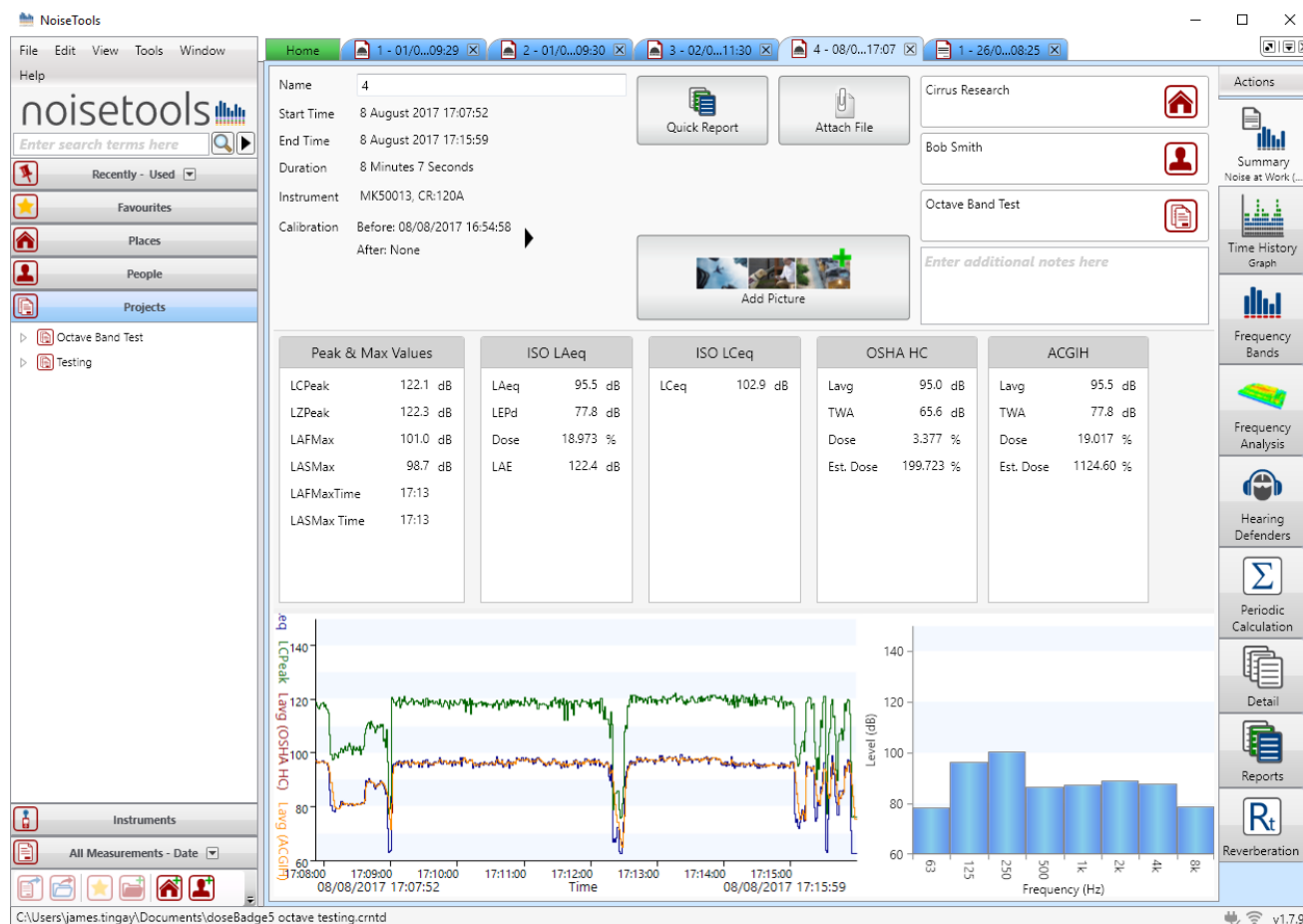
Place: Cirrus Research Person: Bob Smith Project: Noise Exposure

Download Cancel

When the measurements have been selected, click the Download button to store the measurements into the NoiseTools database.

If the Open after download option is selected, the downloaded measurements will be shown.

An example measurement is shown below.



In this measurement, 4 integrators have been enabled along with LCPeak, LZPeak, LAFmax, LASmax and Octave Bands. The Octave Band graph sits alongside the main graph. If octave band data is not available or has not been measured, the time history chart will expand to fill the available space.

Viewing measurements with the dBLink App

Measurement can be viewed whilst they are being made (See Mid-Shift readings on page 33) or at the end of a measurement once the instrument has been stopped.

Please refer to page 61 for details of viewing measurements with the dBLink App.

Viewing measurements on the RC:120A dBConnect

Measurements can be reviewed on the RC:120A dBConnect unit. Please refer to page 49 for details of reviewing measurements on the RC:120A dBConnect.

Please note that the RC:120A dBConnect unit does not allow measurement data to be download to the NoiseTools software.

Storing & transport instruments

Where the doseBadge⁵ will not be used for extended periods the units can be set to Transport Mode. This will prevent the badge from running and will minimise power consumption.

The doseBadge⁵ can then be stored for long periods of time without charging the battery.

Please note that the battery will be depleted after approximately 4 weeks when Transport Mode is enabled.

If the doseBadge⁵ is not set to Transport Mode, the battery will be depleted after approximately 7 days.

Transport Mode

The doseBadge⁵ can be set into transport mode which will shut down the instrument and disables the Shake-to-Wake sensor and will set the instrument into the lowest power mode.

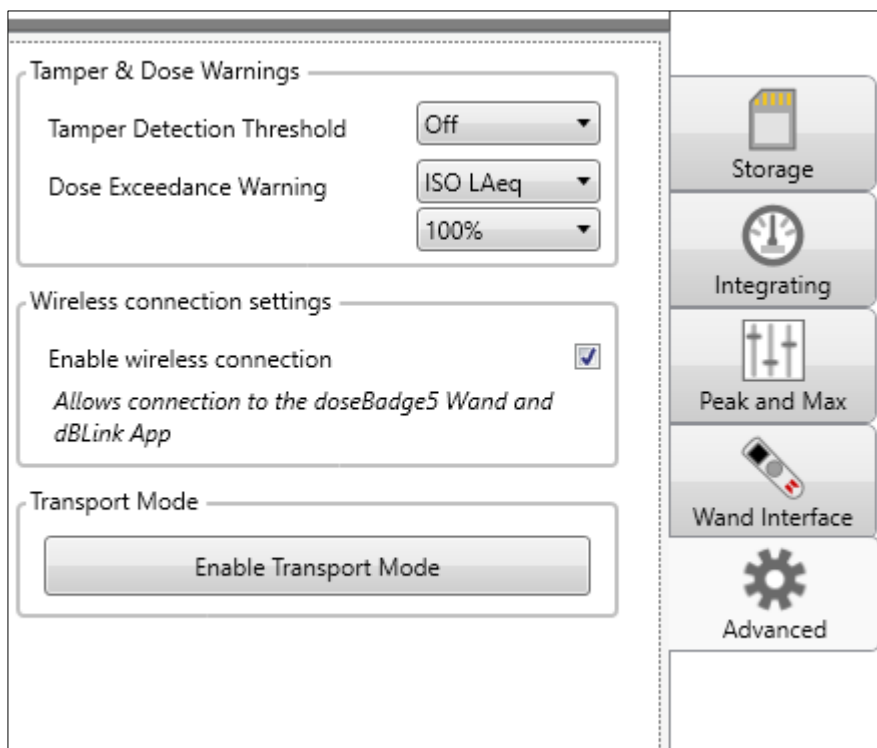
This can be used if the instrument is to be shipped or will be in transit where movement will activate the sensor and wake the badge. This will result in the battery being drained.

When the transport mode is enabled, the doseBadge⁵ will shut down and the shake-to-wake sensor will be deactivated. This will prevent the instrument from waking during transport and will prevent the battery from being drained.

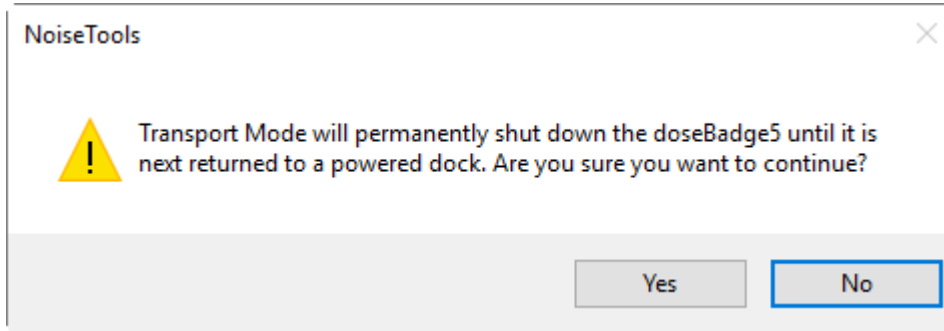
Before the doseBadge⁵ can be used, it must be connected to a **powered** CU:120A Dock. This will disable the Transport Mode and allow the instrument to be used as normal. The instrument must be fully charged before use.

To enable the Transport Mode, connect the instrument to the NoiseTools software. From the configure menu, select the Advanced tab.

Press CTRL+SHIFT+A keys and press the Enable Transport Mode button.



NoiseTools will display a warning as follows:



Click Yes and the doseBadge⁵ will be set to transport mode. Remove the doseBadge⁵ from the Dock and store in the carrying case.

To disable transport mode, reconnect the doseBadge⁵ to a powered CU:120A Dock.

Configuring scheduled measurements

The scheduled measurements function is powerful and unique function of the doseBadge⁵.

It allows the user to configure the instruments to start, pause and stop at specific times throughout the day and to enable or disable the schedules for specific days of the week.

This allows instruments to be configured ready for use before they are needed.

For example, instruments can be configured ready for a night shift and can be given to workers ready for the shift. Measurements will be made automatically and stored in the instrument ready for download the next day.

The overall Scheduled Measurement function can be enabled or disabled via NoiseTools, the RC:120A dBConnect or the dBLink App.

If a doseBadge⁵ is connected to a powered Dock, the scheduled measurements will not be activated.

If a scheduled start is missed (if the badge is still on the Dock for example) the instrument can be started manually and any subsequent automatic measurements will trigger as intended.

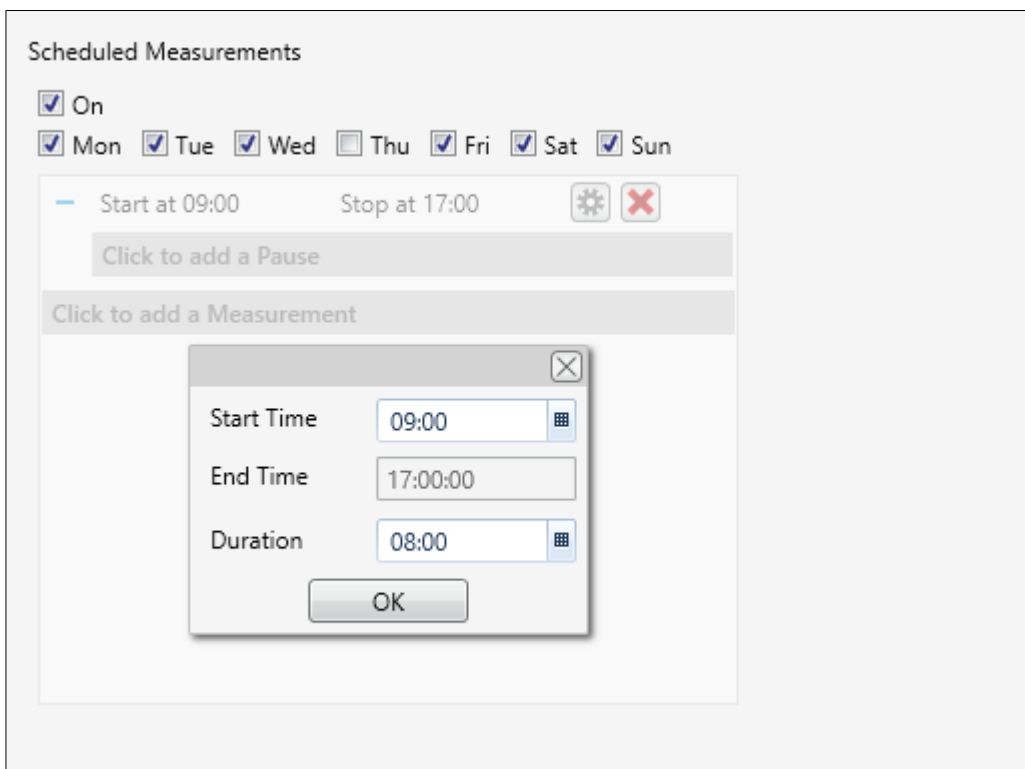
An example of where this can be used is as follows:

1. Configure the instruments to start measuring at 8am and run for 8 hours
2. Calibrate the instrument(s)
3. Leave the instruments on the Dock ready for deployment
4. Give the instruments to the workers to be measured before 8am
5. Measurements will start automatically at 8am and run for 8 hours
6. At 4pm the measurement will stop
7. Return the instrument to the Dock for charging & download
8. Repeat the next day

Adding a timed measurement

To add a timed measurement, click on the “Click to add a Measurement”.

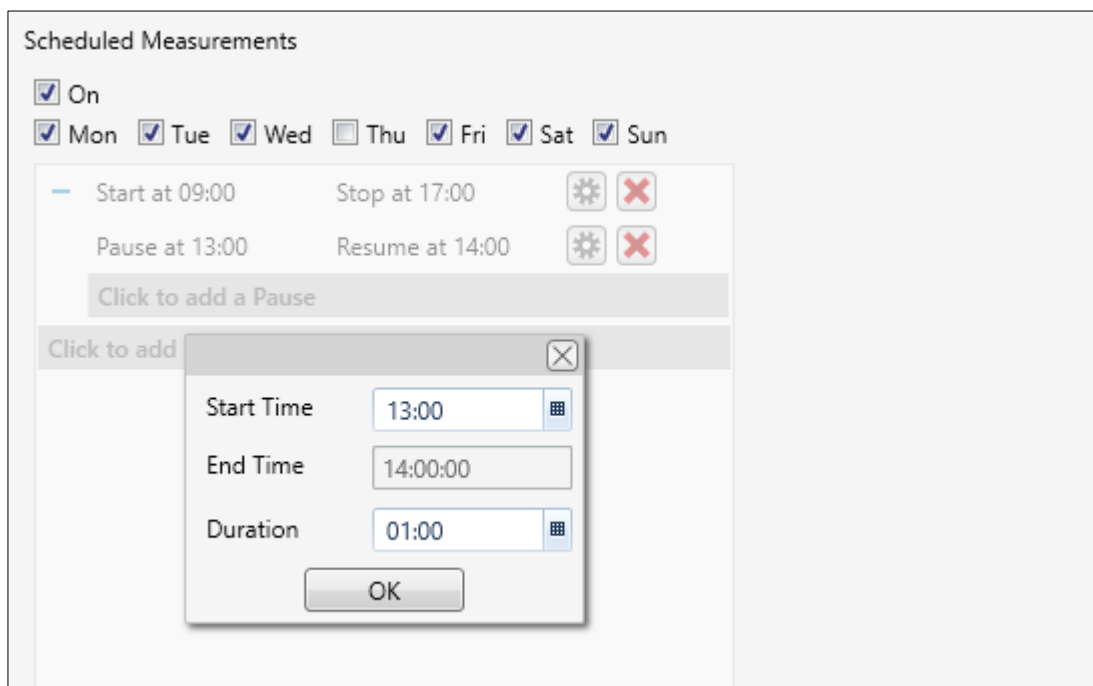
Choose the Start Time and the Duration of the measurement. NoiseTools will show the stop time based on the start time and duration.



The time and duration can be selected either by typing it into the box or by using the pre-set selection.

Adding a pause to the measurement

To add a pause to a measurement, click the “Click to add a Pause”.



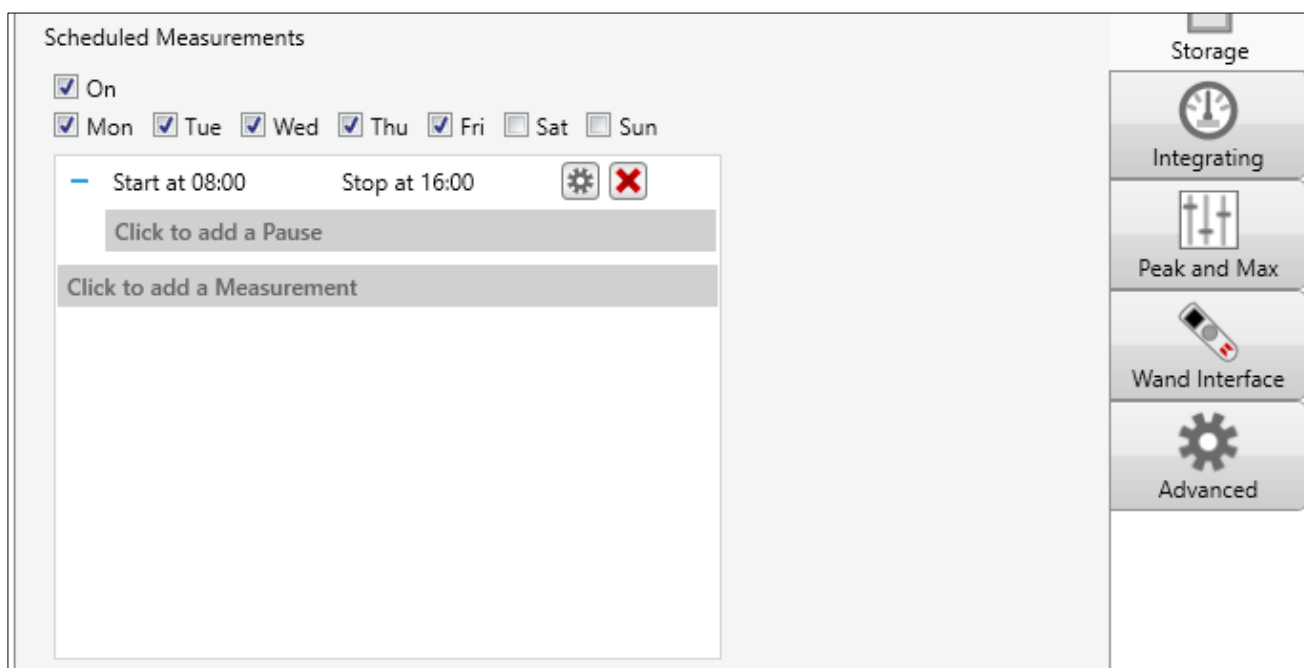
Choose the Start Time and the Duration of the measurement. NoiseTools will show the stop time based on the start time and duration.

The time and duration can be selected either by typing it into the box or by using the pre-set selection.

Example configurations for the scheduled measurements

On the following pages are examples of how the scheduled measurements can be used.

Example 1 - Start at 8am & run for 8 hours





Example 2 - Start at 8am & run for 12 hours. Start at 9pm & run for 8 hours



Scheduled Measurements

☒ On

☒ Mon ☒ Tue ☒ Wed ☒ Thu ☒ Fri ☐ Sat ☐ Sun

— Start at 08:00 Stop at 20:00  

Click to add a Pause

— Start at 21:00 Stop at 05:00  

Click to add a Pause

Click to add a Measurement

Storage

Integrating

Peak and Max

Wand Interface



Advanced



Example 3 - Start at 8am & run for 12 hours with a 1 hour pause at 1pm

Scheduled Measurements

☒ On

☒ Mon ☒ Tue ☒ Wed ☒ Thu ☒ Fri ☐ Sat ☐ Sun

— Start at 08:00 Stop at 20:00  

Pause at 13:00 Resume at 14:00  

Click to add a Pause

Click to add a Measurement

Storage

Integrating

Peak and Max

Wand Interface



Advanced

Example 4 – Start at 8.30am & run for 8 hours (Tuesday, Wednesday & Thursday)

Scheduled Measurements


☒ On


☐ Mon ☒ Tue ☒ Wed ☒ Thu ☐ Fri ☐ Sat ☐ Sun


Start at 08:30 Stop at 16:30  


Click to add a Pause


Click to add a Measurement

 Storage

 Integrating

 Peak and Max

 Wand Interface

 Advanced

The RC:120A dBConnect

The RC:120A dBConnect is an optional item that allows instruments to be controlled, measurements started, paused and stopped and for mid-shift readings to be taken.

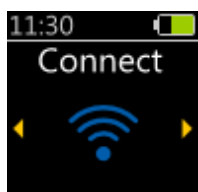
The information displayed by the RC:120A dBConnect when reading measurements from a doseBadge⁵ unit is configured in the instrument.

The RC:120A dBConnect communicates to any number of doseBadge⁵ units via Bluetooth (this requires that the Bluetooth® communications are enabled in the doseBadge⁵ instruments).

Switching on the RC:120A dBConnect

The RC:120A dBConnect is switched on by pressing the round key in the centre of the keypad.

The RC:120A dBConnect will display the Cirrus logo and then show the Connect screen:

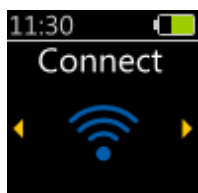


To switch off the RC:120A dBConnect, press and hold the round key and wait for the countdown to complete.

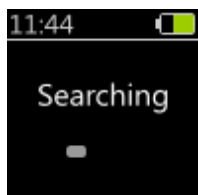
The RC:120A dBConnect will automatically power off after 2 minutes to reduce battery consumption.

Connecting to a doseBadge⁵

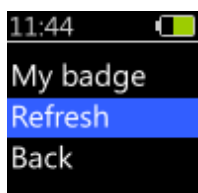
To connect to one or more doseBadge⁵ instruments, select the Connect screen and press the round key.



The RC:120A dBConnect will search for available doseBadge⁵ instruments and will show the searching screen:

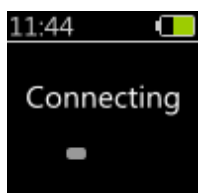


When one or more doseBadge⁵ instruments are detected, the RC:120A dBConnect will show a list of the available units:

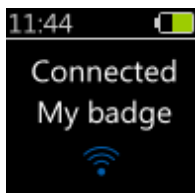


The Refresh option forces the RC:120A dBConnect to search again for available instruments that are in range.

Select the instrument required and press the round key to continue. The RC:120A dBConnect will display the Connecting screen:



When the connection has been made, the RC:120A dBConnect will show the connected screen:



If the connection from the RC:120A dBConnect to the doseBadge⁵ fails or the connection is lost, one of the following screens will be displayed:



Connection lost will be shown when the doseBadge⁵ moves out of range of the RC:120A dBConnect.

When the RC:120A dBConnect is connected to a doseBadge⁵, more options become available from the Main view.



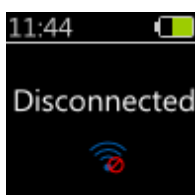
1. *Disconnect* – Disconnects from the instrument
2. *Identify* – Activates the “Identify” blue LED on the doseBadge⁵ for a few seconds to help checking which one is connected
3. *Measure* – Start/stop/pause/resume measurements
4. *Read* – Read the acoustic values from the instrument
5. *Review* – Review the acoustic values from the measurement previously read
6. *Status* – Status of the doseBadge⁵ (battery level, memory left, calibration, etc.)
7. *Settings* – doseBadge⁵ settings (enable timers, clock, clear memory)
8. *Settings* – RC:120A dBConnect settings

a

Controlling the doseBadge⁵ with the RC:120A dBConnect

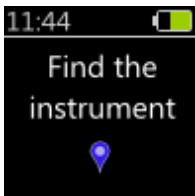
Disconnect

This screen is shown for a few seconds after disconnecting from the instrument.



Identify

After using the “Identify” function from the Main view, the doseBadge⁵ “identify” blue LED will turn on for a few seconds so the user can visually locate the instrument. This screen is displayed for a similar duration.



Measure

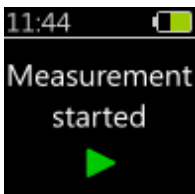
This page lets the user start/stop/pause/resume measurements. The available actions depend on whether the instrument is measuring or not.

The doseBadge⁵ is not measuring

When the instrument is not measuring, the only option is to start a measurement.



Pressing the Left button will start a measurement and a confirmation will appear for a few seconds.



Memory full

An error message will be displayed if the instrument cannot start a measurement because its memory is full.

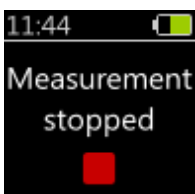


The doseBadge⁵ is measuring

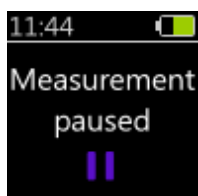
When the instrument is measuring, the options are to either pause it or stop it. The small green "Recording" icon in the status bar indicates that the instrument is measuring.



Pressing the Right button will stop the measurement and a confirmation will appear for a few seconds. The message is split into two lines.

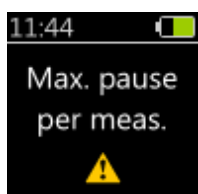


Pressing the Up button will pause the measurement and a confirmation will appear for a few seconds. The message is split into two lines.



Too many pauses in a measurement

A measurement can be paused up to 5 times. An error message will be displayed if trying to pause a measurement too many times. The message is split into two lines.

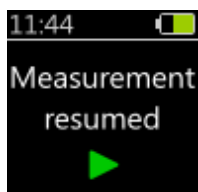


The doseBadge⁵ is paused

When the measurement is paused, the options are to either resume it or stop it. The small purple “Paused” icon in the status bar indicates that the measurement is paused.



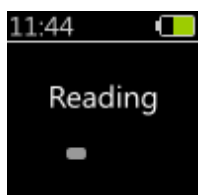
Pressing the Left button will resume the measurement and a confirmation will appear for a few seconds.



Pressing the Right button will stop the measurement and the “Measurement stopped” confirmation will appear for a few seconds.

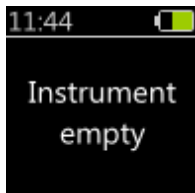
Read

When selecting the “Read” page on the Main view, the RC:120A dBConnect will read the measurements on the doseBadge⁵ and present the results. A progress screen is displayed during the operation.



Instrument is empty

If the instrument is not measuring and does not contain any measurement, a message will be displayed for a few seconds.



Review

After reading the measurements from the doseBadge⁵, the Review page is shown.

The details of a measurement are accessed by using the Left/Right buttons, while the Up/Down buttons are used to go to the next/previous measurement.

Each measurement consists of several pages:

- The summary page with the measurement number, start time and duration
- The calibration page with information about the last calibration before the measurement
- Up to 5 pages of measured acoustic values. Which value is displayed depends on the settings of the measurement channels on the badge and can be modified using the NoiseTools software. Available values include LAeq, LCPeak, exposure, estimated exposure, dose, and more.

A red triangle is shown in the top-right corner of all those pages if an overload occurred during the measurement.

Note that the “Review” page stays accessible even after disconnecting from the doseBadge⁵.

Measurement Summary

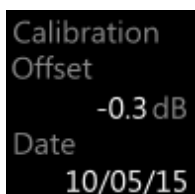
This page displays the number of the measurement, the start date and time and the measurement duration.

If the doseBadge⁵ is currently measuring, the measurement number is replaced with a “Recording” symbol to indicate that this measurement is currently in progress.



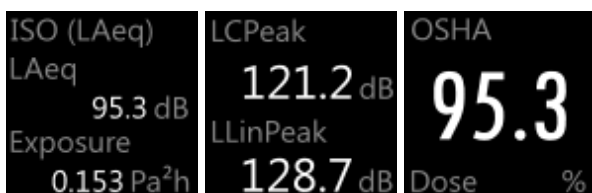
Calibration status

This page shows the details of the last calibration of the doseBadge⁵ done before the measurement started.



Acoustic values

These pages display the measured acoustic values. There are 3 “templates” of pages:



4. The “Integrator template” contains the name of the integrator (e.g. ISO, OSHA PEL, ACGIH, etc.) and two acoustic values (e.g. LAeq, Lavg, TWA, exposure, dose, etc.).
5. The “Values only template” contains two acoustic values not linked to an integrator channel (e.g. LCPeak).
6. The “Big number template” contains one large acoustic value linked to an integrator channel (e.g. dose, exposure).

Status

This screen shows information about the connected doseBadge⁵.

11:44	11:44	11:44	11:44	11:44
My badge	Serial	Fact. Cal.	Last Cal.	Date
70 %	MK501234	10/03/16	05/06/16	07/06/16
5 %	Model	Version	Offset	Time
	CR:120A	1.0.1234	-0.5 dB	11:44

1. *Serial* – Serial number of the instrument
2. *Model* – Model of the instrument
3. *Fact. Cal.* – Date of the last Factory calibration
4. *Version* – Firmware version of the instrument
5. *Last Cal.* – Date of the last user calibration of the instrument
6. *Offset* – Calibration offset of the last user calibration
7. *Date* – Current date of the instrument
8. *Time* – Current time of the instrument

Settings

This menu presents multiple options for the doseBadge⁵:

11:44
Clock
Timers
Storage

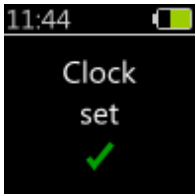
1. *Clock* – Synchronise the clock of the doseBadge⁵ with the clock of the RC:120A dBConnect.
2. *Timers* – Enable or disable scheduled measurements.
3. *Storage* – Clear the memory of the instrument.

Clock

This page gives the option to synchronise the clock of the doseBadge⁵ with the clock of the RC:120A dBConnect.

11:44
Synchronise clock?
Yes No

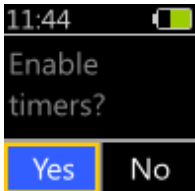
If synchronised, a confirmation will be shown for a few seconds. The message is split into two lines.



Note that it is not possible to change the time on the doseBadge⁵ while it is measuring, and the “Yes” button will be disabled.

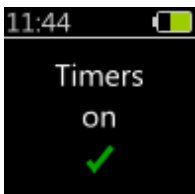
Timers

This page gives the option to enable or disable scheduled measurements on the instrument. The current setting is highlighted by a yellow border (e.g. in the image below, the scheduled measurements are already enabled).

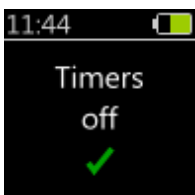


When the setting is changed, a confirmation message will be shown for a few seconds.

Scheduled measurements enabled

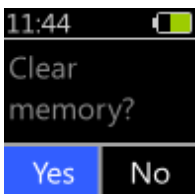


Scheduled measurements disabled

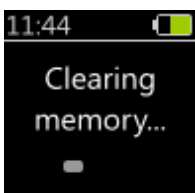


Storage

This page gives the option to clear the memory of the doseBadge⁵, removing all stored measurements.



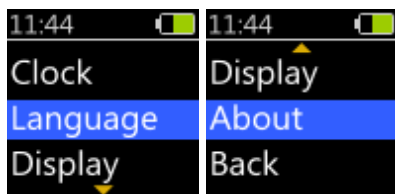
A progress screen will be displayed during the operation, which might take several seconds to complete.



Note that it is not possible to clear the memory while the doseBadge⁵ is measuring, and the “Yes” button will be disabled.

RC:120A dBConnect settings

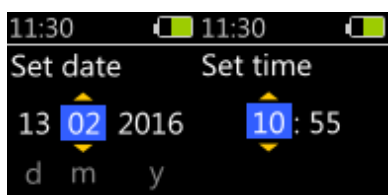
This page brings a menu to modify the configuration of the RC:120A dBConnect. Available choices are:



1. *Clock* – Set the clock on the RC:120A dBConnect
2. *Language* – Change the language of the interface
3. *Display* – Change how the date and time is display throughout the interface (24h, AM/PM, etc.)
4. *About* – Display information about the RC:120A dBConnect itself such as its model and serial number
5. *Back* – Go back to the Main view

Setting the clock

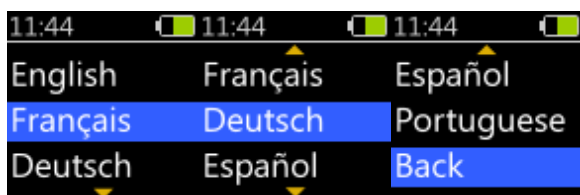
This is where the RC:120A dBConnect clock can be set. It consists of two pages. Use the up and down arrow keys to adjust the value and the left and right keys to move between the options.



Press the round key to move from the Set date to the Set time screens. Press the round key when finished.

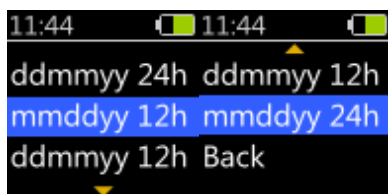
Changing the language

This is where the interface language can be set.



Display

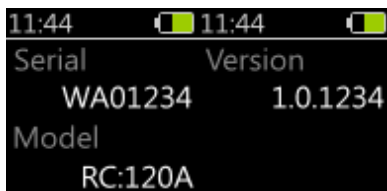
This is where how the date and time are displayed can be changed. There are four available combinations:



1. *ddmmyy 24h* – day/month/year, 24-hour time format
2. *mmddy 12h* – month/day /year, AM/PM time format
3. *ddmmyy 12h* – day/month/year, AM/PM time format
4. *mmddy 24h* – month/day/year, 24-hour time format

About

This page displays information about the RC:120A dBConnect.



Replacing the batteries

The RC:120A dBConnect is powered by 2 x AAA/LR03 batteries.

These are located behind the battery cover on the rear panel. Remove the retaining screw and remove the cover. The cover is secured by a strap to prevent it from being lost.

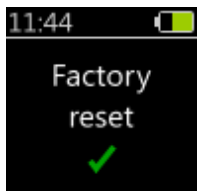


Replace the batteries and secure the cover.

Factory Reset

When started for the first time, the RC:120A dBConnect will ask the user to select a language before doing anything. This is shown when the user first receives the RC:120A dBConnect and will only be asked once. It is still possible to change the language after that from the Language menu.

There is a special function in the RC:120A dBConnect to reset that feature, so the language selection will be asked again when the RC:120A dBConnect is next restarted. This screen is shown to confirm the reset.



The dBLink App

The dBLink App is a mobile application that can be installed onto Android and iOS devices.

It allows doseBadge⁵ instruments to be controlled, configured and measurement information viewed. It can be used to gather mid-shift readings from instruments without having to disturb the worker.

Connecting to the doseBadge⁵

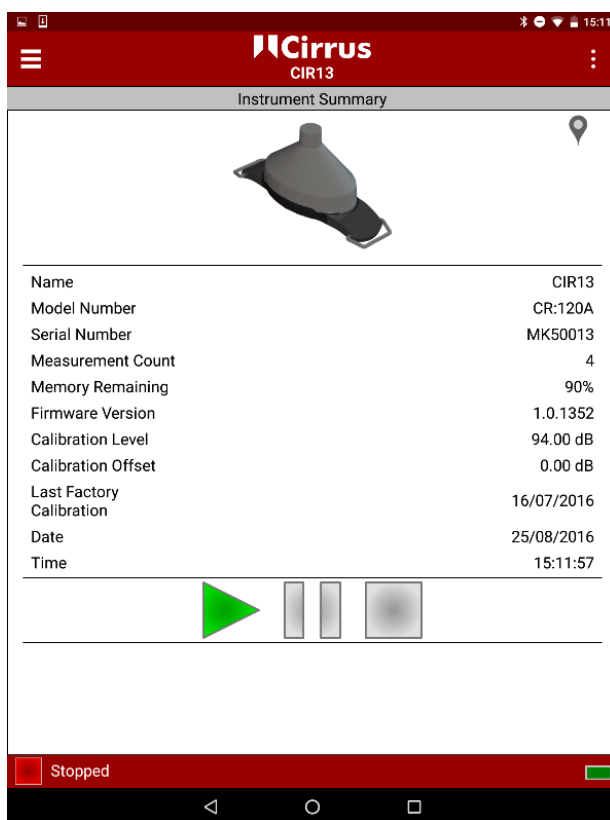
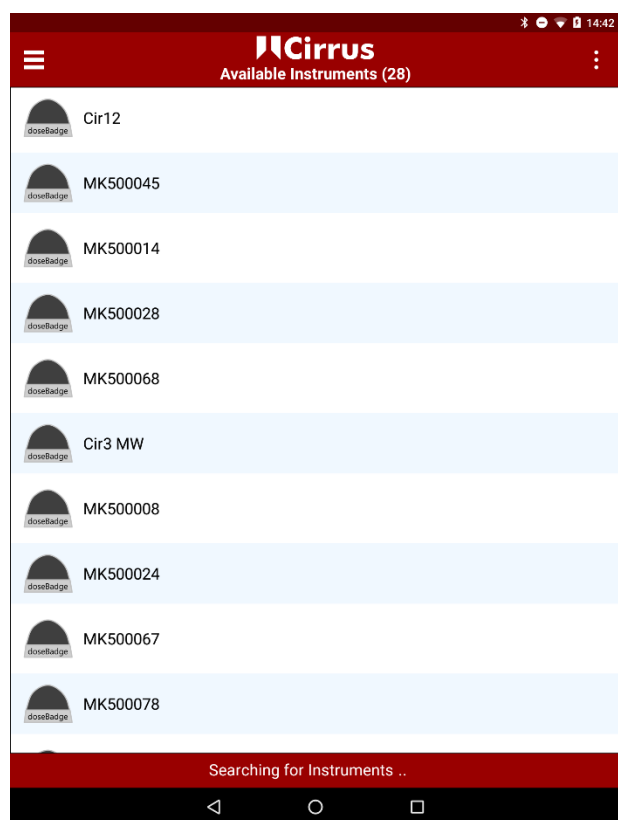
Connection to the dBLink App is via Bluetooth®. Ensure that the Bluetooth® is enabled on the mobile device.

To connect to any available doseBadge⁵ instruments, run the dBLink App and allow the program to discover doseBadge⁵ instruments that are within range.

Once instruments have been detected, they will be displayed on the discovery screen.

Note that a doseBadge⁵ instrument can only be connected to the dBLink App or the RC:120A dBConnect.

If the dBLink App is running and has detected a doseBadge⁵ instrument, close the App before connecting to the RC:120A dBConnect.



Configuring the doseBadge⁵

Select the instrument from the discovery screen and use the menu to select the measurements option or swipe left to view the Setting screen.

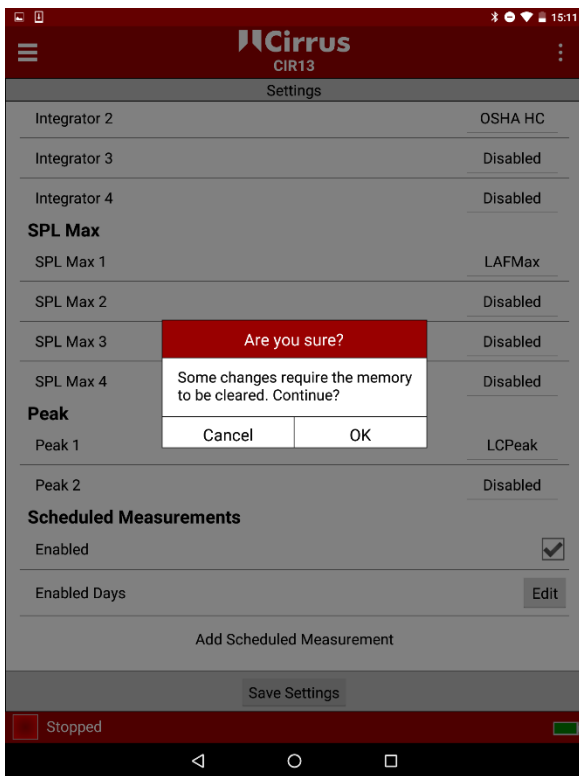
The screenshot shows the 'Settings' screen for the Cirrus CIR13 instrument. The interface is organized into several sections. The 'General' section includes input fields for 'Instrument Name' (pre-filled with 'CIR13'), 'Place', 'Person' (with sub-fields for 'First Name' and 'Last Name'), and 'Project'. Below these are buttons for 'Synchronise Clock' and 'Clear Memory'. The 'Integrator' section contains four rows, each representing an integrator (1 through 4), with a dropdown menu for each; Integrator 1 is currently set to 'ISO LAeq', while the others are 'Disabled'. The 'SPL Max' section is also present. At the bottom of the settings area is a 'Save Settings' button. A red status bar at the bottom of the screen displays a red square icon and the text 'Stopped'.

The following items can be configured from the settings screen:

- Instrument Name
- Place – This information is downloaded into NoiseTools along with the measurement
- Person (first & last name) - This information is downloaded into NoiseTools along with the measurement
- Project - This information is downloaded into NoiseTools along with the measurement
- Clock (synchronise the clock in the doseBadge⁵ to that in the mobile device)
- Clear the instruments memory
- Select the integrators
 - Up to 4 independent integrators can be enabled at any time
- Select the SPL Max settings
 - Up to 4 independent SPL Max values can be enabled at any time
- Select the Peak channels
 - Up to 2 independent Peak channels can be enabled at any time
- Enable or disable scheduled measurements
- Add a scheduled measurement

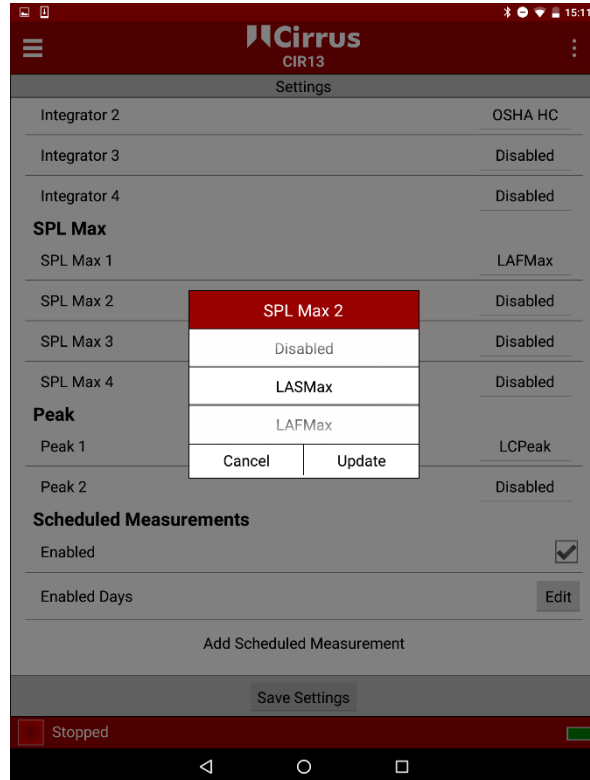
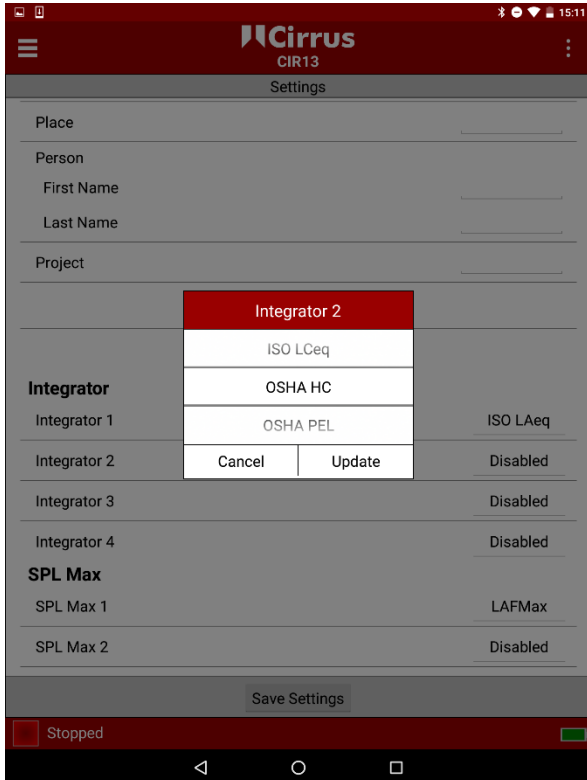
When any settings have been changed, press the Save Settings button at the bottom of the screen to save the new configuration to the instrument.

This will require the instrument's memory to be cleared. Confirm the changes to clear the memory and to program the new settings into the doseBadge⁵.



Integrators, Peak & SPL Max values

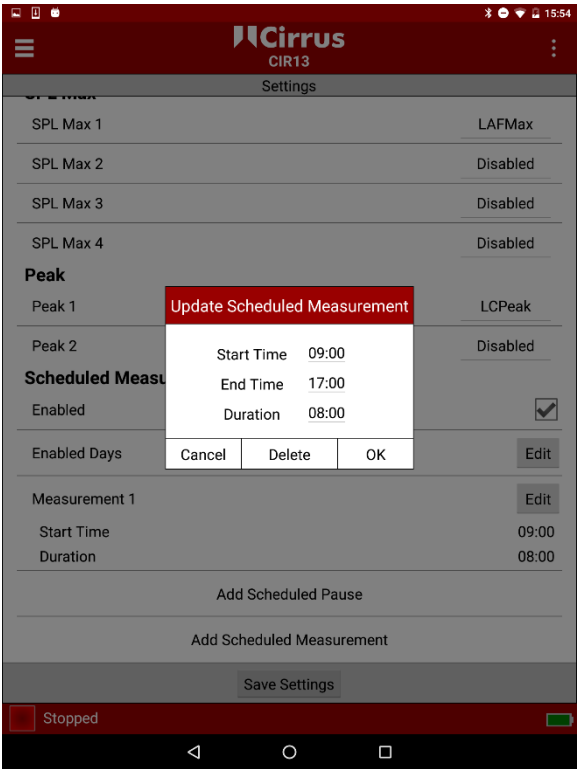
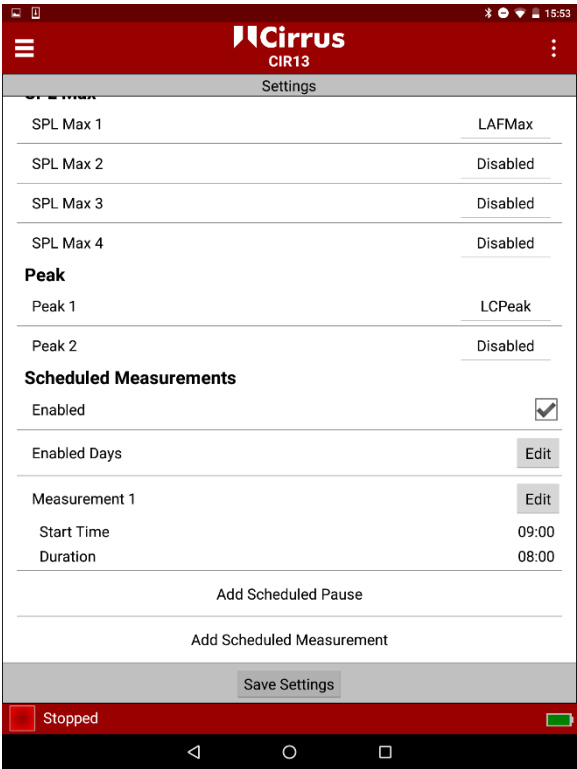
To change the integrators, Peak or SPL Max values, press on the option on the right-hand side and choose from the available selections. Click Update to accept the new values or Cancel to return to the previous screen.



Scheduled measurements

Scheduled measurements can be enabled or disabled. New settings can be added and existing settings adjusted.

Any existing scheduled measurements will be displayed. Click edit to adjust the current settings or Delete to

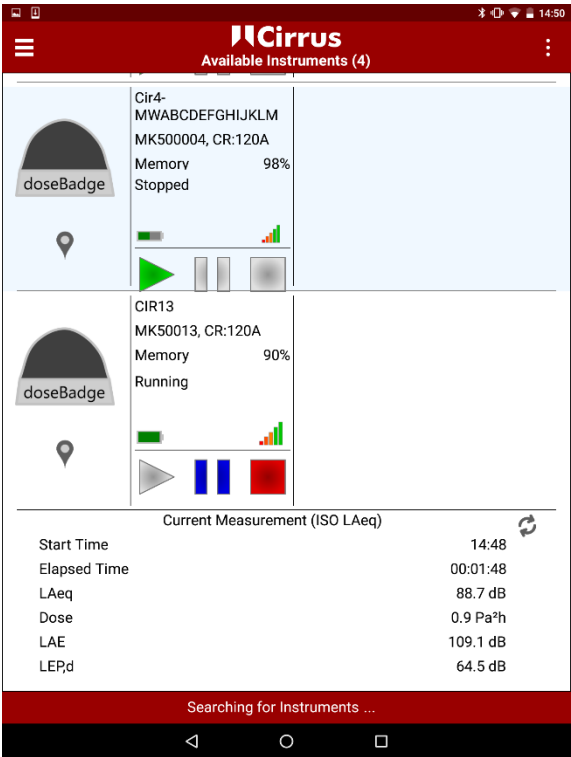


remove the current setting.

Click OK to accept the changes or Cancel to return to the previous screen.

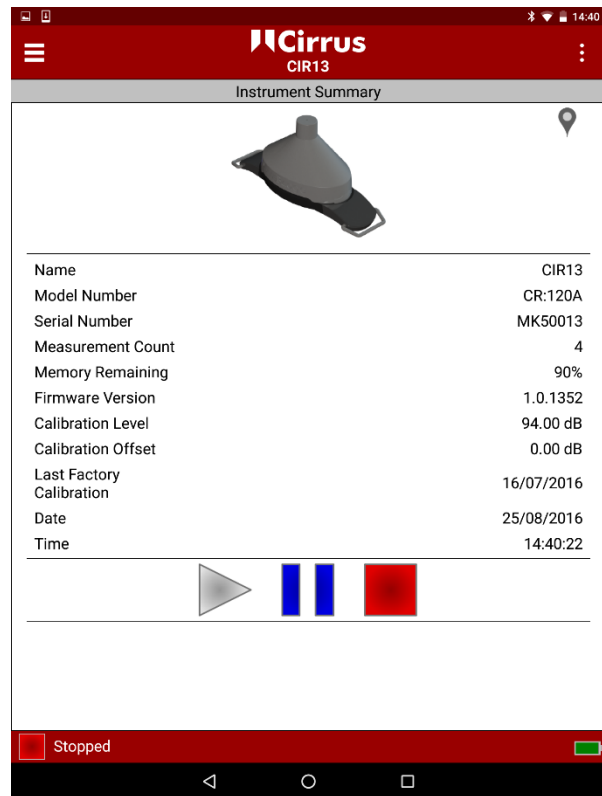
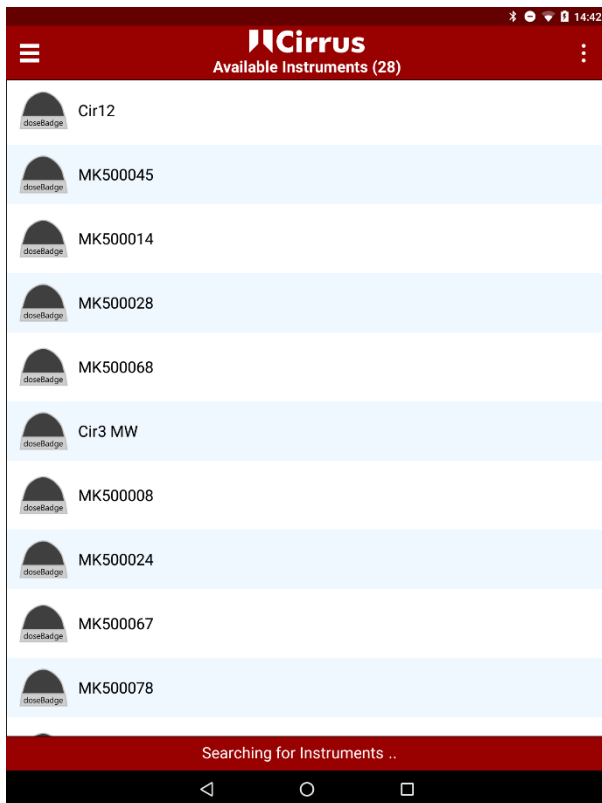
Starting a measurement

To start a measurement with the dBLink App, connect to the required instrument that is running and from the instrument discovery window, press the Green run button. Press again to confirm.



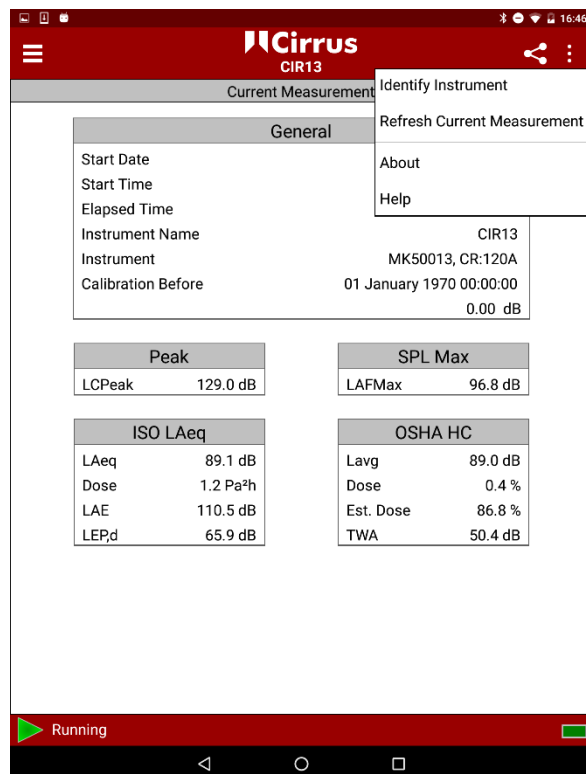
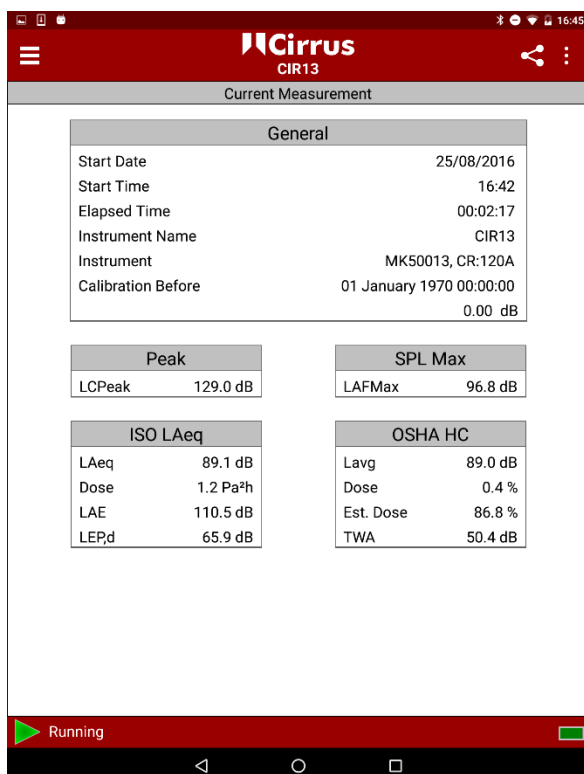
Mid-shift readings

To view the measurement status of an instrument whilst it is running, connect to the badge and select it from the discovering window.



If the badge is running, the current measurement data will be displayed below the badge information. The measurement data for the first integrator is displayed on this screen.

To view the measurement data for other integrators, select the badge and swipe to view the Current Measurement screen.



The current information can be refreshed by selecting the menu in the top right selecting Refresh Current Measurement.

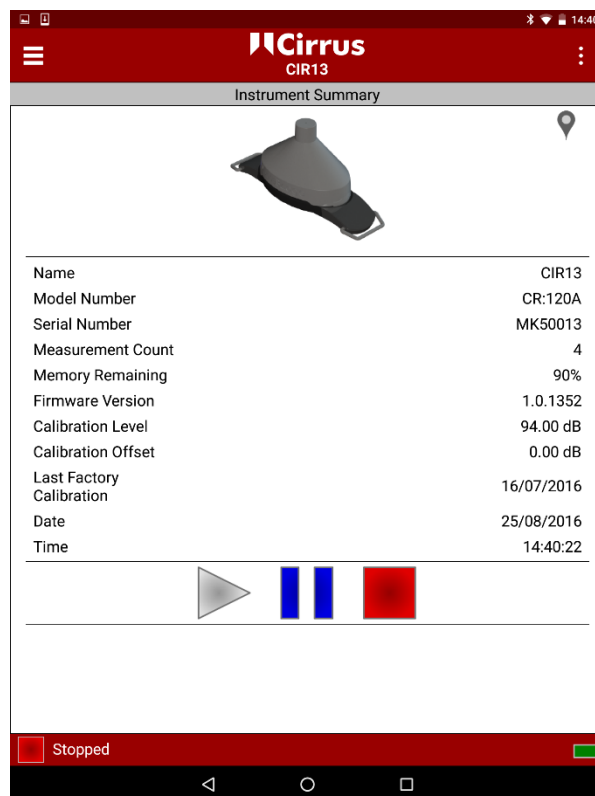
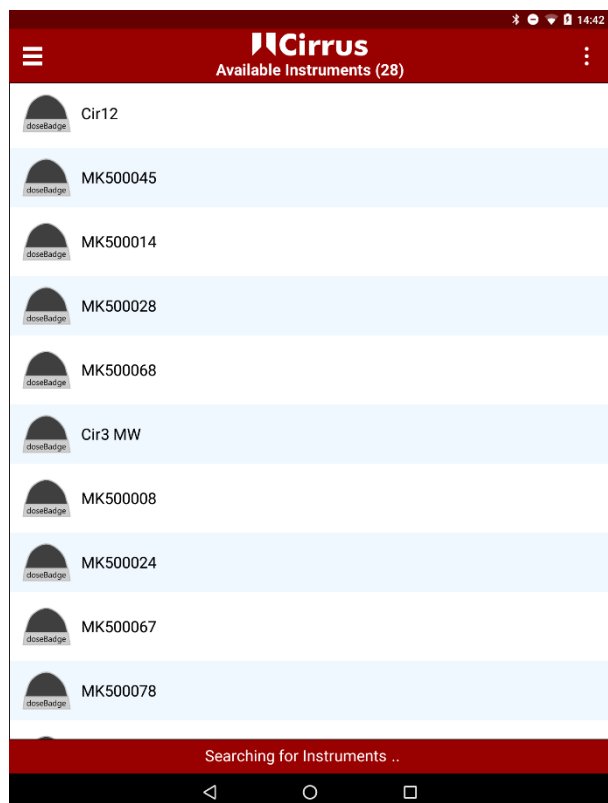
The current status of the instrument is shown at the bottom of the screen.

Please note that to reduce power consumption, the data is not refreshed automatically.

Pressing the refresh icon will load the current measurement data again.

Pausing a measurement

To pause a measurement with the dBLink App, connect to the required instrument that is running and from the instrument discovery window, press the blue pause button. Press again to confirm.



The status of the instrument is shown by the Green run, Blue pause and Red Stop buttons.

Stopping a measurement

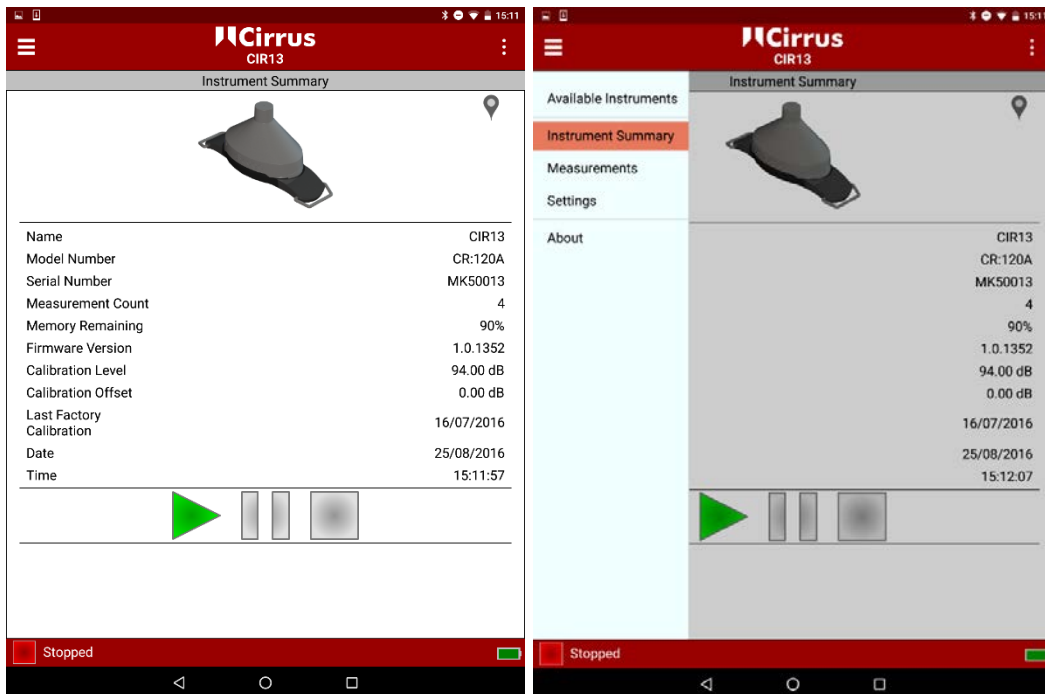
To stop a measurement with the dBLink App, connect to the required instrument that is running and from the instrument discovery window, press the red stop button. Press again to confirm.

The status of the instrument is shown by the Green run, Blue pause and Red Stop buttons.

Viewing measurements

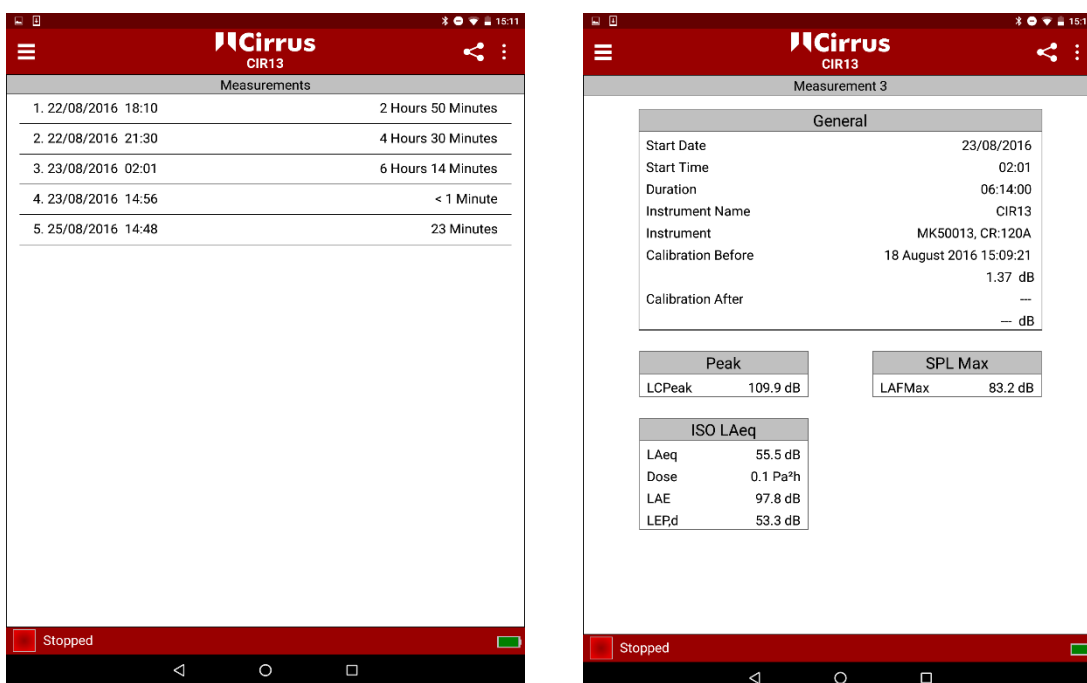
Measurement can be viewed whilst they are being made or at the end of a measurement once the instrument has been stopped.

To view the current measurement or all measurements in the instrument, connect to and select the instrument from the discovery screen.



Using either the menu in the top left or by swiping, select the Measurement option to view the list of measurements in the instrument.

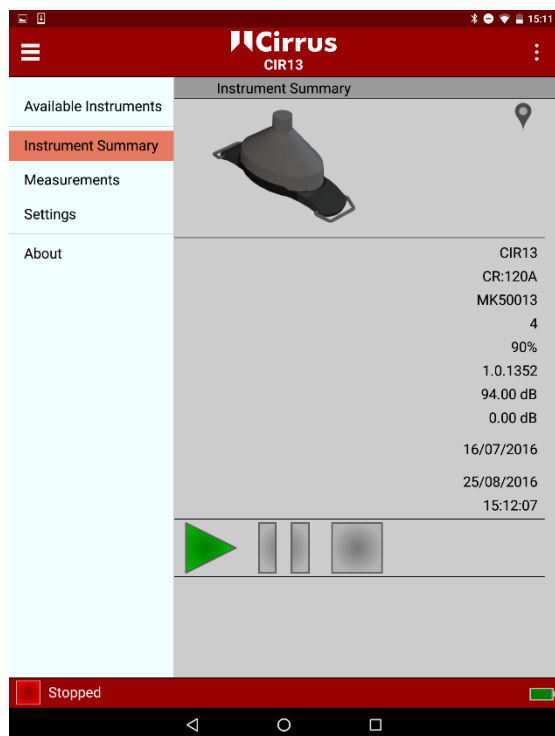
From the measurement list, select the measurement required and the data will be displayed.



Swiping left and right will move through the available measurements.

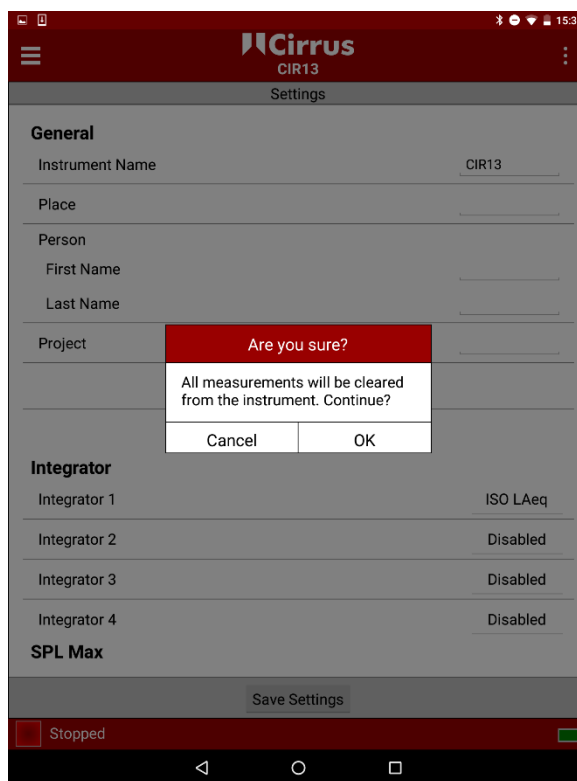
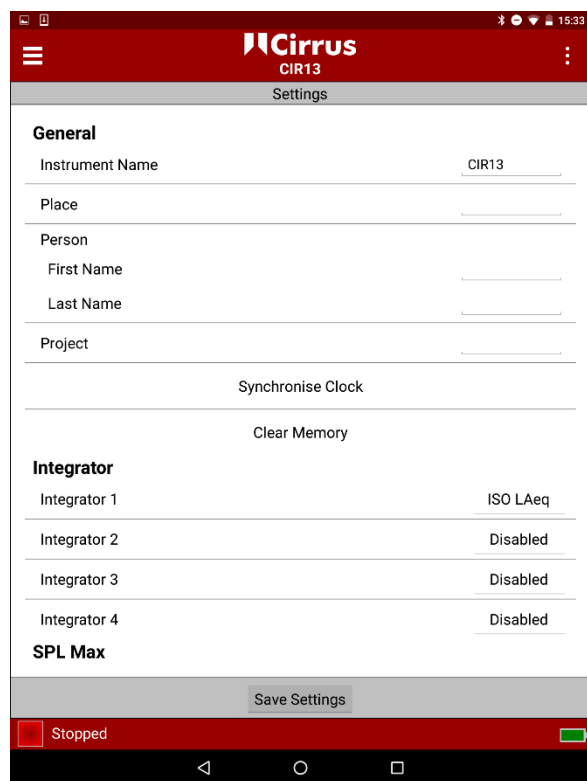
The current measurement number is shown at the top of the screen.

Use the menu to return to the instrument summary, settings or discovery screen.



Clearing the memory

The memory of the doseBadge⁵ can be cleared from the instrument settings screen.



Press the Clear Memory button and confirm to clear the memory. Note that once the memory has been cleared, it cannot be recovered and all measurements in the doseBadge⁵ will be permanently deleted.

Specifications

Applicable Standards

Overall Measurements

IEC 61252:1993 +AMD1:2000 Personal Sound Exposure Meters

ANSI S1.25:1991 (R2017) Personal Noise Dosimeters

1:1 Octave Band Filters (where enabled)

IEC 61260-1:2014 Class 2

ANSI S1.11-2014 Class 2

63Hz to 8kHz

Measurement Range (Typical)

Overall Measurements

RMS Range	60 dB(A) to 140 dB(A)
Peak Range	80 dB(C) to 143 dB(C)
RMS Frequency Weighting	A,C or Z
RMS Time Response	F or S
Peak Frequency Weighting	A,C or Z
Linear Operating Range	65dB(A) to 140dB(A)

1:1 Octave Band Filters (where available)

RMS Range	70dB to 140dB
Linear Operating Range	70dB to 140dB

Visual Indication of Status

4 coloured LEDs to show instrument status and measurement activity

Measurement Functions

The doseBadge5 provides simultaneously the following measurement channels:

4 Simultaneous Independent Integrator Channels

2 Simultaneous Independent Peak Channels

1:1 Octave Bands (63Hz to 8kHz where available)

Configuration of the integrators and peak channels can be chosen from a preset list, for example ISO (LAeq), ISO (LCeq), OSHA HC, OSHA PEL, ACGIH or user configured as needed.

Overall measurement data

Measurement duration

Start time & date

Instrument serial number & name

Calibration information (field & factory calibration)

Overload & Tamper sensor detection

For each Integrator Channel

Average Integrated Sound Level (Leq/LAVG)

Time Weighted Average (LEP,d/LEX,8/TWA)

Sound Exposure & Estimated Sound Exposure

% Dose & Estimated % Dose

ULT Duration

SPL Max Level & Time

SPL Min Level

For each Peak Channel

Overall LPeak level

1:1 Octave Bands (where available)

Overall Unweighted Leq

Time history data

1 second or 1-minute time history data (user selectable)

For each Integrator Channel

Integrated Sound Level (Leq/LAVG)

For each Peak Channel

Peak Sound Pressure

1:1 Octave Bands (where enabled)

Unweighted Leq time history data

Configuration Options

Integrator Channels

Channel name	Preset or user defined
Exchange rate	3, 4 or 5 dB
Criterion Level	80 dB to 100 dB in 1 dB steps
Criterion Time	1 hr to 24 hrs in 1hr steps
Threshold Level	None, 70 dB to 100 dB in 1dB steps
Time Weighting	Fast, Slow or None
Frequency Weighting	A, C or Z
ULT Level	70 dB to 140 dB in 1 dB steps
ULT Time Weighting	None, Fast or Slow
ULT Freq. Weighting	A,C, or Z
SPL Max Time Weighting	Fast or Slow
SPL Max Freq Weighting	A,C or Z
LED Threshold Trigger	User selectable channel with user selectable % Dose trigger levels

75% to 100% in 5% steps

Peak Channels

Frequency weighting A,C or Z

Measurement Control

Manual

Manual Start, Stop & Pause via the doseBadge5 dBControl or the dBLink App

Manual Start & Stop via NoiseTools

Automatic scheduled measurements

Timed start, pause & stop of measurements

Three timed periods per day

Lunch break pause

Day-by-day control

Shock/Tamper Sensor

Internal accelerometer with Off/Low/Medium/High sensitivity settings to detect impact & tampering.

Detected impacts marked on time history data

Calibration

Automatic detection of external acoustic calibration

User configurable calibration level (typically 114dB or 94dB) for use with 1/2" acoustic calibrators such as the Cirrus CR:514 (94dB) or CR:518 (114dB).

Memory

CR:120A doseBadge⁵

Up to 80 hours of Time History Data for each channel including 1:1 Octave Bands (where available)

or

Up to 40 individual measurements

Maximum duration of any single measurement: 24 hours

Power

CR:120A doseBadge⁵

Internal NiMH Battery.

Typical Battery Life

1:1 Octave Bands disabled 20 hours

1:1 Octave Bands enabled 11 hours

Typical 3 hours charge time from empty

Charging should be carried out where the ambient temperature is between +15°C and +30°C (+59°F to +86°F).

Charging at higher temperatures may increase the charge time required or may result in a failure to fully charge.

CU:120 doseBadge⁵ Dock

External power via CU:196A Mains Power Supply

RC:120A dBConnect

2 x AAA (MN2400)

Communication**CR:120A doseBadge⁵**

Bluetooth® Wireless communication to the doseBadge⁵ dBControl

Bluetooth® Wireless communication to the dBLink App (Android & iOS)

USB download to NoiseTools via the doseBadge⁵ Dock

CU:120 doseBadge⁵ Dock

USB to the host PC

Simultaneous download & charging of up to 5 doseBadge⁵ units

RC:120A dBConnect

Bluetooth communication to the doseBadge⁵

dBLink App

Bluetooth® Wireless communication to the doseBadge⁵

Weight & Dimensions**CR:120A doseBadge⁵**

66 mm x 43 mm x 53 mm (excluding clips)

2.53" x 1.69" x 2.01" (excluding clips)

85 g/2.9 oz

CU:120 doseBadge⁵ Dock

305 mm x 100 mm x 22 mm

12" x 3.9" x 0.8"

350 g/12.7 oz

RC:120A dBConnect

170 mm x 45 mm x 30 mm

6.7" x 1.7" x 1.2"

100 g/3.5 oz including batteries

78 g/ 2.7 oz without batteries

Temperature

-10°C to +50°C (+14°F to +122°F) Operating

-20°C to +60°C (-4°F to +120°F) Storage

Humidity

Up to 95% RH Non-Condensing

Software

NoiseTools software supplied as standard with license free installation and free of charge upgrades available from the Cirrus website.

CR:51x Acoustic Calibrator

Frequency	1kHz +/- 1%
Sound Level	CR:514 94dB re 20uPa CR:515 94dB re 20uPa CR:518 114dB re 20uPa
Standardisation	CR:514 - IEC 60942:2003 Class 2 CR:515 - IEC 60942:2003 Class 1 CR:518 - IEC 60942:2003 Class 2
Distortion	Less than 2%
Operating Humidity	25 to 90% Relative Humidity
Operating Static Pressure	65 kPa to 108kPa
Operating Temperature	-10°C to +50°C
Storing Temperature	-20°C to +60°C
Effective Volume	6.19 cm ³ +/- 0.2 cm ³
Cavity Diameter	0.525 inch
Battery	1 x 9v 6F22 (Neda 1604)
Battery Life	Approx. 15 Hours Continuous Use
Battery Voltage	9v Nominal (10v Maximum, 6.4v Minimum)
Weight with Battery	185g
Dimensions	135mm x Ø48mm

Safety Information for the CU:120A Dock

The CU:120A Dock contains small (<1cm³) Neodymium & Samarium Cobalt magnets that are used to secure the CR:120A doseBadge⁵ units to the Dock.

There are no magnets in the CR:120A doseBadge⁵ Noise Dosimeter.

The magnets are securely located inside the case of the CU:120A Dock but if the cases are opened or damaged, the magnets may become visible.

Keep a safe distance (50mm+) between the magnets and all objects that can be damaged by magnetism. These include mechanical watches, heart pacemakers, CRT monitors, credit cards and magnetically stored media.

Heart Pacemakers

Keep magnets away from heart pacemakers. The operation of heart pacemakers will be affected by the close proximity of a magnet. Magnets can set a pacemaker working in a way that is not suitable for the user and that may affect their health.

Glossary of Terms

A detailed glossary of the terminology used in the doseBadge⁵ can be downloaded from

This information is available in a range of different languages and can be downloaded, free of charge, from the Cirrus website.

Please visit <http://www.cirrusresearch.co.uk/library/ebooks/> to download the latest versions of these documents.

Preset Integrator Settings

A number of preset integrators are provided for the doseBadge⁵. The settings for these are shown below:

Name	Exchange Rate (Q)	Time Weighting	Frequency Weighting	Threshold Level	Criterion Time	Criterion Level	ULT Level
ISO LAeq	3	None	A	None	8 hrs	85 dB	115dB
ISO LCeq	3	None	C	None	8 hrs	90 dB	115 dB
OSHA HC	5	Slow	A	80 dB	8 hrs	90 dB	115 dB
OSHA PEL	5	Slow	A	90 dB	8 hrs	90 dB	115 dB
OSHA HC/C	5	Slow	C	80 dB	8 hrs	90 dB	115 dB
MSHA HC	5	Slow	A	80 dB	8 hrs	90 dB	105 dB
MSHA PEL	5	Slow	A	90 dB	8 hrs	90 dB	105 dB
ACGIH	3	Slow	A	80 dB	8 hrs	85 dB	115 dB

Custom integrators can be configured using the following options:

Channel name	Preset or user defined
Exchange rate	3, 4 or 5 dB
Criterion Level	80 dB to 100 dB in 1 dB steps
Criterion Time	1 hr to 24 hrs in 1hr steps
Threshold Level	None, 70 dB to 100 dB in 1dB steps
Time Weighting	Fast, Slow or None
Frequency Weighting	A, C or Z
ULT Level	70 dB to 140 dB in 1 dB steps
ULT Time Weighting	None, Fast or Slow
ULT Frequency Weighting	A,C, or Z
SPL Max Time Weighting	Fast or Slow
SPL Max Freq Weighting	A,C or Z

Support & Troubleshooting

Additional support and information is available from the Cirrus Research support website:

www.cirrusresearch.co.uk/doseBadge5support

LED Indicators on the doseBadge⁵

The doseBadge⁵ uses a set of LED indicators to show the status of measurements, charging, calibration and general operation.

Four LEDs, Orange, Green, Blue and Red are used in combination to show the current status and activity of the instrument as follows.

Where an LED is flashing, this is shown as Flash Time/Period. For example, 0.1/2.0 is one short flash of 0.1 second every 2 seconds and 0.1/5.0 is one short flash of 0.1 second every 5 seconds.



doseBadge⁵ on the Charging Dock

Status	Left LED's	Right LED's	Notes
Badge Charging	Orange Solid		
Badge Fully Charged	Green Solid		
Badge Charging & Measuring	Orange Solid	Blue Flashing (0.1/2.0)	
Badge Charged & Measuring	Green Solid	Blue Flashing (0.1/2.0)	
Badge Charging & Memory Full (or Badge error)	Orange Solid	Red Solid	
Badge Charged & Memory Full (or Badge error)	Green Solid	Red Solid	
Calibration successful		Blue Solid (5 seconds)	The badge will revert to the previous indication after 5 seconds
Calibration failed		Red Solid (5 seconds)	The badge will revert to the previous indication after 5 seconds
Instrument start-up		Orange Solid	Approximate 1 second

doseBadge⁵ undocked

Status	Left LED's	Right LED's	Notes
Badge On (not measuring)	Green Flashing (0.1/2.0)		
Badge measuring		Blue Flashing (0.1/2.0)	

Badge measuring & Dose threshold exceeded		Red Flashing (0.1/2.0)	
Badge Paused		Blue Flashing (0.1/5.0)	
Badge paused & Dose threshold exceeded		Red Flashing (0.1/5.0)	
Battery Low (not measuring)	Orange Flashing (0.1/2.0)		
Battery Low & measuring	Orange Flashing (0.1/2.0)	Blue Flashing (0.1/2.0)	Alternating flashes
Battery Low & paused	Orange Flashing (0.1/5.0)	Blue Flashing (0.1/5.0)	Alternating flashes
Battery Low, measuring & Dose threshold exceeded	Orange Flashing (0.1/2.0)	Red Flashing (0.1/2.0)	Alternating flashes
Battery Low, paused & Dose threshold exceeded	Orange Flashing (0.1/5.0)	Red Flashing (0.1/5.0)	Alternating flashes
Calibration successful		Blue Solid (5 seconds)	The badge will revert to the previous indication after 5 seconds
Calibration failed		Red Solid (5 seconds)	The badge will revert to the previous indication after 5 seconds
Instrument start-up		Orange Solid	Approximate 1 second

Error conditions or warning indications

Status	Left LED's	Right LED's	Notes
Memory full		Red Solid	Connect to NoiseTools to download & clear measurements
Badge error		Red Solid	Connect to NoiseTools to confirm status

Resetting the doseBadge⁵

The doseBadge⁵ can be reset using the small button on the underside of the instrument as shown below. This will reboot the instrument. Any stored measurements will not be affected.



If the doseBadge⁵ is reset using the Reset Button, ensure that the unit is awake by gently shaking the instrument. The Green status LED will flash to show that the instrument is awake and ready for use.

Calibration failure

The doseBadge⁵ is pre-programmed to accept a calibration level that is provided by an acoustic calibrator.

If the level provided by the acoustic calibrator is different from the level that the instrument is expecting by more than +/- 3dB, the instrument will not start the calibration process.

This will not show as a failure; the instrument will simply not calibrate.

If the calibration level is within +/- 3dB of the expected value but is unstable, for example if the background noise is too high and is affecting the calibration level, the doseBadge⁵ will show a calibration error with a solid Red LED for 5 seconds.

The most likely causes of a calibration failure are:

1. The level being provided by the acoustic calibrator is incorrect
 - Check the level of the calibrator matches that of the doseBadge⁵
 - Check that the expected calibration level programmed into the doseBadge⁵ matches the acoustic calibrator
2. The background noise is affecting the stability of the calibration level
 - Move to a quieter location and retry the calibration process

To check or adjust the expected calibration level that is programmed into the doseBadge⁵:

1. Connect the doseBadge⁵ to the NoiseTools software via the Dock
 2. Open the Configure screen for the doseBadge
 3. On the Advanced options tab, ensure that the Calibration Level matches that being provided by the acoustic calibrator. Adjust the level if needed.
 4. Save any changes to the instrument
-

Declarations

CE Declaration of Conformity

Cirrus Research plc Hunmanby UK

CE Certificate of Conformity



Manufacturer: Cirrus Research plc
Acoustic House, Bridlington Road
Hunmanby, North Yorkshire, YO14 0PH
United Kingdom
Telephone +44 1723 891655

Equipment Description

The following equipment manufactured after 1st August 2016:

CR:120A doseBadge⁵ Personal Noise Dosimeter

CU:120A doseBadge⁵ Dock

RC:120A dBConnect

CR:518 Acoustic Calibrator

Along with their standard accessories

According to EMC Directives 89/336/EEC and 93/98/EEC
meet the following standards

EN 61000-6-3:2007+A1:2011

Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments

EN 61000-6-1:2007

Electromagnetic compatibility (EMC). Generic standards. Immunity for residential, commercial and light-industrial environments

Signed

Dated 1st August 2016

A handwritten signature in black ink, appearing to read 'mjs' or 'mjsw', written in a cursive style.

Martin Williams
Director

Bluetooth® Connectivity

All models of the CR:120A doseBadge⁵ noise dosimeter support wireless connectivity via Bluetooth®.

Declaration ID	D034062
Receiver sensitivity	-93 dBm (Typical)
TX power	0 dBm (Typical)

FCC/Industry Canada



This product contains an FCC and Industry Canada certified Class 2 wireless (Bluetooth) low energy single mode module:

FCC Identifier:	T7V1740.
Industry Canada:	IC: 216Q-1740

Producer:	Panasonic Industrial Devices Europe GmbH
Model:	PAN1740
Modular Type:	Single Mode

FCC Conformity Statement

The devices PAN1740, including the antennas, complies with Part 15 of the FCC Rules. The device meets the requirements for modular transmitter approval as detailed in FCC public Notice DA00-1407.transmitter

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Statement

The devices PAN1740, including the antennas, complies with Canada RSS-GEN Rules. The device meets the requirements for modular transmitter approval as detailed in RSS-GEN.

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

PAN1740 est garanti conforme aux dispositions réglementaires d'Industry Canada (IC), licences: IC: 216Q-1740

Radiation Exposure Statement

The product complies with the FCC portable RF exposure limits set forth for an uncontrolled environmental and is safe for intended operation as described in this manual.

Product Guarantee & Extended Warranty

1. The period of the initial guarantee starts from the date of purchase, as a new instrument, from Cirrus Research plc or their formally approved distributors. The periods are as follows unless otherwise stated by Cirrus Research plc in writing:

Products manufactured by Cirrus Research plc	24 months
Repairs	3 months
Replacement microphone capsules	12 months
Spare parts (excluding replacement microphone capsules)	3 months
Products manufactured by a third party (see clauses 12 & 14 below)	Based on the individual manufacturer's warranty

2. The initial guarantee covers all faults and accidental damage to the product.

3. Warranty extension

If the product is returned to Cirrus Research plc or one of its Authorised Service & Calibration Centres for routine verification & calibration after the initial guarantee period, upon completion of the verification the product will be given an additional free one (1) year warranty.

This must be done with a 6-week window of the anniversary date of shipment. This is limited to 3 weeks either side of the anniversary date of the shipment.

It follows that if an instrument is routinely verified by Cirrus Research plc (or an Authorised Service & Calibration Centre) every year after the initial warranty period, the warranty is effectively continuous to a maximum of fifteen (15) years from the original date of purchase.

There will be a charge for the verification (or calibration) of the equipment.

4. Buying back into the warranty

Where the warranty has expired, the customer can buy back into the warranty scheme. This reactivates the warranty for a further 12 months and provides the same level of cover as for the initial period above.

This must be purchased at the same time as a calibration or verification.

The maximum period of any warranty, whether it had been extended or not, is 15 years from the original purchase date.

This offer can only be redeemed once during the life of the instrument.

5. The initial guarantee, and any extended warranty is not transferrable and is provided to the original customer only.
6. Where a product is returned for routine verification or calibration, the customer is responsible for all transportation, duty and other charges.
7. The user shall be responsible for determining if the product is suitable for the use and that such use complies with any applicable laws, regulations or standards.
8. The customer must notify Cirrus Research plc in writing of any claimed defect in the product immediately upon discovering it.

-
9. Where an instrument is being returned under the guarantee or warranty, it must be returned to Cirrus Research plc without undue delay at the customer's risk with transportation charges prepaid.
 10. Where the product is deemed to be faulty due to manufacturing defects, Cirrus Research plc shall:
 - a. Repair or replace the defective products
 - b. Be given reasonable time by the customer to make such repairs or replacements
 - c. Return the product to the customer at Cirrus Research plc's expense
 11. Cirrus Research plc reserves the right to decline an instrument under the initial guarantee or extended warranty where;
 - a. The product has continued to be used after defect has been discovered
 - b. There is clear evidence of damage or misuse that is deemed to be more than minor accidental damage
 - c. The product has been modified or repaired by persons other than those authorised by Cirrus Research plc
 - d. The defect arises from the use of the product in conjunction with products or materials not reasonably contemplated by Cirrus Research plc
 - e. No fault is found with the product
 12. The initial guarantee or extended warranty does not extend to products or materials not supplied by or manufactured by Cirrus Research plc. Consumable items, including dry-cell and alkaline batteries are not covered by the initial guarantee or extended warranty.
 13. Where re-chargeable batteries are used as an integral part of the product design and the product is shipped with the batteries installed (for example the doseBadge⁵ Noise Dosimeter), the standard product guarantee and extended warranty applies provided that the user has used the correct charging instructions and has followed the charging regime stated in the product manual.
 14. No warranty is offered for used equipment unless a special arrangement is made and is confirmed in writing by Cirrus Research plc
 15. Cirrus Research plc reserves the right to amend or update these terms and conditions without notice.

This warranty does not in any way reduce or affect the legal rights of the buyer and is in addition to any statutory rights.

Cirrus Research Offices

The addresses given below are the Cirrus Research plc offices. Cirrus Research plc also have approved distributors and agents in many countries worldwide. For details of your local representative, please contact Cirrus Research plc at the address below. Contact details for Cirrus Research authorised distributors and agents are also available from the Internet Web site at the address shown below.

Main Office

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

Cirrus Environmental

Unit 2 Bridlington Road Industrial Estate
Hunmanby
North Yorkshire
YO14 0PH
United Kingdom

Tel: +44 (0) 1723 891722

Email: sales@cirrus-environmental.com

Web: www.cirrus-environmental.com

Telephone: 0845 230 2434
+44 (0)1723 891655
Fax: +44 (0)1723 891742
E-mail: sales@cirrusresearch.co.uk
Web Site: www.cirrusresearch.co.uk

Germany

Cirrus Research plc Deutschland
Arabella Center
Lyoner Strasse 44 – 48
D-60528 Frankfurt
Germany
Tel: +49 (0)69 95932047
Fax +49 (0)69 95932049
Email: vertrieb@cirrusresearch.de
Web: www.cirrusresearch.de

Spain

CIRRUS RESEARCH S.L.
Travessera de Gracia, 62 4º 7ª
08006 Barcelona
SPAIN
Tel: (34) 933 622 891
Email: info@cirrusresearch.es
Web: www.cirrusresearch.es
