

NoiseMeters

Noise Nuisance Recorder

NNR-P-A1 and NNR-P-A2

User's Manual

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Introduction

This manual is for the Noise Nuisance Recorder “Professional” range, order codes NNR-P-A1 and NNR-P-A2. It covers the use of the equipment as a noise nuisance recorder or neighbour noise recorder. For information about using the sound level meters outside the NNR kit please refer to the sound level meter’s own manual.

The purpose of the Noise Nuisance Recorder is to make long term noise measurements within the complainant’s premises. These noise measurements provide an accurate description of the noise environment in line with the international sound level meter standards. These are the standard functions of a data logging sound level meter.

These devices also offer the ability to record the audio when the complainant presses a button on the remote control. When listened to and used side-by-side with the noise measurements, this makes it possible to make a positive identification of the noise source.



The sound level meter runs all the time recording parameters such as the periodic Leq (average sound level), statistical parameters that describe the background noise levels and the level every second, to provide a graph of the sound level over time.

The actual audio that you can listen to is only recorded when the user presses the record button on the remote control, including an optional pre-record and post-record to capture audio just before and just after the record period.

The NNR is powered using the power adapter that is included. It can also run on batteries for up to 8 hours in case the adapter is unplugged.

Quick Start Guide

- Check the meter's batteries
 - Ensure fresh batteries are fitted if you rely on the battery backup in case the power adapter is unplugged
- Connect Microphone
 - Connect the microphone to the cable
 - Attach to tripod
- Power Up
 - Plug the power adapter in
 - Check the meter's clock
- Calibration
 - Fit the Calibrator on to the microphone
 - Switch the Calibrator on
 - See the level settle and select **Calibrate** on the sound level meter
 - Wait until calibration process is complete – just a few seconds
 - Gently remove the calibrator – don't remove it fast
 - Fit the windshield to protect the microphone capsule
- Start the Measurements
 - Press the **Start** key on the sound level meter
 - If you forget to press **Start** the meter will start automatically after 10 minutes or the first time the record button is pressed on the remote control.
- Close the Box
- Audio Recordings
 - Use the remote control to start and stop audio recordings
 - If you don't press stop it will record for up to 5 minutes (period can be changed)
- End of Measurements
 - Open the box and press the **Stop** key on the meter
 - Press the **Exit** button on the meter
 - Press and hold the power button for 5 seconds to switch it off
- Download the measurements to the NoiseTools software

Getting Started

It is recommended that you connect the sound level meter to the NoiseTools software and check that the instrument is configured as required before deployment.

See page 14 for details of the configuration options that are specific to the Noise Nuisance Recorder.

Connecting the cables

The NNR is shipped with the cables connected so that it can be setup quickly and easily.

The power supply and microphone cable can be disconnected from the case. This allows the cables to be replaced if they become damaged.

To remove the cables from the case, gently pull the rubber surround upwards and away from the case. The cable and rubber surround will slide out of the slot. To replace the cable, gently guide the rubber surround and cable back into the slot in the case.

Connecting the microphone & preamplifier

The microphone and preamplifier are stored inside the case next to the sound level meter. Carefully remove the microphone & preamplifier from the case and connect to the microphone extension cable.

Take care when connecting the cable to the preamplifier. The socket and plug will only connect in one orientation and care should be taken to ensure that the plug and socket are correctly aligned.

Gently insert the plug into the socket ensuring that the pins are correctly aligned. Once the plug has been pushed fully into the socket, tighten the locking ring by hand.

Take care not to over tighten the locking ring.

Mounting the microphone

The microphone and preamplifier are mounted onto a tripod which can be positioned away from the main case in the most appropriate location.

To mount the microphone and preamplifier to the tripod, carefully push them through the holes on the tripod mount.

The case has a cut out that allows the preamplifier and the tripod mount to remain coupled when they are not being used.



Switching on

Connect the mains power supply to a socket and switch on the power.

The Green Power Indicator on the Receiver unit will light up and the instrument will start.

When the instrument has booted, the display will switch to showing noise levels.

At the top of the screen the instrument will show **Noise Nuisance View**.

The main display will show the current sound level as a 1 second LAeq value and the graph below shows the noise profile or time history.

When the instrument is not running or recording, this graph will be displayed in green with yellow markers above showing the peak noise levels.

The instrument is not recording or storing data at this point.

If a measurement is not started within 10 minutes, the instrument will automatically start itself and will begin to record noise levels.

Check the instrument clock

All of the noise measurements and audio recordings made by the NNR are stamped with the current time and date. It is therefore important that the internal clock in the instrument is set correctly.

At the bottom of the main screen, above the three soft keys, is the current time and date of the instrument. If this is not correct, press the menu key and select Set Clock.

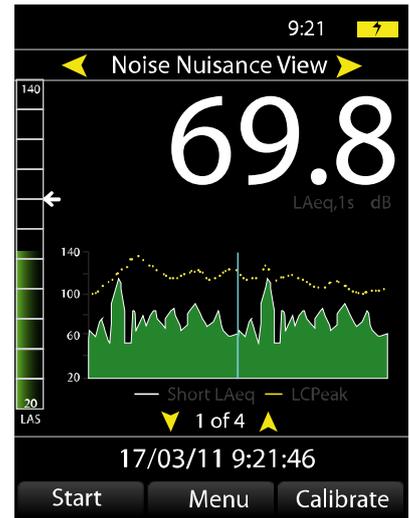
Follow the instructions on screen to set the time and date.

Press **OK** and **Back** to return to the main screen.

Memory Size with audio recordings

Audio recordings take up much more memory than the noise levels measurements and so the NNR is fitted, as standard, with a 4GB internal memory card.

This allows the instrument to store up to 20 hours of standard quality audio recordings alongside 30 days of noise level measurements with a 1 second time history data rate.



Calibrating the instrument

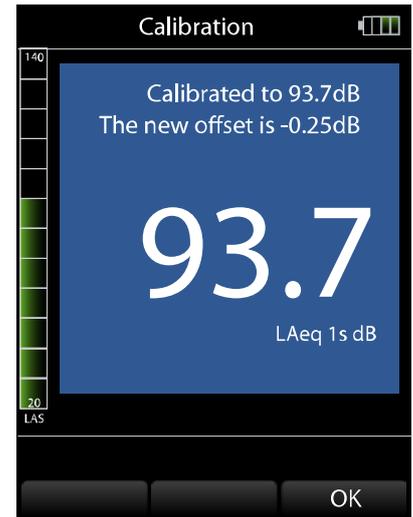
The instrument should be calibrated before each measurement. To calibrate the instrument, switch on the acoustic calibrator and verify that the green indicator light is showing on the calibrator.

Carefully attach the calibrator to the microphone and press the **Calibrate** key on the sound level meter.

The instrument will perform a calibration. When this is complete and has been successful, the display will show 93.7 and the instrument is ready to be used.

Press **OK** return to the main screen.

Attach the windshield to the microphone to protect it from damage.



Starting a measurement

To start a new measurement, press the Start key on the sound level meter.

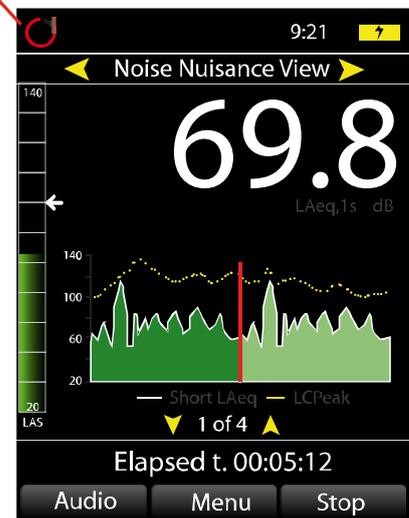
The display will change a red spinning indicator will be shown in the top left hand corner. This shows that the instrument is now measuring and storing noise levels.

The main screen will now show the overall LAeq as the large number with the current 1 second LAeq and LAFmax shown below.

The graph will change colour from a dark green to a light green to show that the data is being recorded.

The case can be closed and locked ready for the user to make audio recordings. To lock the case, use either the supplied padlock or one of the blue security tags.

Measurement
Running



Making a recording

Audio recordings are controlled by the Wireless Remote Control.

Starting a recording

To start an audio recording, press the **Record** button on the Remote Control.

The red Indicator Light on the Remote Control will show when the key is pressed.

The Recording LED on the lid of the case will flash blue and then turn red.

This can be seen on the top of the case and is labelled as the Record indicator.

When an audio recording is active, the graph on the instrument display will be coloured blue.

The noise level bar at the left hand side of the display will also be shown in blue and the Audio key will be highlighted.

The maximum length of a single audio recording is 5 minutes (This can be changed in the NoiseTools software).

This ensures that if the user forgets to stop the recording using the remote control, the memory of the instrument is not filled with excessive and possibly unwanted recordings.

If the recording reaches the 5 minute limit, the instrument will automatically stop the audio recording and store the information. The measurement of noise levels will continue as normal.

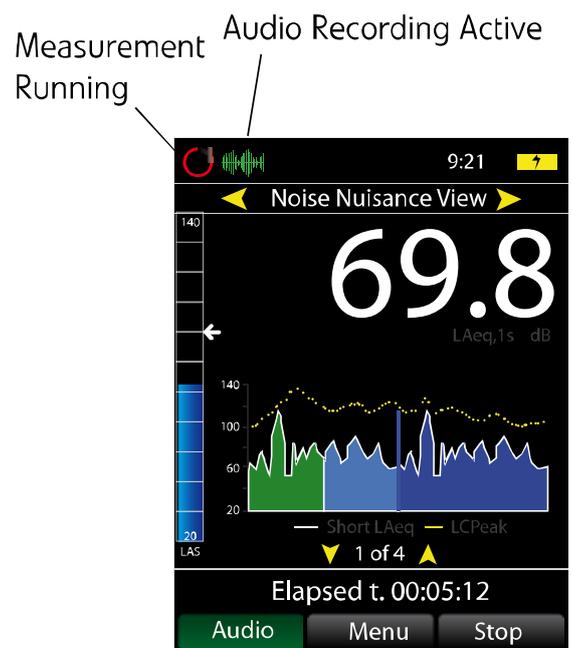
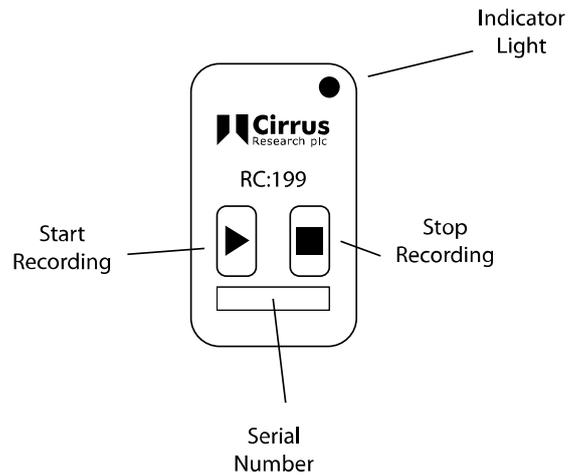
Stopping a recording

To stop an audio recording, press the Stop button on the Remote Control.

The Record indicator will flash blue and then go out. The audio recording has now stopped. The sound level meter will continue to measure and store the noise levels.

Pre-Trigger & Post-Trigger

The NNR provides a Pre-Trigger and Post-Trigger function for the audio recordings. As standard, these are both set to 30 seconds and they can be changed in the NoiseTools software.



When a recording is activated, the instrument will store the previous 30 seconds of audio from before the button was pressed and when a recording is stopped, the instrument will continue to store audio for a further 30 seconds.

Note that the pre-trigger is only available once the instrument has been measuring for at least 30 seconds.

When the Post-trigger is active, the Record indicator will not be lit but the audio will still be recorded.

Ending a measurement

To end a measurement, open the case and press the **Stop** button on the instrument. The measurement will be stopped and the data stored into memory.

If the instrument has been left unattended for more than 15 minutes with the case closed, the display will be switched off to reduce power consumption. This can be changed in the NoiseTools software.

Press any key on the instrument to activate the display and then press the Stop button.

The instrument will show the overall $LA_{EQ,t}$ and LA_{Fmax} values for the measurement.

Press the **Exit** key to return to the main screen.

Packing away the instrument

Before packing the instrument away, switch off the instrument. Press and hold the power button on the side of the sound level meter until the instrument has switched off.

Disconnect the mains power supply from the socket.

The microphone and preamplifier can be stored in the case along with the wireless remote control units. This will protect the microphone from damage during transit and storage.

To remove the preamplifier from the cable, carefully loosen the larger locking ring until the cable can be removed.

Do not attempt to twist or turn the cable whilst it is connected to the preamplifier. This may damage the cable and prevent the instrument from working correctly.

Do not remove the microphone capsule from the preamplifier.

The microphone cable and mains power supply can be disconnected from the case if required. This is not essential and the cables can be stored in the backpack when connected to the main case.

Store the accessories such as the tripod in the backpack.

Downloading data to the NoiseTools software

The noise measurements and audio recordings are downloaded directly from the instrument into the NoiseTools software. This program allows measurements to be viewed and audio recordings replayed as well as reports created and analysis of the information to be made.

This section gives a brief overview of the software and the process to download, display and view measurements, as well as how to listen to an audio recording.

Connecting to a PC

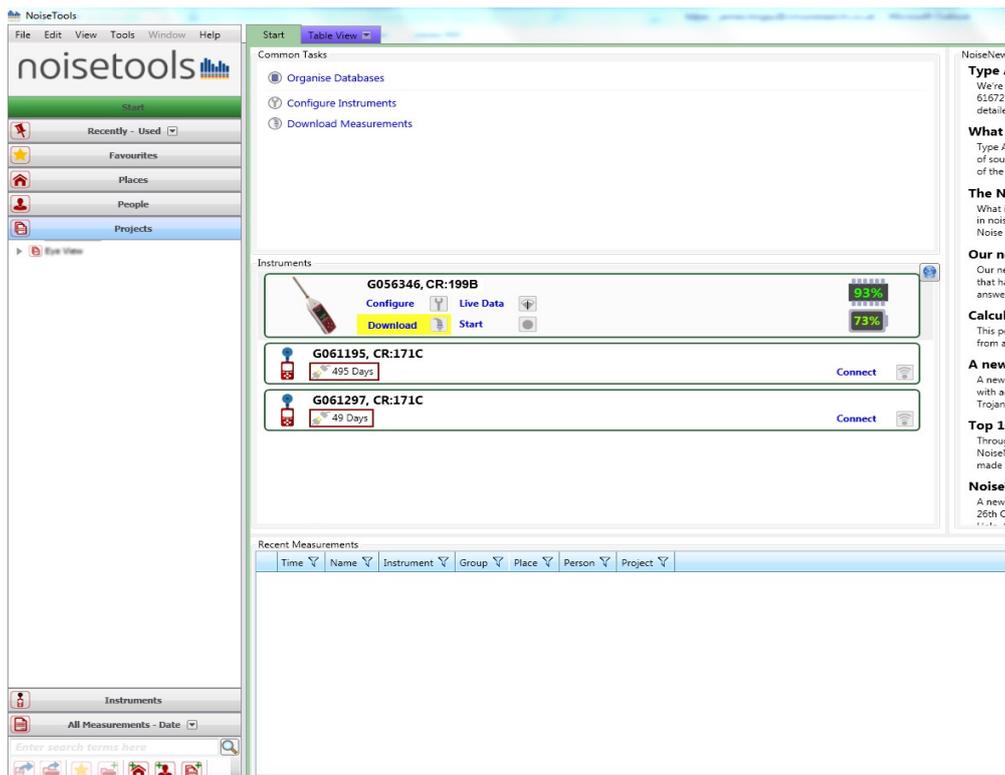
Data is downloaded from the sound level meter via a USB cable which is fitted to the unit. A USB cable is fitted to the NNR to allow data to be downloaded without removing the instrument from the case.

The NoiseTools software should be installed and running before connecting the meter to the PC.

Connect the free end of the USB cable to a USB socket on the PC. The instrument will switch on and the NoiseTools software will detect the instrument ready for download.

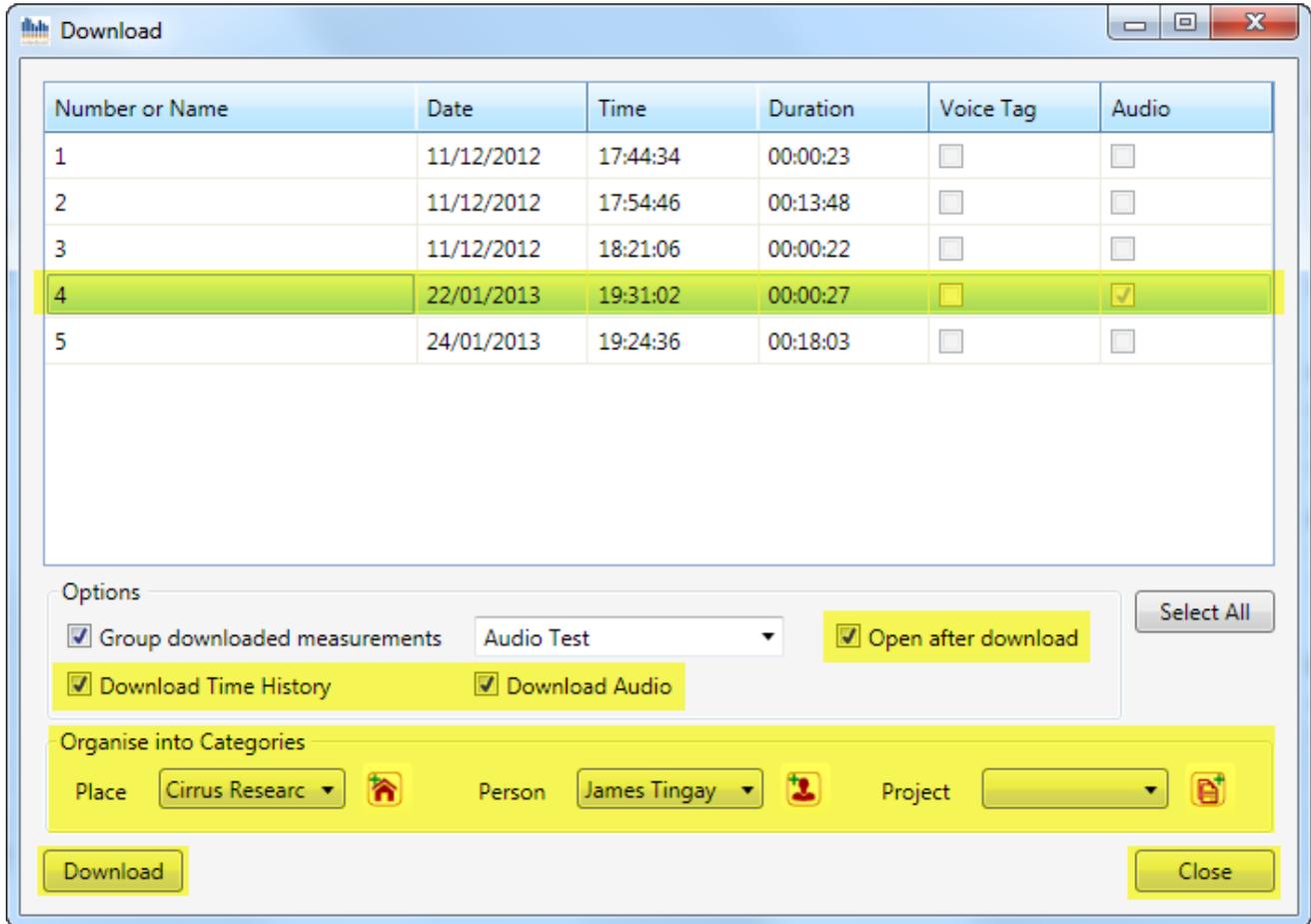
Downloading measurements

To start the download process, click the download button as shown below.



Selecting measurements

The download window will open and the list of measurements currently stored in the instrument will be shown as below.



Select the measurement or measurements to be downloaded by clicking on them. Multiple measurements can be selected by using the Control (CTRL) key with the mouse. To select all of the available measurements, click the Select All button.

Click the **Open After Download** box. This will automatically open the measurement after it has been downloaded.

Select the **Download Time History** and **Download Audio** boxes.

Measurements can be tagged with a **Place**, **Person** or **Project**. This can be used, for example, to store a set of different measurements from the same property or location for easy reference.

To allocate one of these tags click the box and any that have been previously used will be shown. Use the **Add** box next to the pull down to enter a new option.

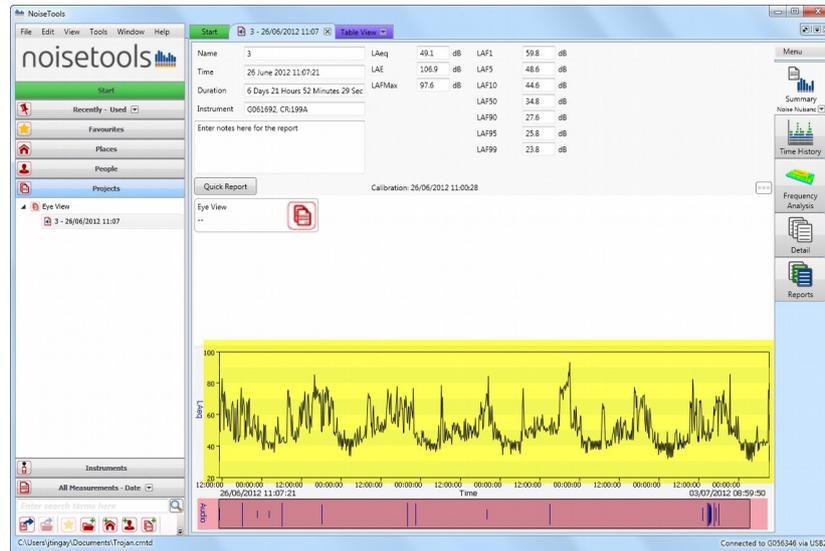
When all of the options have been selected, press the **Download** button and the software will download the information and store it into the NoiseTools database.

Viewing a measurement

After download, the measurement will be opened into the Noise Nuisance Summary screen.

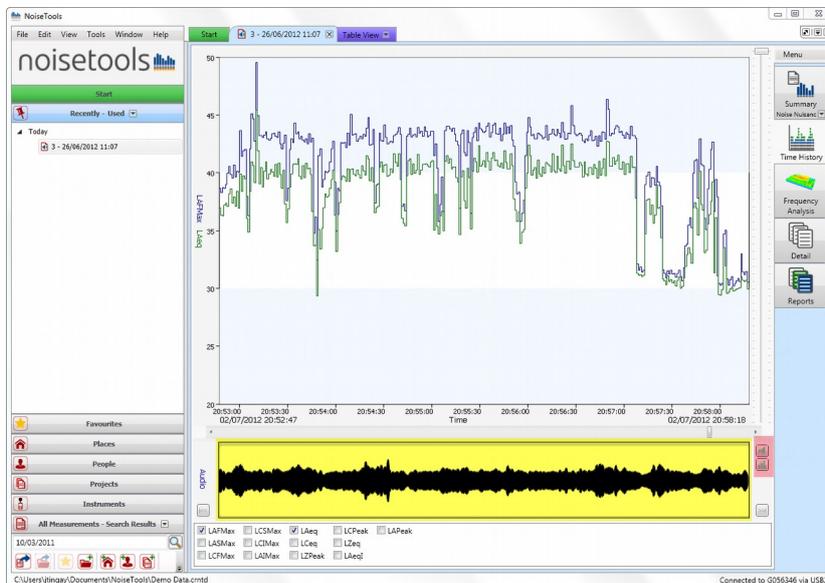
This shows a summary of the measurement data with the information essential for Noise Nuisance provided.

The screen shows the overall noise levels measured for the entire period along with a noise profile of the measurement (highlighted in yellow below) and any audio recordings shown below the noise profile (highlighted in red below).



Selecting an audio recording

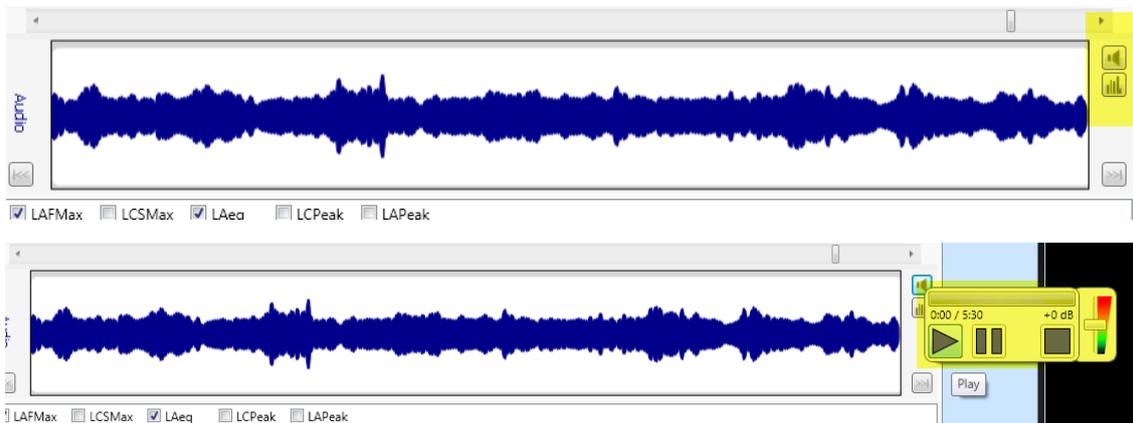
To replay and listen to any of the audio recordings, click on the recording and the display will move to the Time History display (below).



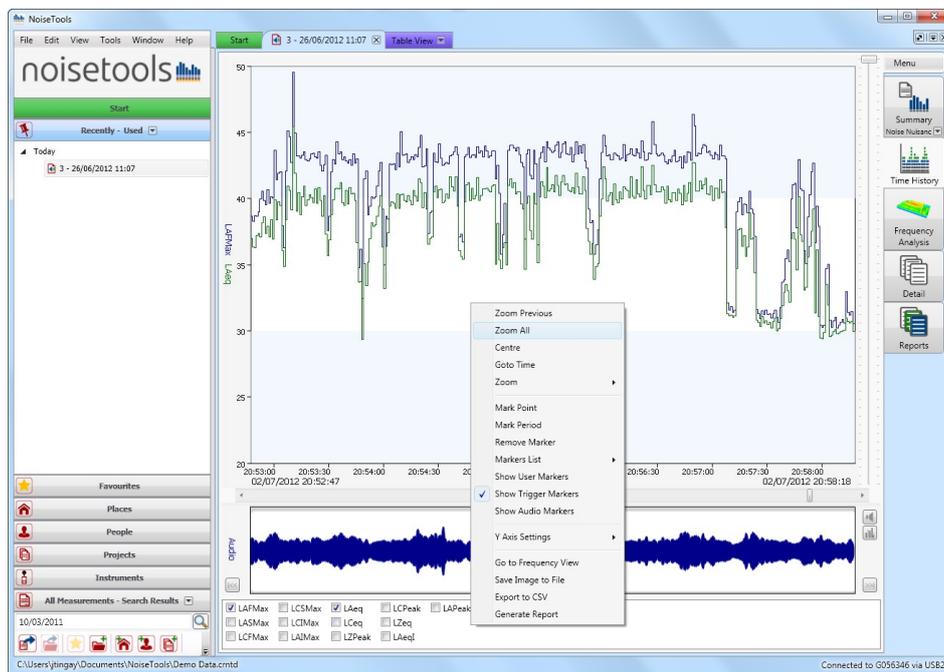
Click on the highlighted audio recording to zoom into the time around the recording.

Replaying an audio recording

To listen to the recording, click on the loudspeaker icon (highlighted below) and press the play button. The audio recording will play back.



To view the entire measurement, right click on the graph and select 'Zoom All' to view the whole measurement.

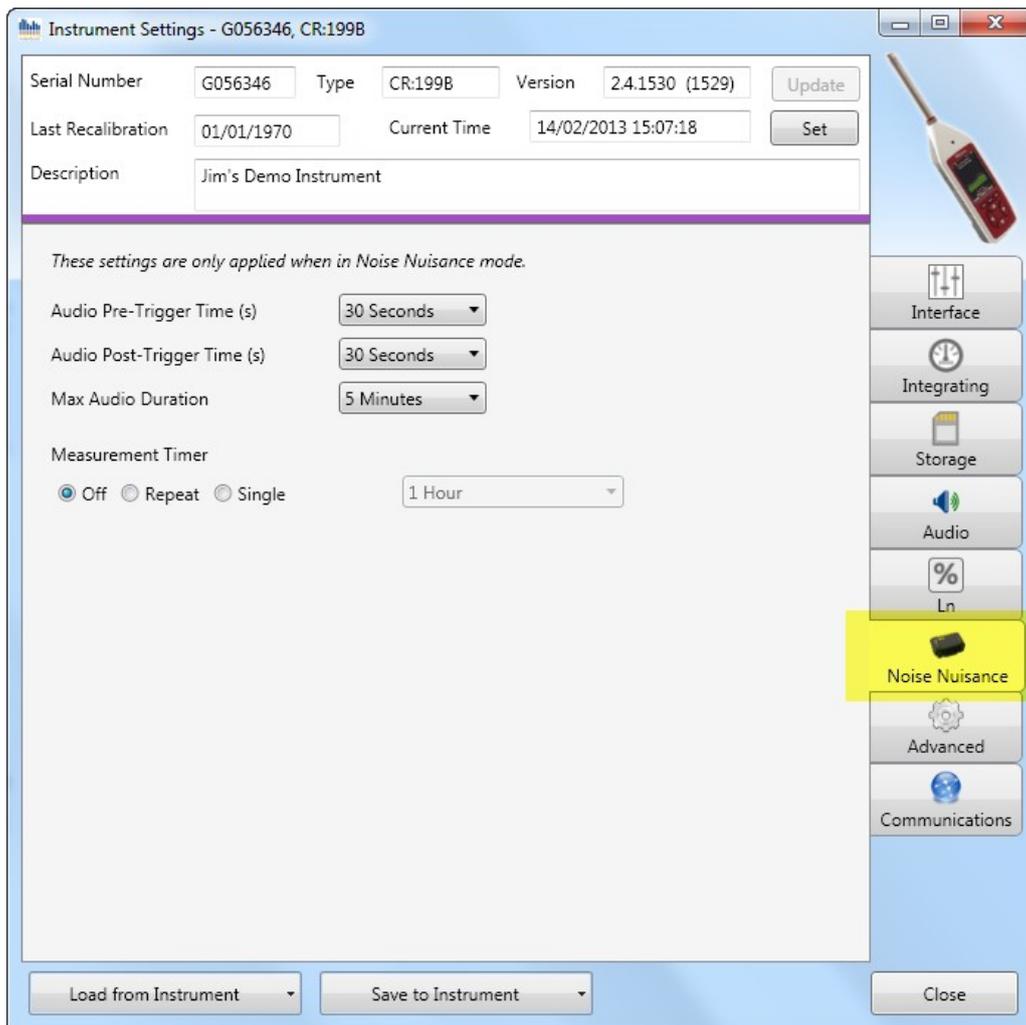


Appendix 1 – Configuring the Sound Level Meter

The sound level meter in the Noise Nuisance Recorder can be configured to meet the needs of each user.

In addition to the standard configuration options, there are four that are specific to the Noise Nuisance Recorder.

Please review these settings before deploying the unit. In most cases, the default settings can be used.



Audio Pre-Trigger Time

This determines the amount of audio recording that is stored prior to the time when the Start button was pressed.

These settings are only applied when in Noise Nuisance mode.

Audio Pre-Trigger Time (s)	30 Seconds
Audio Post-Trigger Time (s)	Off
Max Audio Duration	5 Seconds
Measurement Timer	10 Seconds
	20 Seconds
	30 Seconds

Off Repeat Single 1 Minute

Audio Post-Trigger Time

This determines the amount of audio recording that is stored after the Stop button has been pressed.

These settings are only applied when in Noise Nuisance mode.

Audio Pre-Trigger Time (s)	30 Seconds
Audio Post-Trigger Time (s)	30 Seconds
Max Audio Duration	Off
Measurement Timer	5 Seconds
	10 Seconds
	20 Seconds
	30 Seconds
	60 Seconds

Off Repeat Single

Max Audio Duration

This determines the maximum duration of a single audio recording and can be used to reduce the amount of audio stored when the unit is deployed for long periods.

These settings are only applied when in Noise Nuisance mode.

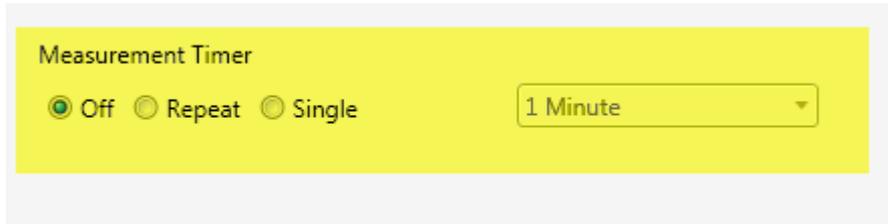
Audio Pre-Trigger Time (s)	30 Seconds
Audio Post-Trigger Time (s)	30 Seconds
Max Audio Duration	5 Minutes
Measurement Timer	2 Minutes
	5 Minutes
	10 Minutes
	30 Minutes
	60 Minutes
	Unlimited

Off Repeat Single

Measurement Timer

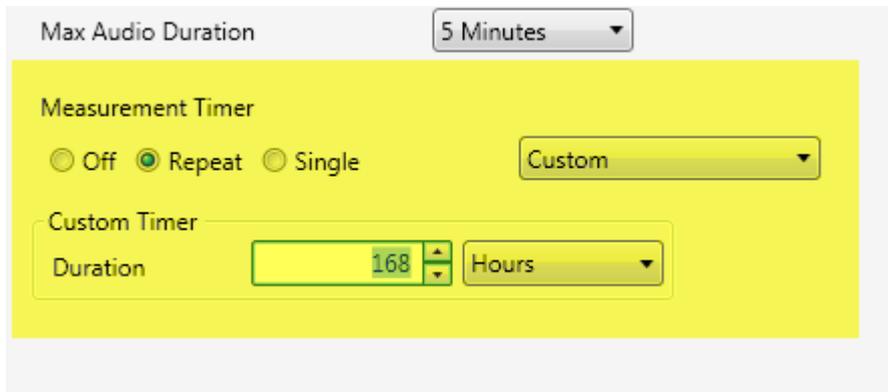
This option determines how the instrument will store the noise measurement data.

The default setting is off. This allows the instrument to store a single measurement for as long as the instrument is deployed.

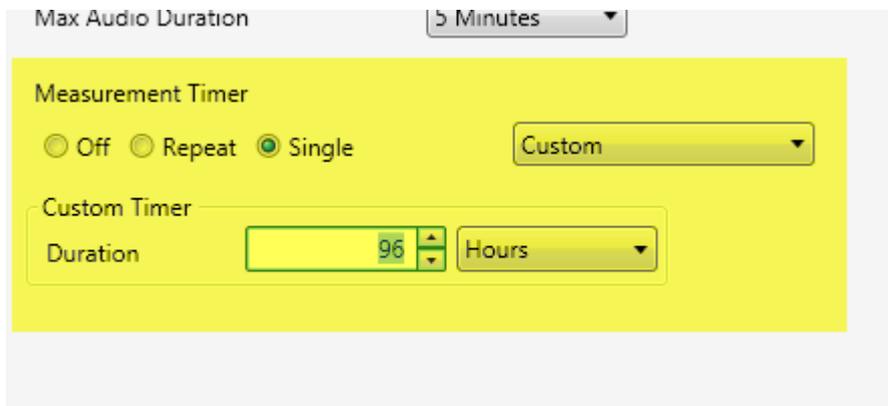


This can result in large files and extended download times if the unit is deployed for over 7 days. In these situations, it is recommended that the Repeat Timer option is used.

The **repeat timer** can be set to 168 hours (24 hours x 7 days) which will result in each file being a maximum of 7 days in length. The instrument can store up to 30 days of data and the repeat timer allows this to be broken into smaller, more manageable sections.

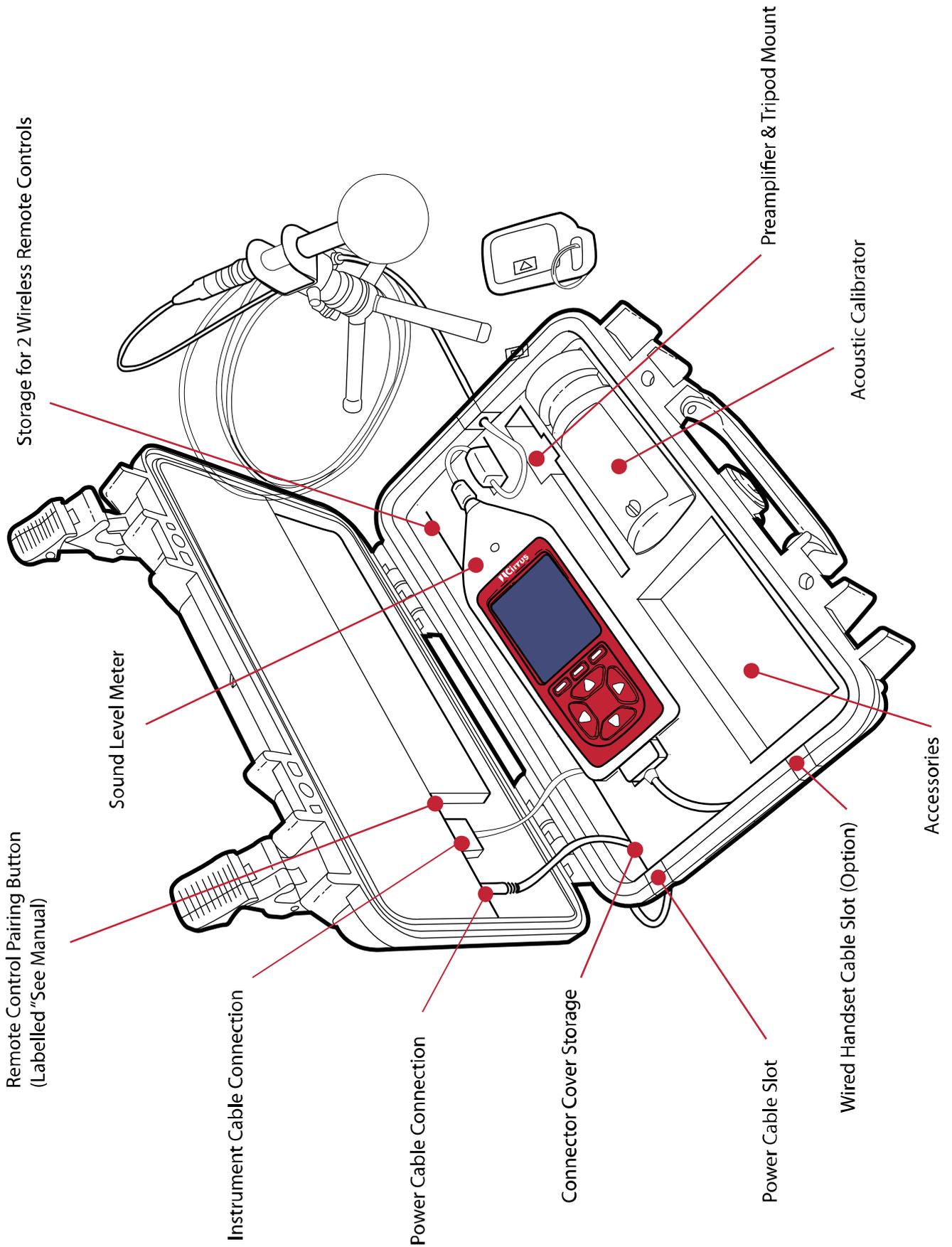


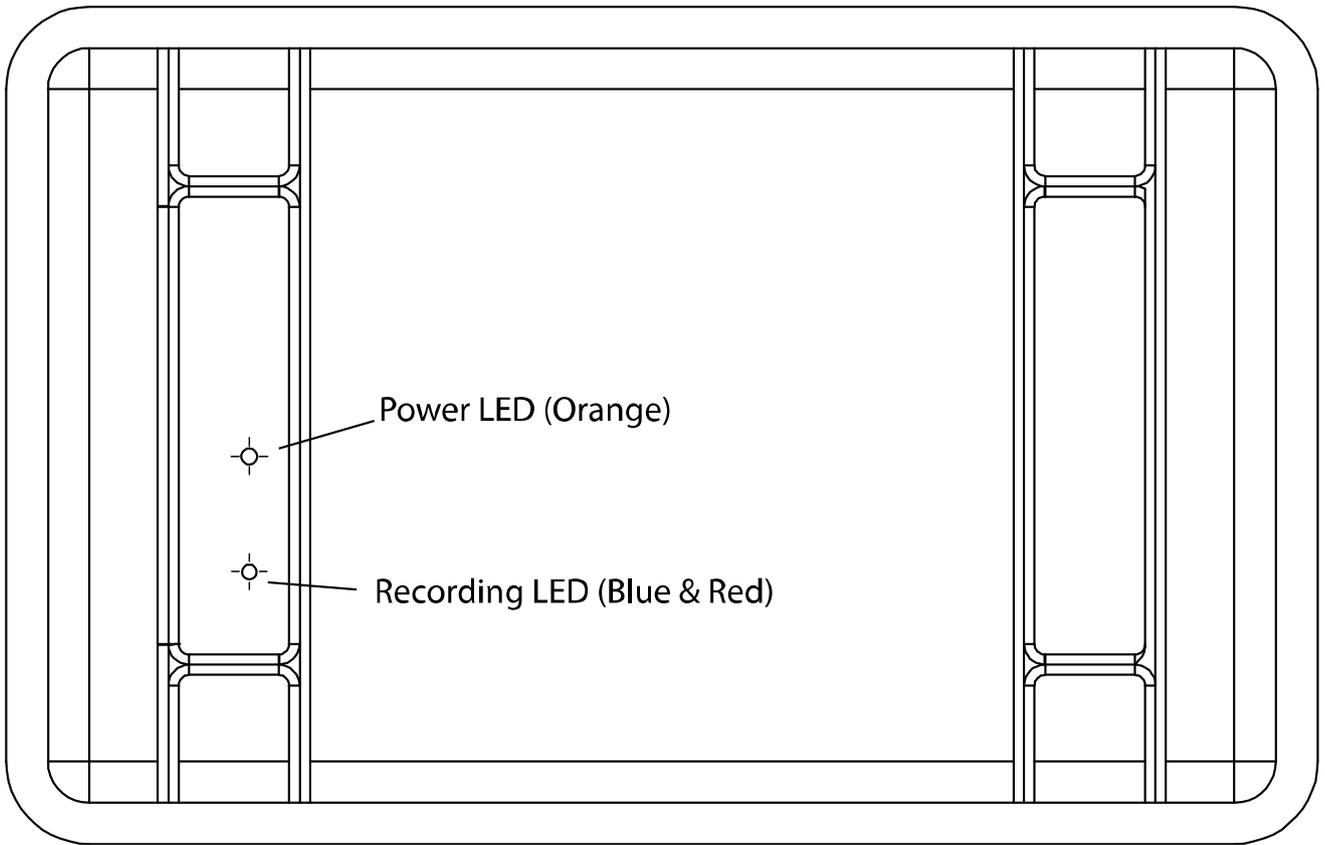
The **single timer** option allows the instrument to be set to measure for a set period and then to stop. For example, setting the single timer to 96 hours will allow the instrument to measure for 4 days at which point it will automatically stop.



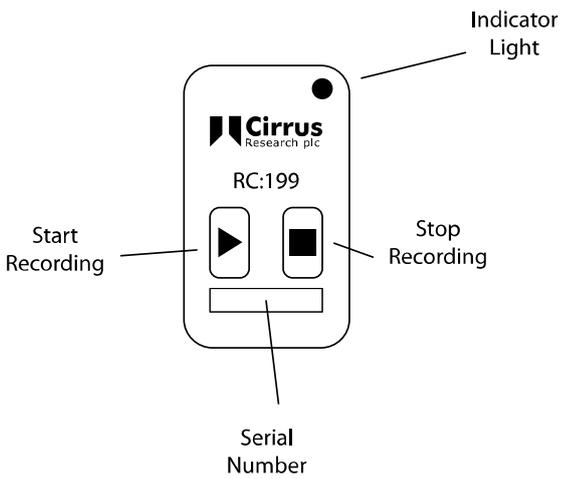
This can be useful where the unit has been deployed but cannot be retrieved at the end of the measurement period. The single timer option allows the amount of data stored to be limited.

Appendix 2 Instrument layout





Remote Control Unit



Appendix 3 Adding a new wireless remote control

The Noise Nuisance Recorder can support up to 40 individual Remote Control Units.

This allows for new remote controls to be added or old units replaced.

To add a new remote control to the system, it must be paired with the receiver (the control box in the case with the status indicator lights).

Pairing a new RC:199 Remote Control with the Receiver Unit

To add a new RC:199 Remote Control, you will need a Paper Clip or other similar small pointer.

1. Power up the NNR with the power adapter.

Ensure that the NNR is not recording.

2. Next to the power and instrument cable connections in the lid of the unit there is a small hole labelled "See Manual".

Inside this hole is a small switch which must be pressed when carrying out the programming of the remote control unit as described below.

Use a small device such as a paper clip or other blunt device with a diameter of less than 1mm and length of end over 4mm to gently action this switch.

When you press the switch, it will move only a small distance but you will feel a click.

3. Insert the paper clip to push the micro-switch briefly.

The Blue LED will flash when the micro-switch is pushed then once when switch released.

4. Push again.

The Blue LED will flash when the micro-switch is pushed then twice when the switch is released.

5. Push again.

The Blue LED will flash when the micro-switch is pushed then three times when the switch is released.

6. Push the STOP button on the Remote Control.

The Blue LED will then illuminate. Press the STOP button again. The Blue LED will then go out and then flash once to indicate learning is complete for STOP.

7. Push the micro-switch briefly.

The Blue LED will flash when the micro-switch is pushed then once when switch is released.

8. Push again.

The Blue LED will flash when the micro-switch is pushed then twice when the switch is released.

9. Push again.

The Blue LED will flash when the micro-switch is pushed then three times when the switch is released.

10 Push again.

The Blue LED will flash when the micro-switch is pushed then four times when the switch is released.

10. Push the RECORD button on the Remote Control.

The Blue LED will then illuminate.

Press the RECORD button again.

The Blue LED will then go out and then flash once to indicate learning is complete for RECORD.

11. Repeat the above procedure for each new transmitter.

Now test each transmitter to ensure the STOP and RECORD function works on the Noise Nuisance Recorder (a blue line on time history as well as the Red Led going on and off.)

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