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Online User Guide

Download this guide at

www.wildlifeacoustics.com/resources/user-guides

Tutorial Videos

Visit <https://www.wildlifeacoustics.com/resources/video-tutorials> to view tutorial videos for the Song Meter Micro.

Contacting Support

For technical queries contact the Wildlife Acoustics support team:

- Email: support2021@wildlifeacoustics.com
- North America (toll-free): 1-888-733-0200
- Outside North America (toll charges may apply): +1 978-369-5225

Don't miss out on Important Updates

We continually add features to the Song Meter Micro. Stay up to date with the newest features and receive important technical support bulletins by signing up to our mailing list at:

<http://www.wildlifeacoustics.com/products#mailinglist>

1 Song Meter Micro Quick Start

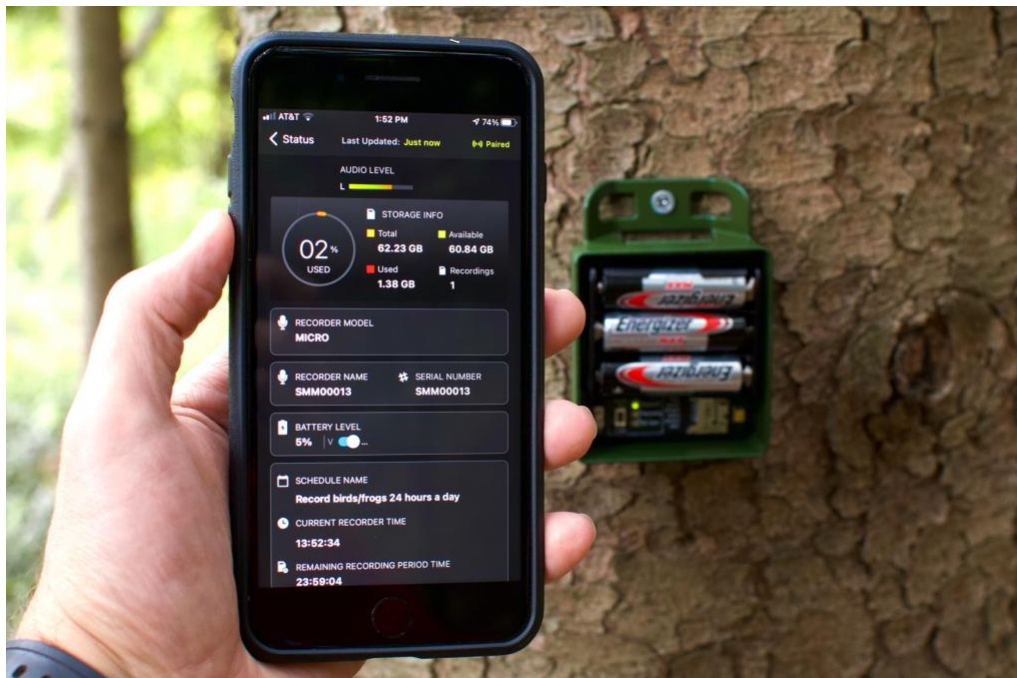
1. Remove the lid from the Song Meter Micro recorder.
2. Insert three AA alkaline or NiMH batteries and a microSD card.
3. Switch the recorder's Power switch to On.
4. If the Bluetooth LED flashes red this indicates that the recorder's internal clock is not set. It will be set when pairing the recorder with the Configurator app.
5. Install the Song Meter Mini and Micro Configurator app from the Apple App store or Google Play store onto your mobile device.
6. Make sure Bluetooth is enabled on your mobile device.
7. Launch the app.
8. The Song Meter Micro will be detected by the app and will appear in the Recorders screen.
9. Press and hold the Pair button on the Song Meter Micro recorder for 3 seconds. The Bluetooth LED on the recorder will blink green, indicating it is ready to pair.
10. In the app, tap the Pair icon in the Recorders screen.
11. A pop-up asks if you want to set the recorder's time zone to your mobile device's time zone. Tap OK. Next, a pop-up asks the same about location. Tap OK.
12. After pairing, tap the Configure button for the paired recorder in the Recorders screen. The Configuration Editor screen will open.
13. Select a preset recording schedule from the dropdown menu and make any desired setting changes.
14. The recording schedule and settings changes load onto the recorder immediately after each change.
15. Tap the unpair button on the Recorders screen and the Song Meter Micro is now ready to deploy and record.

2 Introduction

Our smallest, lightest and most affordable wildlife audio recorder, the Wildlife Acoustics Song Meter Micro offers simple, yet innovative tools for recording birds, frogs and other vocal wildlife.

The Song Meter Micro recorder leverages the processing power of modern smart phones for remote scheduling and status checking, using the free Song Meter Mini and Micro Configurator app.

The Song Meter Mini and Micro Configurator app is available for iOS and Android.

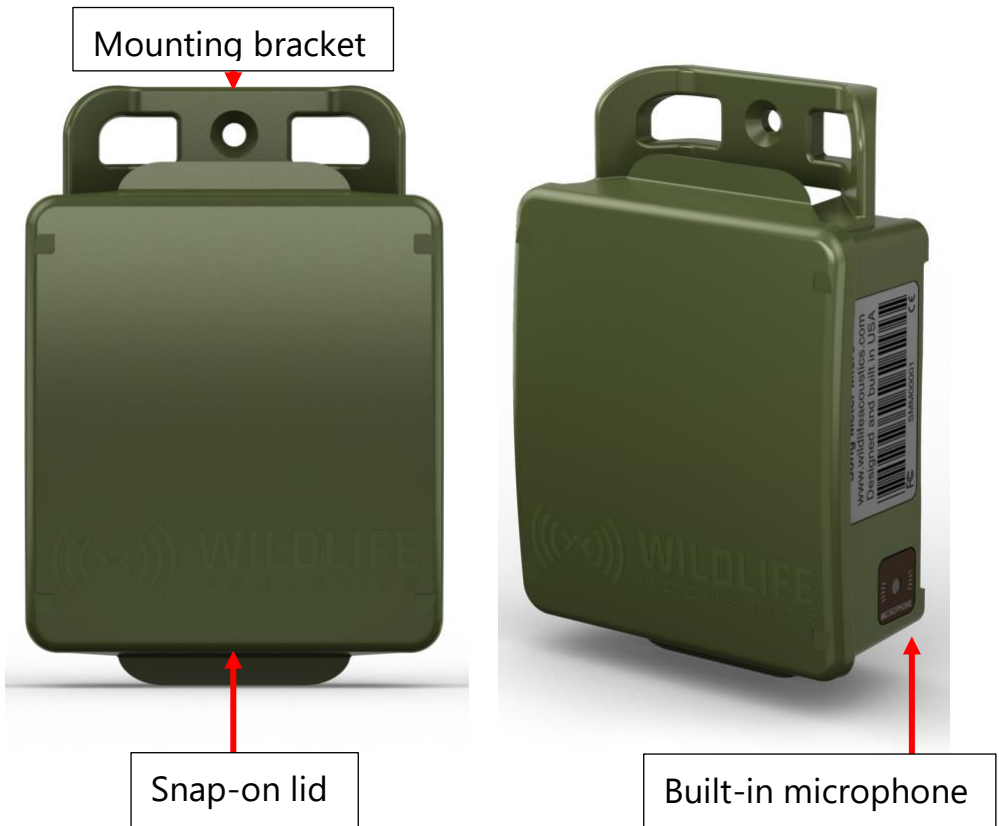


3 The Song Meter Micro Recorder

This section describes the Song Meter Micro recorder hardware.

3.1 External Features

The Song Meter Micro recorder is designed for long-term, outdoor deployment. Made from durable polycarbonate plastic, it is UV resistant and weatherproof.



Mounting Bracket

The mounting bracket top and bottom can be used to secure the recorder, for example to a branch or post. Typical mounting methods include bungee cords, zip ties or cable locks. Cable locks must be under 0.3" (7.6mm) diameter.

Snap-On Lid

The recorder consists of a main enclosure with sealed, snap-on lid. To remove the lid, grasp the long edges with your fingers, applying slight pressure with your thumbs to the center. The lid will pop off to expose the recorder's interior.

A label inside the lid provides basic instructions and Status LED definitions.

To Get Started:

1. Download the Song Meter Mini and Micro Configurator app for Android or iOS. A detailed user guide is included in the app.
2. Insert 3 AA batteries and a microSD card.
3. Switch the Micro to **On**, then press and hold the **STATUS/PAIR** button to pair with the app to view and change settings.

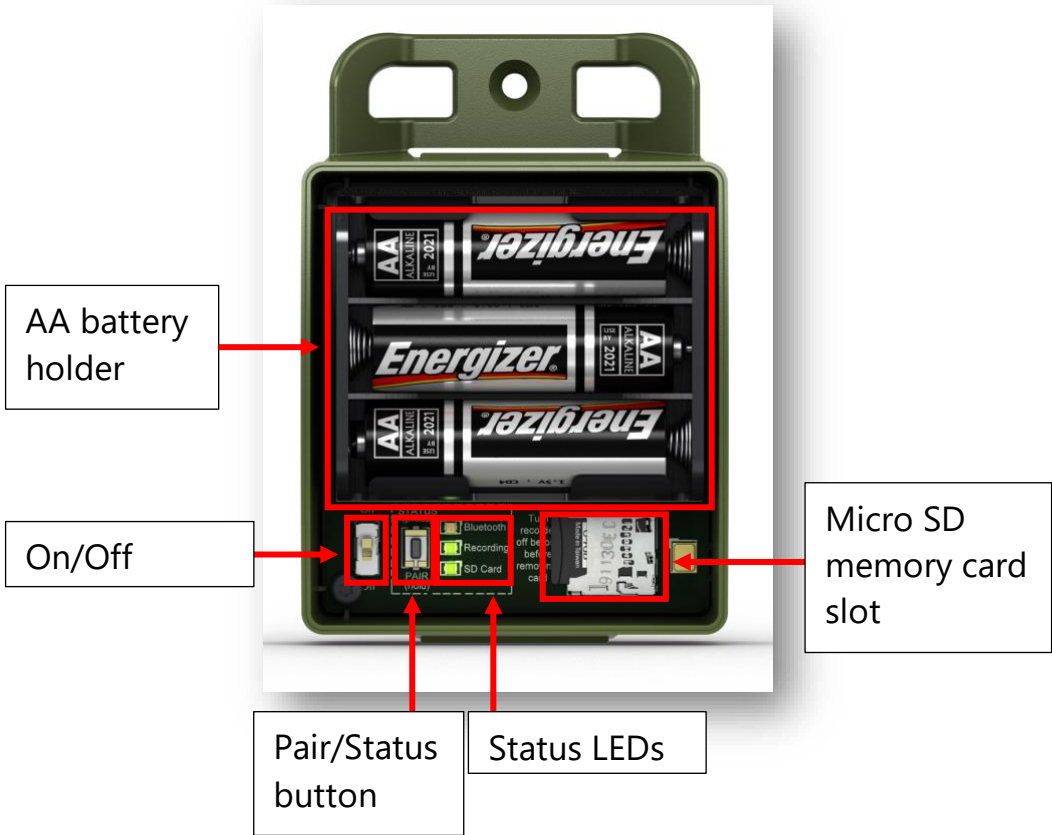
Status LED Key:

Bluetooth:	Off	Not paired
	Green Blinking	Pairing
	Green Solid	Paired
	Red Blinking	Clock needs to be set
	Red Solid	Pair failed
Recording:	Green Blinking	Recording
	Green Solid	Waiting next recording period
	Red Solid	Can't record
SD Card:	Off	No SD card is detected
	Green Blinking	SD card is active
	Green Solid	SD card is not active but mounted
	Red Blinking	SD card full
	Red Solid	SD card issue

Microphone

The Song Meter Micro utilizes a single built-in acoustic microphone.

3.2 Internal Features



On/Off Switch

- **On:** Battery power is enabled. Schedule is started.
- **Off:** Schedule is stopped. Battery power is disabled.

When the Song Meter Micro recorder is first powered on, the Status LEDs show Bluetooth, Recording, and microSD Card status. After one minute with no further activity, Status LEDs are disabled.

NOTE: When the Song Meter Micro recorder is powered off, it goes through a routine to end and save any current recording. This can take a few seconds. Wait until all LED activity has stopped and all LEDs are off before removing the microSD card.

AA Battery Holder

The battery holder takes 3 AA alkaline or NiMH batteries.

- Ensure batteries are oriented with the correct positive/negative polarity.
- Remove batteries before storage.

NOTE: If the AA batteries run down or are removed for 1-2 minutes, the internal clock of the recorder will need to be set (other configuration settings will not be lost). This will be indicated by the Bluetooth LED blinking red when the recorder is powered back on. To set the clock of the recorder, pair the recorder with the Configurator app.

MicroSD Memory Card Slot

The Song Meter Micro recorder saves recording files and a summary log to a microSD memory card installed in the memory card slot.

To insert a microSD card, slide it into the slot until it clicks into place. To remove, gently press the card further into the slot and then slide out.

- Only remove the microSD card with the recorder powered off.

- Use the Configurator app to check recording space available on the microSD card.

NOTE: Wildlife Acoustics recommends the SanDisk brand of memory cards for their superior performance.

NOTE: Be sure the card's write protection switch is "off". The Song Meter Micro recorder will not record to a write-protected card.

PAIR/STATUS Button

This is a dual function button.

Press and hold the PAIR/STATUS button for three seconds to activate the Song Meter Micro recorder for pairing with the Configurator app. When the Configurator app detects the Song Meter Micro is ready for pairing, a Pair icon will appear in the app Recorders screen. Tap the Pair icon to complete pairing between the recorder and app.

To unpair, press and hold the PAIR/STATUS button on the Song Meter Micro recorder for three seconds, or use the Configurator app.

When the Song Meter Micro recorder is powered on, it's Status LEDs are activated for 2 minutes. After 2 minutes the Status LEDs will be disabled. Press the Pair/Status button once to reactivate the Status LEDs.

Status LEDs

The three Status LEDs on the recorder provide Bluetooth, Recording and microSD Card information.

The Status LEDs remain active while the recorder is paired with the Configurator app.

The table of Status LED definitions, below, is also found inside the recorder's lid for reference.

Bluetooth:	Off	Not paired
	Green Blinking	Pairing
	Green Solid	Paired
	Red Blinking	Clock needs to be set
	Red Solid	Pair failed
Recording:	Green Blinking	Recording
	Green Solid	Waiting next recording period
	Red Solid	Can't record
SD Card:	Off	No card detected
	Green Blinking	Card is active: do not eject
	Green Solid	No activity
	Red Blinking	microSD card full
	Red Solid	microSD card issue

3.3 Preventative Maintenance

The Song Meter Micro is designed with all kinds of weather in mind, and will not let in any water under normal circumstances. However, there are a few routine checks that should be done to make sure that your recorder is as weatherproof as it was when you received it.

- In humid environments, Insert a silica desiccant pack to prevent condensation from forming inside the recorder. A new packet should be installed with each deployment. Small packets are readily available and affordable. Choose a pack rated for a 6 cubic inch space, which equates to a packet weight of about a gram. Place the packet in the space below the battery holder where the MicroSD is installed.
- Examine the black rubber gasket inside the lid. The gasket should be free of debris and tears. Note that DEET, a common ingredient in insect repellent, is known to degrade the plastic used in the Song Meter Micro enclosure. Some plant oils may also soften the recorder's rubber gasket over extended periods of exposure. When possible, avoid contact with insect repellents.
- Avoid putting strain on the Song Meter Micro case by mounting it too tightly. This can distort the case and break the seal with the lid, causing a gap that may leak. Note that trees can sometimes grow rapidly enough to cause further strain on equipment that has been mounted on them.

4 Configurator App

Internal settings and schedules for the Song Meter Micro recorder are configured using an iOS or Android device via the Song Meter Mini and Micro Configurator app.

- The Song Meter Configurator app is available in English, French, Spanish, and Portuguese. The display language of the Configurator app will follow the Android or iOS language setting. It is also possible to manually set the language of the app in the [App Information screen](#).
- The Configurator app communicates with the recorder via a Bluetooth connection.
- A Song Meter Micro that is detected by the Configurator app will automatically upload its current status to the app.
- The Configurator app can be used to program the recorder in real time. It can also create and save configuration files, which can be stored and uploaded to the recorder at a later time.
- The Configurator app can manage multiple recorders concurrently.
- The Configurator app can save, open, and share configuration files.

4.1 Installing the App

The “Song Meter Mini and Micro Configurator” app is available for Android and iOS mobile devices.

- **For Android** devices, download and install the Android version from Google Play. The Configurator app requires a minimum Android version of 5.0.

- **For iOS** devices, download and install the iOS version from the Apple App Store. The Configurator app requires a minimum iOS version of 10.0.

4.2 Bluetooth Connection

The Song Meter Micro recorder uses the Bluetooth protocol to communicate with the Configurator app.

In factory default mode, when the Song Meter Micro recorder is powered on, it generates a Bluetooth status beacon. If the recorder is within Bluetooth range of the mobile device, the Configurator app will automatically detect the Bluetooth status beacon and the recorder will be detected and displayed in the Recorders screen of the app.

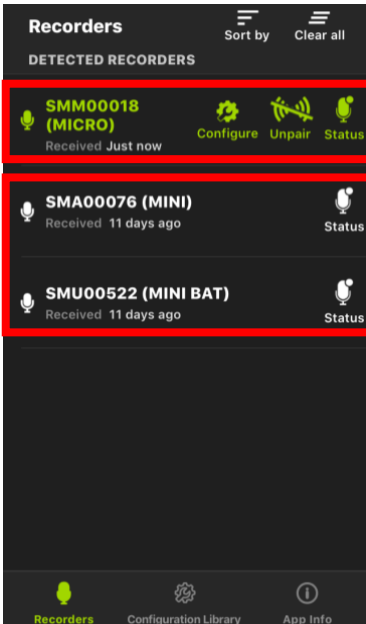
NOTE: The Configurator app requires that the host mobile device has a minimum Bluetooth chipset version of 4.0.

NOTE: It is possible to disable the recorder's Bluetooth status beacon using the Paired Configuration Editor screen. If Bluetooth beacons are disabled, the recorder will not be detected by the app unless the Pair button on the recorder is pressed and held for three seconds.

4.3 Recorders Screen

The Recorders screen is the first screen displayed when the Configurator app is launched. The Recorders screen can also be accessed by tapping the Recorders icon at the bottom of the Recorders/Configuration Library/App Info screens.

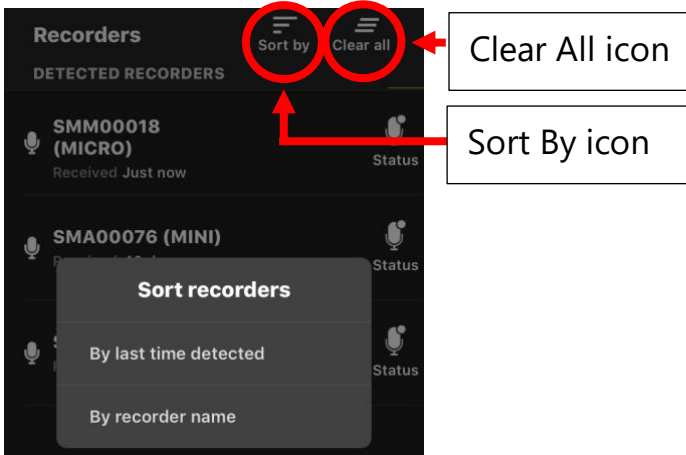
- The Recorders screen lists each recorder within Bluetooth range that is detected by the Configurator app.
- Previously detected recorders that are out of Bluetooth range or powered off will remain in the list until removed.
- If a recorder is within range and powered on, but does not show in the Recorders screen list, check whether the “Send Bluetooth Beacons?” option is enabled.



← Detected and paired

← Previously detected
but not currently paired

Sort By

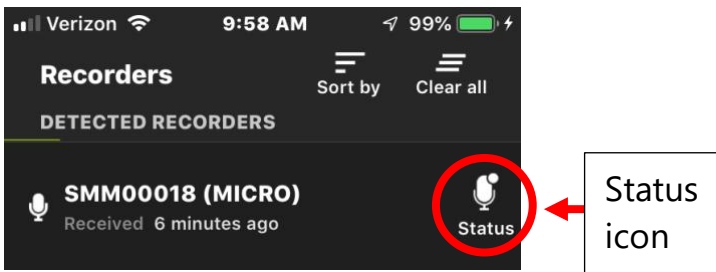


Tap the Sort By icon to sort the recorder list by time last detected or recorder name.

Clear All

Tap this icon to delete all recorders from the list. If a recorder is redetected it will reappear in the list.

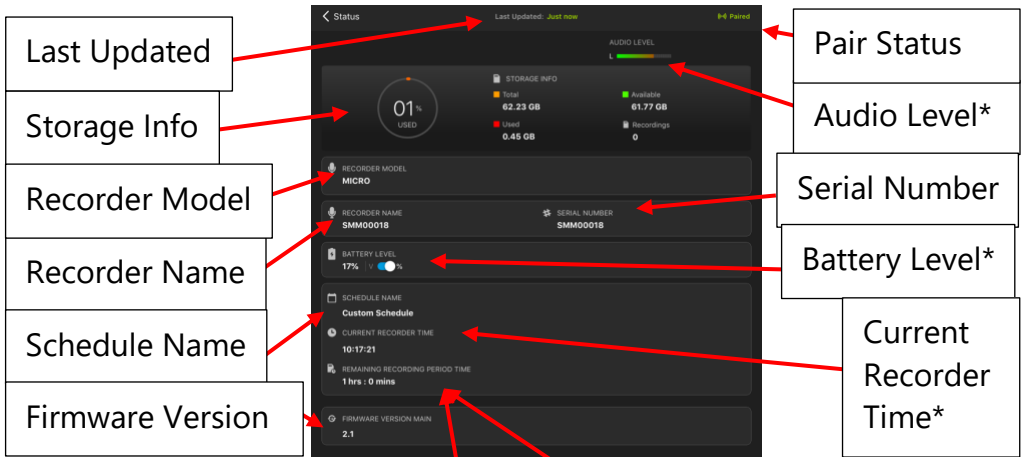
4.4 Status Screen



The Status screen for a detected recorder is accessed from the Recorders screen by tapping on the Status icon.

- When a Song Meter Micro recorder is within Bluetooth range and is detected by the Configurator app, its status automatically uploads to the app.
- Tap the Status icon for any recorder listed in the Recorders screen to see the most recently uploaded Status information for that recorder.
- The last uploaded Status information is retained by the app when the app is closed, or the mobile device is powered off or moved out of Bluetooth range of the recorder.
- The Song Meter Micro recorder does not need to be paired with the Configurator app to upload its current Status, as long as it is within Bluetooth range.
- If the recorder is currently being detected, the Status screen will update in real time. If the recorder is not currently being detected, the Status screen will display the last settings detected from the recorder.
- When a recorder is paired with the app it does not send Bluetooth status beacons and cannot be detected by another device.

The Status screen displays the following information



Remaining Record Period Time
(If currently recording)*

Start Time Of Next Recording
(If not recording)*

Last Updated

Displays when the recorder was last detected by the app.

Paired/Unpaired Status

Displays whether the recorder is currently paired or unpaired with the Configurator app.

Audio Level (Only visible when recorder is paired with app)

If the Song Meter Micro recorder is currently paired with the app, and is in record mode, the Audio Level meter displays the audio level present at the built-in microphone.

If the recorder is not paired, is paired but not in record mode, or if the microSD card is faulty, the Audio Level meter will not be visible.

Storage Info

Displays the current or last detected parameters for the microSD memory card as follows:

- **% Used:** Percentage of microSD card that has been used for file storage.
- **Total:** Gigabytes of total storage space on the microSD card.
- **Available:** Gigabytes of free storage space remaining.
- **Used:** Gigabytes of used storage space.
- **Recordings:** Number of separate recording files made since the last time the recorder was powered on. This number will

also be reset to zero if the microSD memory card is reformatted by the Song Meter Micro recorder.

Recorder Name

By default, this is the serial number of the Song Meter Micro recorder. It is also possible to assign a custom name to the Song Meter Micro ([Click here for details](#)).

Serial Number

Displays the recorder's serial number. This cannot be edited.

Battery Level (only visible when paired)

Displays the current total voltage of the AA batteries as a percentage or actual voltage. Slide the button to choose.

Note: To avoid damaging the batteries, the recorder automatically turns off when the voltage drops below 3.7V (0.9V per cell) for AA batteries.

Schedule Name

Displays the currently programmed schedule name.

If a pre-set schedule is programmed, that name will be displayed. If the schedule has been edited it will be displayed as "Custom Schedule".

Current Recorder Time (only visible when paired)

Displays the recorder's currently programmed time.

If the recorder is currently not detected by the Configurator app, the time when the recorder was last detected is displayed.

Start Time of Next Recording (only visible when paired)

If the recorder is not currently in record mode, this will display the start time of the next scheduled recording. This is displayed in one-hour increments.

Remaining Recording Period Time (only visible when paired)

If the recorder is currently in record mode, this will display the end time of the current recording schedule block. If the schedule is set to 24-hour recording, this will display "Continuous".

NOTE: When the recorder is paired with the app, either Start Time of Next Recording or Remaining Record Time will be displayed (but not both), depending the current recording schedule status.

Firmware Version

Displays the current firmware version of the recorder.

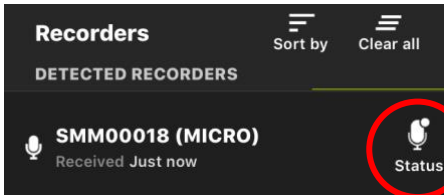
4.5 Pairing the Recorder with the Configurator app

If a Song Meter Micro recorder is powered on, and is within Bluetooth range of the mobile device, it can be paired or unpaired with the Configurator app.

- A recorder must be paired with the app in order to edit the schedule and settings currently stored in the recorder.
- Pairing is not automatic and must be done manually.
- Only one recorder at a time can be paired with the Configurator app.
- The internal clock, location, and time zone are set during pairing when necessary.

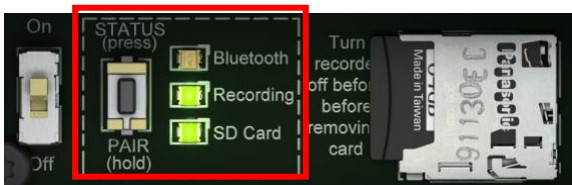
1. Enable Bluetooth on the iOS or Android device.

2. Launch the Configurator app and display the Recorders screen.
3. Remove the Song Meter Micro recorder's lid.
4. Turn the Power switch to On.
5. Launch the Configurator app and display the Recorders screen.
The Configurator app will detect the recorder.

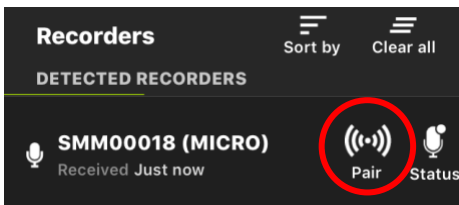


Detected but not ready to pair. Bluetooth LED on recorder is off.

6. Press and hold the PAIR button on the recorder for three seconds, until the Bluetooth status LED blinks green.

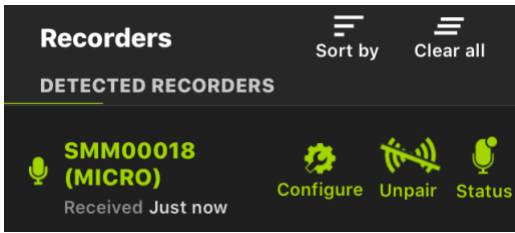


7. The Pair icon will appear in the Recorders screen on the app.



Ready to pair. Bluetooth LED on recorder is Blinking.

8. Tap the Pair icon to complete the pairing of the Song Meter Micro recorder to the Configurator app.



Recorder is paired with app. Bluetooth LED on recorder is solid green.

9. To unpair the recorder, tap the Unpair icon in the Configurator app Recorders screen, or press and hold the PAIR button on the recorder for three seconds.

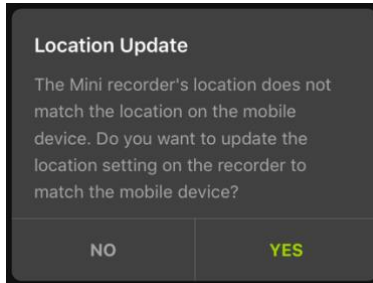
NOTE: Pairing does not affect the schedule of recordings nor interrupt a recording in progress. The Song Meter Micro recorder will not go to sleep while paired. If the recorder finishes a schedule and is ready to go to sleep, it will not go to sleep until it is unpaired.

Setting the Recorder's Clock

The first time the Song Meter Micro recorder is configured, or if the batteries have been removed for some time, the internal clock will not be set. When the recorder is paired with the Configurator app, the internal clock of the recorder will be automatically set to match the Mobile device.

Setting the Recorder's Location

When the Song Meter Micro recorder is paired with the Configurator app, the current location of the mobile device is compared with the recorder. If the programmed location of the recorder does not closely match the current location of the mobile device, the following message will be displayed:



- Tap **Yes** to reset the programmed location of the Song Meter Micro recorder to the current mobile device location
- Tap **No** to leave the currently programmed location of the recorder unchanged.

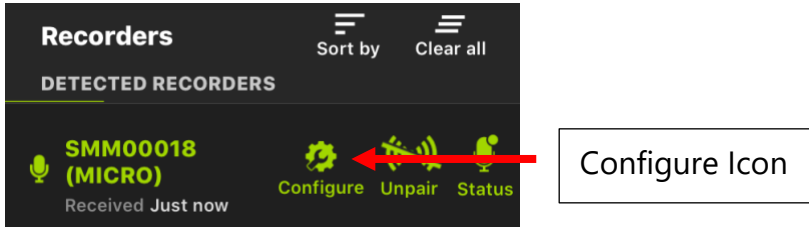
4.6 Pairing With A Different Recorder

1. Unpair any currently paired recorder by tapping the Unpair icon in the Recorders screen.
2. Press and hold the PAIR button on the next Song meter Micro recorder to be configured. That recorder will now become available for pairing in the Configurator app, and the Pair icon will appear.
3. Press the Pair icon for the new recorder. The text will turn green when the recorder pairs with the Configurator app, and the Configure and Unpair icons will be displayed.

4.7 Paired Configuration Editor Screen

The configuration and settings of a paired recorder can be edited from within the Paired Configuration Editor screen.

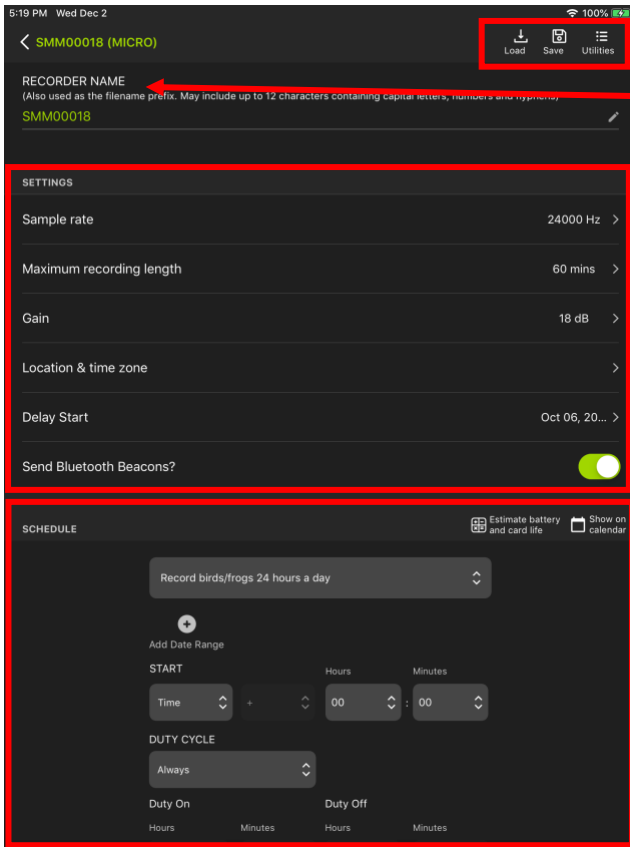
The screen is accessed from the Recorders screen by tapping the Configure icon



- When the Song Meter Micro recorder pairs with the Configurator app, it automatically uploads and displays its current configuration to the app.
- Once paired, any changes made in the Configuration Editor screen will immediately update the recorder.

NOTE: Making a configuration change concludes any recording in progress and pauses the schedule for 10 seconds. This allows changes to be made to the configuration without constantly starting and stopping a recording schedule. 10 seconds after no further changes have been made, the recorder will resume its schedule.

The Configuration Editor screen displays the following:



- Load/Save/Utilities
- Recorder Name
- Sample Rate
- Maximum Record Length
- Gain
- Location and Time Zone
- Delay Start
- Send Bluetooth Beacons?

Schedule Editor

Load

Tap the Load icon to display a list of any saved configuration files in the Configurator app.

Select the saved configuration file that you would like loaded onto the recorder and tap OK.

The saved configuration and settings will be loaded to the paired Song Meter Micro recorder.

Save

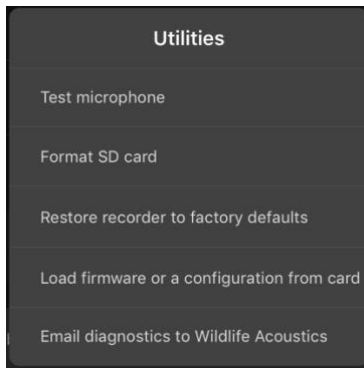
Tap the Save icon to name and save the current configuration and settings to the Configuration Library (see section [4.16](#)) as a saved configuration file.

Once the configuration is saved, the screen will again display the current configuration in the recorder. Changes made to the configuration will then edit the recorder directly.

To save new changes to the Configuration Library, tap the Save icon again.

To further edit a saved configuration file, go to the Configuration Library window or, save a new configuration file.

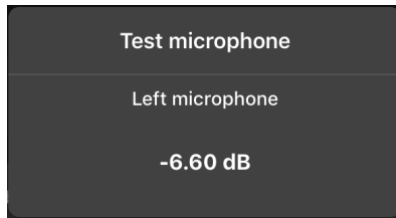
4.8 Utilities



To access the Utilities menu, tap the Utilities icon at the top right of the Configure screen.

Test Microphone

The number displayed shows the current sensitivity for the built-in microphone in dB.



The sensitivity of the microphone can be measured to test its functionality. The microphone calibration is bandpass filtered at 1kHz and is designed to be used with a standard third-party microphone calibrator.

A standard microphone calibrator will produce a 94dB SPL (1 Pa) 1kHz tone at the microphone.

Note: This procedure is only valid for third-party microphone calibrators that emit a calibrated 1.0 kHz signal.

1. Navigate to the Test microphone window under the Utilities menu.
2. Connect the calibrator to the acoustic microphone.
3. Turn the calibrator ON.
4. The calibrator generates a 1kHz tone.
5. Observe the dB level in the Test microphone window. If the value is higher (less negative) than -16 dB the microphone has passed and is ready to use. If the value is lower (more negative), the microphone has lost some or all of its sensitivity and should be replaced. For example, if the value is -17dB it fails. If the value is -14dB the microphone passes.

Format SD Card

Formats the microSD memory card in the currently paired recorder.

- Use this utility prior to all deployments for optimal performance and to ensure that the cards are empty.
- Formatting a corrupt microSD memory card can sometimes make it work again; if not, the card may be defective.

WARNING! This procedure erases all data on the microSD memory card. Verify that you have saved any important schedules or recording files before running this utility.

Restore Recorder to Factory Defaults

Restores the Song Meter Micro recorder to its factory default configuration.

- Restoring factory defaults will not change the date and time of the recorder, though they may appear to change because the time zone and location is reset.
- See sections [4.8](#) and [4.9](#) for default settings values.

Load Firmware or a Configuration from Card

If there is a firmware update and/or configuration file on the microSD card, this function will load those files to the recorder.

Email Diagnostics to Wildlife Acoustics

Generates a Diagnostics Dump file can then be sent to Wildlife Acoustics technical support for further analysis.

Recorder Name

Tap the pencil icon to rename the currently paired recorder.

- The Recorder Name is added as a prefix to the file name of all recordings made by the Song Meter Micro recorder.

- The Recorder Name will not be over-written when loading a saved configuration file.
- Resetting Factory Defaults will reset Recorder Name to the recorder serial number.

4.9 Settings

Sample Rate

- **Options:** 8000, 12000, 16000, 22050, 24000, 32000, 44100, 48000, or 96000Hz.
- **Default:** 24,000Hz.

Determines the number of samples per second used to make a recording during a recording period. Higher sample rates record higher frequencies, but use more card space.

Choose a sample rate at least double the highest frequency to be recorded. For example, a sample rate of 24,000Hz will capture sounds up to 12,000Hz.

Maximum Recording Length

- **Values:** 1 min to 60 min in 1-minute increments.
- **Default:** 15min.

Specifies the maximum length of recordings within a schedule. For example, if a recording schedule is set to record always and the maximum record length is set to 60 minutes, the recorder will create 24 60-minute files per day.

Gain

- **Options:** 6, 12, 18, or 24dB.
- **Default:** 18dB.

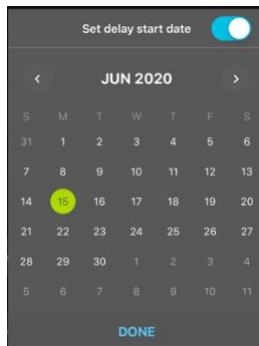
Gain can be added to the microphone signal to increase the recorded signal's amplitude.

NOTE: Test recordings should be made to make sure desired signals are being recorded with enough gain, but not so much as to cause clipping distortion. If a test recording shows clipping distortion, lower the gain setting. If a test recording shows a faint signal, raise the gain setting.

Delay Start

It is possible to program a paired Song Meter Micro recorder so its recording schedule will not start until a specified date. The recorder will sleep until the Delay Start date and then wake up to commence its programmed recording schedule.

- To set the Delay Start date, tap the icon in the Configure screen to open a calendar.
- Select the desired start date.
- Tap Done.



Send Bluetooth Beacons?

- **Options:** On or Off
- **Default:** On

By default, a recorder that is powered on will send continuous Bluetooth beacons so the Configurator app can detect the recorder and receive its current status.

- If Send Bluetooth Beacons? is disabled, the Configurator app will not automatically detect the recorder, and its current status will not be automatically updated.
- If Send Bluetooth Beacons? is disabled, the recorder must be manually paired with the Configurator app in order for the current status to be updated in the app.
- Disabling Send Bluetooth Beacons? will not affect the recording functions of the Song Meter Micro recorder.

4.10 Location and Time Zone

The Location and Time Zone screen is accessed from the Configuration Editor screen.

- Time zone and location information are embedded in the metadata of files created by the Song Meter Micro recorder.
- Accurate time zone and location information is required if sunrise/sunset times are to be used in a recording schedule.
- Location and time zone can also be set when the Song Meter Micro recorder is first paired with the Configurator app on a device (see section [4.5](#)).

The screenshot displays the configuration interface for a Song Meter Micro recorder. It is divided into two main sections: 'SET LOCATION' and 'SET TIME ZONE'.

SET LOCATION:

- Instructions: "Set location using address, latitude and longitude or by dropping a pin on the map below."
- SET LOCATION TO ADDRESS:** A text input field contains "27 Pond Ln, Billerica, MA 01821, USA". A red arrow points from the "Address" label to this field.
- LATITUDE:** A dropdown menu is set to "N" and the value is "42.54176".
- LONGITUDE:** A dropdown menu is set to "W" and the value is "71.26456". A red arrow points from the "Latitude/Longitude" label to these two fields.
- A "Set" button is located to the right of the latitude and longitude fields. A red arrow points from the "Set" label to this button.
- TAP ON MAP TO SET:** A map of the Northeastern United States is shown. A red pin is placed on the location in Billerica, MA. A red arrow points from the "Pin" label to this pin.
- A "Zoom to current location" button (a circular icon with a location pin) is at the bottom right of the map. A red arrow points from the "Zoom to current location" label to this button.

SET TIME ZONE:

- Instructions: "Local time zone used to calculate sunset and sunrise-set in hours relative to UTC (Universal Time Coordinated). Note: The recorder will not adjust for a change to daylight savings time during a deployment."
- Select time zone:** A dropdown menu is currently set to "America/New_York". A red arrow points from the "Select time zone" label to this dropdown.
- The current time zone is displayed as "UTC-04:00" with a right-pointing arrow.

Set Location to Address

Specify a location based on a street address using Google Maps' database. This will automatically update the location's latitude and longitude, and will be represented by the pin on the map.

Latitude/Longitude

Manually enter latitude and longitude information. Tap the Set icon to update. This will also automatically update the address, and will be represented by the pin on the map.

Set

Tap this icon to scroll the map view to the manually entered address or latitude/longitude.

Tap the Set icon to update newly entered latitude and longitude.

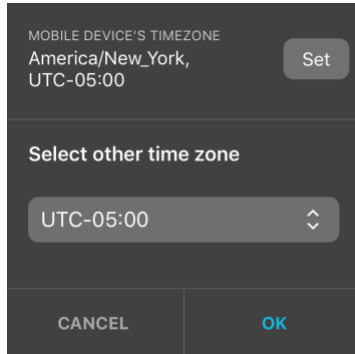
Zoom to Current Location

Tap this icon to center the Pin in the Map view.

Map

If the mobile device is connected to the internet, the map view displays the manually entered location on a map. It is also possible to tap on the map to create a "pinned" location. The address and longitude/latitude for the pinned location are then displayed above.

Select Time Zone



By default, time zone is based on the mobile device.

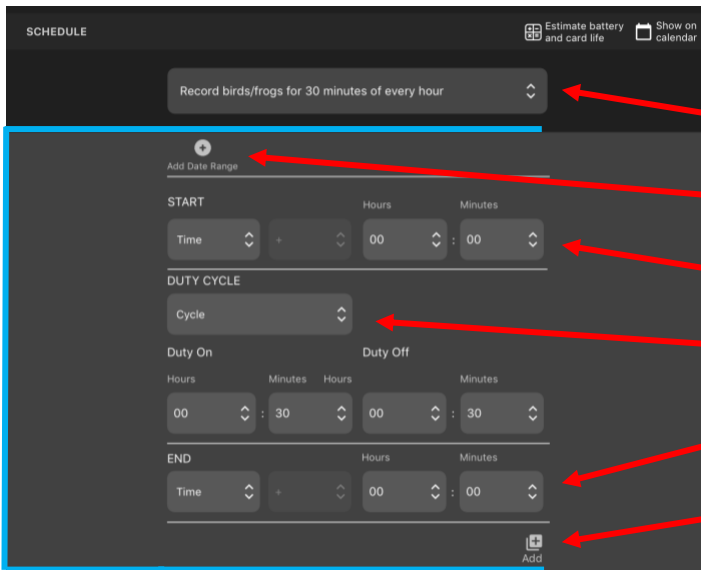
Tap the Set button to instantly set the recorder to the device's current location and dismiss the time zone setting pop up window.

When manually programming a location for the Song Meter Micro recorder, it is also possible to manually select a time zone. Use the UTC menu to select the time zone offset.

4.11 Schedule Editor

A schedule specifies when the Song Meter Micro recorder is in record mode. When not in scheduled record mode, the Song Meter Micro goes to sleep, which conserves battery power.

The recording schedule can be edited directly on a paired recorder or within a saved configuration.



Calculators

Presets

Add Date Range

Start Time

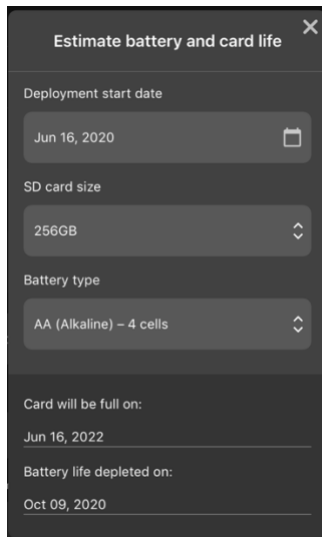
Duty Cycle

End Time

Add Sched Block

Schedule block

Estimate Battery and Card Life



Tap the Estimate Battery and Card Life icon to open the Estimate Battery and Card Life utility.

This utility estimates battery and SD card life for different battery types and card sizes, using the currently programmed schedule and settings.

- **Deployment start date:** tap the calendar icon to select the deployment start date. The Use Current Date slider must be set to off before you can select another date.
- **SD Card size:** tap to select current card or choose another card size.

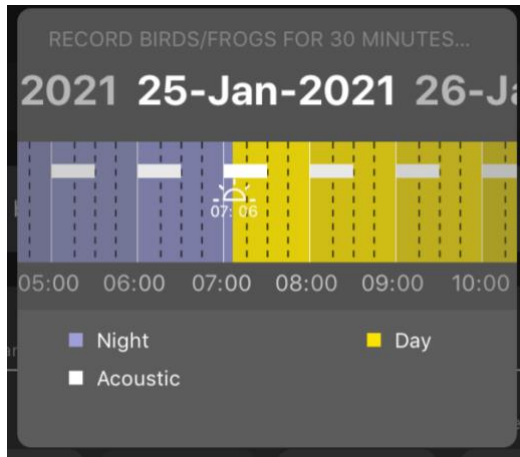
NOTE: Estimate is based on a high-quality SD memory card that has been reformatted and is completely empty.

- **Battery type:** tap to select current battery or choose another battery type and size.

NOTE: If current battery is selected, estimate will be based on the current battery charge. If another type of battery is selected, the calculation will be based on fully charged batteries at room temperature.

- **Card will be full on:** gives the estimated date when the SD card will be full.
- **Battery Life depleted on:** gives the estimated date when the battery life will be depleted.

Show on Calendar



Tap the Show on Calendar icon to visually check schedules on a calendar.

- Color coding displays night and day based on sunrise/sunset times.
- Scroll the date at the top of the window to show sunrise/sunset times for any date based on currently programmed location.
- Scroll the calendar view to show the currently programmed recording schedule.

Preset Schedules

The Configurator app includes preset recording schedules.

- Tap the schedule menu to select different preset schedules. If a customized schedule is currently programmed, this menu will display "Custom Schedule"
- When a preset schedule is selected, it is automatically loaded onto the Song Meter Micro recorder.

- When a preset schedule is selected, the schedule settings are displayed and can be immediately edited.

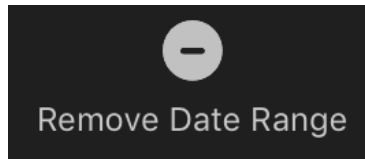
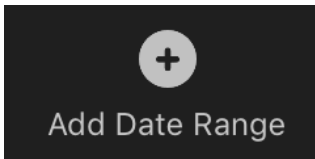
Included Presets:

- Record birds/frogs 24 hours a day.
- Record birds/frogs for 30 minutes of every hour.
- Record birds/frogs for 5 minutes of every hour.
- Record birds/frogs from sunrise to sunset.
- Record birds/frogs 2 hours around sunrise and 2 hours around sunset.

Schedule Blocks

- A schedule block defines a start time, stop time, and duty cycle for recording.
- A recording schedule must contain at least one schedule block.
- The most simple recording schedule is a single schedule block with no added date range.
- If no additional date range is specified, a schedule block will repeat every 24 hours.
- Additional schedule blocks can be added or deleted.

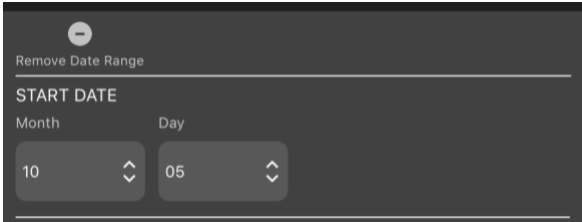
Add Date Range/Remove Date Range



- Each schedule block can have its own start and end dates
- If no Date Range is specified, the schedule block will repeat indefinitely every 24 hours.
- If a Date Range is specified, the schedule block will work within that specified range.

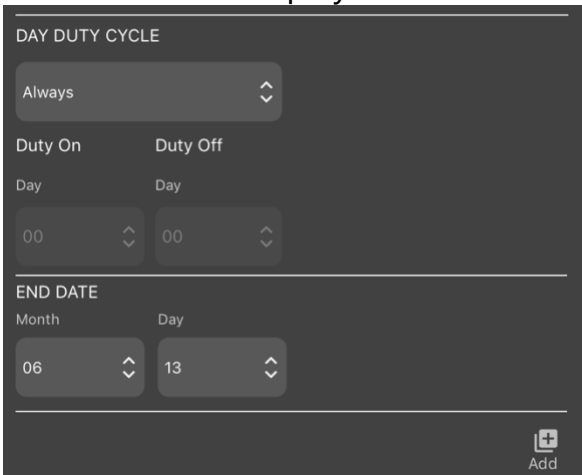
- Start and end dates of schedule blocks can overlap.
- This allows for complex programming of recording schedules over time.

When Add Date Range is enabled for a schedule block, additional fields are displayed. At the top of the schedule block, a START DATE is displayed. This is the month and day on which the following schedule block will commence.



A screenshot of a dark-themed user interface for configuring a schedule block. At the top left, there is a minus sign icon and the text "Remove Date Range". Below this is a horizontal line. The section is titled "START DATE". Underneath, there are two columns: "Month" and "Day". Each column has a dropdown menu. The "Month" dropdown is currently set to "10" and the "Day" dropdown is set to "05".

At the end of the schedule block, DAY DUTY CYCLE and END DATE fields are displayed.



A screenshot of a dark-themed user interface for configuring a schedule block. The section is titled "DAY DUTY CYCLE". Below the title is a dropdown menu set to "Always". Underneath, there are two columns: "Duty On" and "Duty Off". Each column has a "Day" label and a dropdown menu. The "Duty On" dropdown is set to "00" and the "Duty Off" dropdown is set to "00". Below this is a horizontal line. The section is titled "END DATE". Underneath, there are two columns: "Month" and "Day". Each column has a dropdown menu. The "Month" dropdown is set to "06" and the "Day" dropdown is set to "13". At the bottom right of the interface, there is a plus sign icon and the text "Add".

Duty Cycle specifies what will happen within the Start and End dates.

- **Always** means the schedule block will be enabled continuously between the Start and End times.
- **Cycle** provides Month and Day settings for Duty On and Duty Off. The schedule block will be cycled between the specified number of days on and specified number of days off between the start and end dates.

NOTE: When Add Date Range is enabled for a schedule block, the default Start Date will be the current month and day according to the Android/iOS device. The default End Date will be set to the day before the current Android/iOS date. These default settings run the schedule block every day of the year.

NOTE: If a Date Range is removed from a schedule block, that schedule block returns to repeating every 24 hours.

START

Specifies the start time of the recording schedule block.

- Start time can be based on a specific Time, Sunrise, or Sunset.
- If Time is selected, the start time of the schedule block is entered in hours and minutes.
- Sunrise and sunset times are calculated based on the time and location currently programmed in the recorder.
- If Sunrise or Sunset is chosen, the available parameters include plus or minus, hours, and minutes. For example, Sunrise + 1:00 would mean the schedule block starts one hour after sunrise.

DUTY CYCLE

Specifies what will happen within the Start and End times.

- **Always** means the recorder will be in record mode continuously between the Start and End times.
- **Cycle** provides hour and minute settings for Duty On and Duty Off.

END

Specifies the end time of the schedule block.

- End time can be based on a specific Time, Sunrise, or Sunset.
- If Time is selected, the end time of the schedule block is entered in hours and minutes.
- If Sunrise or Sunset is chosen, the available parameters include plus or minus, hours, and minutes. For example, Sunrise + 1:00 would mean the schedule block ends one hour after sunrise.
- Sunrise and sunset times are calculated based on the set date and location of the recorder.

Add/Delete

It is possible to add or delete additional schedule blocks. This allows creation of complex schedules within a 24-hour cycle. See next section for examples of building schedules using blocks.

4.12 Schedule Block Examples

This section provides recording schedule examples that demonstrate how schedule blocks work. Most of these examples

are built into the app and can be selected as starting points for customized schedules.

A schedule specifies the record start and end times, but does not necessarily result in a single file for the entire period.

- The number of recordings for a given schedule will be determined by the Maximum Recording Length set in the Acoustic Settings screen, and the Duty Cycle within the Start and End times of the recording schedule.
- Maximum file length is 2 GB. If a recording exceeds 2 GB it will be split into smaller file segments.

Record Continuously All Hours of Every Day

The following schedule records continuously all day and night, 24 hours per day:

START

Time + 00 : 00

DUTY CYCLE

Always

Duty On Duty Off

00 : 00 00 : 00

END

Time + 00 : 00

Whenever the start and end times are identical and the Duty Cycle is set to Always, the schedule will record continuously.

Record Continuously for Part of Each Day

The following schedule records daily from 4:00am to 10:00am:

START

Time :

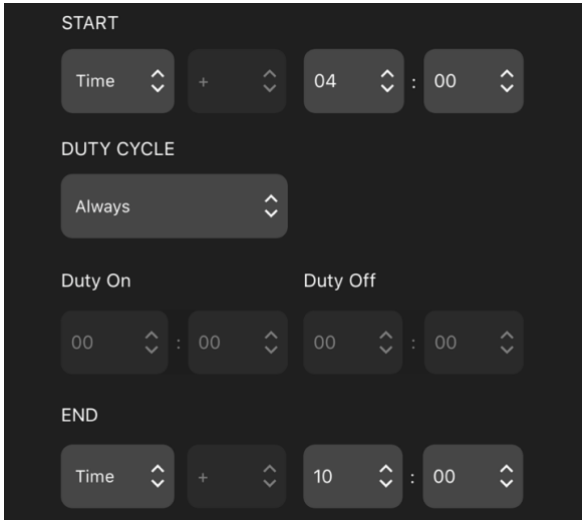
DUTY CYCLE

Always

Duty On : Duty Off :

END

Time :



Record in 5-Minute Segments Every Hour

The following schedule uses the Duty Cycle and records for 5 minutes at the beginning of each hour:

START

Time :

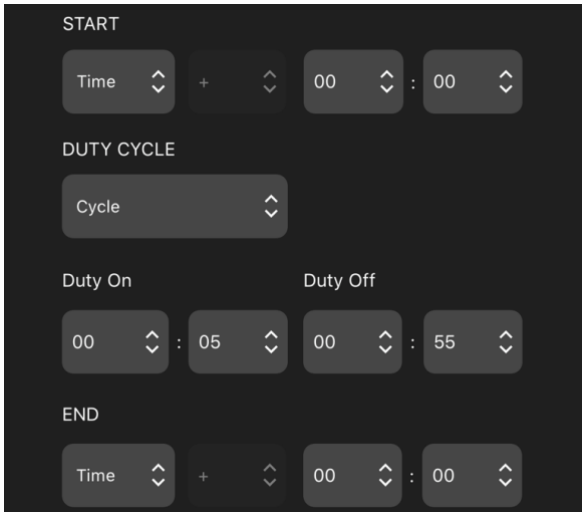
DUTY CYCLE

Cycle

Duty On : Duty Off :

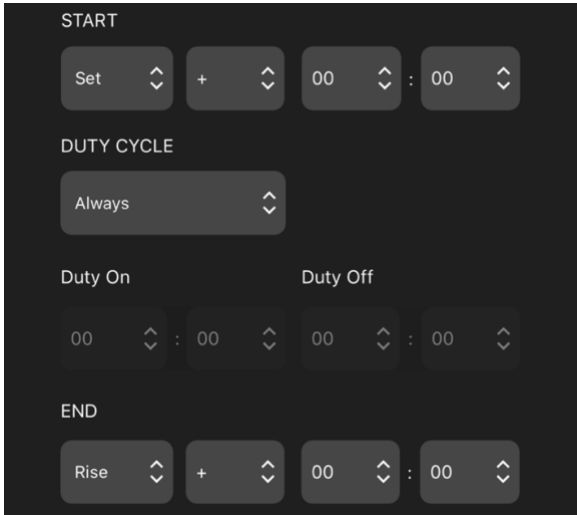
END

Time :



Record from Sunset to Sunrise

The following schedule starts every day at sunset and records until sunrise on the following day:



The screenshot shows a dark-themed interface with the following sections:

- START**: A row of four buttons: "Set", "+", "00", and "00". Each button has a small up/down arrow icon.
- DUTY CYCLE**: A dropdown menu showing "Always" with an up/down arrow icon.
- Duty On**: Two time selection buttons, each showing "00" and "00" with up/down arrow icons.
- Duty Off**: Two time selection buttons, each showing "00" and "00" with up/down arrow icons.
- END**: A row of four buttons: "Rise", "+", "00", and "00". Each button has a small up/down arrow icon.

Record in Multiple Blocks Relative to Sunset and Sunrise

The following schedule uses two blocks. The first block defines a period relative to sunrise and the second block defines a period relative to sunset. The combined result records for 2 hours before and after sunrise, and 2 hours before and after sunset.

START

Rise ▾ - ▾ 01 ▾ : 00 ▾

DUTY CYCLE

Always ▾

Duty On Duty Off

00 ▾ : 00 ▾ 00 ▾ : 00 ▾

END

Rise ▾ + ▾ 01 ▾ : 00 ▾

Schedule block 1 records one hour before sunrise to one hour after sunrise

START

Set ▾ - ▾ 01 ▾ : 00 ▾

DUTY CYCLE

Always ▾

Duty On Duty Off

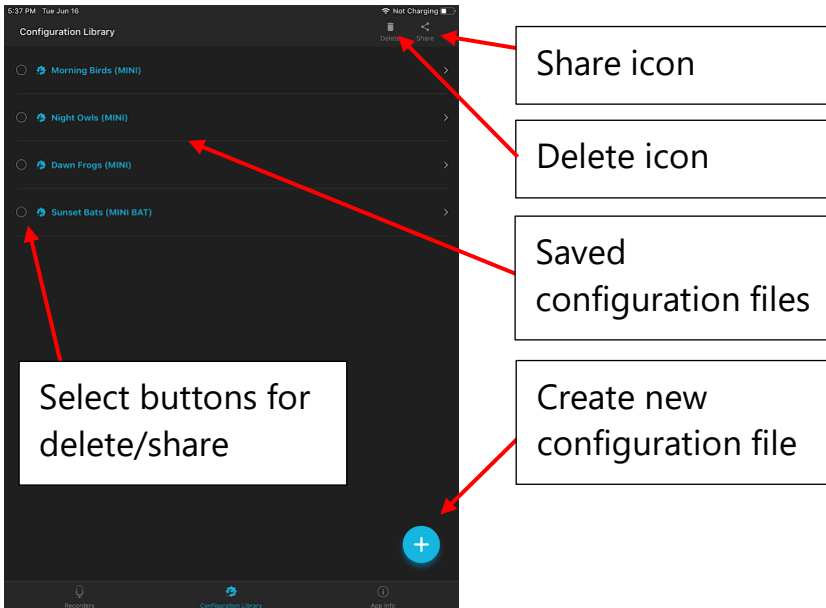
00 ▾ : 00 ▾ 00 ▾ : 00 ▾

END

Set ▾ + ▾ 01 ▾ : 00 ▾

Schedule block 2 records one hour before sunset to one hour after sunset

4.13 Configuration Library Screen

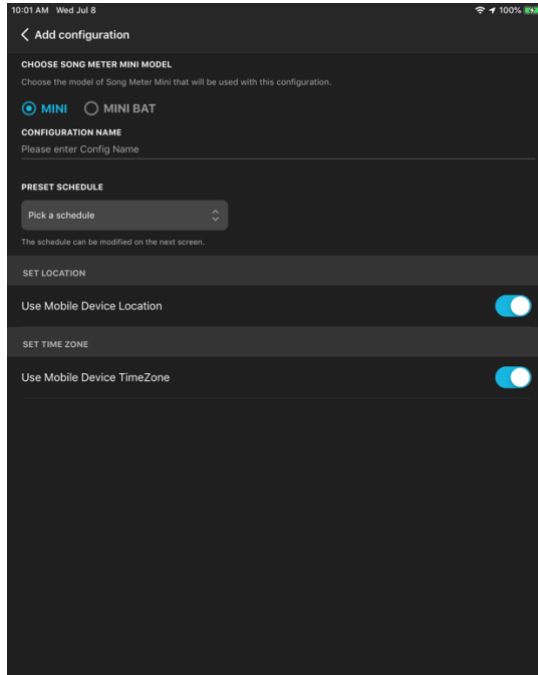


- The Configuration Library screen is accessed by tapping the Configuration Library icon at the bottom of the Recorders/Configuration Library/App Info screens. Since the Song Meter Micro has internal memory for a single configuration, the Configuration Library in the app is where you can store multiple configuration files. A configuration file can be downloaded to a paired Song Meter Micro recorder from the Configurator Library (see section [4.7](#)). A configuration file consists of settings and a schedule for the Song Meter Micro recorder.
- Configuration files can be created and saved from the Paired Configuration screen (see section [4.7](#)).
- Configuration files can be created directly from the Configuration Library screen.

- Saved configuration files can be edited. After making an edit to a saved configuration file, exiting the edit window will save the change.
- Configuration files can be shared.
 - In the Configuration Library screen, select the configuration files(s) to share.
 - Tap the share icon in the upper right-hand corner of the Configuration Library screen.
 - Choose a standard iOS or Android sharing protocol.
- A shared configuration file can be copied from a PC to an SD memory card and the SD card can then be used to program the configuration into a Song Meter Micro recorder.

NOTE: A saved configuration file can have a specific location and time zone as part of its settings. The saved location and time zone will over-ride the currently programmed location and time zone of a Song Meter Micro recorder when the saved configuration file is loaded, either to a paired recorder or via an SD card.

How To Create a Configuration File From the Configuration Library Screen



1. Go to the Configuration Library screen and tap the Plus icon.
2. The Add Configuration utility will open.
3. Choose whether the configuration is intended for a Song Meter Micro or Song Meter Mini.
4. Tap Configuration Name to open a keyboard.
5. Name the Configuration.
6. Choose a starting schedule.
7. Choose to set location and time zone to match the mobile device or to set them manually. Choosing manually will take you directly to the location setting page when you choose OK.
8. Press NEXT .
9. The Saved Configuration Edit screen will open.

10. Adjust the Settings and Schedule as necessary (see section 4.7 onwards).
11. When you are ready to save the configuration, tap its name at the top of the screen.
12. The Configuration Library screen will open and the saved file will show in the list of saved configurations.

How To Delete A Saved Configuration File

1. In the Configuration Library screen, select one or more saved configurations.
2. Tap the Trash icon at the top of the screen to delete the selected configuration(s).

How To Share A Saved Configuration File

A configuration file can be shared to other iOS/Android devices or a computer. The configuration file has the file name suffix ".microconfig".

1. In the Configuration Library screen, select one or more saved configurations.
2. Tap the Share icon at the top of the screen.
3. Choose your preferred method to share the file.

NOTE: Shared configuration files can be transferred from a computer to a microSD memory card. The memory card can then be used to transfer the configuration directly to the recorder (see [the Utilities window in the Paired Configuration Editor Screen](#)).

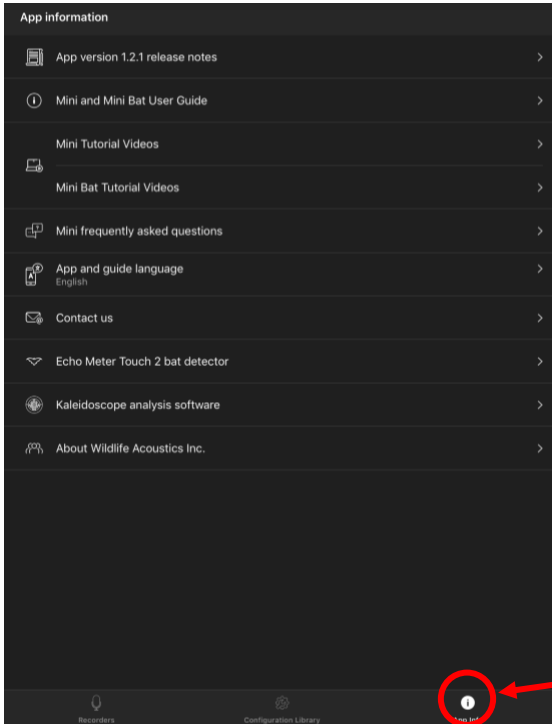
Edit A Saved Configuration File

1. In the Configuration Library screen, tap on the name of the configuration you wish to edit.
2. The Saved Configuration screen opens.
3. Edit the settings and schedule (see section [4.7](#) onwards).

4. Tap the Rename icon at the top of the screen to rename the saved configuration File.
5. Tap the Configuration name at the top of the screen to return to the Configuration Library screen.
6. Changes made to a saved configuration file are saved immediately.

4.14 App Information Screen

The App Information screen is accessed by tapping the button at the bottom of the Recorders or Configuration Library screens.



Tap to open

App version "x.x" release notes

The current version of the configurator app is listed. Tapping the button opens a screen which shows update notes.

User Guide

Tap to open the built-in User Guide

Tutorial Videos

Tap to link to tutorial videos. Requires Wi-Fi connection.

Frequently Asked Questions

Tap for quick answers to common questions.

App and Guide Language

Tap to access language choices. By default, the language used in the app is determined by the language setting of the iOS or Android device. This setting will override the device language.

Contact Us

Tap to open email form addressed to Wildlife Acoustics Technical Support. Requires Wi-Fi connection to send.

Echo Meter Touch 2 Bat Detector Kaleidoscope Analysis Software

Tap to link to further information about these products.
Requires Wi-Fi connection

About Wildlife Acoustics Inc.

About us!

5 Recording Files

The purpose of the Song Meter Micro recorder is to create audio files that are embedded with metadata. The files are initially

written to the microSD memory card, and from there can be transferred to a computer for analysis.

A summary file is also created and saved to the microSD card. The summary file is a text file and contains the following information:

- Date
- Time
- Latitude
- Longitude
- Power (V)

5.1 Transferring Recording Files to a Computer

1. After making a recording, remove the microSD Memory card from the recorder.
2. Insert it to a microSD card slot or microSD card adapter connected to a computer.
3. The microSD card will appear as a standard storage device.
4. Copy the files to the internal drive of the computer.

NOTE: Once the files have been transferred to the computer the microSD card can be erased or reformatted and used again to make more recordings. Before reformatting the microSD card, ensure the files are readable on the computer. It's also a good idea to back the files up for long-term storage.

NOTE: When files are transferred from the microSD card to a computer, the number of files listed in the Status screen will not be reset to zero unless the microSD card is reformatted in the recorder, or if the recorder is powered off, then powered on again.

5.2 WAV Files

The Song Meter Micro creates standard .wav audio files.

- .wav is a digital audio file standard. A .wav file can be played back by most music playback software as long as the software supports the sample rate of the file.
- The .wav files created by the Song Meter Micro contain embedded metadata (see section [5.4](#)).
- .wav files are written to a folder called Data on the microSD memory card.

5.3 Metadata

Metadata is additional information embedded in the recording file. The Song Meter Micro recorder embeds metadata according to the GUANO standard. Software that is capable of reading GUANO format metadata can access the information within the files.

When the Song Meter Micro recorder creates a .wav recording file it embeds the following metadata:

- Firmware Version
- Length (of the file in seconds)
- Loc Position (latitude and longitude)
- Make
- Model
- Original Filename
- Sample rate
- Serial number
- Timestamp
- WA|Song Meter|Audio settings

- WA|Song Meter|Prefix

6 Analysis Software

6.1 Kaleidoscope Pro

Kaleidoscope Pro analysis software allows you to quickly sort, label, and identify bird songs, frog calls, and bat identifications from weeks, months, or even years of recordings. Whether you are conducting species inventory, presence/absence surveys, endangered species detection or habitat health monitoring, Kaleidoscope Pro significantly minimizes the time it takes to find what you're looking for. Try it out now at www.wildlifeacoustics.com/products/kaleidoscope-pro

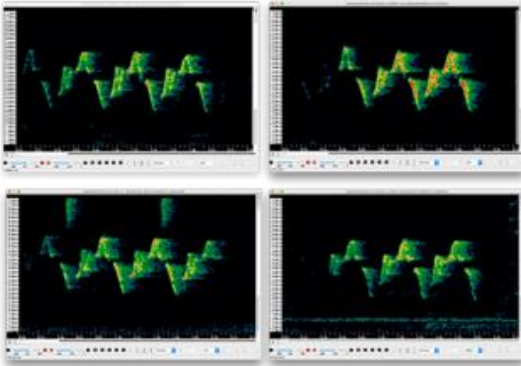


Kaleidoscope Pro includes:

Cluster Analysis

Kaleidoscope Pro automatically scans recordings and pulls out distinct sounds and phrases, such as frog calls or bird songs, and groups them into clusters. Once grouped, you can view, sort and label each cluster to efficiently analyze your recordings. Customize

cluster settings to help you more easily search for a specific species or refine for classifiers.

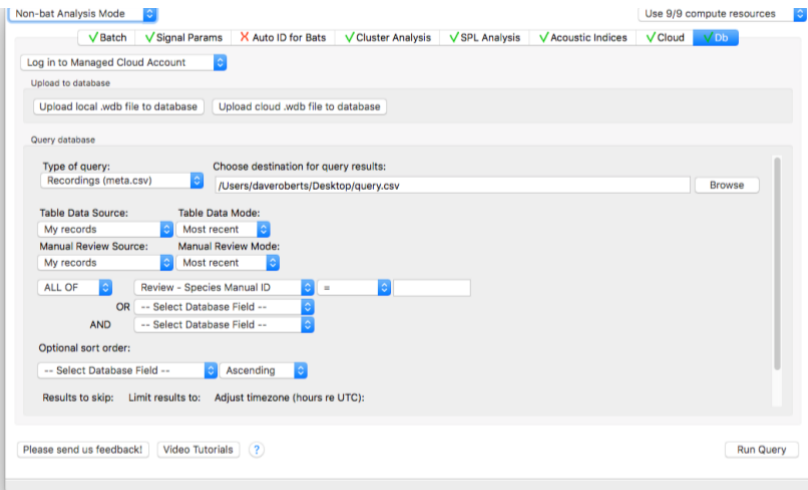


Sound Pressure Level Analysis

The Kaleidoscope Pro SPL Analysis feature allows you to scan recordings to analyze the audio frequency spectrum, and generate reports of sound pressure levels in accordance with various standards. Sound level data is reported in a table that is easily exported into spreadsheet applications for pivot table and chart creation.

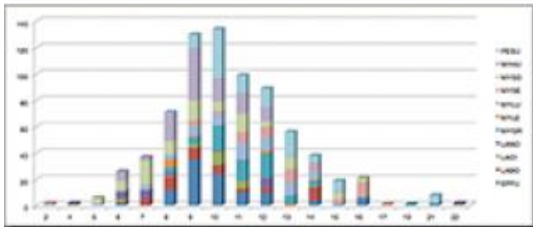
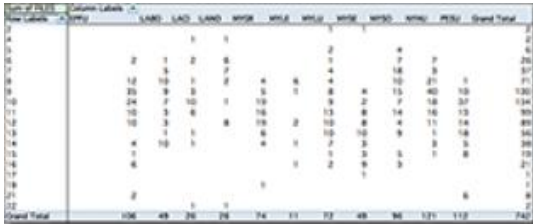
Smart Search and Cloud Storage

Search your recordings based on details such as time, temperature, identifications, or even spectral qualities of the recording. Smart Search works on recordings stored locally in your own PostgreSQL database or in a Kaleidoscope Pro Managed Cloud Account.



Easy Report Generation

Kaleidoscope Pro presents the cluster or classifier results, along with other metadata such as timestamps and temperature in a table that's easily exported into Excel and other applications for pivot table and chart creation.



15-Day Free Trial

Download Kaleidoscope Pro and use it for FREE for 15 days via our web site www.wildlifeacoustics.com. (You will need to create and log in to an account on our website).

After your free trial of Kaleidoscope Pro ends, the software will revert to Kaleidoscope Lite, and you will still be able to view spectrograms, convert audio files, and listen to your recordings.

6.2 Third-Party Software

The Song Meter Micro creates standard .wav files that can be opened with most audio applications. The audio application must be able to support the sample rate of the recorded file.

7 Specifications

7.1 Physical

Height:	4.0" (101 mm)
Width:	2.9" (74 mm)
Depth with lid:	1.1" (28 mm)
Weight no batteries:	0.16lb/2oz (73g)
Weight with 3 AA batteries	0.43lb/5oz (195g)
Power options	3 AA-size alkaline or NiHM batteries
Storage type	1 microSD card
Storage capacity	Up to 2TB
Material:	Polycarbonate
Environmental:	Fully weatherproof
Operating Temp	-4°F to +185°F or -20°C to 85°C
Warranty	1 Year

7.2 Audio and Microphones

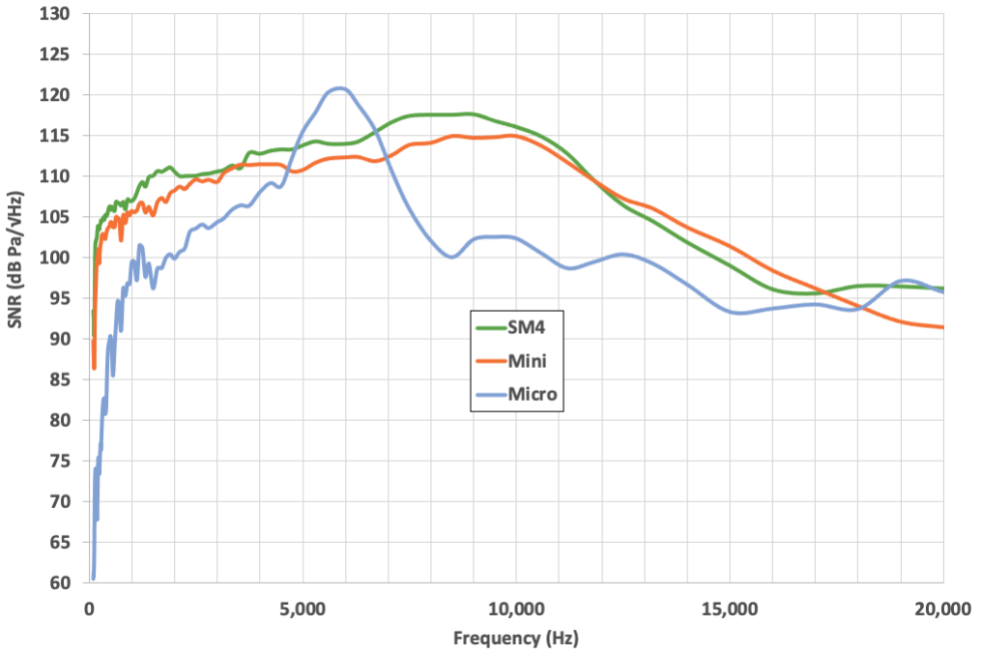
Audio

Recording Format:	16-bit PCM .wav
Sample Rate:	8,000 – 96,000Hz
High Pass Filter	2-pole 100Hz

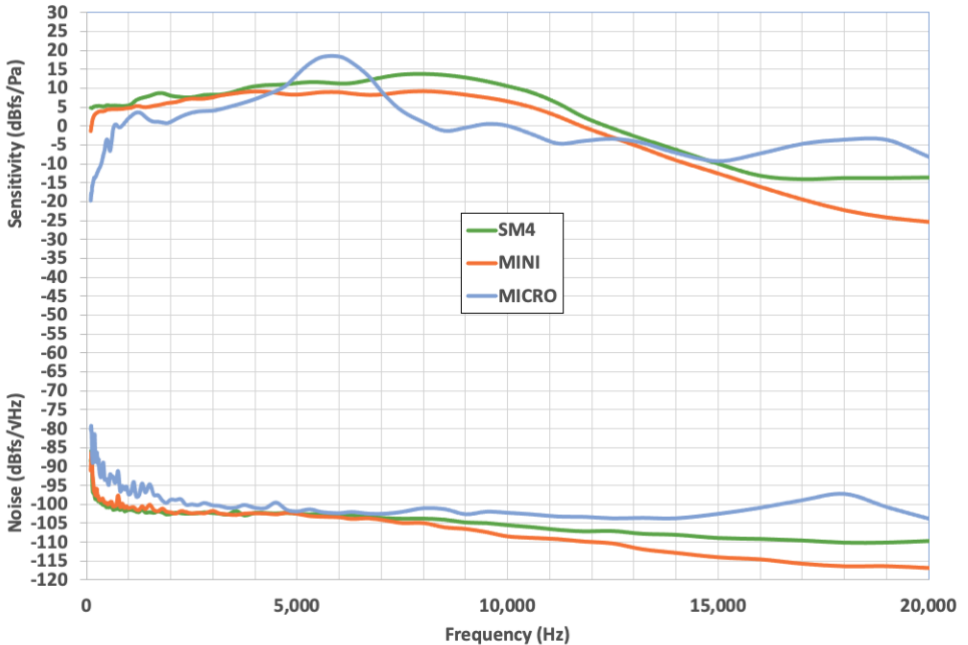
Microphone

- Directional Characteristic: Omni-Directional
- Sensitivity: -15.0 ± 4 dBfs/pa @ 1kHz, 0dB gain
- Signal to Noise Ratio: 70dB Typ. at 1kHz (1 Pa, A weighted)
- Max Input Sound Level: 103dB SPL Typical.

Signal to Noise Ratio of the SM4, Mini, and Micro Recorders



Sensitivity and Noise of the SM4, Mini, and Micro Recorders



Charts reflect default gain and filter settings, 48 kHz sample rate, calibrated sound source 1m from recorder perpendicular to microphone axis.

7.3 Battery Life

3 Alkaline AA: up to 200 hours

(Based on recording at 24,000 sample rate)

NOTE: Battery life can vary based on how the recorder is used, quality, charge, and type of battery and other conditions such as operating temperature. All estimations of battery life for deployment are based on fully charged, high quality batteries.

Current Consumption

- Recording at 24kHz sample rate: 70mW typical
- Sleeping between scheduled recording periods: 0.5mW typical

8 Warranty and Disclosures

Except as specifically provided herein, Wildlife Acoustics makes no warranty of any kind, express or implied, with respect to this product.

Hardware Limited Warranty

Product	Components	Warranty Period
Song Meter Micro	All components (excluding microphones and accessories)	1 Year

Wildlife Acoustics, Inc. Limited Warranty

HARDWARE: Wildlife Acoustics, Inc. (“WAI”) warrants to the original end user (“Customer”) that new WAI branded products will be free from defects in workmanship and materials, under normal use. Refer to the Hardware Limited Warranty table at the top of this page for the applicable warranty period from the original date of purchase.

WAI warrants refurbished WAI products, marked and sold as such, for ninety (90) days from the original purchase date.

SOFTWARE: WAI warrants to Customer that any WAI branded software will perform in substantial conformance to their schedule specifications for a period of ninety (90) days from the date of original purchase. WAI warrants the media containing software against failure during the warranty period. WAI makes no warranty or representation that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected.

EXCLUSIONS: This warranty excludes (1) physical damage to the surface of the product, including cracks or scratches on the outside casing; (2) damage caused by misuse, neglect, improper installation or testing, unauthorized attempts to open, repair, or modify the product, or any other cause beyond the range of the intended use; (3) damage caused by accident, fire, power changes, other hazards, or acts of God; or (4) use of the product with any non-WAI device or service if such device or service causes the problem.

Any third party products, including software, included with WAI products are not covered by this WAI warranty and WAI makes no representations or warranties on behalf of such third parties. Any warranty on such products is from the supplier or licensor of the product.

No warranty is provided by WAI unless the product was purchased from an authorized distributor or authorized reseller.

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DECLARATION OF CONFORMITY (EN 45014)

Manufacturer:

Wildlife Acoustics, Inc.

3 Mill and Main Place, Suite 210

Maynard, MA 01754

United States of America



Declares that the following product:

Product Name: Song Meter Micro and Micro Bat

Product Type: Bioacoustics Recorder

Conforms to the appropriate country standards and governing regulations listed below. As the manufacturer, we are fully responsible for the design and production of the above-mentioned equipment.

- Federal Communications Commission Rules Part 15, Class B
- AS CISPR 11, 2017, Industrial, scientific and medical (ISM) radio-frequency equipment – electromagnetic disturbance characteristics – limits and methods of measurement, Class B
- EN 55011, 2016, Industrial, scientific and medical (ISM) radio-frequency equipment – Electromagnetic disturbance characteristics – Limits and methods of measurement, Class B
- ICES-003, 2012, Industry Canada, Interference-Causing Equipment Standard, Digital Apparatus, Class B
- EN61326, 2013 Electrical Equipment for Measurement, Control and Laboratory use EMC Requirements
- EN61000-4-2 Electrostatic Discharge
- EN61000-4-3 Radiated Electromagnetic Fields

This product was tested in a typical configuration.

Ian Agranat, President

A handwritten signature in black ink, appearing to read 'Ian Agranat', written over a light blue horizontal line.

Wildlife Acoustics, Inc.

February, 8, 2020

ELECTROMAGNETIC INTERFERENCE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by Wildlife Acoustics, Inc. could void the user's authority to operate the equipment.

PRODUCT DOCUMENTATION

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The Song Meter Micro is covered under the following patents:

US 7,782,195

Additional patents pending

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