TheCornellLab of Ornithology

K. LISA YANG CENTER FOR CONSERVATION BIOACOUSTICS

SWIFTONE
Quick Start Guide

APRIL 2023

CONTENT

BRIEF INTRO

This guide is intended to help users to set up and start using a SwiftOne recorder. No previous experience with acoustic recorders is required.

ADDITIONAL RESOURCES

Comprehensive information can be found at https://www.birds.cornell.edu/ccb/swift-one/, including:

- SwiftOne – Documentation and Downloads (second generation recording units);
- SwiftOne: Frequently Asked Questions;
- SwiftOne Recorder Configuration Tool – Compatible with SwiftOne Model (Windows only);
- SwiftOne training video (19.09 minutes) – Basic setup and operation guide for SwiftOne units;
- Swift Recorder Configuration Tool – Compatible with original Swift model (Windows only);
- Swift Recorder Users Guide (Version 2.1);
- Swift Recorder Maintenance Suggestions (Version 1.0);
- Swift SD Card Information and Formatting Protocol.

BOX CONTENT

Included

Quantity	
1	Swift Recorder assembly
1	Aluminum tree bracket
1	Weatherproof microphone
1	BR1225 3V coin cell battery
1	Micro-USB Cable
1	#2 Philips Screwdriver
1	Keychain magnet

Required (not included)

Quantity	
3	Alkaline D-Cell batteries
1	SD Card formatted with FAT32 or exFAT filesystem
1	Desktop/laptop/tablet computer running Windows 7 or later

SWIFTONE SPECIFICATIONS

Size	20.3 x 12.7 x 10.1 cm (with tree bracket attached) 11.9 x 12.9 x 6.1 cm (without tree bracket)
Weight	1.1 kg (with batteries and tree bracket attached) 0.75 kg (with batteries but no tree bracket)
Supported audio sampling rates	8, 12, 16, 24, 32, 48, 96 (kHz)
Microphone model	CUI Device CMC-4015-25L100
Microphone type	Omni-directional
Microphone signal to noise ratio	62 dB re 1 V/Pa
Microphone sensitivity	-25 dB re 1 V/Pa
Microphone frequency response	100 Hz to 20000 Hz
File format	WAV
Bit-depth	16
Working temperature range	-35 to 50 degrees Celsius
Windscreen	WindTech 10380 Military High Density Windscreen
SD Card file system support	FAT32, exFAT
Scheduling mode	Arbitrary time, duty cycle, continuous recording
Voice memos	Supported

SD CARDS (NOT INCLUDED)

Type	Class 10 High Speed
Recommendation	SanDisk Extreme Pro
Maximum storage recommended	256 GB
Avoid	Micro-SD Cards
Format required	FAT32 or exFAT

A SanDisk Extreme Pro SD Card of speed class 10

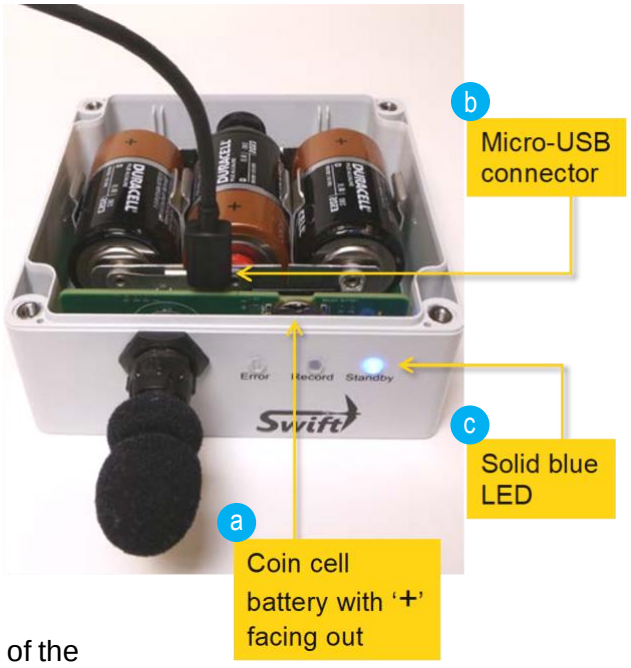
BATTERIES (NOT INCLUDED)

- Each unit requires 3 Alkaline D-cell batteries. Prefer quality name-brand batteries to ensure proper operation.
- Rechargeable batteries have lower energy capacity than Alkaline batteries, and thus, runtime estimates will be substantially lower.
- Lithium batteries have a higher voltage than supported by SwiftOne devices and are therefore not recommended.

STEP-BY-STEP SWIFTONE CONFIGURATION

1. Clock battery.

- Make sure the coin cell battery is fully seated in the holder (a).
- Replace the coin cell battery after one year of use.
- While changing the coin cell battery, make sure that SwiftOne is off.



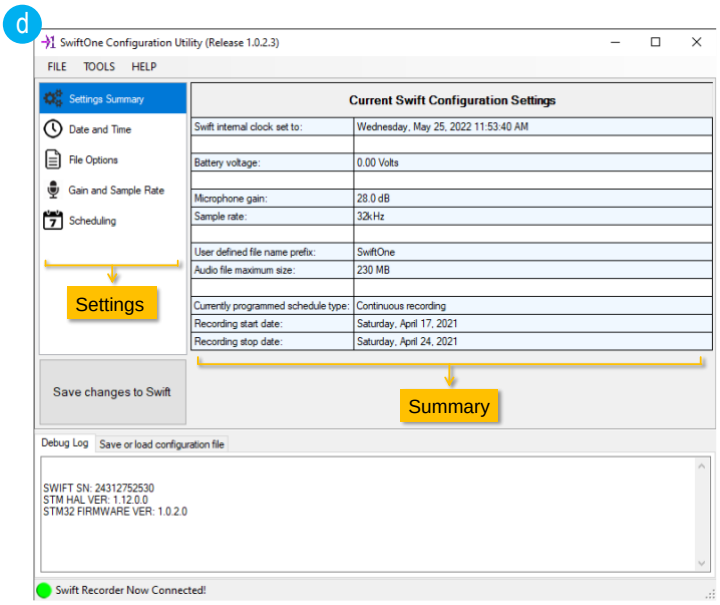
2. SwiftOne Configuration Utility.

- Using a computer or tablet, install SwiftOne configuration utility (Windows only), available at: https://www.birds.cornell.edu/ccb/swift-one

3. Connect the micro-USB cable.

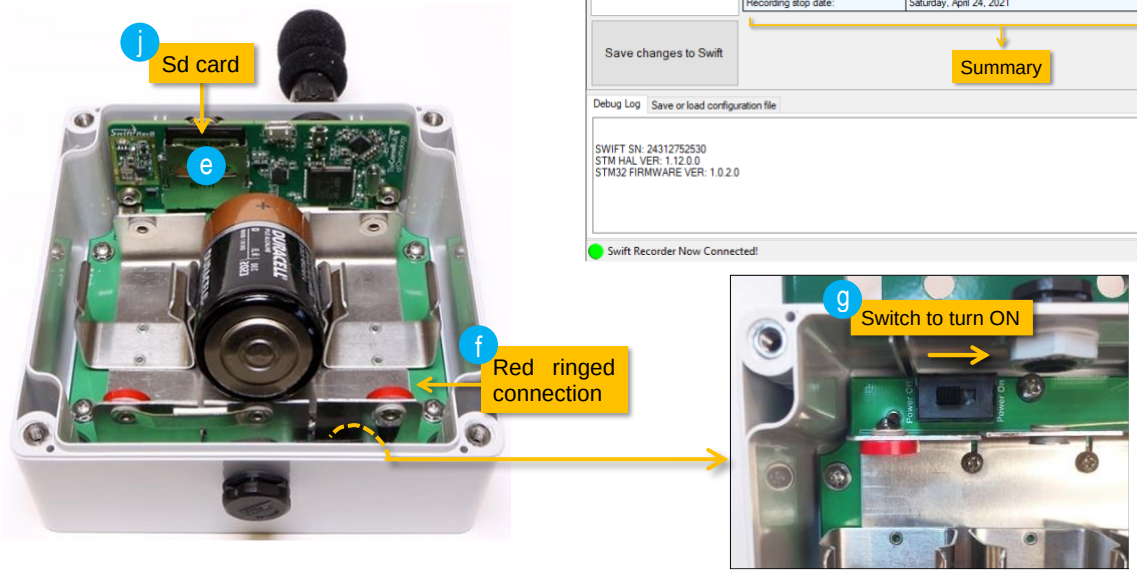
- Remove the lid and connect the cable near the front of the enclosure (b).
- Connect the micro-USB cable to the computer or tablet.
- The "standby" LED on the recorder will turn solid blue (c).

- The configuration settings summary will be automatically displayed on the computer (d).

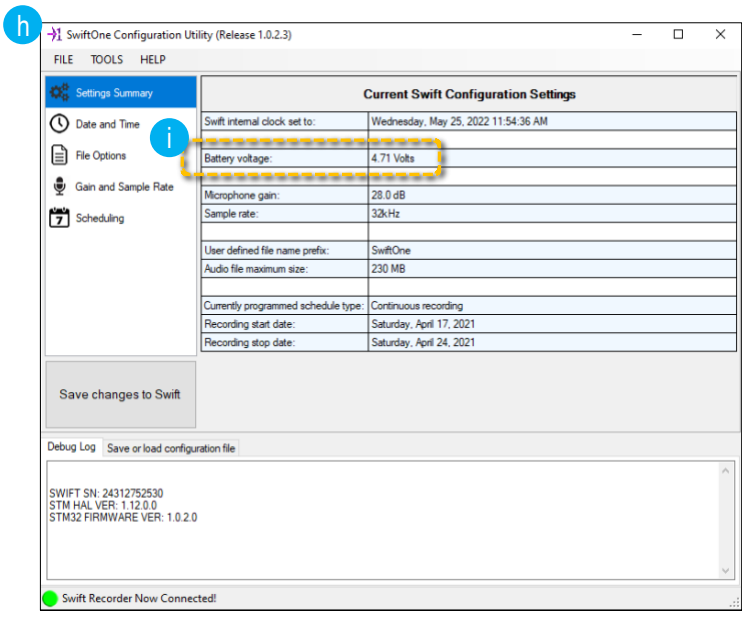


4. Install batteries.

- Install the center battery first (e). Align the positive terminal to the red ringed connection (f).
- Push the battery forward and then down.
- Install the other two batteries.



- Once all batteries are installed, to check batteries' voltage, locate the switch inside the enclosure and turn to the position "On" (g).
- The **battery voltage** will be displayed on the "Current Swift Configuration Settings" page in the **Configuration Utility** (h).
- The battery voltage should be between ≥ 3 V and ≤ 4.8 V, otherwise, batteries should be replaced (i).



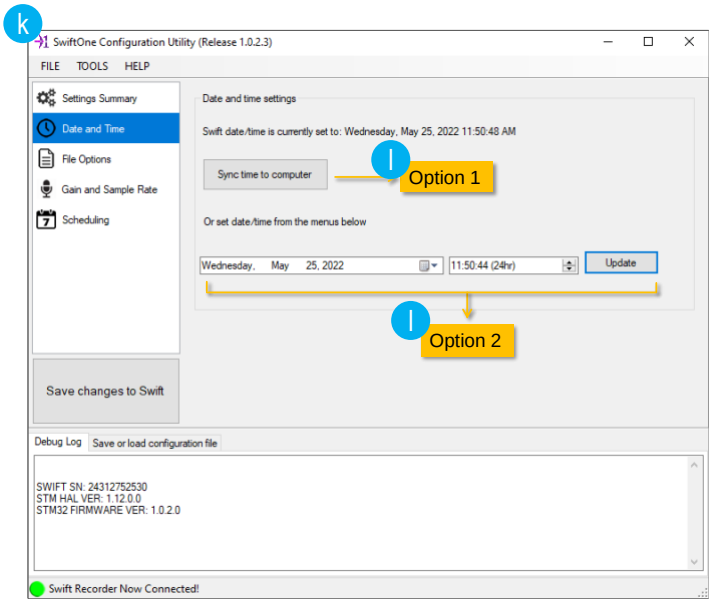
5. Install the SD card.

- The gold contact terminal of the SD Card should be on the bottom, opposite the batteries (j, above).

- On the left panel, click:

6. Date and Time (k).

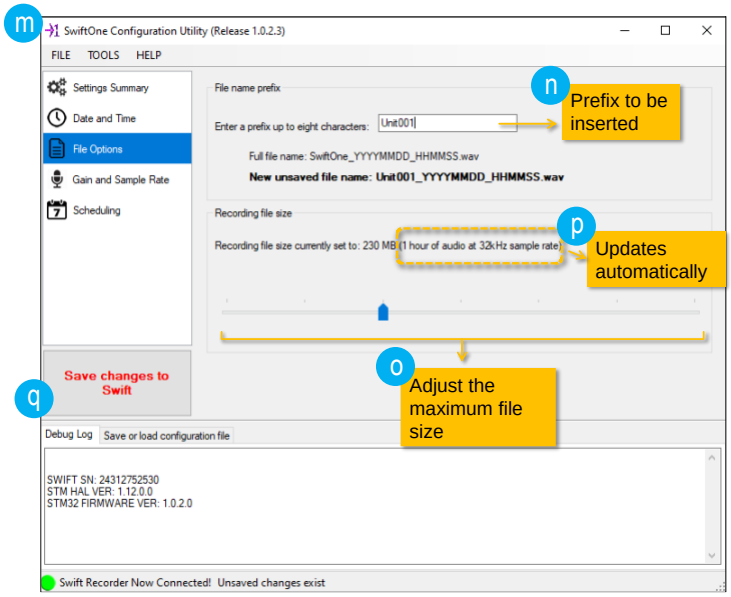
- Choose between synchronizing to the computer (option 1) or manually setting it to a specific date and time (option 2) (l).



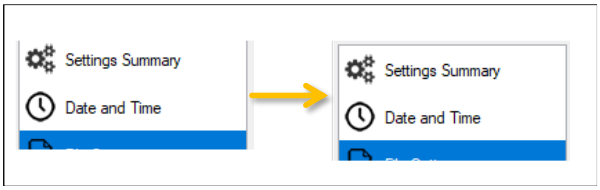
7. File options (m).

- Set **Prefix* and the maximum file size** for each recording (n).
- The maximum audio recording size limits the size (in MB) of each file (o). This is especially useful for continuous monitoring (no intervals between files).
- On the configuration tool, the duration of each recording will be automatically updated as the maximum value is adjusted (p).

*How to create an informative prefix: https://vimeo.com/488384629



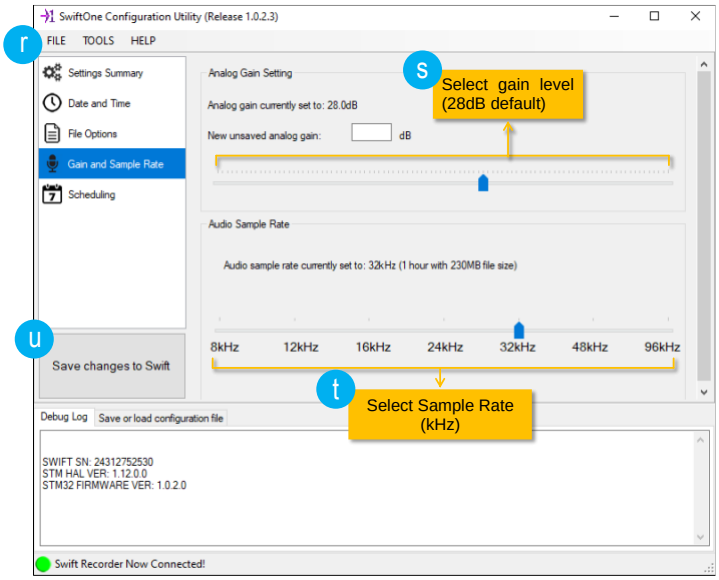
- The button "**Save changes to Swift**" will turn bold red (q).
- To save Prefix and maximum file settings, click on "Save changes to Swift", which will automatically return to the normal appearance after the settings have been saved.



A comprehensive video on the set-up process for a SwiftOne at https://www.youtube.com/watch?v=JVuJB8bJa0Q

8. Gain and Sample Rate (r).

- Gain controls the input of the audio signal (s).
- By increasing gain levels, sounds will be amplified in the recordings.
- On one hand, the chance of capturing distant sounds is improved.
- On the other hand, signals emitted close to the recorder can become saturated (or clipped).**
- Choose sample rate based on at least twice the maximum frequency emitted by the focal organism (t).**
- Note that higher sample rates will drain batteries and fill memory space more quickly.
- To commit changes, don't forget to hit the "**Save changes to Swift**" button (u).
- Under ideal conditions, continuous recordings at 48 kHz should drain batteries after one month. Use this scenario to estimate average runtime while also bearing in mind that most natural conditions are not ideal.



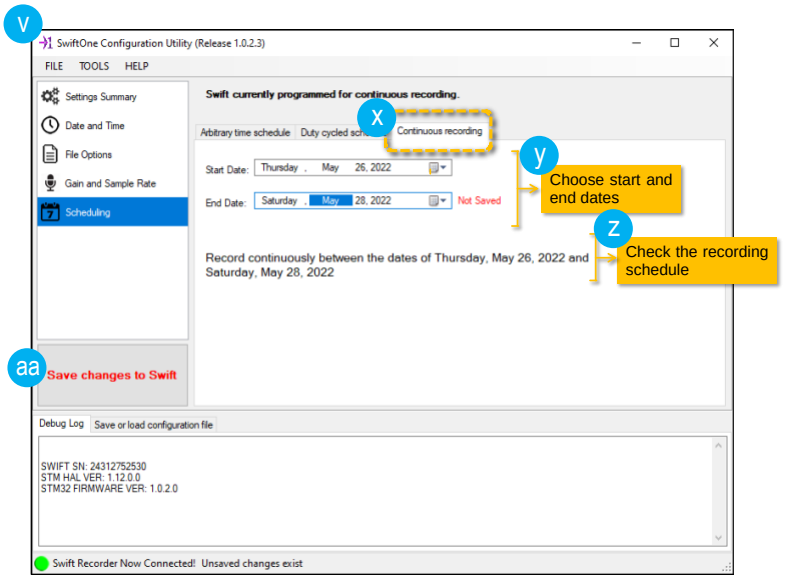
** More on audio clipping and sample rate at: https://www.birds.cornell.edu/ccb/virtual-lab-sound-analysis-principles/

9. Scheduling option (v).

- Choose one of the three tabs (Arbitrary time schedule, Duty cycled schedule, and Continuous recording).
- Only one type of scheduling can be picked by selecting the corresponding tab.

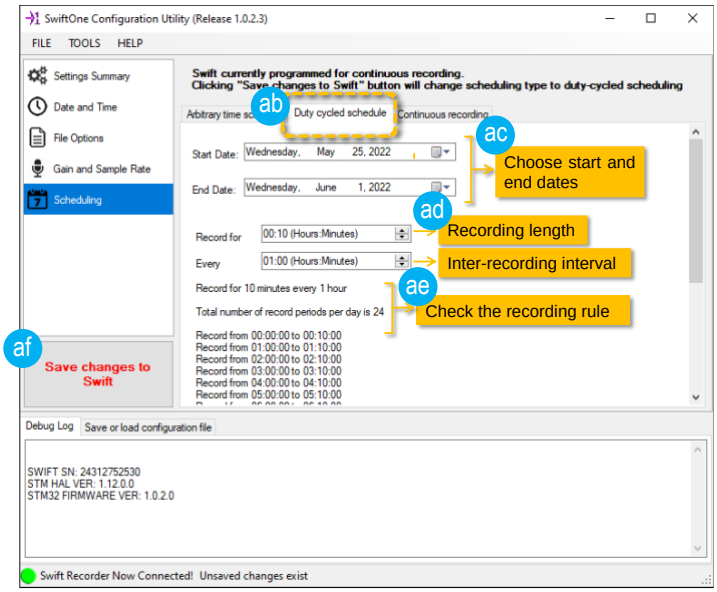
9.i. Continuous recording (x).

- Select start and end dates for continuous, non-intermittent recordings between these two dates (y;z).
- To commit changes, don't forget to click the "**Save changes to Swift**" button (aa).



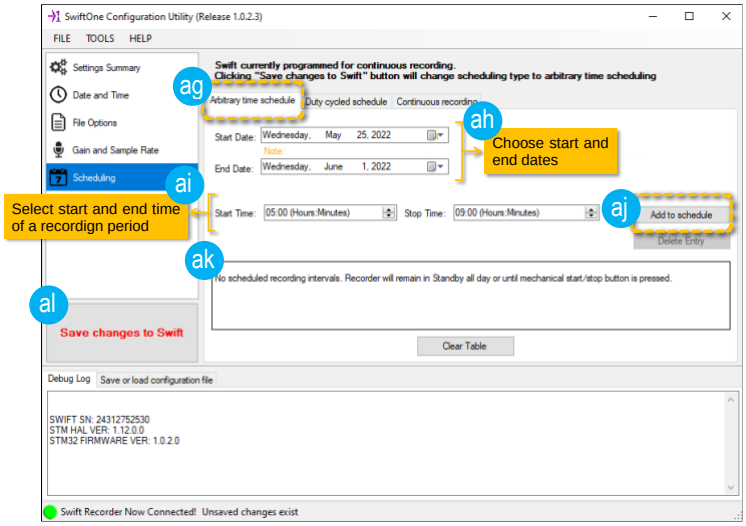
9.ii. Duty cycle schedule (ab).

- Define a set of rules to record audios between the start and end dates (ac).
- Choose the duration of each recording and the interval between recording events (ad).
- Recording rule and number of recording periods per day will be automatically updated (ae).
- To commit changes, don't forget to click the "**Save changes to Swift**" button (af).

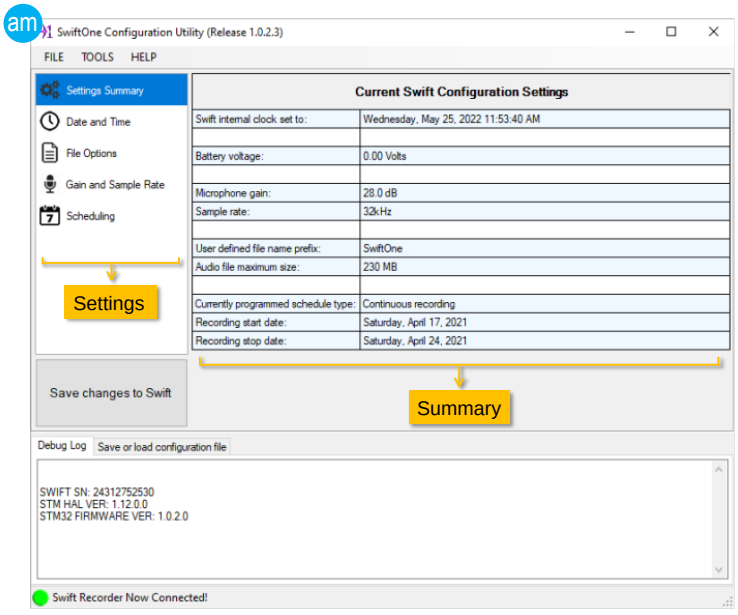


9.iii. Arbitrary time recording (ag).

- Build a table of customized daily recording periods between the start and end dates (ah).
- Create your first recording period by selecting start and end times (ai) and clicking "Add to schedule" (aj).
- The period is added to the recording table (ak).
- Add as many recording periods as necessary.
- To commit changes, don't forget to click the "**Save changes to Swift**" button (al).

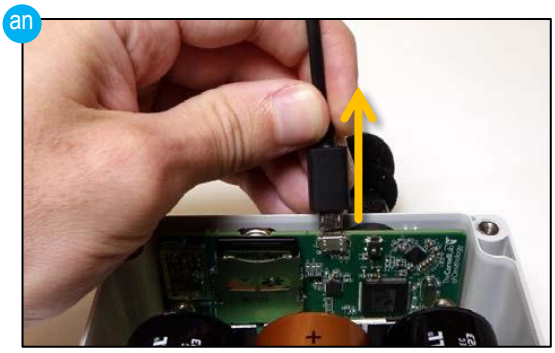


- Before unplugging from the recorder, it's a good idea to check the 'Settings Summary' panel (am) to review all the settings that were recently saved to the device.



10. Unplug the micro-USB connection from Swift (an).

an

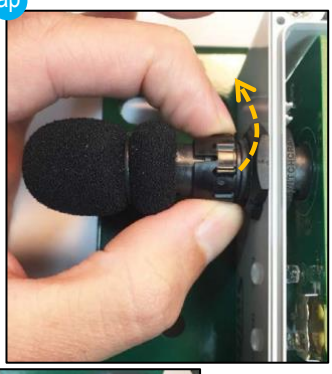


11. Connect the microphone.

- Locate the inverted U-shaped dip both in the microphone and at the connector and insert the microphone in the same orientation (ao).
- Push the two halves firmly together. Rotate the threaded sleeve clockwise direction until it locks into place (ap).

ao

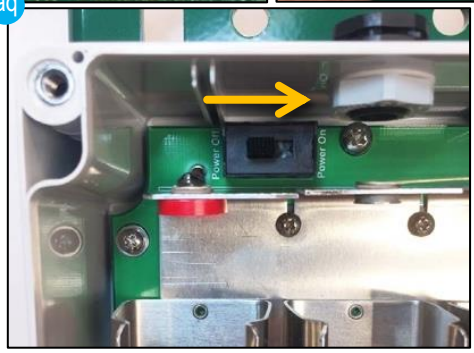
ap



12. Turn SwiftOne on (aq).

- Locate the switch inside the enclosure and turn to the position “ON”.
- The blue LED will blink rapidly at first and then will start to flash every 3 seconds.
- If the recording schedule includes the time the SwiftOne is turned on, the middle green LED will start flashing, indicating that the unit is recording.

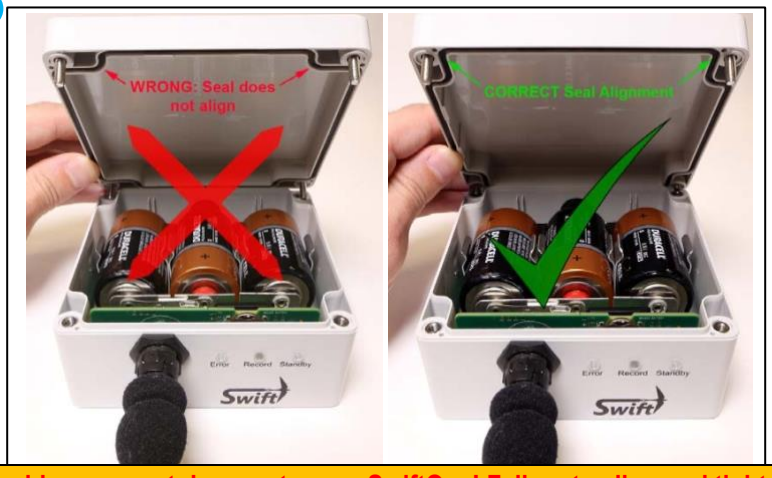
aq



13. Secure the lid.

- Attention is required to correctly attach the enclosure lid.
- Make sure that the rubber gasket in the lid follows the contour of the plastic ridge along the lip of the lower half of the enclosure (ar).

ar



Avoid permanent damage to your SwiftOne! Failure to align and tighten the lid correctly will affect proper sealing and facilitates water intrusion.

- Tighten the four lid screws to attach the lid (as).
- **They must be firmly hand-tightened with a similar amount of torque applied to each screw**.
- Do not overtighten the screws.

14. Deploy the SwiftOne recorder in the field.

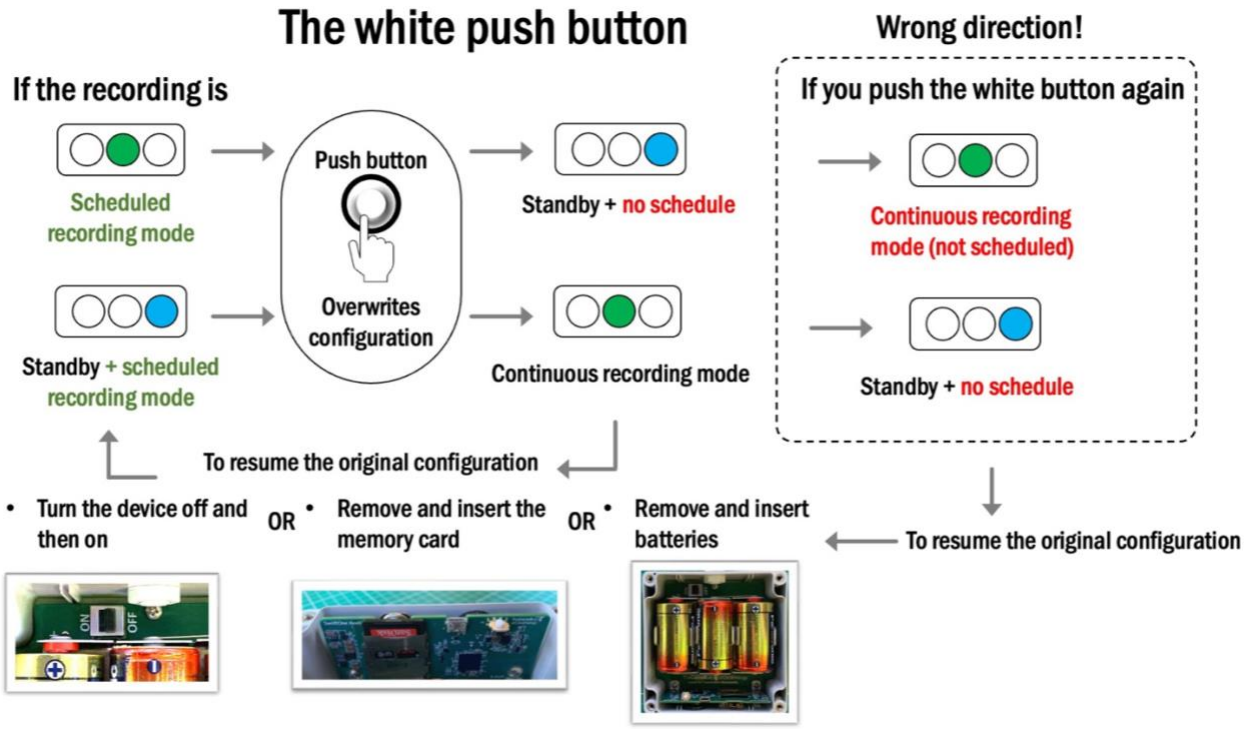
- The microphone should be pointing down. This reduces the chance of the microphone getting damaged by external debris (at).
- Strap the recorder to a tree or post (au).
- If using a tripod or similar, use the threaded hole in the metal base plate.
- Make sure the strap is tight. Secure the loose end of the strap to avoid unwanted noise to recordings.

15. Record a voice memo.

- Place the keychain magnet between the record (green) and standby (blue) LEDs (av).
- Notice that the blue and green LEDs will blink simultaneously (ax).
- Leave the voice memo (maximum 2 minutes).
- Use a checklist that includes:
    - Name of person doing deployment
    - Project
    - Time (including time zone)
    - Date
    - Location name
    - Latitude/longitude or UTM coordinates
    - Site number
    - Equipment ID and model
    - SD card number
    - Site description
    - Notes or comments
- You can leave several voice memos.

APPENDIX A. THE WHITE PUSH BUTTON

The diagram below explains how to use the white push button to properly stop recordings and replace batteries and memory cards.



APPENDIX B. PREVENTING WATER DAMAGE

Numerous users have water coming into their recorders. The following tips can prevent water intrusion to a SwiftOne, which might cause permanent damage to the electronic components.

- On the underside of the lid, you will find a black rubber gasket that runs around a channel. This gasket forms the watertight seal when the lid is attached. (1) Inspect the seal to ensure there are no particles of dirt or debris that may cause it from sealing correctly. (2) Make sure there are no twists in the gasket and that it is lying flat in its channel.

- Do not open the enclosure lid when you're outside in the rain. If rainwater or moisture gets into the enclosure when the lid is removed, it will be sealed inside when the lid is secured to the enclosure again. This can be damaging to the electronics. Only remove the lid when there is no chance of rainwater entering the enclosure.

- Make sure the lid is attached correctly. It's important that the lid is oriented correctly, and all four screws are hand tightened with equal pressure. For more information, check the SwiftOne training video. This is talked about in our SwiftOne training video.

- In cases of very wet weather, it can help to run a strip of Duct Tape or similar around the seam where the lid and enclosure come together. In other words, once the lid is screwed on, a piece of tape is run around the outside of the enclosure to cover the seam.