SpikeGadgets

Logger Dock

V1

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Logger Dock

Introduction

When running cable-free recordings, the Logger Dock is a powerful asset for streamlining your experiments. In addition to being compact and affordable, the ability to start/stop recording on multiple headstages synchronously makes it the perfect tool for high-throughput assays.

The logger dock has three primary functions:

- **Acquisition**: Wirelessly start and stop your assays with the logger dock through *Trodes* while recording environmental events using up to 3 digital and 1 analog inputs.
- **Data offload**: Using the microSD card slot (for the HH128) or the mL32 port, quickly offload recorded neural data and seamlessly merge with environmental data for export and analysis.
- **Charging**: While offloading data, the dock will also charge your batteries (configuration available for external batteries used with HH128) to make sure you can get back to recording in the blink of an eye.

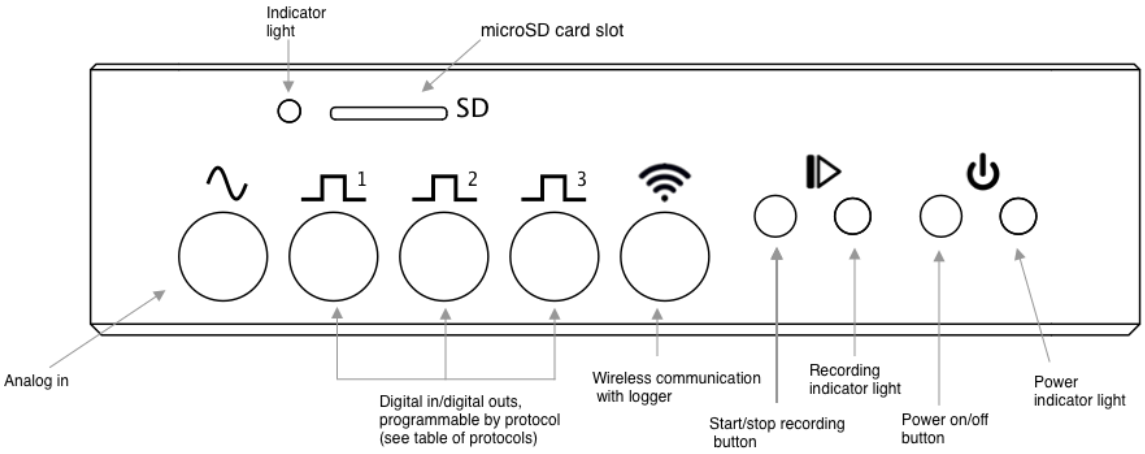
The Logger Dock also supports the SpikeGadgets ECU for environmental configurations that require up to 32 digital and 8 analog inputs, and 32 digital and 4 analog outputs.

Logger Dock specifications

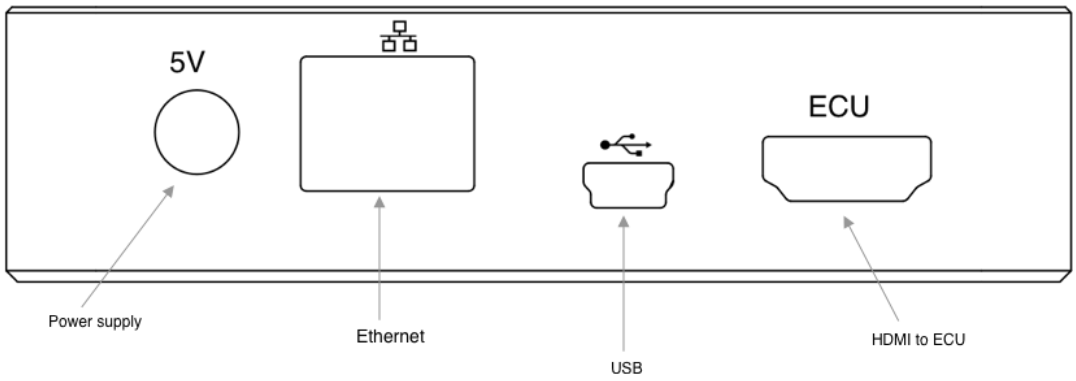
Dimensions	97 x 80 x 25 mm
Connecting Cable	USB
Compatible with	miniLogger 32, HH128, custom loggers
Synchronization range	15 feet
Charging time?	~1 hour, varies based on configuration
Upload speed	25 MBps
Power	5v linear connector
Environmental	1 analog i/o, 3 digital i/o

Controls and Indicators

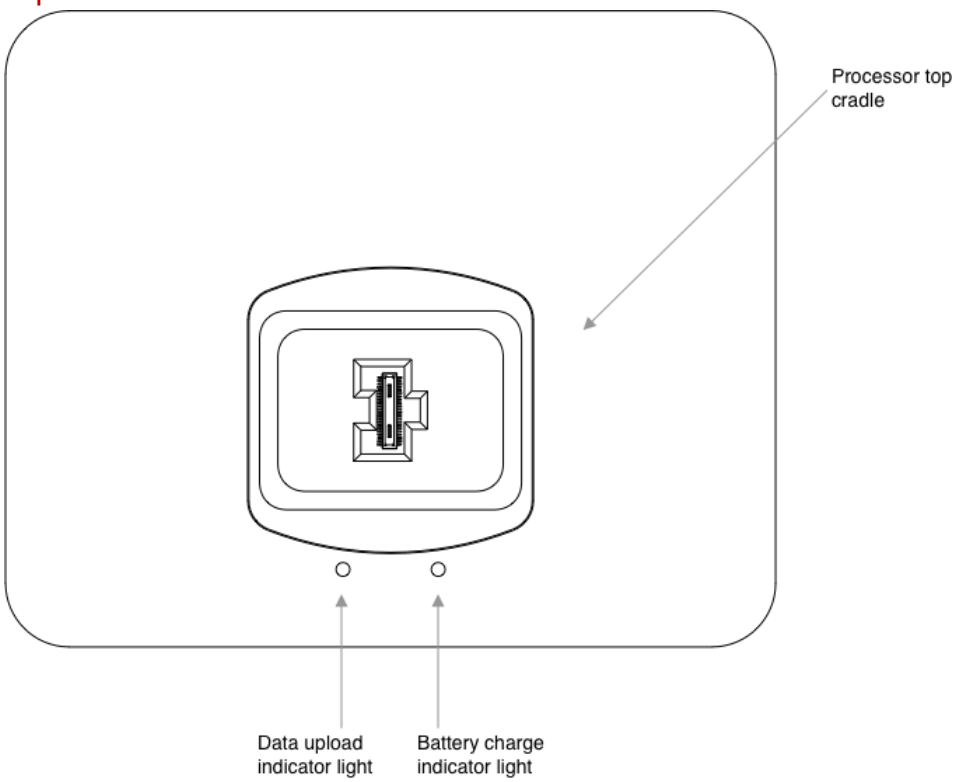
Front



Back



Top



LED Indicators

Indicator	Location	Color/Pulse	Meaning
Battery	Top	Red	Battery is charging
	Top	Green	Battery is fully charged
Data upload	Top	Green- blink	Data is uploading
	Top	Solid blue	Upload complete
	Top		

Recording	Front	Red	Start command from computer received, recording
Recording	Front	Off	Recording is stopped
SD card	Front	Fast red blink	Error mounting or reading microSD card
SD card	Front	Slow green blink	Reading/writing microSD card
SD card	Front	Solid blue	MiicroSD card detected and mounted but no activity
SD card	Front	Off	No microSD card inserted

Setup

Checklist:

- Logger Dock
- 5V power supply
- Antenna
- USB cable
- Datalogger GUI installed on your computer: https://bitbucket.org/mkarlsso/trodes/downloads/
- miniLogger 32 or HH128 headstage

Power

To turn the Logger Dock on, make sure the 5V power supply is plugged in and briefly press the Power button. To turn off, press the power button down for 2-3 seconds until the system shuts off.

Initial Configuration

Ensure that the data-logging headstage and the Logger Dock are set to the same sampling rate, either 20kHz or 30kHz. Typically both are shipped out at a default 20kHz sampling rate. To check or change the sampling rates connect the Logger Dock with the datalogger headstage plugged in to a computer and run the

Datalogger GUI. At the top of the window select, Edit logger config to change the sampling rate on the headstage and Edit dock settings to change the sampling rate of the Logger Dock.

Charging Processor Battery

miniLogger 32

To charge the miniLogger 32, place the processor top on the top of the Logger Dock itself. For simultaneous charging and data upload, the Logger Dock should also be connected to a computer via a USB cable.

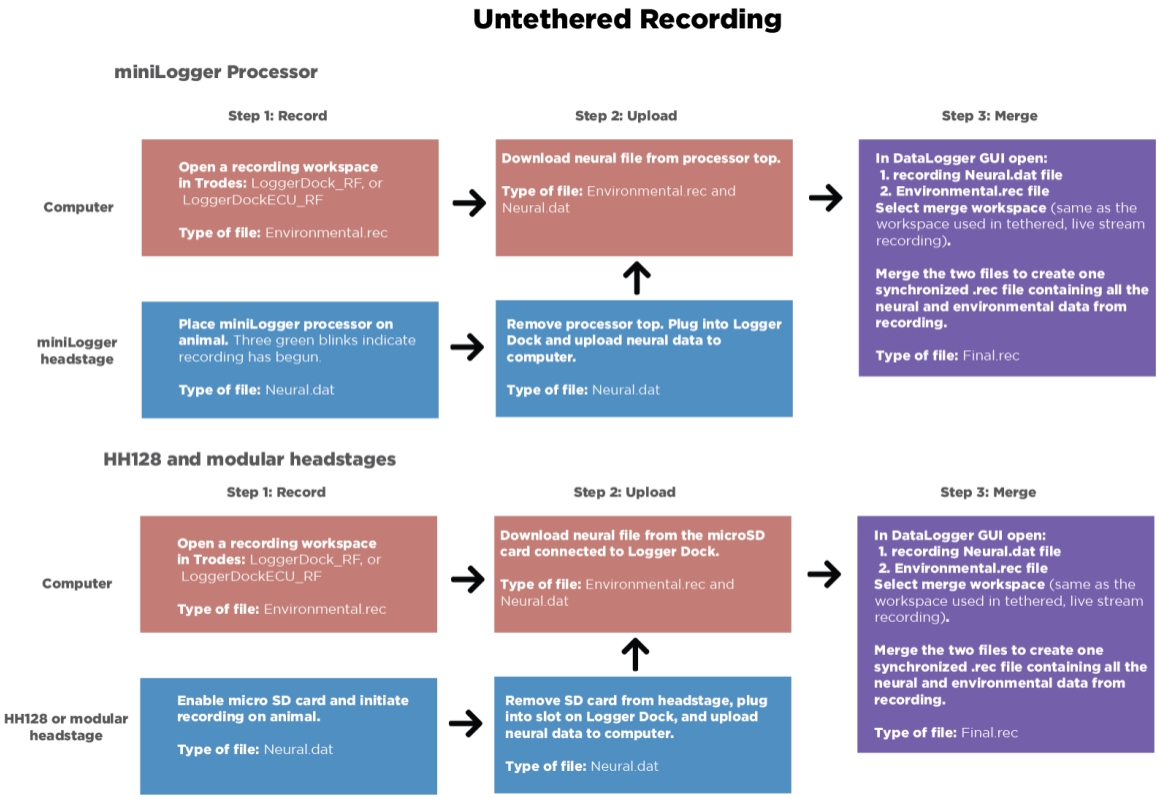
Figure 1 miniLogger 32 charging on Logger Dock

HH128 and other data loggers

For headstages where the battery is not built into the logger top, simply remove the battery from the headstage and plug the white connector into the corresponding white box on the top of the Logger Dock.

Figure 2 Battery charger for HH128 and other data loggers

Workstations



For datalogging there are two workstations needed:

1. The workspace used to collect environmental data (from the docking station) during recording.

2. The workspace that will define the final merged file containing the environmental data and the neural data from the logger (we call this the merge workspace.

The docking workspace should be used during the recording and the merge workspace is the file that should contain the spiking configuration.

Alternate option: To run the merge as a command line tool for greater flexibility follow the instructions here:
https://bitbucket.org/mkarlsso/trodes/wiki/SDFunctions

Offloading Data

miniLogger 32

After a recording session, with the Logger Dock connected to a computer via a USB cable, place the processor top in the cradle of the Logger Dock. Proceed with data extraction using the DataloggerGUI or scripts (see: https://bitbucket.org/mkarlsso/trodes/wiki/DataLoggerGUI).

HH128

After a recording session, with the Logger Dock connected to a computer via a USB cable, remove the microSD card from the HH128 and insert into the slot on the front of the logger dock. Proceed with data extraction using the Datalogger GUI or scripts.

Acquisition mode

To record, open the docking station workspace. Once the workspace is open, select *Connection>Source>SpikeGadgets>Dock(USB)*. You should see a message at the bottom of the window verifying connection to the MCU.

Next, select Connection>Stream from source to start streaming data from the docking station. This will also initiate a radio command from the docking station to the headstage to start logging data to the SD card.

To record environmental events, create a new recording file from the Trodes menu (*File> New recording*) and then start recording (*File> Record*). Then stop the environmental recording (*File> Pause*) and close the recording file (*File> Close file*). To stop recording on the headstage, navigate to (*Connection> Disconnect)*.

Note: The Logger Dock enables local recordings to your wireless headstage's microSD card only. For live streaming to check channels, connect to the MCU.

Uploading Data

Then, plug the processor top into the docking station and use the Data Logger GUI (see instructions here: https://bitbucket.org/mkarlsso/trodes/wiki/DataLoggerGUI) to transfer the neural data to your computer and merge the data with the environmental record.

Update Firmware

Please contact the SpikeGadgets team on your lab's private channel for support updating headstage firmware with the Logger Dock.

Troubleshooting

About SpikeGadgets

SpikeGadgets is trying something new. Our hybrid approach is to design and sell powerful hardware that interfaces with an open-source software platform supported by a large community of scientists and developers. Our goal is to support the efforts of the open-source community in a commercially-sustainable way.

Technical Support

If you would like technical support, please email us at support@spikegadgets.com.