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MANUAL V2

Submitted by mario on Tue, 09/10/2019 - 11:16

USER MANUAL

PLEASE NOTE THIS MANUAL IS FOR NEW V2 GECHO, THE MANUAL FOR OLDER V1 IS [HERE](#). THESE TWO MODELS LOOK SIMILAR BUT DO NOT HAVE MUCH IN COMMON; WHAT YOU SEE BELOW NO LONGER APPLIES TO V1.

THE WOODEN BOXED VERSION

Just like geckos, **your synth likes to stay warm and dry**. The box is hand-made from real trees, and therefore it reacts to the humidity in air (which can be a problem during the colder months in some places). If the wood accumulates moisture it may warp and expand. To avoid irreversible damage, please store your loopsynth at a dry and warm place, such as where the heating is on during the winter, instead of the attic or basement.


INSERTING BATTERIES

The most common model runs on three AA batteries. You can use rechargeable AA batteries (Ni-Cd, Ni-Mh, Ni-Zn) but **they will not be charged inside the device** when plugged to USB (as it does not "know" what batteries were installed or if they are rechargeable at all). You need to take them out and **charge in a dedicated charger**. If your unit only has one AA slot, then it runs on a rechargeable 14500 cell instead.

CAUTION: If your unit supports Li-Ion 14500 cells, as in the video below, do not confuse rechargeable Li-Ion with non-rechargeable "primary lithium batteries" with Li-SOCI2 chemistry that work at similar voltage (e.g. 3.6V), such as Xeno Energy

XL-060F or SAFT LS14500. The unit will power up but attempt to charge such non-rechargeable cell can be very dangerous.

THESE "14500" BATTERIES ARE NOT RECHARGEABLE!



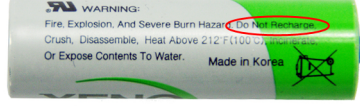
Wrong voltage
Doesn't say Lithium-Ion

Xeno Energy XL-060F AA 3.6V Lithium Battery
by Xeno Energy
★★★★☆ 8 ratings | 4 answered questions
Amazon's Choice for "3.6v aa lithium battery"


Available from these sellers.

- Eagle Picher LTC-17C, Eternacell T06/41, Eternacell T06/51, Maxell ER6#5TC, NSN6135-01-301-8776, NSN6135-01-358-7471, Saft LS14500, Saft LS14500BA, Saft LS14500C, Saft LS6, Saft L56BA, ShockWatch, ShockLog 208, Siemens 6ES5980-0AE1, Siemens 6ES7110-0A00, Tadiran TL-2100/S Tadiran TL-5104/S, Xeno Energy XL-060F, Zenith 418-0042-00.

Compare with similar items
New (7) from \$7.72



WARNING:
Fire, Explosion, And Severe Burn Hazard. **Do Not Recharge.**
Crush, Disassemble, Heat Above 212 F (100 C),
Or Expose Contents To Water. Made in Korea



Wrong voltage
this means "disposable"

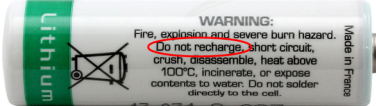
SAFT LS14500 Size AA 3.6V 2600mAh Primary Lithium (Li-SOCl2) Battery
(Li-SOCl2) Battery
★★★★★ 1 review
ASK a question

SAFT LS14500 Size AA 3.6V 2600mAh Primary Lithium (Li-SOCl2) Battery - More

\$8.95

- Buy 10 for \$7.95 each and save 12%
- Buy 50 for \$6.95 each and save 23%
- Buy 100 for \$5.95 each and save 34%

ADD TO CART Qty: 1



WARNING:
Fire, explosion and severe burn hazard. **Do not recharge, short circuit, crush, disassemble, heat above 100°C, incinerate, or expose contents to water. Do not solder directly to the cell.**
Made in France

For instructions about installing a Li-Po cell (if your unit has a wire terminal instead), see [this guide](#).

If your unit has a complete enclosure, there is a sliding door at its bottom side for replacing batteries. It might not move smoothly, mainly when the unit is new. This will get better over time as you use it, but in the meantime there is a simple trick to it. If the door twists a little bit sideways, it will get stuck. Leaning the unit against a flat surface helps, but put something soft under (like a newspaper) to not scratch anything. Puller is helping to get the door into the notch, but it is not a good idea to pull the door all the way only by the puller as it may snap, also it is very hard to keep the door straight, instead pull the door with your fingers.

How to open and close battery door



POWERING ON

If you intend to use external power, you need to **set the switch to ON before plugging in the USB cable**. This is counter-intuitive, but there is a reason for it, as explained below.

When powered from batteries, use the sliding switch to power the device on and off. When off, it completely disconnects the batteries so no significant energy is drawn. It is perfectly safe to power the board via USB from a standard 5V power source without removing batteries (also to plug/unplug the USB cable while music is playing). This is a good way to extend the battery lifespan.

If your unit has a built in rechargeable battery, you can leave it on USB power as long as you want, the intelligent charging circuit prevents overcharging.

When powering via USB cable, the sliding switch does not turn the device off, instead it changes between normal mode (at ON position), and firmware update¹ mode (at OFF). This setting is "checked" at the time of connecting power (with batteries, after flipping the switch, and if no batteries are present, after you plug in the USB). In firmware update mode no LEDs are active apart from PWR, so the board appears as if it has not started up properly.²

If the unit has successfully powered on, the PWR (power) LED should light up, and RDY (ready) should blink in 0.5sec intervals.

¹The preferred way to load firmware updates is to use a micro-SD card, but flashing the binary over USB would be the only option if the unit got soft-bricked.

²The previous model worked the same way, however you could push the RST button to get out of the firmware update mode; in v2 the RST is not a hardware reset anymore - if it was, pressing it at an inappropriate moment might cause undesired effects, such as corrupt the SD card filesystem.

INSERTING SD CARD

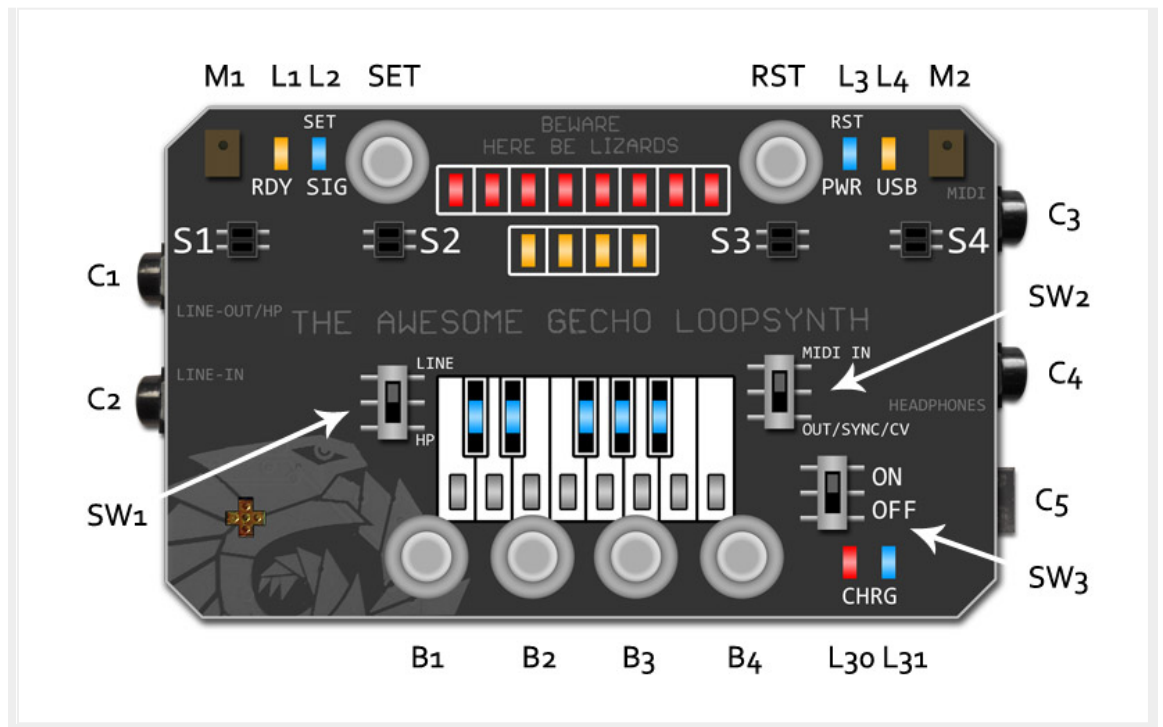
This should be no problem with the acrylic version (explained [here at the end of the build guide](#)), but the micro SD slot in complete unit is recessed deeper. This is because the standoffs holding enclosure together are in the way, they do not allow the back panel to be closer to the PCB board.

The card should be inserted logo facing up, contacts down. The slot has a push-push mechanism with spring; first push locks it, second push ejects it. It is easy to do even with a door key or similar blunt instrument. If the card is fully ejected it is just about aligned with the slot, and if it isn't easy to get out with a knock on the case, then you need to use tweezers. Even better, check out [this neat trick](#) that makes it easier to remove the card (thanks Alex!).

In current firmware, only cards up to 32GB are supported. The hardware should theoretically support larger cards too [and this may be implemented in future](#).

You should not need to take the card out too often, it is mainly meant to serve as a temporary memory space for channels that work with larger chunks of sound (still work in progress). Recorded files will be downloadable over USB (this should appear soon).

INTERFACE EXPLAINED



- M1,M2: Left and right microphone.
- L1: "Ready" LED, slow blink indicates idle state (ready to input a channel number), faster blink indicates recording to micro-SD card.
- L2: "Signal" LED, indicates data or signal received or transmitted over MIDI or other interfaces.
- L3: "Power" LED, glows when unit is powered on. If PWR glows but RDY does not blink, the unit may have booted into firmware update mode instead of normal operation mode.
- L4: "USB" LED, indicates data is transmitted over the virtual serial port.
- SET: Button to start channel (short press after channel number is keyed in), invoke menu (short press when idle) or start recording (long press while playing).
- RST: Button to stop playing (short press) or soft-reset the unit (long press).
- S1-S4: Infra-red proximity sensors, they influence various parameters depending on which channel is running.
- C1: Headphone or line-out jack, function determined by SW1 (up = line-out, down = headphones).
- C2: Line input jack, related to B4 that activates inputs or combinations of.
- C3: Shared jack for MIDI and other signals, function determined by SW2 (up = MIDI In, down = MIDI Out or other function selected by software).
- C4: Second headphone output jack, no alternative function.
- C5: USB connector for powering and eventually firmware update (which can be done with micro-SD card as well). Ensure the **power switch is at ON position before plugging the USB in**, otherwise the unit will start in firmware update mode instead of normal operation.
- B1-B4: Buttons to key in a channel number, control volume and other settings.

- L30,L31: Charging indication, only active in units that use a built-in rechargeable cell. Red = charging in progress, Blue = fully charged.
- SW1: Switch that selects function for C1 jack; up = line level output, down = headphones.
- SW2: Switch that selects function for C3 jack; up = MIDI In, down = MIDI Out or other signals (selected by software).
- SW3: Power-on switch, also selects firmware update mode (as explained above).

SELECTING A CHANNEL

Every channel's code consists of one or more numbers between 1 and 4, so they can be typed on the four-button keyboard. For example, to select channel 12, press buttons 1 – 2 – SET. To stop playing, press RST.

All buttons have alternative function depending on whether you just short press them or hold them for a second or longer (this is all explained in the [settings leaflet](#) and also in a detailed description of each channel where some buttons perform a specific function). For a button combination such as RST+1, hold RST then short press button 1, then release RST.

LIST OF CHANNELS

The available channels vary among firmware versions, [here you can find the one relevant to your unit](#).

SETTINGS AND MENUS

While the most important settings are mentioned on this page, the leaflet that you received with your unit contains many more settings - they are all [explained in detail here](#). You can find [printable version of the leaflets here](#).

INPUT LEVELS

The button 4 during play browses between inputs (or combinations of), as explained in [In-play Controls](#). **When you select line-in without anything plugged in, you will hear buzzing** - that's normal. The [codec chip](#) used in v2 Gecho has an AGC (automatic gain control), that is enabled by default, and it will try to amplify the signal by up to 50dB - and when there is no signal, the interference and noise of empty connector or a loose cable

will be amplified (signal lines act like [antennas](#) so they naturally pick up surrounding electromagnetic waves).

You can disable the AGC or set it to a lower level using "AGC Max Gain" in [In-play Settings](#) and/or [Configuration Settings](#) "AGC level / off". The settings you adjust in the menus are stored in persistent memory (so they are not lost during power off, but can be cleared using channel 4321). The settings accessible during play such as volumes, input levels, input select - also usually stored too (except the input levels as they are likely to require adjustment from channel to channel anyway).

The defaults are stored in "config file" that is located in flash memory on board. They can be adjusted by downloading the config.txt to a SD card using [service menu](#) or by running channel 4222, editing the file, and re-uploading it back to flash ([service menu again](#)). The input levels are represented by parameters AGC_ENABLED, AGC_TARGET_LEVEL and AGC_MAX_GAIN.

LED INDICATORS

As listed in [In-play controls](#), pressing buttons B3 and B4 during play browses through delay lengths and input selects. The selected option is indicated by red LEDs in a pattern that should be easy to recognize.

B3: delay

1	2	3	4	5	6	7	8	
■	■	■	■	■	■	■	■	3/2 (1.5s at 120BPM)
■	■	■	■	■	■	■	■	1 (1s at 120 BPM)
■	■	■	■	■	■	■	■	2/3
■	■	■	■	■	■	■	■	1/2 (0.5s at 120BPM)
■	■	■	■	■	■	■	■	1/3
■	■	■	■	■	■	■	■	1/4
■	■	■	■	■	■	■	■	1/6
■	■	■	■	■	■	■	■	1/8
■	■	■	■	■	■	■	■	1/16
■	■	■	■	■	■	■	■	1/32
■	■	■	■	■	■	■	■	1/64
■	■	■	■	■	■	■	■	4/3
■	■	■	■	■	■	■	■	5/4 (1.25s at 120BPM)
■	■	■	■	■	■	■	■	13k samples
■	■	■	■	■	■	■	■	off (shortcut: RST+B3)

B4: input

1	2	3	4	5	6	7	8	
■	■	■	■	■	■	■	■	both microphones
■	■	■	■	■	■	■	■	line-in, stereo
■	■	■	■	■	■	■	■	all together, stereo
■	■	■	■	■	■	■	■	left mic + right line-in
■	■	■	■	■	■	■	■	left line-in + right mic
■	■	■	■	■	■	■	■	right line-in*
■	■	■	■	■	■	■	■	left line-in*
■	■	■	■	■	■	■	■	right line-in + mic*
■	■	■	■	■	■	■	■	left line-in + mic*
■	■	■	■	■	■	■	■	off (shortcut: RST+B4)

*: the unused stereo line is muted but still receiving sound that may be analyzed for sync signal if the channel supports it. This is a method used for example by Pocket Operators, however Gecho also has a dedicated connector input for handling external triggers (shared with MIDI). This may not yet be fully implemented in the current firmware version.

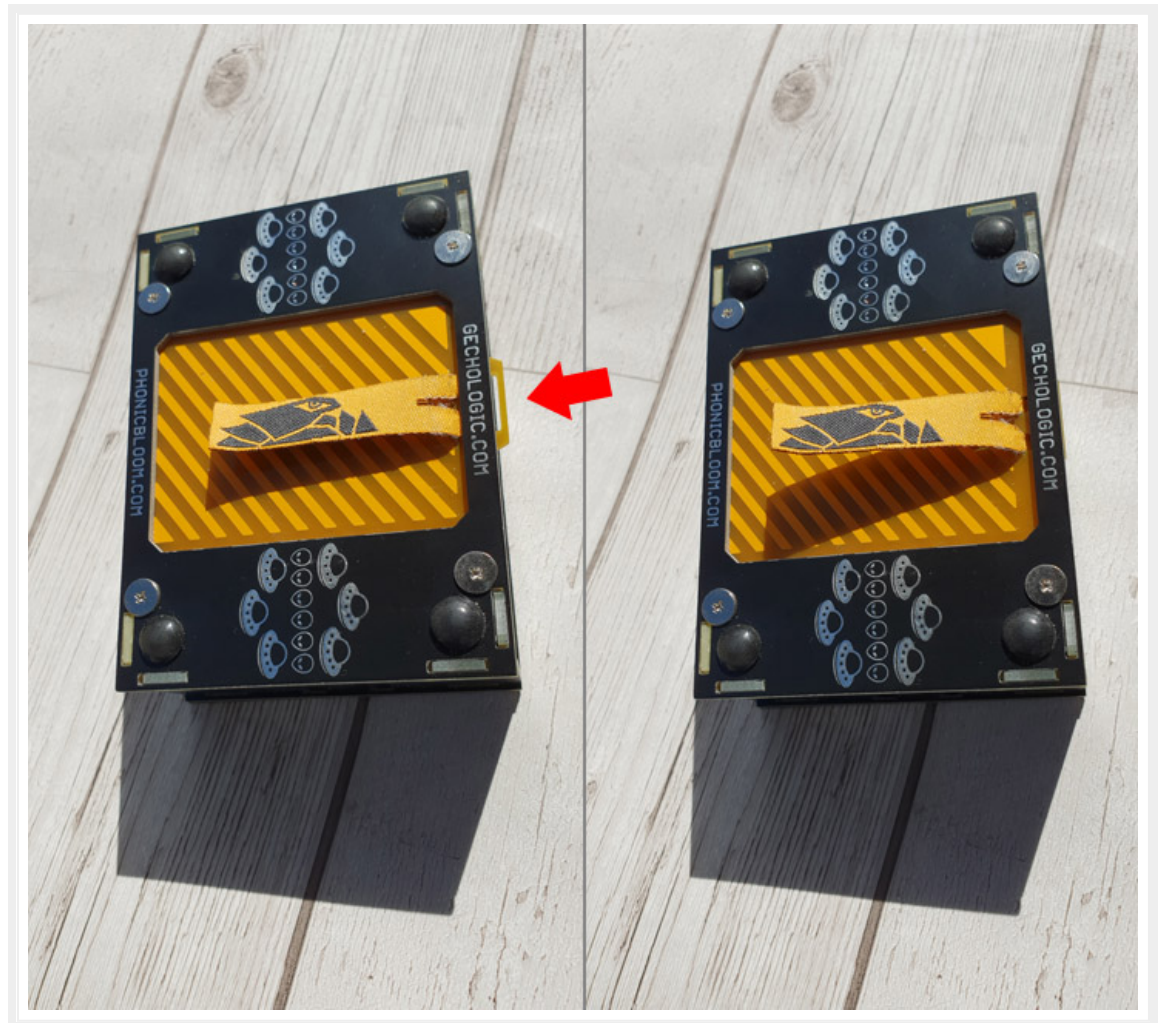
The odd 13k samples delay is there because it is originally used by [Dekrispator on STM32F4 platform](#), it is selected by default when this channel runs (but it can be switched to any other delay, or off - just like in any other channel).

THE POUCH AND THE BOX

As the snap fasteners in the felt pouch protrude inside, we are putting soft pads over the metal bits, to minimize risk of the front panel getting scratched over time. However this may cause the power switch to flip while the unit is inserted into the pouch. It is safer to insert it upside-down, or even the other way round as the bottom side is flat and the pads won't be in the way.



Also, if you have the wooden box for your complete unit, there is only 1mm clearance in between, and the door handle will be in the way - you need to push it in so the door is aligned with the bottom panel precisely.



A FEW THINGS TO KEEP IN MIND

Respect your ears, don't set the volume too loud. It often happens that a combination of inputs creates a sound much louder than average. To make it safer, there is a dynamic limiter (often configured differently in every channel, mainly in those that use 3rd party code). At a certain combination of volumes and signal you can hear it in action; if this represents a limitation, you can reconfigure it (at your own risk).

The distance sensors don't work very well outdoors, especially on a sunny day, unless you're in complete shadow - they are easily saturated by sunlight. Switching to accelerometer control helps here. Surprisingly, the microphones are sensitive to light as well, in models without a complete enclosure this affects sound, depending on what way a certain channel uses the signal.



The wooden box is hand-made from real trees, and therefore it reacts to the environment, especially humidity (which is influenced mainly by ambient temperature). In some countries, it may happen that during cold winter months the box accumulates moisture from air and the wood warps and expands. The box is glued together with a very strong glue but the forces exerted by the wood are, in this regard, effectively infinite. To avoid permanent damage, please store the box safely, at dry and warm enough place.

IMPORTANT INFORMATION, PLEASE READ CAREFULLY



The device contains many small parts – screws, silicone pads and buttons that can be removed by force applied sideways. Also, the wooden box contains small magnets that may be fatal if swallowed. The inner enclosure has sharp corners. It is made of fiberglass (just like the PCB board) and may contain residues of fine dust which is irritant if inhaled.

**This is not a toy! At least not for kids! :)
We hope you can share the experience
with them but only under supervision.**

DETAILED GUIDE AT GECHOLOGIC.COM/MANUAL   

Warranty: 2 years. Malfunctioning units are replaced free of charge. We are happy to repair units / replace DIY kit elements damaged by user as agreed on individual basis. This product is provided as is without guarantees or warranty of any kind, either expressed or implied, including, but not limited to warranties of merchantability, fitness for a particular purpose, of title, or of non-infringement of 3rd party rights. Use of the product by a user is at the user's risk.

Credits: The firmware uses [3rd party code/data](#) provided under GNU, MIT, CC or Public Domain licenses.

Made in EU. Board assembled in Poland. Most components manufactured in China. Wooden case hand-made in Slovakia. Completed in Ireland.

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