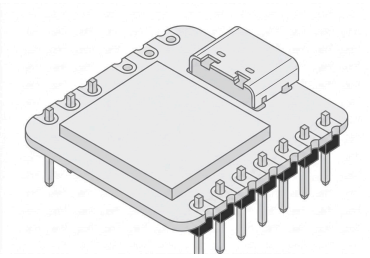


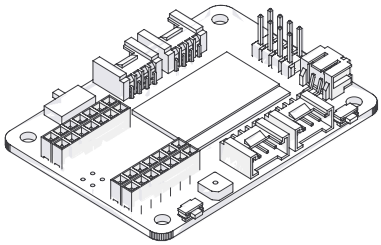
Raily Keyring

Build it, flash it, press it.

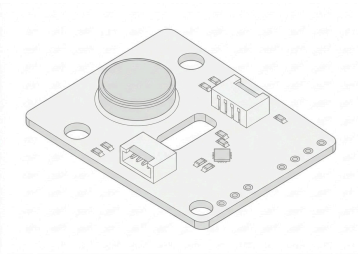
What's in the box



XIAO nRF52840 Sense, pre-soldered



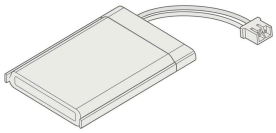
Expansion Board



Haptic motor DA7280



Grove-to-Qwiic cable, 100 mm



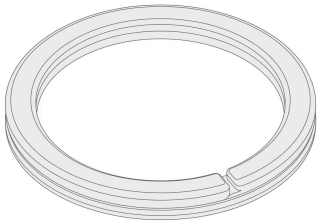
LiPo battery 602030



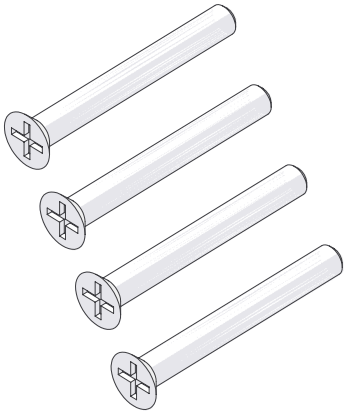
USB-C data cable



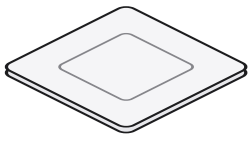
Printed case



Split ring, 25 mm



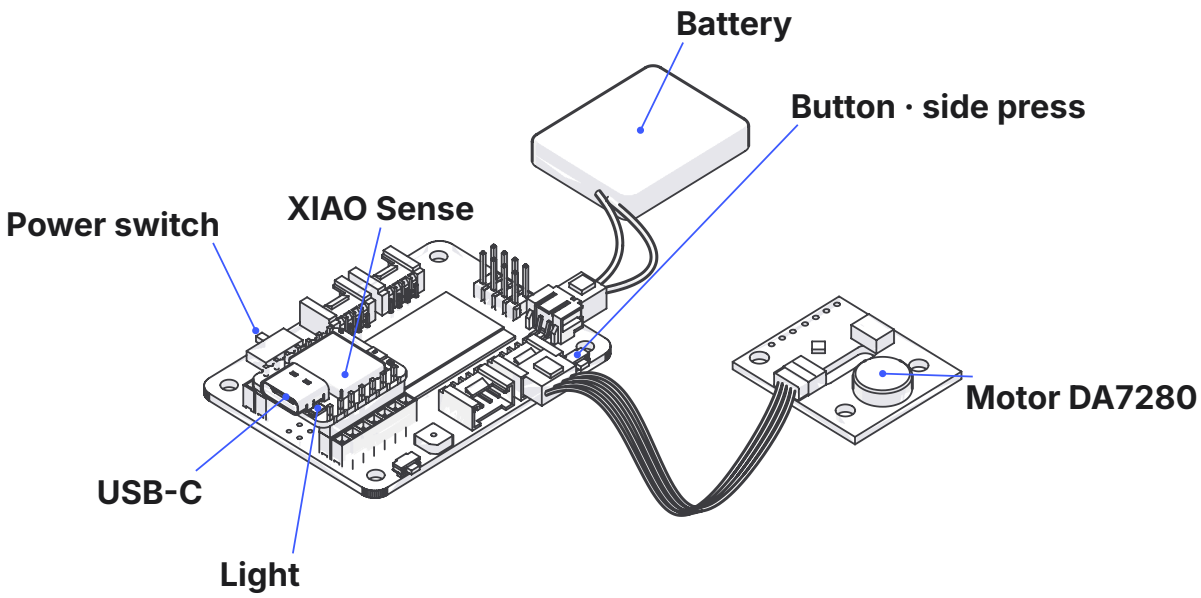
M2 × 16 countersunk self-tapping screws, 4



NFC sticker, 16 × 16 mm, on-metal

No soldering: the XIAO comes with its pins, and every cable plugs in. Parts not to scale.

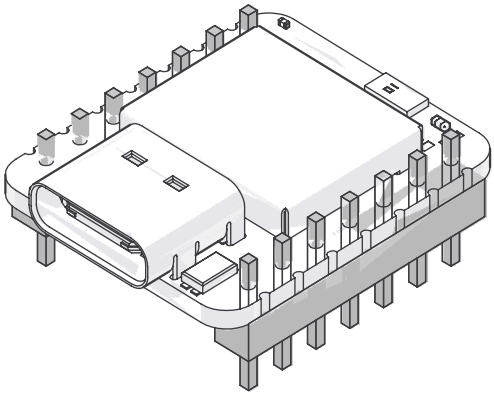
What you're building



Everything connected on the bench, before it goes into the case.

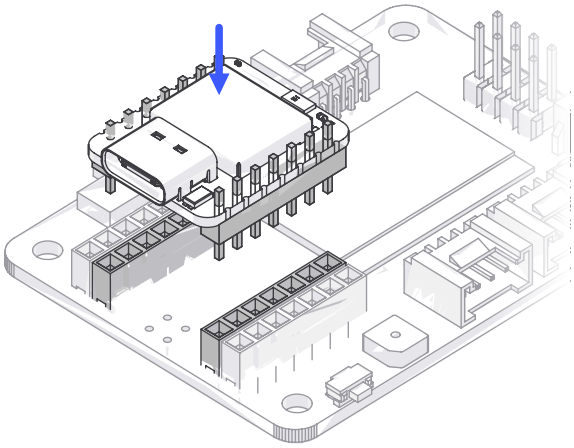
The pages that follow build it in this order: board, motor, firmware, app, battery, case.

Onto the board



1

The XIAO Sense comes with its pins already soldered. There is no soldering in this build.

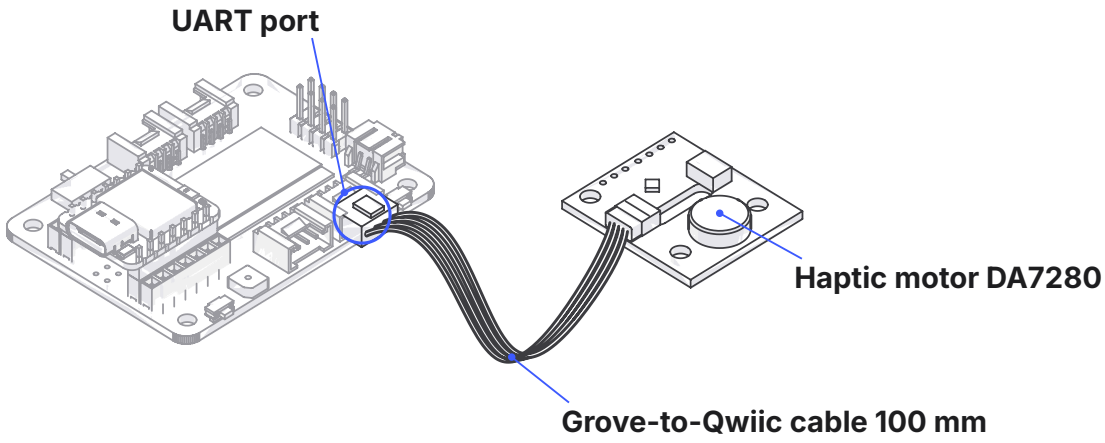


2

Push it into the two inner rows of sockets, all the way down. USB-C at the edge without the screen.

Before the cover goes on, the spring pins under the USB-C end lift the XIAO slightly. That is normal.

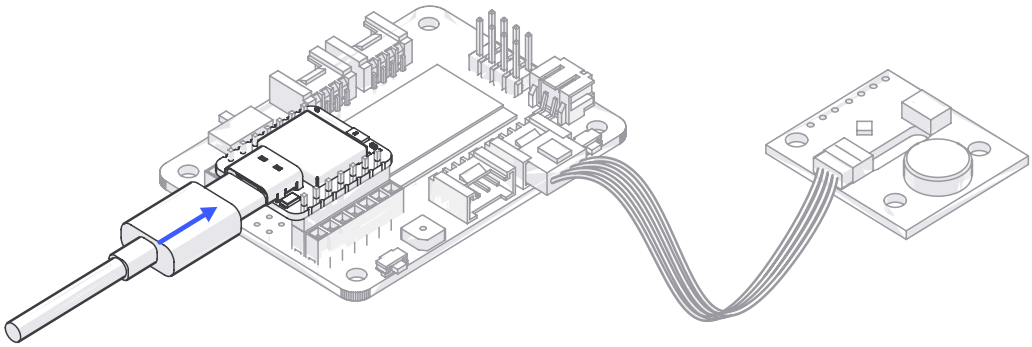
Motor and power



3

Plug the cable’s Grove end into the port marked UART and its small Qwiic end into the motor.

Both plugs fit one way only. On the bench the motor lies loose; in the case it sits on its shelf (see «Into the case»).



4

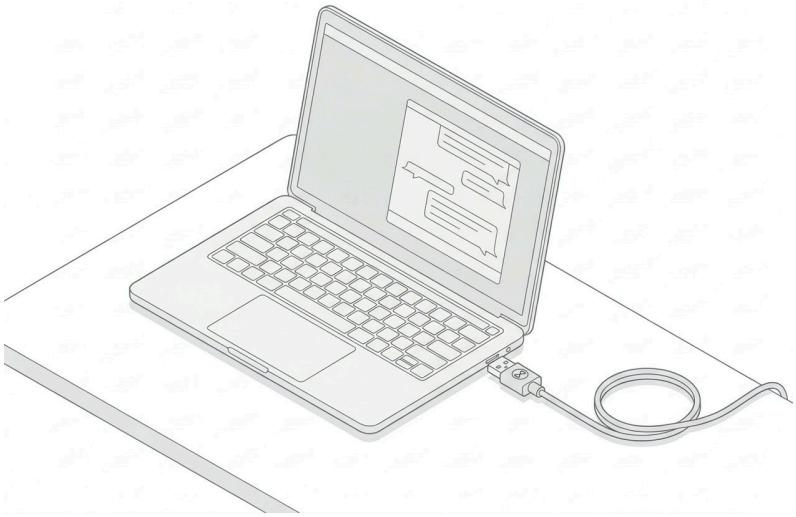
Connect USB-C to your computer. No battery yet.

Use a cable that carries data. The battery waits until page 8.

Flash

Open Claude Code, Codex or Cursor and paste:

Flash my Raily Pin using
https://github.com/railyai/raily-pin

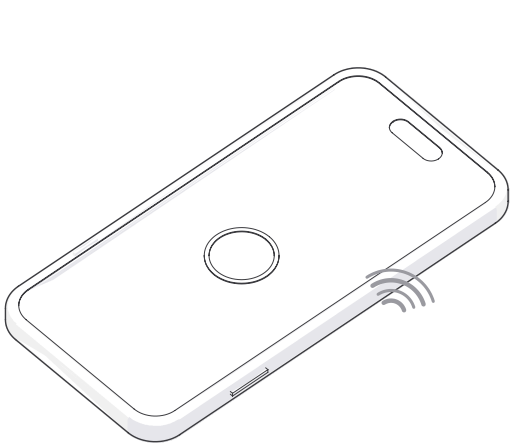


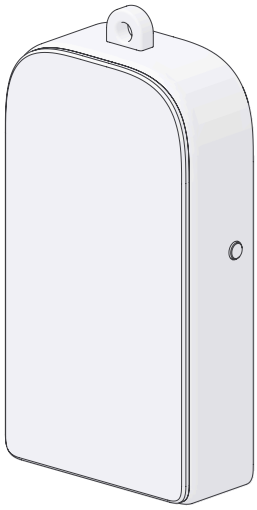
5

Your AI assistant installs the firmware and checks it.

It explains each step and asks before it writes to the board. No assistant? See «Flash by hand» at the back.

Make it yours

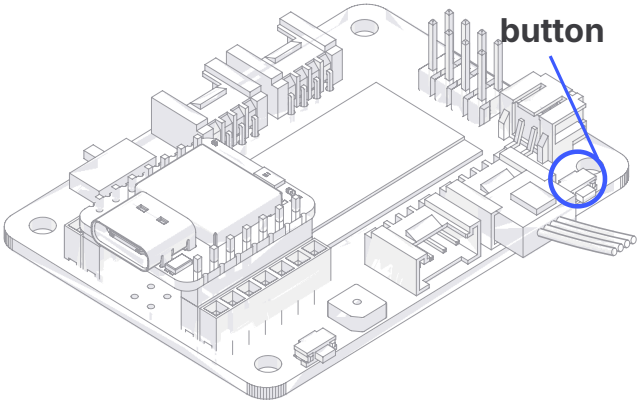




6

Install the Raily Device app and sign in.

Download link: devices.raily.si/build.

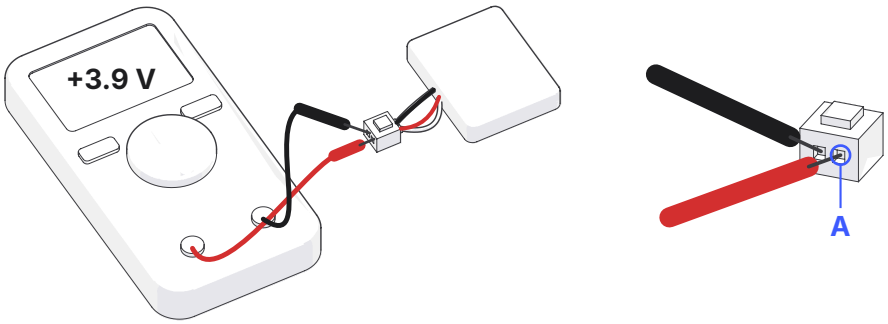


7

Press the button on the board edge. The app binds the keyring to you.

Then tap Pair in the app and confirm on the iPhone: without it, presses do not reach the phone. Test on USB: each press shows up once. The motor starts working with the firmware your agent installs.

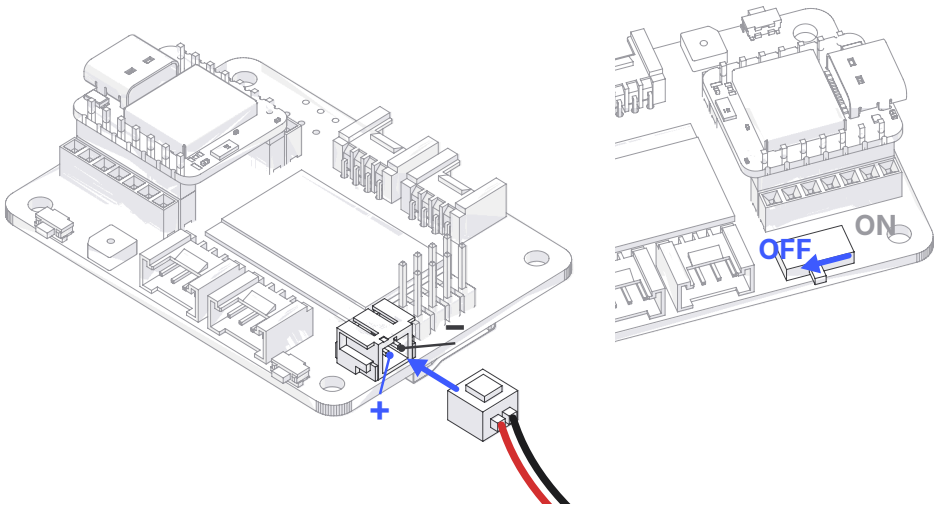
Battery



8

Check + with a multimeter first.

Red probe on contact A reads +3.9 V: A is plus. A must meet the + printed by the socket. Reads −3.9 V? The red probe is on minus: move it to the other contact and check for +3.9 V.

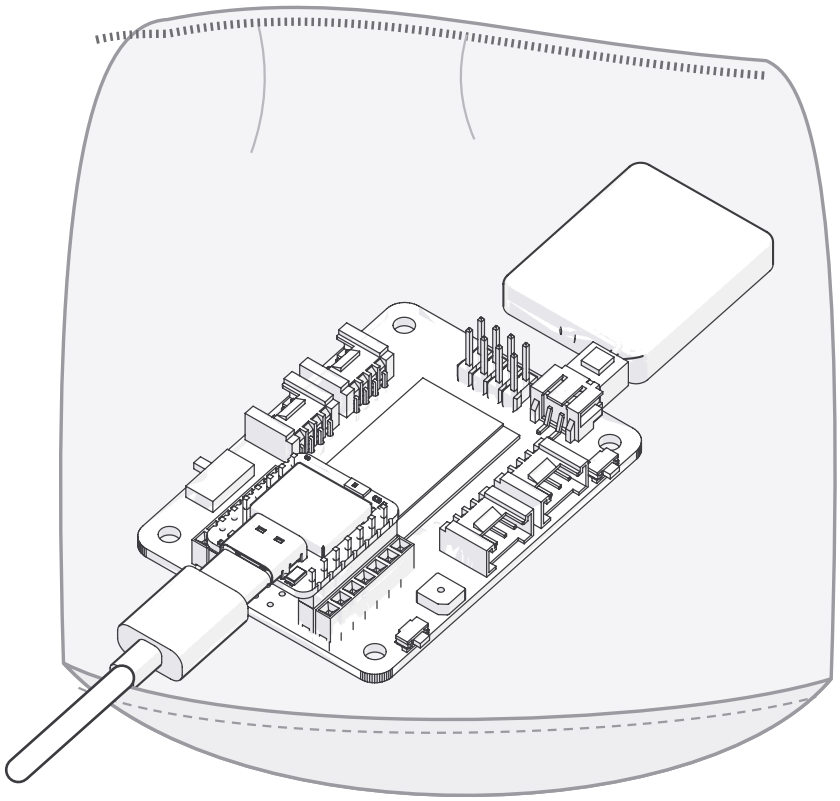


9

Switch OFF, plug in the battery, switch ON.

Red wire to +. Push the plug by its body, never by the wires.

First charge



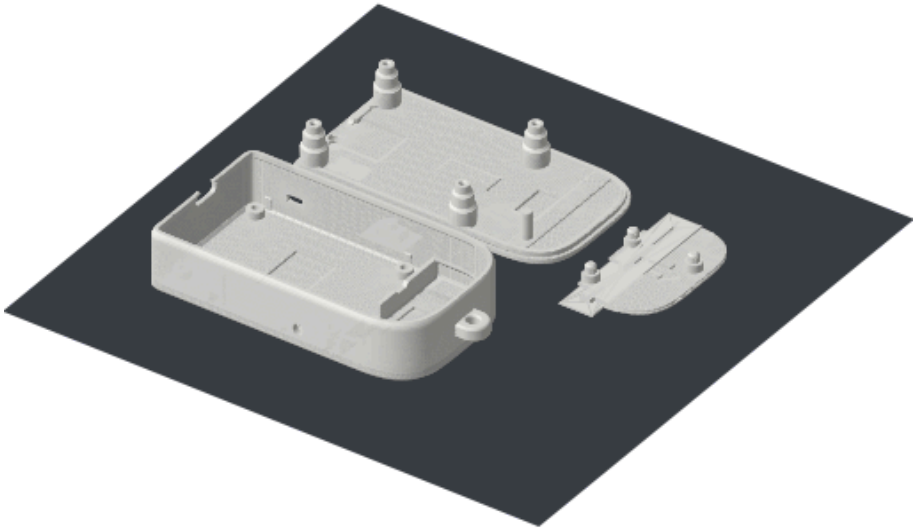
10

Watch the first charge for 30 minutes, outside the case.

Board and battery in a LiPo-safe bag, the USB-C cable in the XIAO. No smell, no swelling, no heat.

Print the case

Skip this page if your kit came with a printed case. One plate, one print: the cover (one piece), the tray with its key loop, the side button cap and the motor shelf. About 1 h 55 min and 35 g of white PLA on a Bambu Lab A1 mini.

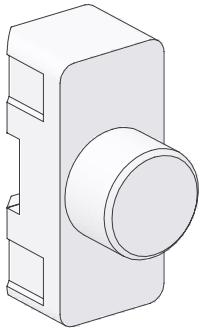


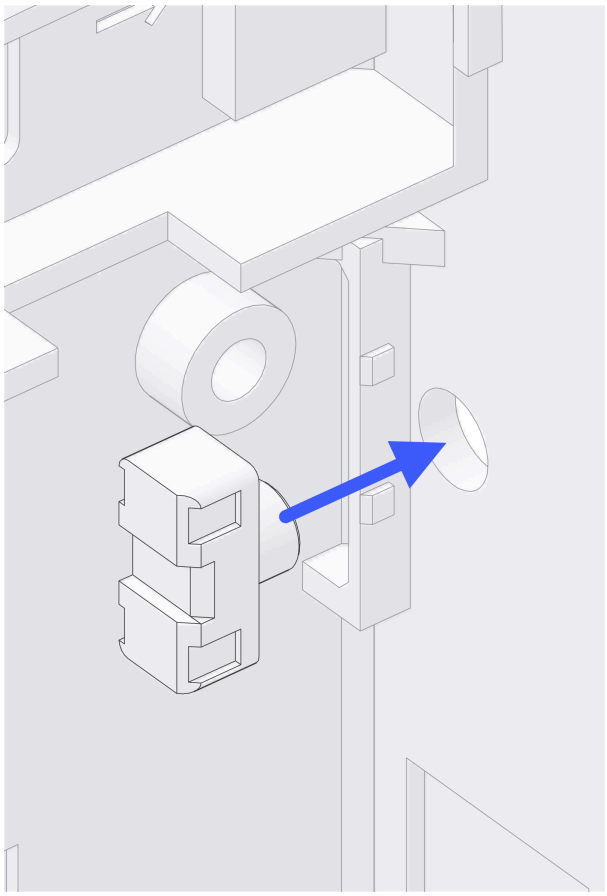
In front, the tray with its loop; behind it, the cover with its four screw pillars; on the right, the motor shelf. The small side button cap prints on the same plate.

- Open the Bambu Studio project from the case download and print the plate as it is: orientation, supports and per-part settings are in the file. Keep auto supports off.
- Other printers: use the STL files. Load the tray and the loop together as one object, the cap and the shelf each with its brim, and the support-enforcer volumes in the same places.

Side button cap

Before you start: switch OFF, then unplug the battery and the motor cable.



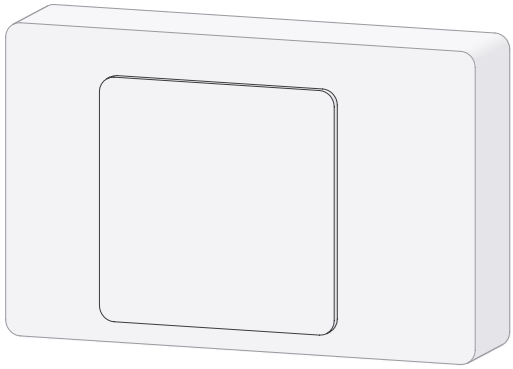


11

From inside the tray, push the side button cap into the hole in the side wall, round stem first, until it clicks and its flat back lies against the wall.

The round stem points out through the hole; the clips stay inside. Fit it first, while the tray is still empty. No glue; either side up. If a thin flat ring is stuck around the cap’s base, peel it off.

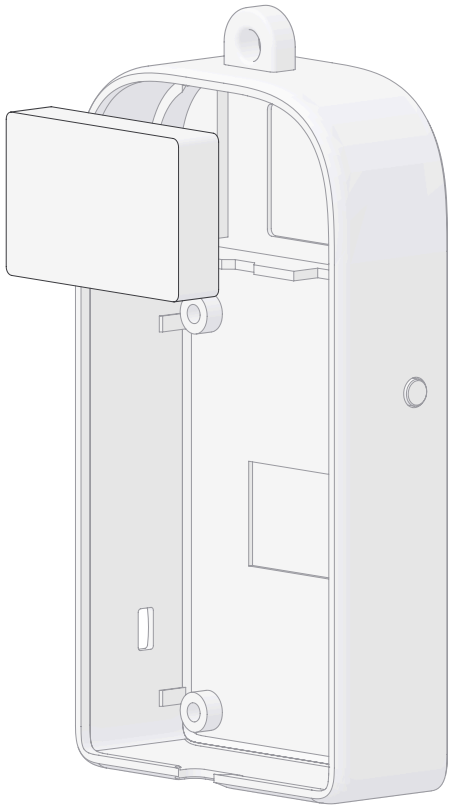
NFC sticker



12

Write your NFC sticker in the app first: Settings → Write an NFC sticker. Then stick it in the middle of the battery's underside, adhesive (ferrite) side on the battery.

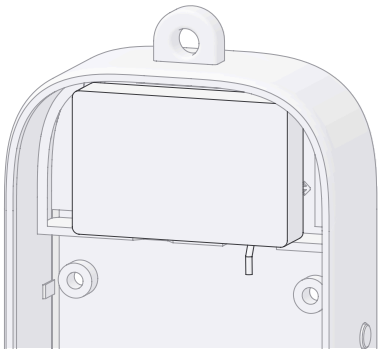
No NFC sticker? It is optional: skip to step 14.



13

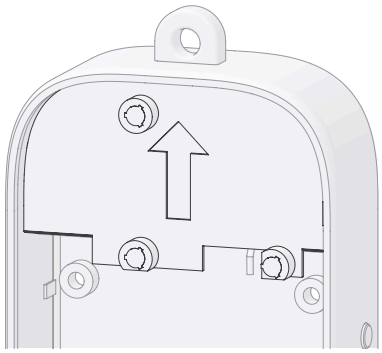
Put the battery in tag side down, so the tag drops into the square pocket in the floor. To check later, tap the back of the device, loop end, with your phone.

Into the case



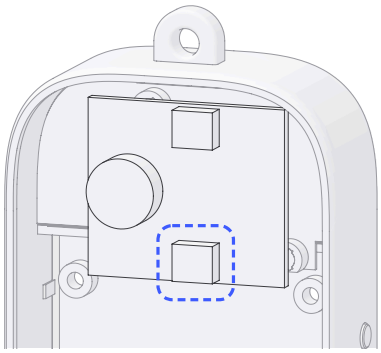
14

Bring the battery lead up through the notch toward the board. Never clamp, tape or glue the battery: it must stay replaceable.



15

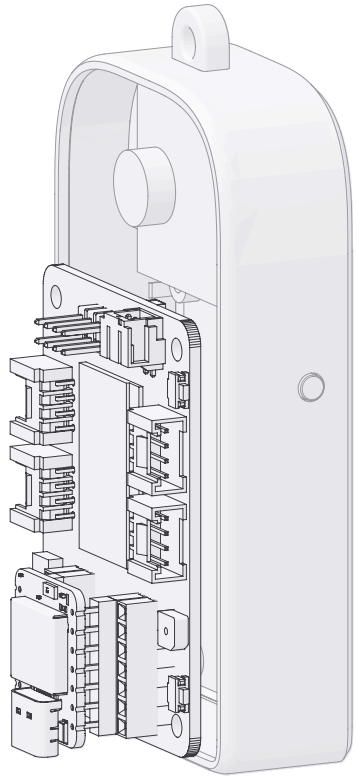
Shelf onto its ledges over the battery, its arrow toward the loop.



16

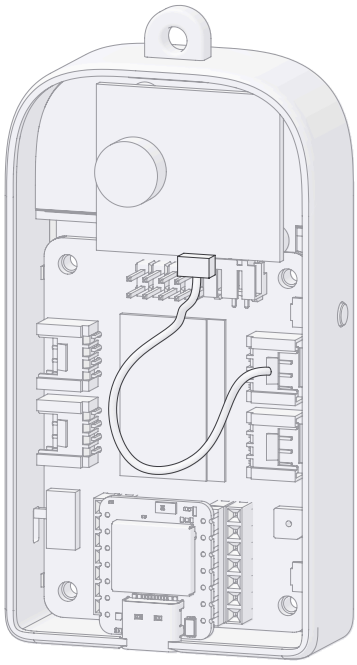
Motor board onto its seat on the shelf, the round motor up. The ringed socket takes the cable’s Qwiic end.

Board, cable and cover



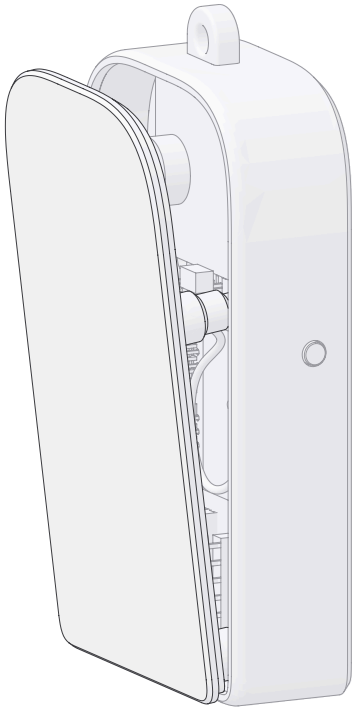
17

Board onto the four standoffs, USB-C in the end window. Plug in the battery lead, switch still OFF.



18

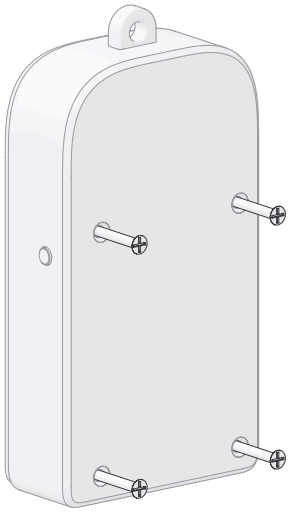
Cable’s Grove end into the UART port, its Qwiic end into the ringed socket on the motor board. Lay the spare length in a loose loop over the board. Nothing is taped to the screen.



19

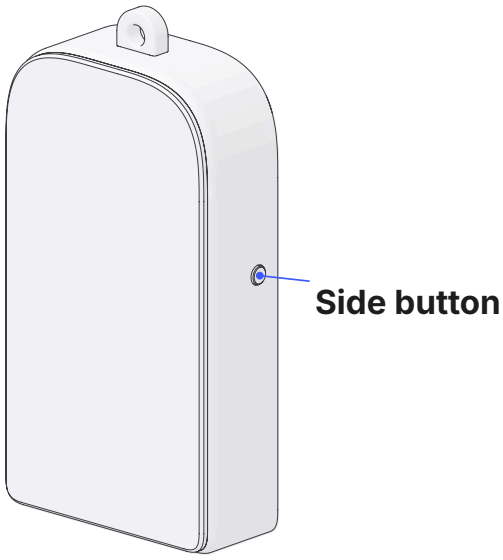
Turn the cover face up and set it on the tray: USB-C end first, then press the loop end down until the rim sits flush.

Screws and done



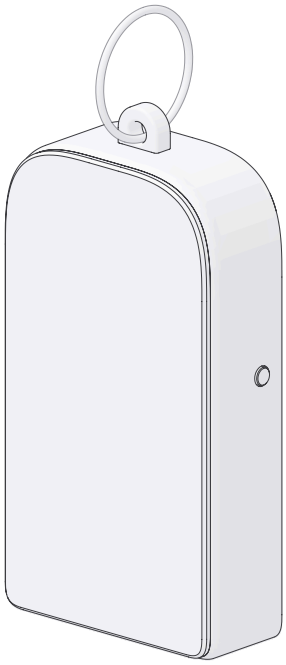
20

Turn it over: four M2 × 16 countersunk self-tapping screws from the back, straight into the pillars. Snug, not tight.



21

Switch ON with a pen tip through the slot on the other long side. Press the side button to use it. The status light shines through the face near the USB-C end.



22

Thread the split ring through the loop.

Important information

Battery polarity

Sellers wire JST-PH plugs differently, so the red wire is not proof. Set the multimeter to V DC and touch the two plug contacts. A positive reading means the red probe is on plus. That contact must line up with the + printed by the board socket. If it does not, stop and do not plug it in. A negative reading means the probes are swapped.

Charging

Buy the 602030 cell only from a seller that provides its UN38.3 test summary. Charge through USB-C from a CE-marked 5 V charger, never unattended, in a bed or in a pocket. Regular charging only after the charge current is confirmed for your board revision and the cell's datasheet; until then, charge only while you watch. Hot, swollen or smelly? Unplug it and let it cool somewhere safe.

Never

- A battery on the Expansion Board and on the XIAO's battery pads at the same time.
- A swollen or damaged cell.
- A clamped, screwed-down, taped or glued cell.
- A first charge inside the case.
- Soldering onto the battery.

Using it

Not a toy; keep it from children. Not waterproof. Not an emergency or medical device. At the end of its life, take it to an electrical waste or battery collection point.

Print settings

Any white PLA or matte PLA; we print Polymaker Panchroma Matte PLA in Cotton White. 0.4 mm nozzle at 220 °C, bed 65 °C, textured PEI plate; sliced for a Bambu Lab A1 mini. One plate at 0.16 mm (High Quality) with auto supports off: the project file places the few supports and the brims under the cap and the shelf. About 1 h 55 min and 35 g. Case 49.6 × 89.5 × 20.9 mm (50.0 mm across at the side button), 97.05 mm long with the loop.

Important information

Flash by hand

Download the firmware and the start-up program update for your board from download.railyai.com/pins (links in the README at github.com/railyai/raily-pin). Check each file's SHA-256 against releases.json in that repository before you copy it. Press reset twice quickly; a drive appears: XIAO-SENSE on the Sense board, XIAO-BOOT on the plain one. If the first line of INFO_UF2.TXT does not start with «UF2 Bootloader 0.9.2-OTAFIX2.3», copy the update, wait for the drive to return and check again; keep the cable in. Then copy the firmware (.uf2). Full steps: the README at github.com/railyai/raily-pin.

Help

Questions and build photos: GitHub Discussions in railyai/raily-pin. Firmware bugs: Issues in the same repository. Your account: Help in the app. Never post your device ID (it starts with rp1-).

Licences

This guide and the shell models: CC BY-NC-SA 4.0. Firmware and flashing tools: Apache License 2.0. Board drawings derived from Seeed Studio 3D models (CC BY-SA 4.0). © 2026 Raily LLC. «Raily» and the Raily logo are trademarks of Raily LLC and are not covered by these licences.