T.A.L.O.N.

TACTICAL - AUTONOMOUS - LoRa - OPERATIONAL - NODE

R1 FIELD MANUAL — HASTY DEPLOYMENT MESH REPEATER

BUILD & FLASH PROCEDURE

RAK4631 PLATFORM · 915 MHZ LORA · MESHCORE

Flash the RAK4631 **before final assembly**. Complete all steps in order. Use Google Chrome only.

FIG. 1 — FINISHED PRODUCT (FIELD CLOSEUP)

MISSION	Rapid field mesh extension

RADIO	RAK4631 LoRa · 915 MHz
STACK	MeshCore repeater firmware
BATTERY	2x Samsung INR18650-30Q · 6000 mAh
WEIGHT / SIZE	0.67 lb · 6 x 4 x 3 in
DEPLOYMENT	Hoist deployable · solar assist
FLASH HOST	meshcore.io/flasher (Chrome)

↓ DOWNLOAD PRINTABLE FIELD MANUAL (PDF)

WARNING — READ FIRST

Connect an antenna to your RAK4631 before you complete this task!

FIG. 2 — KIT CONTENTS, LAID OUT BEFORE ASSEMBLY

STEP 01

CONNECT TO YOUR COMPUTER

Plug a **USB-C cable** from the RAK4631 (or WisBlock base board) into your computer. Use a data-capable cable — charge-only cables will not work.

> Use **Google Chrome** only. Safari and Firefox are not supported.

STEP 02

ONE-TIME ONLY

INSTALL THE OTAFIX BOOTLOADER

Do this step **once**. OTAFIX enables future repeater updates over **Bluetooth**.

2.1 ENTER UF2 BOOTLOADER MODE

With the RAK4631 connected, **quickly double-press reset**. A USB drive named **RAK4631** (~32 MB) should appear.

2.2 DOWNLOAD THE OTAFIX BOOTLOADER

Download: atakmaps.com/repeater/firmware/rak4631-otafix.uf2

2.3 INSTALL THE BOOTLOADER

Drag the UF2 file onto the **RAK4631** USB drive. Do not unplug during update.

2.4 VERIFY OTAFIX IS INSTALLED

Re-enter UF2 mode. Open `INFO_UF2.TXT` — version must include **OTAFIX**.

STEP 03

OPEN THE MESHCORE FLASHER

In Chrome, go to meshcore.io/flasher.

STEP 04

SELECT BOARD, ROLE, AND MODE

Select **RAK WisBlock/WisMesh (RAK4631)**, choose **Repeater**, then select **DFU mode** (not UF2 mode).

STEP 05

CONNECT AND FLASH

Click **Connect**, pick the serial port, and flash. Do not disconnect until the flasher reports success.

> If not detected, double-tap reset and try Connect again.

STEP 06

CONFIGURE YOUR REPEATER

After flashing, select **Configure via USB**, then **Connect**.

6.1 SET NAME

Name & Location → Name

6.2 SET COORDINATES (OPTIONAL)

Latitude and **Longitude**

6.3 SET ADMIN PASSWORD

Access → New Admin password

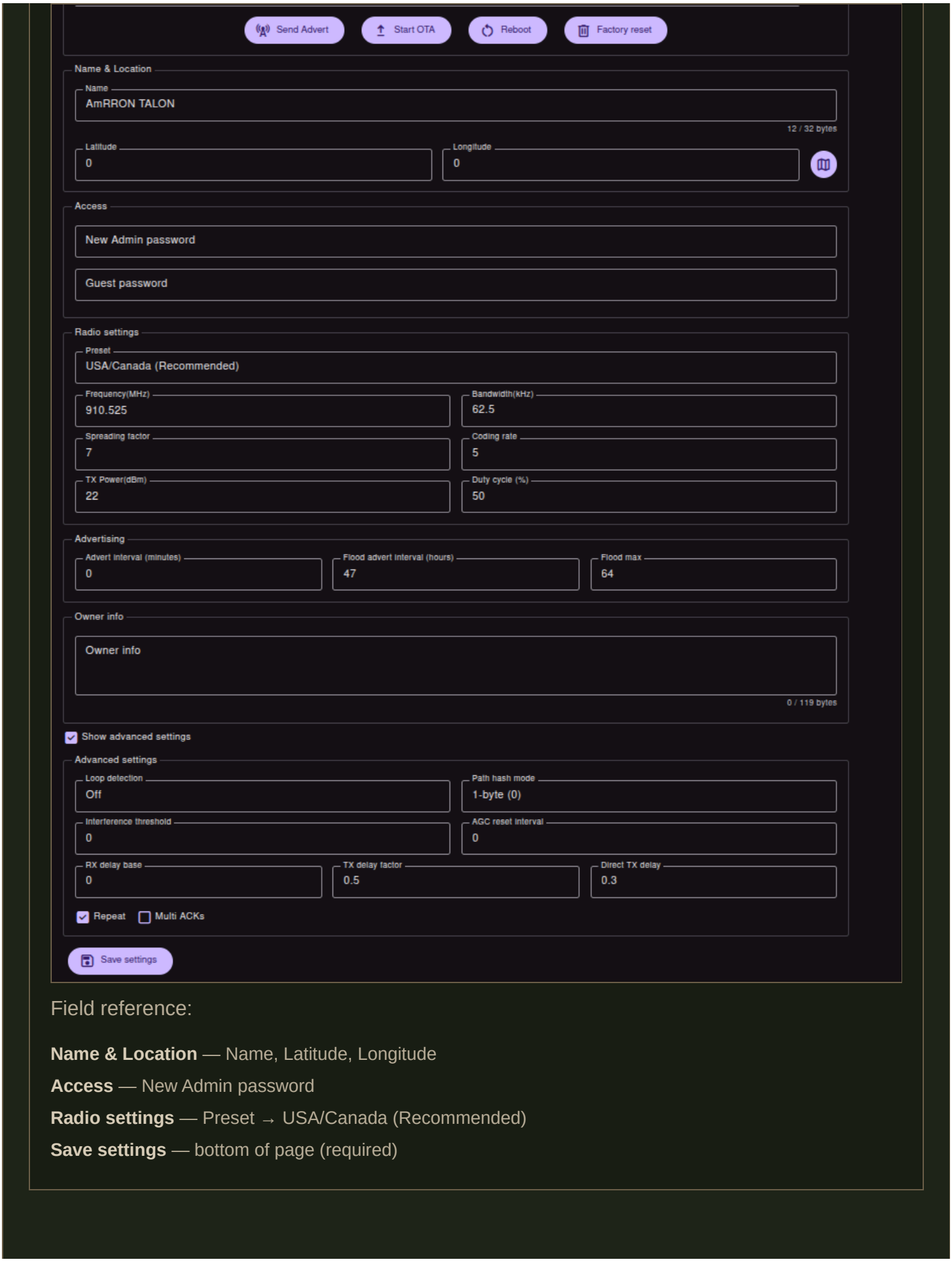
6.4 CHANGE PRESET TO USA

Radio settings → Preset → USA/Canada (Recommended)

6.5 SAVE SETTINGS

Scroll to bottom. Click **Save settings**.

> **Important:** Changes are not applied until you save.



Field reference:

Name & Location — Name, Latitude, Longitude

Access — New Admin password

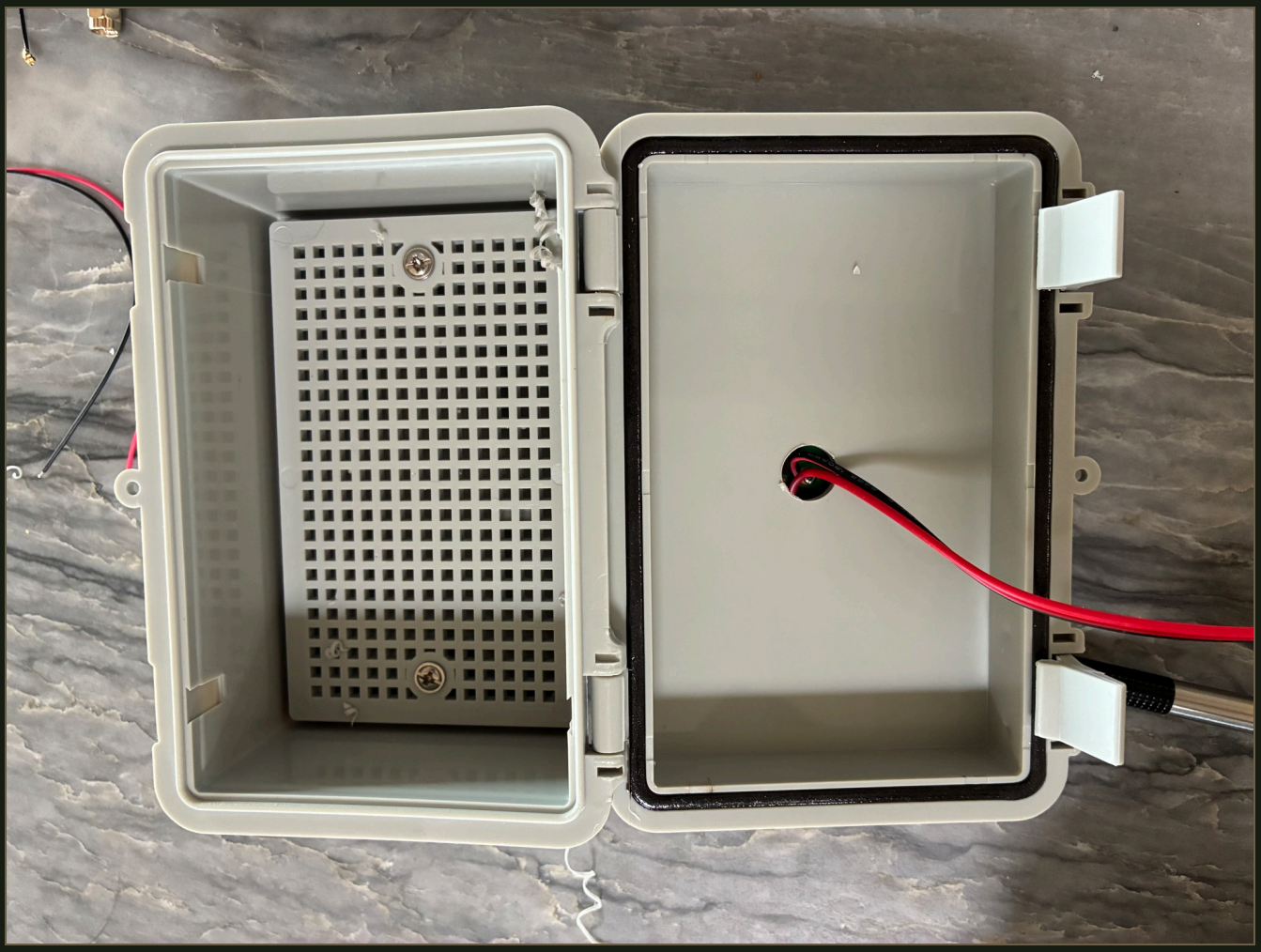
Radio settings — Preset → USA/Canada (Recommended)

Save settings — bottom of page (required)

STEP 07

SOLAR PANEL CABLE ENTRY

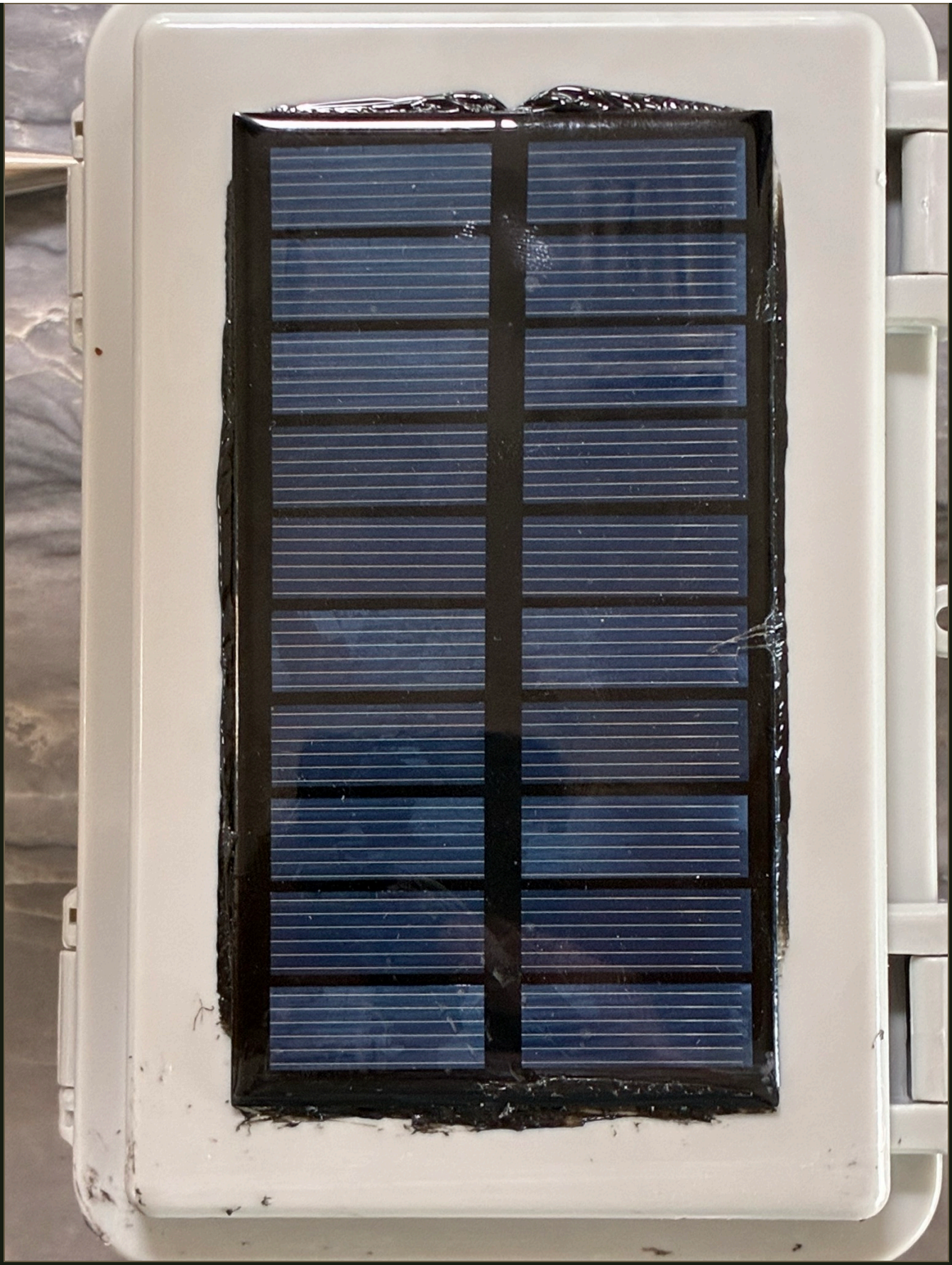
With the RAK4631 flashed and configured, move to final assembly. Drill a **1/2 inch hole** in the center of the enclosure lid for the solar panel leads.



STEP 08

SOLAR PANEL INSTALLATION

Apply adhesive or silicone sealant around the solar panel and route the leads through the lid hole from Step 07.

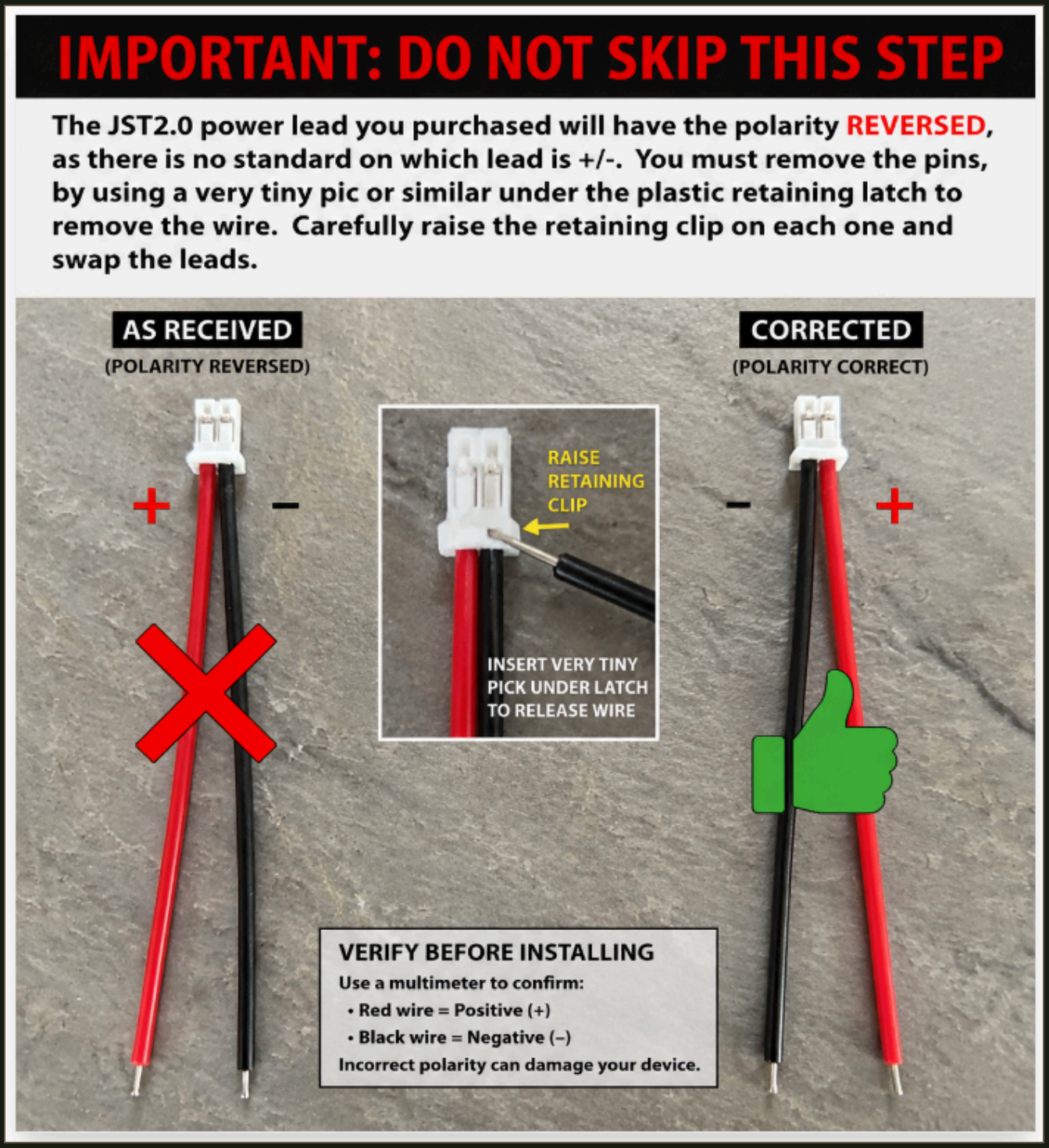


STEP 09

DO NOT SKIP

CRITICAL JST 2.0 POLARITY CORRECTION

IMPORTANT: The JST 2.0 battery lead as received has **reversed polarity** — there is no industry standard for which lead is positive. Remove the pins and swap the leads before connecting power.



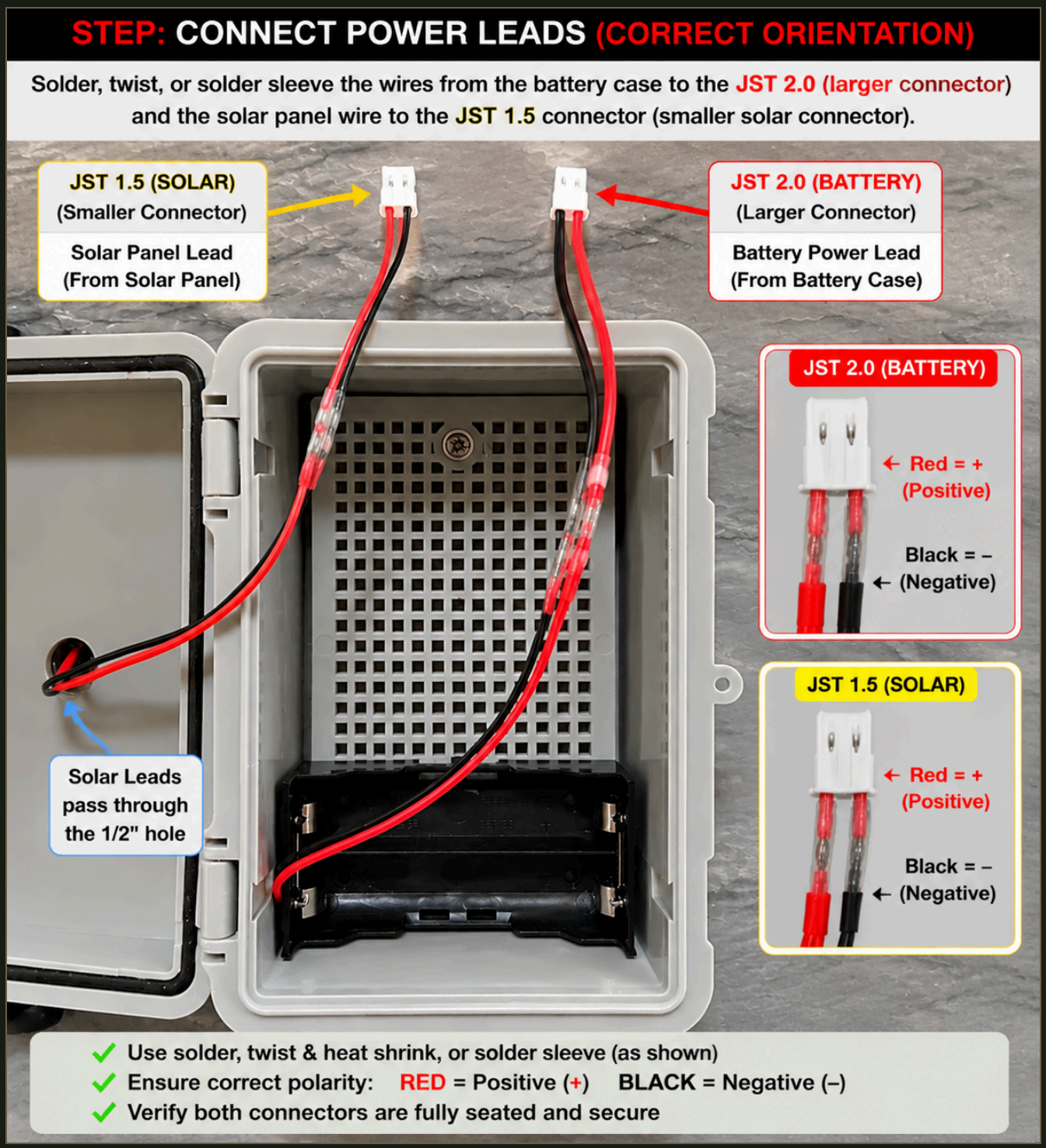
> Use a very tiny pick under the plastic retaining latch to release the wire, raise the retaining clip, and swap the leads. Verify with a multimeter before installing: **red = positive (+)**, **black = negative (−)**.

> Incorrect polarity can damage your device.

STEP 10

POWER CONNECTION REFERENCE

Use the approved connector orientation: **JST 1.5 (solar)** on the left, **JST 2.0 (battery)** on the right.

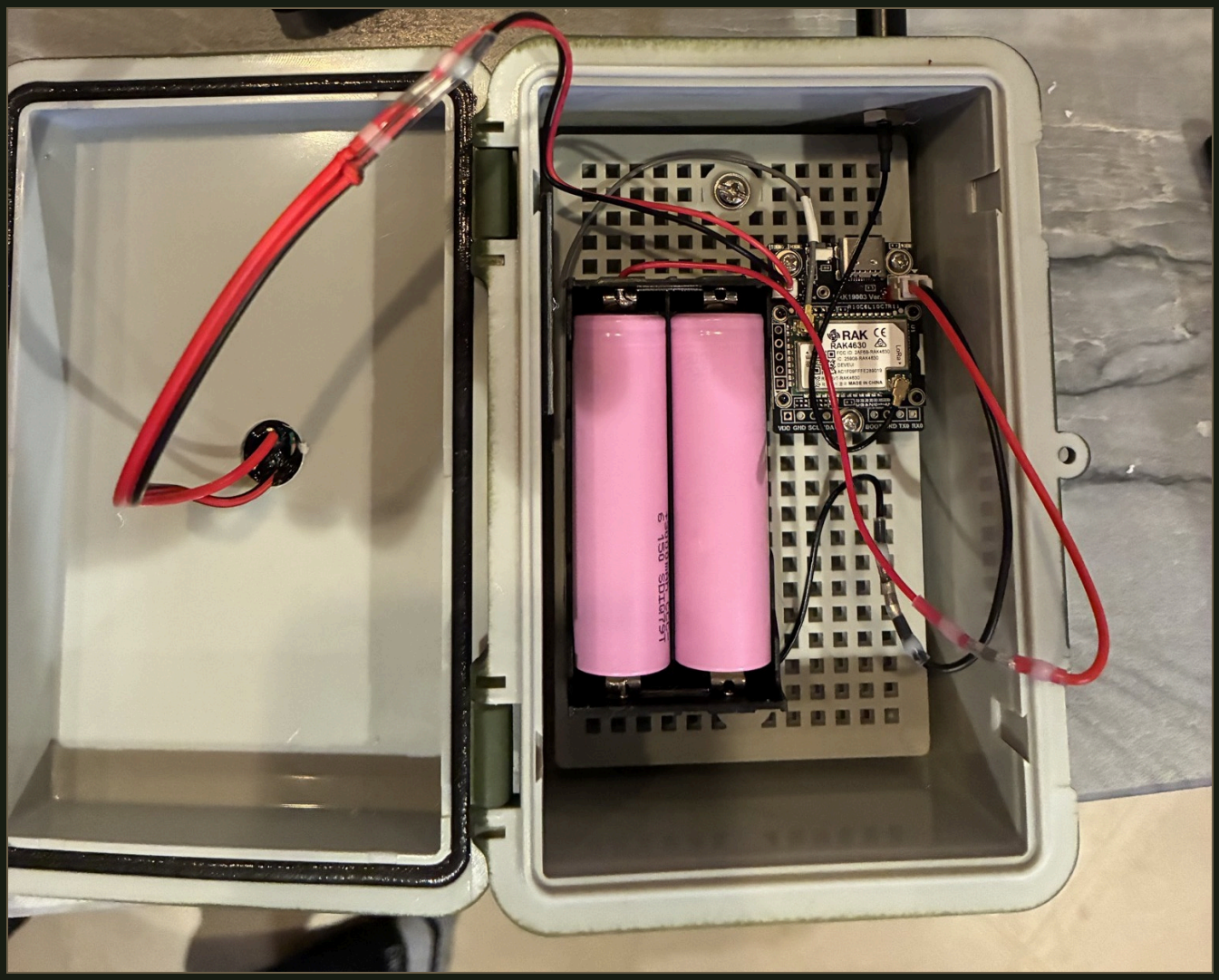


> Solder, twist and heat-shrink, or use a solder sleeve. Confirm polarity with a multimeter and verify both connectors are fully seated before closing the case.

STEP 11

RAK4631 / BATTERY INSTALLATION

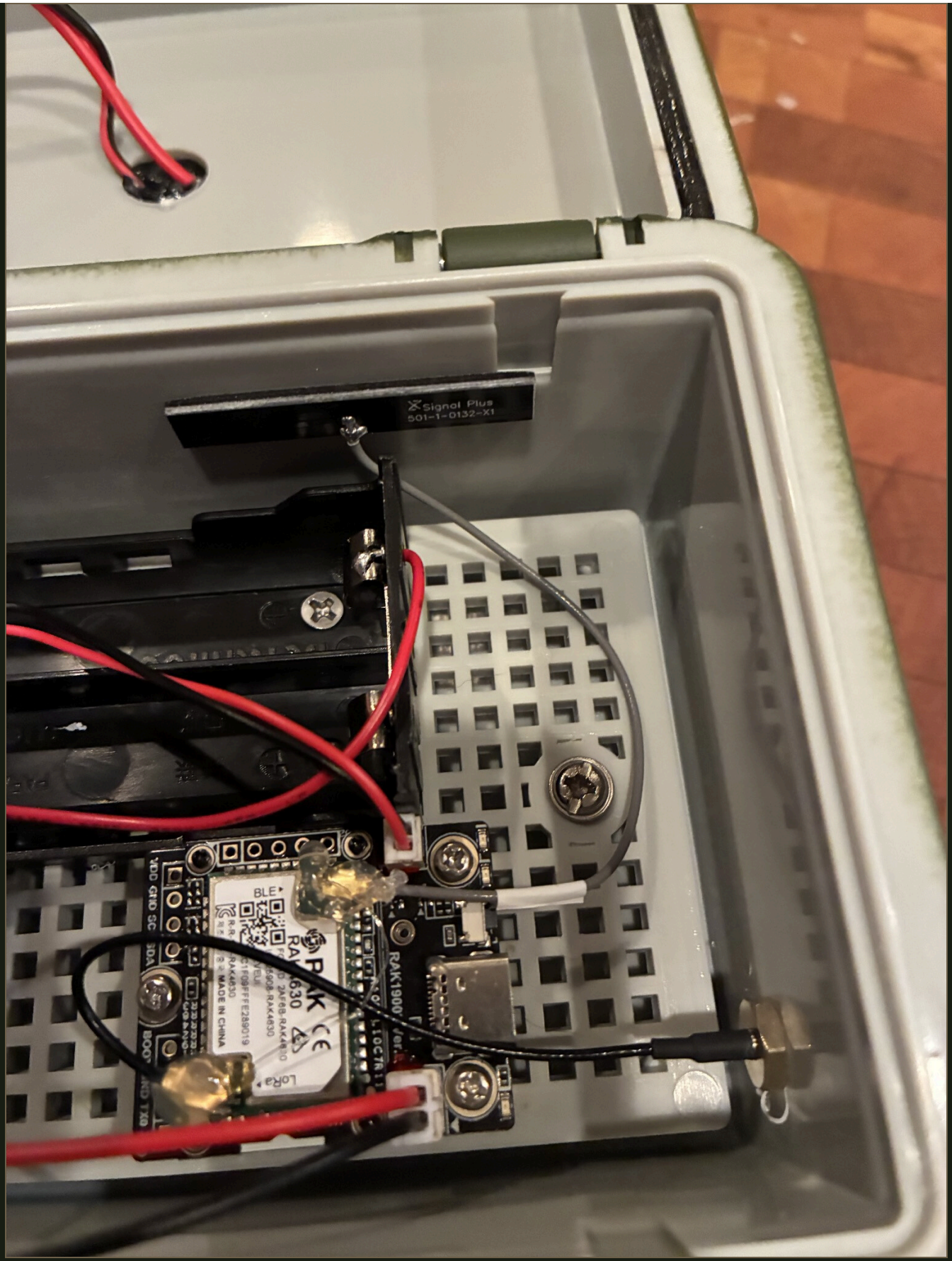
Install the battery holder, M2.5 standoffs, and antenna bulkhead. Seat the RAK4631 board and connect the battery and solar leads.



STEP 12

ANTENNA INSTALLATION

Seat the IPX connectors carefully. Avoid cable twist or preload on the pigtail.



WARNING — ANTENNA BEFORE BATTERY

Do not insert batteries without an antenna connected.

Connect antenna first. Verify polarity. Then install batteries.

FIELD DEPLOYMENT CHECKLIST

- [ ] Firmware flashed
- [ ] JST polarity verified
- [ ] Solar installed
- [ ] Antenna connected
- [ ] Batteries installed correctly
- [ ] Enclosure sealed
- [ ] Radio tested
- [ ] Hoist deployment complete