

LilyGo T-Beam Setup Guide

⚠ **ANTENNA SAFETY - ALL DEVICES:** Always connect an antenna **before** powering on or transmitting with any LoRa device - this is good practice on every board. On the T-Beam's **SX1262**, the radio has improved antenna-mismatch tolerance, so a brief transmission without an antenna is less likely to cause instant damage than on older PA/front-end boards; nonetheless, transmitting without an antenna can still stress the radio, so make antenna-before-power a firm habit. (The "permanent damage from a brief TX" risk is most acute on PA/FEM-equipped boards.)

LilyGo T-Beam - Setup Guide

The T-Beam is a compact ESP32-based node with built-in GPS and a holder for a standard 18650 lithium cell. It is important to verify the radio variant (SX1262 vs SX1276) before purchasing, as this affects firmware compatibility.

Specifications

Attribute	Value
MCU	ESP32
Radio	SX1262 on the current T-Beam v1.1 / v1.2 (US/EU); some older revisions shipped the SX1276. Read the radio chip off your board and confirm against LILYGO's product page before flashing. (The T-Beam Supreme uses the SX1262; the SX1268 is the ~470 MHz China-band part.)
GPS	Built-in
Battery	18650 holder (cell not included)
Power Management	AXP192 or AXP2101 chip
Price	\$35 - 45 (volatile; confirm against a current LILYGO/Rokland listing, as of 2026-06-08)
Strengths	Compact with GPS, familiar form factor, replaceable 18650

⚠ **CRITICAL - Verify Radio Variant Before Purchasing:**
The T-Beam is sold with two different radio chips:

- **SX1262** - Current standard. Full firmware support for both MeshCore and Meshtastic. Preferred for new builds.
- **SX1276** - The legacy radio. Still supported in Meshtastic/MeshCore, but being phased out, so the SX1262 is preferred for new purchases.

Selecting the wrong firmware variant during flashing will result in a blank/non-functional screen. Confirm your hardware version before flashing.

Driver Installation

- **Windows:** The required driver depends on your board's USB-to-UART chip. Recent T-Beams ship a **CH9102F** chip, which needs the **CH9102/CH34x driver**; older boards use a **CP2102**, which needs the **CP210x driver** from Silicon Labs. Check Device Manager (or the chip marking on the board) to confirm which one you have.
- **macOS & Linux:** Built-in - no driver needed.

Entering Bootloader / DFU Mode

Method 1 - From powered-off state:

1. Hold the **BOOT** button (labeled "IO0" on some hardware versions).
2. Plug in the USB cable while holding BOOT.
3. Release BOOT after ~2 seconds.

Method 2 - From powered-on state:

1. Hold the **BOOT** button.
2. Briefly press and release the **RST** button.
3. Release the BOOT button.

Firmware Flashing

1. Enter bootloader mode.
2. Open Chrome or Edge and navigate to:
 - **MeshCore:** flasher.meshcore.io (the canonical MeshCore web flasher)
 - **Meshtastic:** flasher.meshtastic.org
3. Select the T-Beam variant that matches your radio chip:
 - **T-Beam (SX1262)** for current hardware
 - **T-Beam (SX1276)** for older hardware
4. Click **Flash**. Do not disconnect during the process.

Post-Flash Configuration

1. GPS initializes and begins acquiring satellites automatically.
2. Set **region to US** via the Bluetooth app.
3. The AXP192/AXP2101 power management chip handles battery charging automatically and provides charge/discharge protection.
4. **Use good-quality flat-top (unprotected) 18650 cells.** The T-Beam holder is sized for **unprotected flat-top** cells - protected cells are longer and generally will not fit, and may also trip on transmit current spikes. The board's AXP PMIC provides charge/discharge protection. Buy quality cells from a reputable brand, and in cold deployments never charge any lithium cell below 0 °C (32 °F).

Known Quirks

- **SX1262 vs SX1276 variant selection is critical** - the wrong radio firmware leaves a blank/non-functional screen. (Distinct from a wrong-PMIC mismatch, where the board may appear to boot but the battery will not charge.)
- On some hardware versions the GPS antenna is located under the screen - avoid placing metal objects directly on the display area.
- The BOOT button may be labeled "IO0" on older PCB revisions.

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