

SCAN FOR THE
FULL GUIDE

Set up your LoRa Field Node

Every sensor in the greenhouse on one board, broadcasting home over 915 MHz. No Wi-Fi at the node: nothing to join, nothing to sign in to.

BEFORE YOU START

Have these on hand:

- A **Heltec WiFi LoRa 32 V4** (or V3 / V2) with its **LoRa antenna on the LoRa connector** before power.
- A **LoRa Gateway** at the house, set up first (its own card).
- Your sensors: DS18B20 probes, an SHT-30, a photoresistor, capacitive soil probes — any mix.
- A computer with **Chrome** or **Edge** and a **data** USB cable, for flashing and the console.
- Power: USB, or a battery and a solar panel sized for winter (see the page).

FLASH IT (FIRST TIME ONLY)

- 1 Open openagriculturetechnology.com/build/sketches/lora-field-node/, plug the board in, press **your board's button**. Coming from Meshtastic? Hold **PRG**, tap **RST**, release, then connect. Press **RST** after the flash.

WIRE IT AND TALK TO IT

- 2 **Wire the sensors** (V4 pins; the page lists V3 and V2): DS18B20 data to **GPIO 33** with a 4.7k pull-up to 3V3; SHT-30 SDA **17**, SCL **18**; a photoresistor divider to **4**; a soil probe to **6**. Power sensors from **3V3** or the **Vext** pin. Never touch GPIO 2, 5, 7, 46 on a V4.
- 3 **Open the console**: plug the node into the computer, open the install page (QR above) and choose **Console**. Type **status**. Every probe found is listed with its serial number and a reading.
- 4 **Declare analog pins** (they are never guessed): **set lightpin 4**, **set soilpins 6**. Buses (DS18B20, SHT-30) are found by themselves — **scan** after wiring, or press RST.

FILL IN YOUR SETTINGS

Write yours here first, then type them on the console as set <key> <value>. One card per node.

Cadence (sec)

default 180 · 60 is the floor

Frequency (MHz)

915.0 — must match the gateway

Bandwidth (kHz)

125 — must match the gateway

Spreading factor

7 — must match the gateway

Sync word (hex)

Transmit power (dBm)

12 — must match the gateway	V4 default 10 (≈20 at the antenna) · V3/ V2 17
DS18B20 pin V4 33 · V3 7 · V2 13	SHT-30 SDA / SCL V4/V3 17/18 · V2 4/15
Light pin -1 = none · V4 4 · V3 2 · V2 36	Soil pins (csv) empty = none · V4 6 · V3 3,4,5,6
Soil dry / wet (mV) read in dry air / in water	Pod port RX / TX V4 47/48 · V3 40/41 · V2 17/23
Unit id (from status) 8 hex — write it on the board	Probe serials (from status) and where each one is placed

SEND, AND CHECK IT ARRIVED

- Type `tx`**. The console prints a roster frame and a data frame ending in **ok**. The screen's line four shows the send with its sequence number.
- Look at the gateway**. Its screen shows `last <your unit id>` with a signal in dBm within a second, and **nodes 1**. Its setup page lists the node under **Field nodes heard**.
- Look at the endpoint**. Under the gateway, each probe appears by its serial number (`ds18b20:28...`) and the node itself as its unit id with rssi, snr and uptime. Done.

Updating later: The node's screen shows its id, the radio plan, probe counts, the last send and how long ago, the countdown to the next, and the latest reading. Settings survive reboots; a fresh flash wipes them on purpose. A node can't know it was *heard* — the gateway's screen says that.

THE USB CONSOLE IS THE WHOLE SETUP

There is no Wi-Fi and no setup page on this node. 115200 baud; type `help`.

<code>status</code>	unit id, radio plan, every probe with its serial and reading, analog pins, the pod port.
<code>set <key> <value></code>	cadence, sf, freq, sync, power, dspin, sda, scl, lightpin, soilpins, cal, podrx, podtx, lineout.
<code>set cal 3 dry / set cal 3 wet</code>	calibrate that probe at the bench: dry air, then a glass of water. No calibration = raw mV only.
<code>scan / read</code>	find probes again / take a reading now.
<code>tx / roster</code>	send a data frame now / send the roster now.
<code>factory</code>	wipe settings and reboot.

IF SOMETHING'S NOT WORKING

The gateway never hears it	Radio plan must match the gateway exactly. Antenna on the LoRa connector. A V4 must run the V4 image (the V3 image leaves its radio front end unpowered). On the gateway, type <code>rssi</code> while you <code>tx</code> : the number must jump.
A probe doesn't show after wiring	Press RST (or <code>scan</code>). Check the data wire — probe cable colours vary — and the 4.7k pull-up to 3V3. Data at rest should read about 3.3 V.
Soil reads 100 % with nothing wired	A floating pin reads like a wet probe. Analog pins are off until you declare them; declare only the ones you wired.

Battery shows 0 V or 100 % on USB

The board's divider sees the battery connector only (V3) or the charger rail (V4). With no battery, ignore it.

Generated 2026-10-10 · This card and the firmware are open. The full sketch, the supported boards, and the web installer are at openagriculturetechnology.com/build/sketches/lora-field-node/.