



## Set up your DS18B20 temperature node

Sealed temperature probes, up to ten on a single wire, each reporting under its own factory serial number to a place you own.

### BEFORE YOU START

Have these on hand:

- An **ESP32** board (classic, S3, C3 or C6) and a **data** USB cable.
- One or more **DS18B20** probes — the sealed stainless kind on a cable, or bare chips.
- A **4.7k resistor** from the data line to 3V3 (one for the whole wire, however many probes).
- Three wires per probe: **red 3V3**, **black GND**, **yellow data** — all probes share the same three lines. Data goes to **GPIO 4** (GPIO 6 on a C6).
- A computer with **Chrome** or **Edge**, your **Wi-Fi** (2.4 GHz), and where the readings go.

### FLASH IT (FIRST TIME ONLY)

- 1 Open [openagriculturetechnology.com/build/sketches/ds18b20-node/](https://openagriculturetechnology.com/build/sketches/ds18b20-node/), plug the board in, press **your board's button**. Already flashed? Skip to step 2.

### CONNECT TO THE NODE

- 2 **Power the node** with a USB cable (any USB charger or your computer).
- 3 **On your phone or laptop, join its Wi-Fi network.** It appears as **OAT-Setup-XXXXXX** (open, no password). A setup page opens by itself; if not, go to <http://192.168.4.1>.

|                    |                                                     |
|--------------------|-----------------------------------------------------|
| Setup page address | <b>http://192.168.4.1</b>                           |
| Username           | <b>admin</b>                                        |
| Password           | <b>oatsetup</b> (change it once the node is online) |

### FILL IN YOUR SETTINGS

Write yours here first, then type them into the setup page. One card per node.

Device name

e.g. soil-profile-1

Farm ID

the same on every node you own

Location

zone the node watches

Wi-Fi name (SSID)

2.4 GHz

Wi-Fi password

Webhook URL

[https:// ...](#) (or the Test Endpoint below)

1-Wire data pin

default 4 (6 on a C6)

Temperature offset (°C)

default 0

Probe serial → where it is

ds18b20:28... — hold a probe; the serial that climbs is it

Delivery method

Webhook or MQTT

MQTT host / port

if using MQTT

Resolution (bits)

default 12 · 9 is faster, coarser

Push interval (sec)

default 60

Probe serial → where it is

one line per probe

## NO ENDPOINT YET? USE THE OAT TEST ENDPOINT

A public test endpoint the collective runs. Your node appears under your Farm ID with each probe beneath it by serial number.

|                 |                                                                                                                                  |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------|
| Delivery method | <b>Webhook</b>                                                                                                                   |
| Webhook URL     | <b><a href="https://iot-test.openagriculturetechnology.com/ingest">https://iot-test.openagriculturetechnology.com/ingest</a></b> |
| Watch it live   | <b><a href="https://iot-test.openagriculturetechnology.com">https://iot-test.openagriculturetechnology.com</a></b>               |

It keeps roughly the last hour. Prove the chain, then point the node at an endpoint you keep.

## USING MQTT INSTEAD (HOME ASSISTANT)

Point the node at the broker Home Assistant uses; each probe lands on its own topic, named by serial, `oat/<name>/ds18b20:<serial>/temperature`. Declare each as an MQTT sensor in YAML (`value_json.value`).

|                  |                                                                         |
|------------------|-------------------------------------------------------------------------|
| MQTT host        | the Home Assistant machine                                              |
| Port             | <b>1883</b> plain · <b>8883</b> with TLS ticked                         |
| User / password  | if your broker requires them                                            |
| Readings land on | <code>oat/&lt;device name&gt;/ds18b20:&lt;serial&gt;/temperature</code> |

## SAVE & CHECK THE DATA IS FLOWING

- 4 Press Save.** The node joins your Wi-Fi while the setup page waits, then shows its **address on your own network**, like `http://192.168.1.37` and `http://oat-yourname.local`. Bookmark one; that's the node's home page from now on.
- 5 Open Live Status** there and press **Send a test reading**. A green "OK" means a reading just reached your endpoint. That's the whole job done.

**Updating later:** The setup page's **probe block** lists every probe found with its serial and reading. **Which probe is which:** hold one in your hand, watch which serial climbs, write it on the card. The node never names a probe; your endpoint maps serial to place, so a probe moved to another node keeps its history.

## THE USB CONSOLE

Open the install page, choose **Console**.

|                                    |                                                                            |
|------------------------------------|----------------------------------------------------------------------------|
| <code>status</code>                | Wi-Fi, push counters, every probe's serial and reading, read/CRC counters. |
| <code>bus</code>                   | diagnose the data pin and list the addresses that answer.                  |
| <code>pins</code>                  | sweep every usable pin: where is the bus really wired?                     |
| <code>rescan</code>                | look for probes added since boot.                                          |
| <code>set ow 4 / set res 12</code> | move the bus / change resolution.                                          |

## IF SOMETHING'S NOT WORKING

|                                                      |                                                                                                                                                                                                                                                                |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>No probe found</b>                                | The 4.7k pull-up from data to 3V3 is the usual miss. Then the data wire: cable colours vary, and a few swap black and yellow. Data at rest should read about 3.3 V. Type <code>bus</code> , then <code>pins</code> if you suspect the wire is on another GPIO. |
| <b>Two probes report as one, or a probe vanishes</b> | A weak pull-up or a very long cable. Use 4.7k (not 10k) and star-wire short runs; a sealed probe's cable can run tens of metres if the pull-up is right.                                                                                                       |
| <b>Readings are 85 °C or -127</b>                    | 85 is the power-on value before the first conversion; -127 is a read failure. Both point at power: a probe browning out on a long cable, or parasite wiring without a strong pull-up.                                                                          |
| <b>It won't join my Wi-Fi</b>                        | 2.4 GHz only. Names with spaces are easier over the console: <code>set ssid ...</code> .                                                                                                                                                                       |

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/ds18b20-node/](https://openagriculturetechnology.com/build/sketches/ds18b20-node/).