

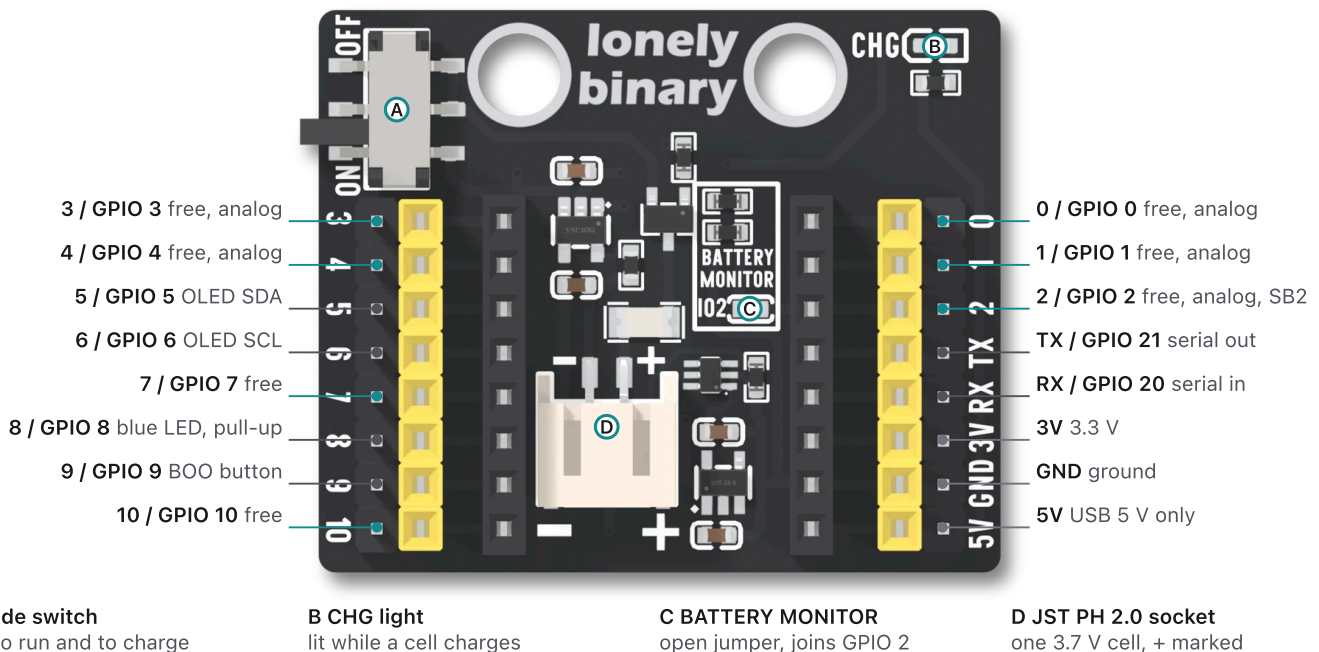
# ESP32-C3 OLED Expansion Base

The board's sixteen holes as pins and sockets down each edge, with a battery, a charger and a switch.

**✗ Seat the board first, plug the cable in second**

The board fits end for end as well, and that way the base's 5 V pad meets the hole marked 3, ground meets 4 and 3.3 V meets 5: the battery rail drives three chip pins. Put V5 on the board and 5V on the base at the same end, with the switch off and the cable out.

## The sixteen holes, from above



### Sixteen holes, not thirty-two

Each hole comes out as an upright pin, as a yellow socket beside it, and in the socket the board sits in. It is one wire: two jumpers on one hole share a GPIO. Pins and sockets are the same copper, so use the strip your wire end fits.

### Battery and charge

One 3.7 V lithium cell with its own protection circuit, plugged into the JST socket with + beside the positive pin. The charger takes it to 4.2 V, and only with the switch ON. USB alone does not charge it; with the switch OFF the CHG light can flicker and look half-lit. The 5V hole carries nothing on battery alone.

# The first program, a knob sets the blink

Arduino IDE · Board ESP32C3 Dev Module · USB CDC On Boot Enabled · Flash 4MB (32Mb) · Upload 921600 · Serial Monitor 115200 · 10k potentiometer, LED, 330 ohm resistor

```
const int KNOB_PIN = 3; // analog input
const int LED_PIN = 7; // free digital pin

void setup() {
  Serial.begin(115200);
  pinMode(LED_PIN, OUTPUT);
}

void loop() {
  int raw = analogRead(KNOB_PIN); // 0 to 4095
  int wait = map(raw, 0, 4095, 50, 1000); // milliseconds
  digitalWrite(LED_PIN, HIGH);
  delay(wait);
  digitalWrite(LED_PIN, LOW);
  delay(wait);
  Serial.printf("knob %d -> %d ms\n", raw, wait);
}
```

knob 2048 -> 525 ms  
The LED blinks faster as the knob goes down: 50 ms at one end, a second at the other. If the monitor stays empty, USB CDC On Boot is set to Disabled.

## What is wired where

| HOLE | ON THE BASE           | GOES TO                                  |
|------|-----------------------|------------------------------------------|
| 3V   | right strip, 6th hole | potentiometer, one end                   |
| GND  | right strip, 7th hole | potentiometer's other end, LED short leg |
| 3    | left strip, 1st hole  | potentiometer, middle terminal           |
| 7    | left strip, 5th hole  | 330 ohm resistor, then LED long leg      |

## When it does not work

- Two wires on one hole fight each other**  
Pin, socket and the board's own socket hole are one wire. Sixteen holes come out, each twice on the strips.
- GPIO 2 reads a steady half of something**  
The BATTERY MONITOR jumper is bridged. Open it to get the pin back; it ships open.
- The Serial Monitor is empty**  
USB CDC On Boot is Disabled. Set it to Enabled, upload again, reopen at 115200.

- There is no 5 V with only the battery connected**  
5V is USB's 5 V. The cell feeds a 3.3 V regulator only. Use a boost converter for a 5 V part on battery.
- The LED never lights**  
Long leg to the resistor, short leg to GND, and the resistor's other end in the hole printed 7.
- The reading sits at 0 or at 4095 whatever the knob does**  
The middle terminal is not on GPIO 3. Ends to 3V and GND, the moving middle to the hole printed 3.

## Specifications

|          |                                    |               |                                |
|----------|------------------------------------|---------------|--------------------------------|
| Fits     | ESP32-C3 OLED, rows 17.78 mm apart | Holes         | 16, each as a pin and a socket |
| Strips   | 4 × 8-way, 2.54 mm                 | Board sockets | 2 × 8-way, 2.54 mm             |
| Battery  | JST PH 2.0, one 3.7 V cell         | Charger       | TP4054, to 4.2 V               |
| Mounting | 2 holes, 4.8 mm, 16 mm apart       | Size          | 39.5 × 32.5 mm, 10.1 mm tall   |