

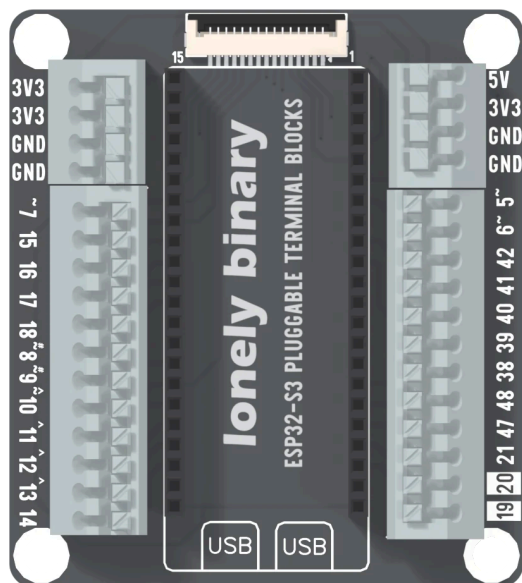
ESP32-S3 Pluggable Terminal Base

Two 12-way and two 4-way push-in blocks, and the standard 15-way display plug.

✗ Seat the board first, plug the cable in second

The ESP32-S3 fits end for end as well, and that way its 3.3 V output lands on the base's ground ways: a short across the regulator. Its two USB sockets go over the two boxes printed USB.

The base



Silkscreen order, display plug at the top. A power block sits above a signal block on each edge. Each way is one GPIO or supply: no regulator, no buffer, no LED.

The ways

ROW	LEFT PWR	LEFT	RIGHT PWR	RIGHT
1	3V3	7	5V	5
2	3V3	15	3V3	6
3	GND	16	GND	42
4	GND	17	GND	41
5		18		40
6		8		39
7		9		38
8		10		48
9		11		47
10		12		21
11		13		20
12		14		19

24 GPIOs once each. Not brought out: 0, 1, 2, 3, 4, 35, 36, 37, 43, 44, 45, 46 and RST. GPIO 1, 2 and 4 reach the display plug only. GPIO 19 and 20 are the native USB port.

The display plug: contact to GPIO

#	SIGNAL	ESP32-S3	WHAT IT DOES
1	GND	GND	ground
2	3V3	3V3	the display's supply, 3.3 volts
3	BL	GPIO 41	backlight: the lamp behind the glass
4	RST	GPIO 42	reset: a clean start for the controller
5	DC	GPIO 2	data or command: says what the byte on the wire is
6	MISO	GPIO 13	data back from the display; a write-only panel leaves it unused
7	SCK	GPIO 12	the SPI clock
8	MOSI	GPIO 11	the pixels and commands, out to the display
9	CS	GPIO 10	chip select: this display is the one being addressed
10	D2	GPIO 1	spare, a TFT panel leaves it unused
11	D3	GPIO 15	spare, a TFT panel leaves it unused
12	D4	GPIO 7	spare, a TFT panel leaves it unused
13	D5	GPIO 4	spare, a TFT panel leaves it unused
14	D6	GPIO 6	spare, a TFT panel leaves it unused
15	D7	GPIO 5	spare, a TFT panel leaves it unused

Any Lonely Binary display with the 15-way ribbon plugs straight in: contacts 1 to 9 are in the same order on every one. The back of the board prints contacts 10 and 11 as 20 and 22; the wiring above is right. A screen drives its GPIOs, so keep a sensor off the same ways.

Power comes from the ESP32-S3

There is no regulator on the base. The 3V3 ways are the plugged-in board's own 3.3 V output, for a sensor, not for a second supply. The right-hand 5V way is the board's 5V pin, a little under 5 V while USB is plugged in. Ground is on both blocks.

The first program, name the way a wire touches

Arduino IDE · Board ESP32S3 Dev Module · USB CDC On Boot Enabled · Flash 16MB · PSRAM OPI PSRAM · Serial Monitor 115200 · one wire

```
// ESP32-S3 Pluggable Terminal Base: name the way a wire touches.
//
// Wiring: one wire from any signal way to a GND way. Nothing else.
// Unplug the display first: its lines are on the same ways.
//
// Arduino IDE, Tools menu:
//   Board      ESP32S3 Dev Module
//   USB CDC On Boot  Enabled
//   Flash Size   16MB (128Mb)
//   PSRAM        OPI PSRAM
//   Serial Monitor 115200
// No library needed.

const int WAYS[] = {
  7, 15, 16, 17, 18, 8, 9, 10, 11, 12, 13, 14,    // left block
  5, 6, 42, 41, 40, 39, 38, 48, 47, 21,          // right block
};
// 19 and 20 are USB: left out
const int N = sizeof(WAYS) / sizeof(WAYS[0]);

void setup() {
  Serial.begin(115200);
  for (int i = 0; i < N; i++) pinMode(WAYS[i], INPUT_PULLUP);
}

void loop() {
  for (int i = 0; i < N; i++)
    if (digitalRead(WAYS[i]) == LOW)
      Serial.printf("GPIO %d is grounded\n", WAYS[i]);
  delay(200);
}
```

GPIO 12 is grounded
Touch a wire from a signal way to a GND way and the way's GPIO number prints. 19 and 20 are left out on purpose: they are the USB port.

When it does not work

The wire pulls out or will not go in

Strip it to a clean bare end and push it in square. The WJ250B-3.5 is listed for 16 to 22 AWG wire. To free a wire, press the button above its way and pull. Tug the wire after: if it moves, it never seated.

A GPIO is missing from the blocks

0, 1, 2, 3, 4, 35, 36, 37, 43, 44, 45 and 46 have no way. GPIO 1, 2 and 4 are on the display plug only.

The display shows garbage after I added a sensor

Ways 7, 15, 10, 11, 12, 13, 5, 6, 42 and 41 are also display contacts. Move the sensor to a way the screen leaves alone.

Which end is way 1?

Read the silkscreen, not the design files: every block is printed top to bottom with the display plug at the top.

The board stops talking to the computer

A wire on GPIO 19 or 20 loads the native USB port. Move it to another way.

Nothing lit, or the red LED on the ESP32-S3 is dark

Unplug at once and check the board is seated with its USB sockets over the boxes printed USB.

Specifications

Fits	44-pin ESP32-S3, rows 22.86 mm apart	GPIOs at the edge	24, once each
Blocks	2 × 12-way and 2 × 4-way, push-in	Terminal pitch	3.5 mm
Terminal parts	Kangnex WJ250B-3.5-12P and -4P, 16 to 22 AWG	Display plug	15-way FPC, 1.0 mm
Mounting	4 holes, 4.8 mm	Size	64 × 72 mm, 14.8 mm tall