

ESP32-S3 Screw Terminal Base

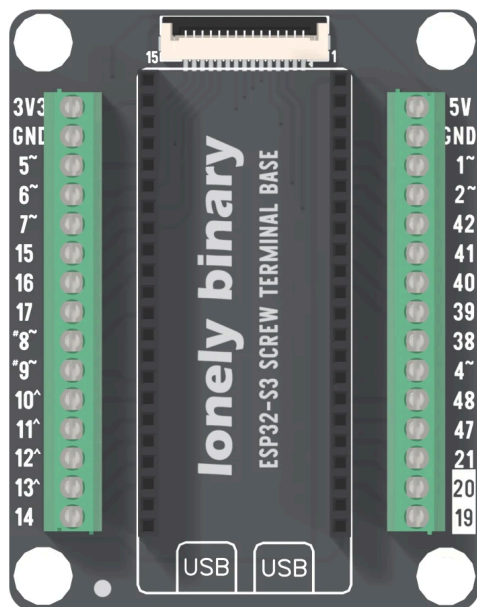
Two 15-way screw blocks bringing out 26 GPIOs, and the standard 15-way display plug.



Seat the board first, plug the cable in second

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

The base



Ways are numbered from the display end, top of the picture. The sockets between the blocks take the ESP32-S3.

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. Each of these GPIOs is also a screw way, and nothing switches them. The back of the board prints contacts 10 and 11 as 20 and 22; the wiring above is right.

Both blocks, display end first

WAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Left	3V3	GND	5	6	7	15	16	17	8	9	10	11	12	13	14
Right	5V	GND	1	2	42	41	40	39	38	4	48	47	21	20	19

GPIO 4 and 5V come out on the other side

Both are pins of the ESP32-S3's left row, and both are on the right block: GPIO 4 tenth from the top between 38 and 48, 5V the top way. 3V3 is the left block's top way and there is no 3V3 on the right. Read the number beside the screw, not the row you counted. The base has no regulator: 3V3 and 5V are the ESP32-S3's own pins. GPIO 0, 3, 18, 35 to 37 and 43 to 46 are not brought out, nor is RST.

The first program, blink an LED on GPIO 4

Arduino IDE · Board ESP32S3 Dev Module · USB CDC On Boot Enabled · Flash 16MB · PSRAM OPI PSRAM · one LED, one resistor

```
// ESP32-S3 Screw Terminal Base: blink an LED on GPIO 4.
//
// Wiring, on the right-hand block (GPIO 4 is the tenth way down):
//   GPIO 4  -> 330 ohm resistor -> LED long leg
//   LED short leg -> GND (the right block's second way)
//
// Arduino IDE, Tools menu:
//   Board           ESP32S3 Dev Module
//   USB CDC On Boot Enabled
//   Flash Size      16MB (128Mb)
//   PSRAM           OPI PSRAM
// No library needed.

const int LED = 4;

void setup() {
  pinMode(LED, OUTPUT);
}

void loop() {
  digitalWrite(LED, HIGH);
  delay(500);
  digitalWrite(LED, LOW);
  delay(500);
}
```

an LED on the right block's tenth way
If nothing blinks, the LED is the wrong way round or the wire is in the left block, where there is no GPIO 4.

When it does not work

My sensor on GPIO 4 reads nothing

GPIO 4 is not on the left block, although it sits on the dev board's left row. It is on the right block, the tenth way down from the display end, between 38 and 48. Move the wire there, or read the number printed beside the screw and not the row you counted.

GPIO 0, 3, 18, 43 or 44 is not on any terminal

Ten GPIOs stop at the socket: 0, 3, 18, 35, 36, 37, 43, 44, 45 and 46, and RST as well. Nothing on this base reaches them. If a project needs one of them, use the PinPulse shield, which brings out every GPIO the dev board has.

A sensor on a pin the display uses behaves strangely

The display connector's lines are the same nets as terminal ways: GPIO 41, 42, 2, 13, 12, 11, 10, 1, 15, 7, 4, 6 and 5. With a display fitted, a wire on one of those ways is on the display's line too. Use a way the display leaves unused.

There is no 3V3 on the right block

3V3 is on the left block only, and 5V on the right block only, one way each. A module on the right block that wants 3.3 V needs a wire from the left block's top way across the board, or power it from 5V if it takes that.

A wire pulls out even though the screw is tight

The clamp has closed on insulation, or beside the copper. Back the screw out until you can see the clamp open, put bare copper under it with no insulation inside the clamp, tighten until the wire will not move, and tug it.

The dev board will not start, or the regulator is hot

Check which way round it went. The two sockets are identical, so the board also fits end for end, and that way its 3V3 pins land on the base's ground. Unplug the cable first. The two USB sockets go over the two boxes printed USB.

Specifications

Fits	44-pin ESP32-S3, rows 22.86 mm apart	Terminals	2 × 15-way, 3.5 mm pitch, screw
GPIOs at the edge	26, each once	Power ways	3V3 left, 5V right, GND on both
Not brought out	GPIO 0, 3, 18, 35-37, 43-46, RST	Display plug	15-way FPC, 1.0 mm
Mounting	4 holes, 4.8 mm	Size	56 × 72 mm