

4-Direction Tilt Sensor

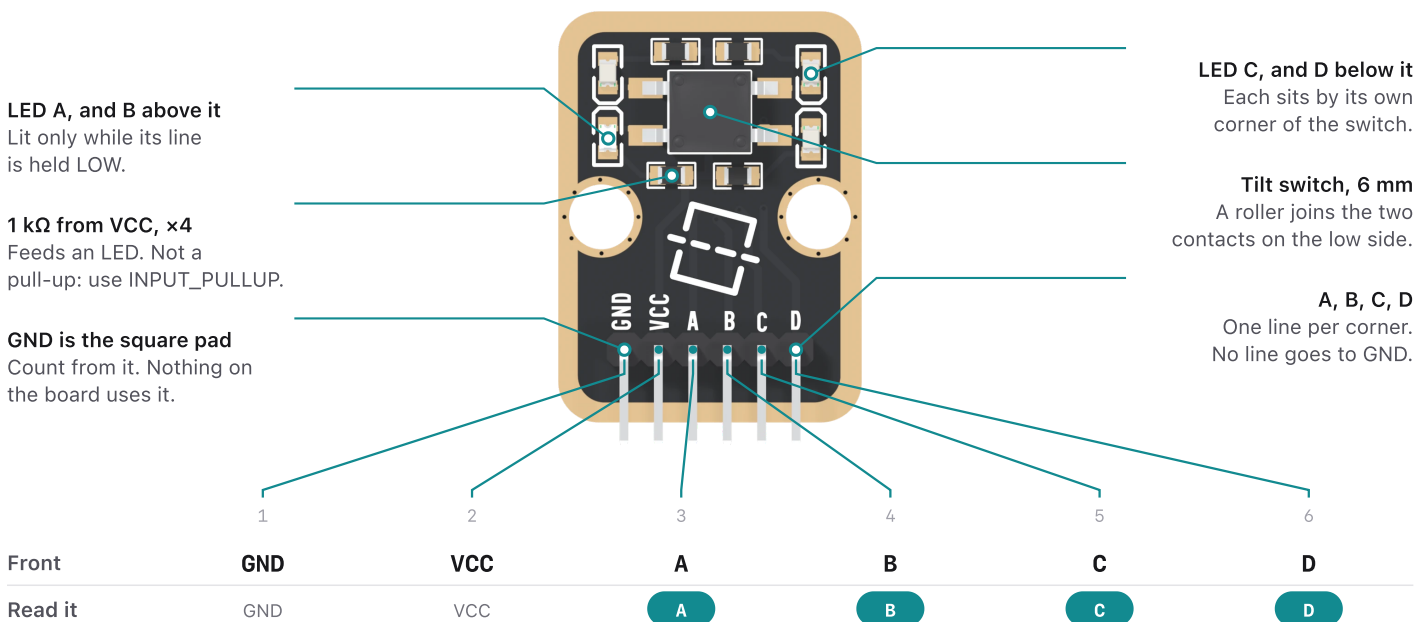
Which edge is down, read by pulling one line LOW at a time.

✗ VCC sets the lights, and never drive a line HIGH

On an ESP32, ESP32-S3 or Pico, feed VCC from 3V3, never 5V: the four LEDs run from VCC into your pins. And never make A, B, C or D an OUTPUT at HIGH: the roller can join it to a line held LOW.

Pins, and which to wire

Parts up, header at the bottom. All six pins are wired: GND, VCC and one GPIO for each of A, B, C and D.



No line goes to GND

The switch only joins two neighbouring lines. So hold A LOW and see whether B or D follows, then hold C LOW and look again. The LEDs light only on lines held LOW.

Which edge is down, which pair joins

Left edge down

A–B joined

Hold A LOW and B reads LOW.

Top edge down

B–C joined

Hold C LOW and B reads LOW.

Right edge down

C–D joined

Hold C LOW and D reads LOW.

Header edge down

D–A joined

Hold A LOW and D reads LOW.

Opposite corners, A–C and B–D, never join. Laid flat, the roller stays where it last rolled, so level is not a reading: the switch may keep reporting the last side, or none after a tilt towards a corner.

Pairs from the supplier's drawing of the RB-6635S-1T and the board's net list. It publishes no trip angle, rating or bounce time: find your own angle, and accept a side only after 5 equal reads 10 ms apart.

Find the low side, and print it

Arduino IDE · Board: your board · ESP32-S3: USB CDC On Boot: Enabled

```
// A B C D pins. Uno 2-5. ESP32 25 26 27 32. S3 4-7. Pico 10-13.
const int A = 4, B = 5, C = 6, D = 7;
const int LINES[] = {A, B, C, D};
const char* NAME[] = {"none", "left", "top", "right", "header"};

void releaseAll() {
  for (int i = 0; i < 4; i++) pinMode(LINES[i], INPUT_PULLUP);
}

void holdLow(int p) {           // LOW first: never drive HIGH
  digitalWrite(p, LOW);
  pinMode(p, OUTPUT);
}

int scanTilt() {
  releaseAll(); holdLow(A); delayMicroseconds(10);
  bool ab = !digitalRead(B), da = !digitalRead(D);
  releaseAll(); holdLow(C); delayMicroseconds(10);
  bool bc = !digitalRead(B), cd = !digitalRead(D);
  releaseAll();
  return ab ? 1 : bc ? 2 : cd ? 3 : da ? 4 : 0;
}

void setup() { Serial.begin(115200); releaseAll(); }
void loop() {
  static int last = -1;
  int side = scanTilt();
  if (side != last) { Serial.println(NAME[side]); last = side; }
  delay(20);
}
```

left
top
right
header

Serial Monitor at 115200: a line each time the low side changes.

The four lights

Each LED runs from VCC through 1 kΩ to its line, so it lights only while your board holds that line LOW: about 3.0 mA from 5 V and 1.3 mA from 3.3 V. With power alone none lights. To show the low side, hold both lines of the joined pair LOW between scans: they are joined anyway, and a pin then sinks at most about 6 mA.

When it does not work

Nothing lights when I tilt it

Normal until a sketch runs: an LED lights only while its line is held LOW.

Flat, it reads a side

The roller stays where it last rolled. Level is not a reading this switch can give.

Two sides at once

A pin is floating or a line is shorted. Opposite sides can never join together.

Specifications

Switch	RB-6635S-1T, roller and four contacts	Reads	4 sides down, or none
Pairs	A–B left, B–C top, C–D right, D–A header	Read by	Hold A LOW, then C, read B and D
Lights	4 red LEDs, 1 kΩ from VCC, lit on LOW	Supply	3.3 V or 5 V, the same as your board
Header	6 pins, right-angle, 2.54 mm	Size	22.4 × 30.4 mm

Wiring

	FRONT	UNO	ESP32	S3	PICO
1	GND	GND	GND	GND	GND
2	VCC	5V	3V3	3V3	3V3
3	A	D2	GPIO 25	GPIO 4	GP10
4	B	D3	GPIO 26	GPIO 5	GP11
5	C	D4	GPIO 27	GPIO 6	GP12
6	D	D5	GPIO 32	GPIO 7	GP13

Hole 1 is the square pad. Every line needs a pin that can be an output: on an ESP32, not GPIO 34 to 39.