Wire your SashSense kit

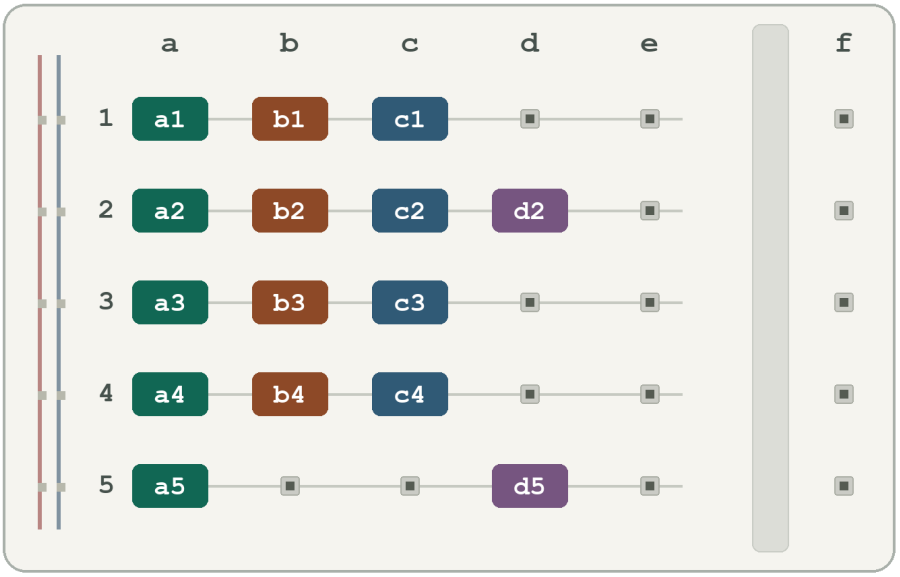
Loose boards? Leave USB unplugged and follow this page. **Already assembled?** Turn to page 2 and connect. A controller marked “Firmware loaded and checked” is ready for the live graph.

Match each bag to a breadboard column

Leave the controller beside the breadboard. Slip each female socket onto the printed board pin and plug its male end into the indicated hole. Holes a–e on the same numbered row connect together.

Row	1 ESP32	2 VL53L0X	3 SHT31	Contact
1	3V3 → a1	VIN → b1	VIN → c1	—
2	GND → a2	GND → b2	GND → c2	Lead 1 → d2
3	GPIO21 → a3	SDA → b3	SDA/RH → c3	—
4	GPIO22 → a4	SCL → b4	SCL/T → c4	—
5	GPIO25 → a5	—	—	Lead 2 → d5

Either contact wire can go to ground. If the magnetic switch is absent, leave a5, d2 and d5 empty. The other measurements work normally.



Before power
Find row 1. Trace both sensor VIN leads back to the controller’s 3V3 pin.

Find row 2. Trace both sensor grounds back to GND.

Use the labels even when your jumper colors differ.

Ready for the card check

Turn over. A flat card in front of the distance sensor is enough to see the graph respond. You can try a moving sash or optional fixture afterward.

See your first moving graph

sashsense.mosherpa.org/kit

Connect the kit on your laptop

Open the address above in desktop **Chrome or Edge**. Plug the checked, wired kit into that laptop with its USB data cable. A preloaded board needs no software download or account. Close Arduino Serial Monitor and Serial Plotter if either is using the board.

Click **Connect kit**. The port may say **CP210x** or **USB-to-UART**. If you see several, cancel, compare the list with the kit unplugged, then reconnect and choose the port that reappears.

Move a card toward the range sensor

Select **Distance**. Hold a flat matte card about 20 cm in front of the VL53L0X. Move it closer and then farther away. The line should fall and rise in millimeters. This is your first check before making a fixture.

Zero the target and compare with a ruler

Fix the sensor in place above a movable target. Use a clamp, a scrap stand or your own setup. Allow 10 cm of travel toward the sensor and keep the same surface in view. Put the magnet beside the fixed switch at closure, if supplied, and select **Switch fitted**.

Hold the target closed and click **Set zero**. After the board confirms, follow one edge through 0, 5 and 10 cm of travel. Pause at each mark. Raw distance should fall while opening increases.

Ruler opening	Distance (mm)	Opening (cm)	Contact state
0 cm	_____	_____	_____
5 cm	_____	_____	_____
10 cm	_____	_____	_____

Close five times without re-zeroing. Closed readings ranged from _____ to _____ cm. Click **Export CSV** before closing the tab. It retains the latest 3,600 readings.

If something is missing

Temperature updates but distance is blank? USB is connected. Aim a matte card at the VL53L0X and clear its window. Unplug USB before checking bag 2’s four wires at b1–b4. **No port?** Try another data cable and close other serial tools. For blank-board setup, open the online firmware guide.