QUICK REFERENCE · TK39 + TK38

DHT Sensor Kit

Three DHT22s and three DHT11s: the same board, two sensors.

VCC sets the data line The 10 kΩ pull-up ties DATA to VCC. **On an ESP32, ESP32-S3 or Pico, feed VCC from 3V3, never 5V**: 5 V would idle on a 3.3 V input. On an Uno, 5V.

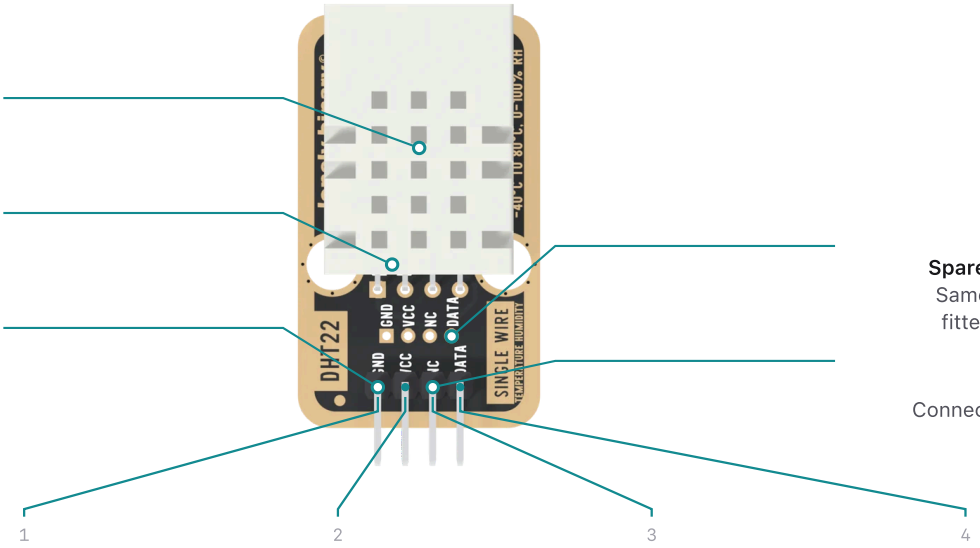
The DHT22: TK39

Sensor up, header at the bottom. Wire GND, VCC and DATA; NC is connected to nothing on the board.

DHT22, white cage
–40 to 80 °C, ±0.5 °C.
Overhangs the top edge.

10 kΩ pull-up
Hidden under the cage.
Fitted: add nothing.

GND is the square pad
Count from it: GND, VCC, NC, DATA.



Spare 2.0 mm pads
Same nets, nothing fitted. Leave them.

NC
Connected to nothing on the board.

Front	GND	VCC	NC	DATA
Single wire	GND	VCC	●	DATA

Declare DHT22, not DHT11 Both send 40 bits with a valid checksum, packed differently. The wrong type prints a confident wrong number, not an error.

Two sensors, one wire each

TK39 · DHT22

±0.5 °C

–40 to 80 °C, ±2 % RH, in tenths. One read every 2 s.

TK38 · DHT11

±2 °C

0 to 50 °C, ±5 % RH, whole numbers. The library reads it every 2 s too.

Both

3 wires each

GND, VCC and DATA. No addresses: six sensors need six DATA pins.

Learn the wire on a DHT11, then use a DHT22 for any number something acts on. The wiring is the same; one word in the sketch changes.

From Aosong's DHT11 and DHT22 (AM2302) datasheets and Adafruit's DHT sensor library 1.4.7. Accuracies are the datasheets'; nothing on this sheet was measured.

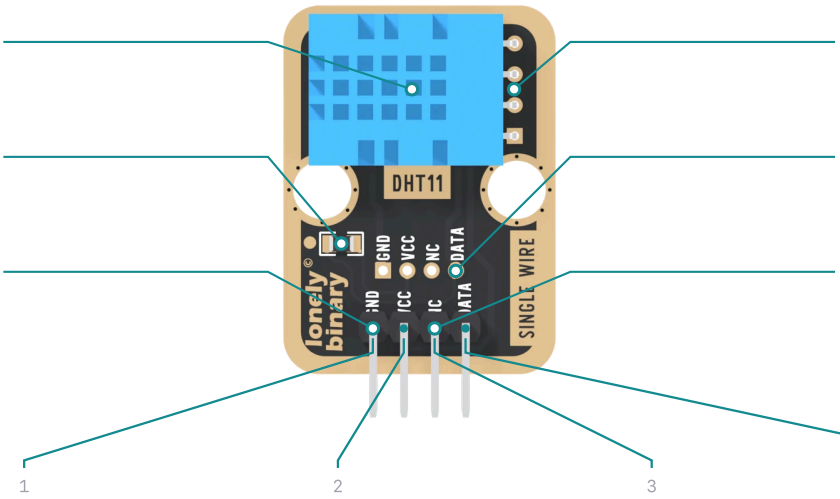
The DHT11: TK38

Same header, same order, same pull-up. Only the sensor and the board's length differ.

DHT11, blue cage
0 to 50 °C, ±2 °C.
Nothing below freezing.

10 kΩ pull-up
DATA to VCC. Already fitted: add nothing.

GND is the square pad
Count from it: GND, VCC, NC, DATA.



The sensor's leads
Bent flat, soldered here.
Nothing to wire.

Spare 2.0 mm pads
Same nets, nothing fitted. Leave them.

NC
Connected to nothing on the board.

	1	2	3	4
Front	**GND**	**VCC**	**NC**	**DATA**
Single wire	GND	VCC	●	DATA

nan means nobody answered It is the only error the protocol has: no reply, or a checksum that failed. Check the wires before the code.

Which board is which

	TK39 · DHT22	TK38 · DHT11
Cage	white	blue
Temperature	−40 to 80 °C, ±0.5 °C	0 to 50 °C, ±2 °C
Humidity	0 to 100 %, ±2 %	20 to 80 %, ±5 %
Steps	0.1 °C, 0.1 %	1 °C, 1 %
Supply	3.3 to 6 V	3 to 5.5 V
In the sketch	DHT22	DHT11
Use it for	logging, outdoors, switching	learning, a display

What happens on the wire

The sketch pulls DATA low for 20 ms to wake the sensor (the DHT11 needs 18 ms, the DHT22 only 1 ms). The sensor answers 80 µs low, 80 µs high, then sends 40 bits: each a 50 µs low and a high whose length is the bit, 26 to 28 µs for 0, 70 µs for 1. About 4 ms in all.

Both at once

Arduino IDE · Library: DHT sensor library (Adafruit), with Adafruit Unified Sensor · ESP32-S3: USB CDC On Boot: Enabled

```
#include <DHT.h>   // DHT sensor library by Adafruit

// Uno D2, D3. ESP32 18, 19. ESP32-S3 4, 5. Pico GP2, GP3.
DHT dht22(4, DHT22);   // TK39, white cage
DHT dht11(5, DHT11);   // TK38, blue cage: a pin of its own

void setup() {
  Serial.begin(115200);
  dht22.begin();
  dht11.begin();
}

void loop() {
  delay(2000);
  Serial.print("DHT22 ");
  Serial.print(dht22.readTemperature(), 1);
  Serial.print(" C   DHT11 ");
  Serial.print(dht11.readTemperature(), 1);
  Serial.println(" C");
}
```

```
DHT22 23.4 C DHT11 23.0 C
```

Serial Monitor at 115200. Expect them to differ by up to the DHT11's ±2 °C.

Wiring

	FRONT	UNO	ESP32	S3	PICO
1	GND	GND	GND	GND	GND
2	VCC	5V	3V3	3V3	3V3
3	NC				
4	DATA · TK39	D2	GPIO 18	GPIO 4	GP2
4	DATA · TK38	D3	GPIO 19	GPIO 5	GP3

Hole 1 is the square pad. Both boards share GND and VCC; each DATA needs a pin of its own. VCC is your board's logic voltage, because DATA idles at VCC.

When it does not work

Every reading is nan

Nobody answered. Check GND, then VCC, then DATA on the pin the sketch names, counting from the square pad: GND, VCC, NC, DATA.

The reading never changes

Reads closer than 2 s apart return the last answer without touching the wire. Time reads with millis().

Works on an Uno, not an ESP32

Check VCC is 3V3. The pull-up takes DATA to VCC, so 5 V there sits on a 3.3 V pin.

Numbers, but silly ones

The type in the sketch does not match the cage. Blue is DHT11, white is DHT22; the checksum passes either way.

Reads warm, and dry

It is measuring the board it sits on. Move it off the breadboard on jumper wires, away from regulators, and wait a few minutes.

Two sensors on one pin

There are no addresses: both answer at once and neither survives. One DATA pin per sensor.

Specifications

DHT22 range	−40 to 80 °C, 0 to 100 % RH	**DHT22 accuracy**	±0.5 °C, ±2 % RH
DHT11 range	0 to 50 °C, 20 to 80 % RH	**DHT11 accuracy**	±2 °C, ±5 % RH
Supply	3.3 V to 5.5 V, both	**Pull-up**	10 kΩ, DATA to VCC, fitted
Boards	TK39 22.4 × 38.4, TK38 22.4 × 30.4 mm	**In the box**	3 × TK39, 3 × TK38, a case