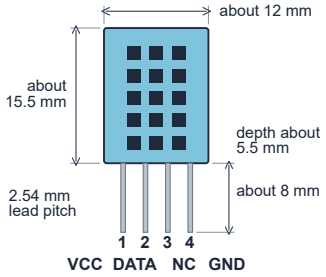
DHT11 Digital Temperature and Humidity Sensor, Bare 4-Pin

Single-wire temperature and humidity sensor for breadboards, stripboard and your own PCBs

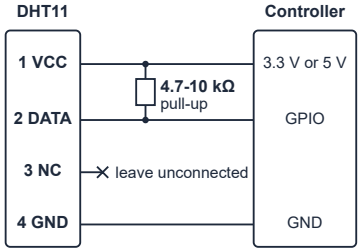
SINGLE-WIRE DIGITAL | 3.3 TO 5.5 V | 20 TO 80 % RH | 0 TO 50 °C | PULL-UP NEEDED

PINOUT AND OUTLINE, GRILLE FACE



Grille towards you, leads down. Simplified, not to scale; sizes are approximate.

RECOMMENDED CONNECTION



One pull-up from DATA to the same supply that powers the sensor. 5.1 kΩ is the reference value.

IDENTIFICATION

ITEM	DETAIL
Device	**DHT11 digital temperature and humidity sensor, bare 4-pin part (no breakout board)**
Package	**Light-blue vented housing, about 12 x 15.5 x 5.5 mm, 4 straight leads at 2.54 mm**
Markings	**None on the housing**
Pins and interface	**1 VCC, 2 DATA, 3 NC (not connected), 4 GND, grille towards you and leads down. Single-wire, 40-bit frame**
Supplied as	**1 sensor. Pull-up resistor and wires not included**

DHT11 FAMILY REFERENCE

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Supply voltage, VCC	DC	**3.3**	**-**	**5.5**	**V**
Supply current	Measuring / standby	**-**	**0.3 / 0.06**	**-**	**mA**
Humidity, recommended range	0 to 50 °C	**20**	**-**	**80**	**% RH**
Humidity accuracy	At 25 °C		**±5**		**% RH**
Temperature range	Operating	**0**	**-**	**50**	**°C**
Temperature accuracy	At 25 °C		**±2**		**°C**
Reading step	Humidity / temperature, whole numbers		**1 / 1**		**% RH / °C**
Response time, 63 %	Humidity / temperature		**6 / 10**		**s**
Interval between reads	Recommended	**2**	**-**	**-**	**s**
Settle time after power-up	Before the first read	**1**	**-**	**-**	**s**
Cable length, DATA	5 V supply, 5.1 kΩ / 3.3 V supply		**20 / 1**		**m max**

DHT11 family figures for design reference. Each read returns the previous measurement, so discard the first value after power-up or a long pause.

WIRING

- **Arduino Uno or Nano:** pin 1 to 5V, pin 4 to GND, pin 2 to D2, 4.7 kΩ to 10 kΩ from pin 2 to 5V. Pin 3 stays unconnected.
- **ESP32 or Raspberry Pi:** pin 1 to 3.3V, pin 4 to GND, pin 2 to GPIO4, pull-up from pin 2 to 3.3V. Keep the wires under 1 m at 3.3V.
- **Arduino IDE:** install the DHT sensor library and set the type to DHT11. **ESPHome:** platform dht, model DHT11.

USE AND TROUBLESHOOTING

- **Failed read or nan:** check the pull-up, that pin 2 goes to the pin named in the sketch, and that the type is DHT11.
- **Errors every few reads:** read every 2 seconds or slower.
- **Reads warm or dry:** keep it away from regulators, chips and other heat sources, with air around the grille.
- **Checksum errors on long wires:** shorten the run, use 5V, or use twisted or shielded cable.
- **Sensor gets hot:** VCC and GND are swapped. Remove power at once.

Soldering and storage: hand solder at up to 300 °C for less than 10 s per lead. Keep it out of condensation, chemical vapours and direct sun; the housing is vented, not sealed.

REVISION HISTORY

REV	DATE	CHANGE
1.0	2026-10-22	First release