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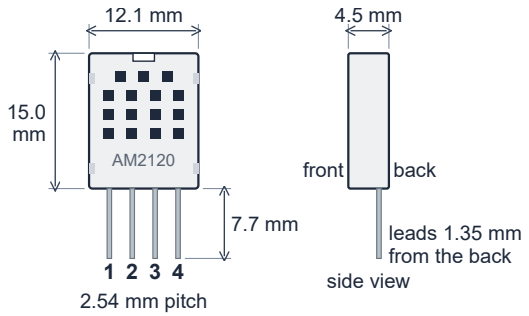
REV 1.0 | 2026-10-22

AM2120 Digital Temperature and Humidity Sensor

Calibrated single-bus sensor with 4 straight leads at 2.54 mm, for breadboards and PCBs

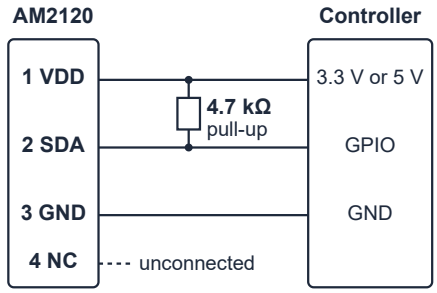
SINGLE-BUS DATA | 3.3 TO 5.5 V | 0 TO 99.9 %RH | -40 TO 80 °C | PULL-UP NEEDED

PINOUT AND OUTLINE



Front view with the vent holes towards you and the leads down. Simplified drawing; values are nominal.

RECOMMENDED CONNECTION



Pull SDA up to the controller's own logic voltage. Pin 4 stays unconnected.

IDENTIFICATION AND INTERFACE

ITEM	DETAIL
Device	**AM2120 calibrated digital temperature and relative humidity sensor, capacitive humidity element**
Package marking	**AM2120 with a lot code line, engraved under the vent holes**
Pins	**1 VDD, 2 SDA (data), 3 GND, 4 NC, vent holes towards you and leads down**
Interface	**Single-bus (one data wire, open-drain with pull-up). Not an I2C device: pin 4 is not connected**
Data frame	**40 bits: humidity x10 (16 bit), temperature x10 (16 bit, bit 15 = below zero), 8-bit checksum. Same frame as the DHT22 / AM2302**

ELECTRICAL AND PERFORMANCE DATA

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Supply voltage, VDD	5 V recommended	**3.3**	**5**	**5.5**	**V**
Supply current	Sleep / measuring / average at one read per 2 s		**15 / 1200 / 600 typ**		**µA**
Humidity range	Normal use 0 to 80 %RH	**0**	**-**	**99.9**	**%RH**
Humidity accuracy	25 °C, 5 V, 20 to 80 %RH, non-condensing	**-**	**±3**	**±4**	**%RH**
Temperature range		**-40**	**-**	**80**	**°C**
Temperature accuracy	About 15 to 55 °C	**-**	**±0.5**	**-**	**°C**
Resolution	Humidity / temperature		**0.1 / 0.1**		**%RH / °C**
Response time, 63%	Humidity / temperature, 25 °C, 1 m/s air		**under 6 / under 10**		**s**
Read interval	Also wait 2 s after power-up	**2**	**-**	**-**	**s**
Host start signal	SDA held low by the controller	**1**	**1**	**20**	**ms**

Figures are the sensor datasheet values for this model. Humidity accuracy widens towards 0 and 100 %RH and at the ends of the temperature range. Each reading returns the previous measurement, so after a long gap read twice, 2 s apart.

WIRING AND SOFTWARE

- **Arduino Uno or Nano:** pin 1 to 5V, pin 2 to D2, pin 3 to GND, 4.7 kΩ from pin 2 to 5V. Leave pin 4 unconnected.
- **ESP32 or Raspberry Pi Pico:** pin 1 to 3.3V and a 4.7 kΩ pull-up to 3.3V. Keep wiring under 1 m on 3.3 V.
- **Arduino library:** the DHT sensor library with the type set to **DHT22**. The DHT11 setting decodes this frame wrongly.
- **ESPHome:** the dht platform with **model: AM2120** and an update interval of 2 s or longer.

USE AND TROUBLESHOOTING

- **Not a DHT11 pin swap:** on this part GND is pin 3 and pin 4 is not connected. Check the wiring before fitting it to a DHT11 footprint.
- **NaN or checksum errors:** check the pull-up, the pin order and that reads are at least 2 s apart.
- **Readings stuck or off by a lot:** the library type is set to DHT11. Change it to DHT22.
- **Reads high or slow to settle:** keep the sensor away from regulators and warm parts, and out of solvent fumes, glue and tape.

Soldering and care: hand-solder at 300 °C or less for under 3 s per lead. Avoid condensation, direct sun and chemical vapours. Store at 10 to 50 °C and 20 to 60 %RH.

REVISION HISTORY

REV	DATE	CHANGE
1.0	2026-10-22	First release