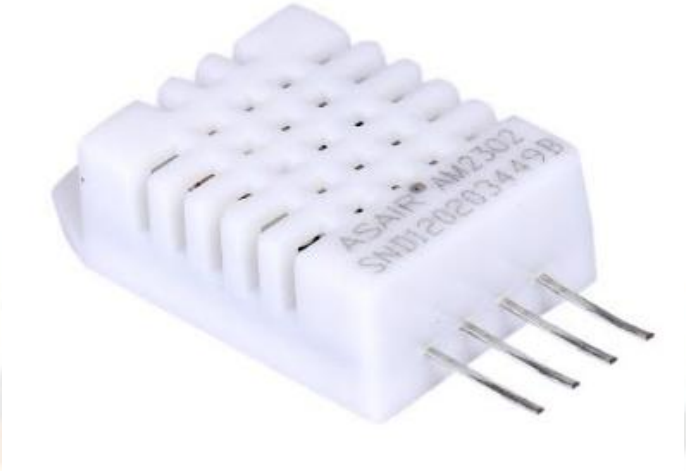
DHT22 Sensor Original



DHT22 is output calibrated digital signal. It utilizes exclusive digital-signal-collecting-technique and humidity sensing technology, assuring its reliability and stability. Its sensing elements is connected with 8-bit single-chip computer. Every sensor of this model is temperature compensated and calibrated in accurate calibration chamber and the calibration-coefficient is saved in type of program in OTP memory, when the sensor is detecting, it will cite coefficient from memory. Small size & low consumption & long transmission distance (20m) enable DHT22 to be suited in all kinds of harsh application occasions. Single-row packaged with four pins, making the connection very convenient.

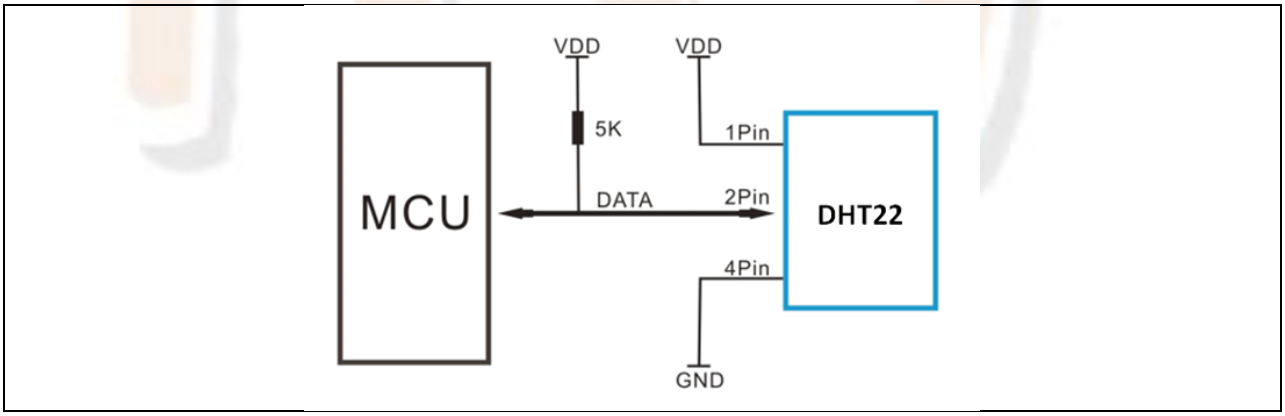
FEATURES:

- Full range temperature compensated
- Relative humidity and temperature measurement
- Calibrated digital signal
- Outstanding long-term stability
- Extra components not needed
- Long transmission distance
- Low power consumption
- 4 pins packaged and fully interchangeable

SPECIFICATIONS:

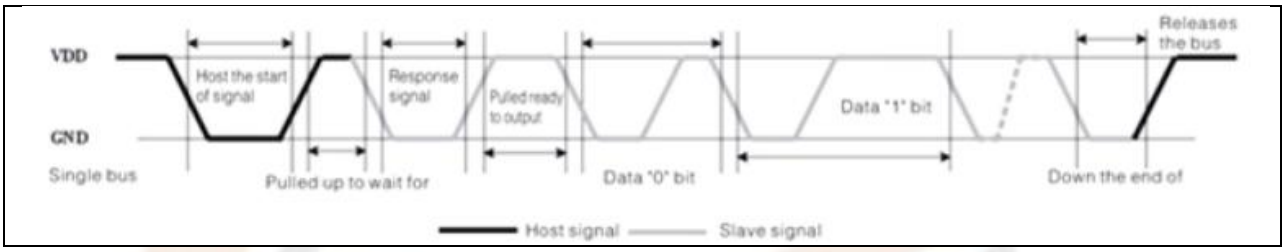
- Model: DHT22
- Power supply: 3.3-6V DC
- Output signal: digital signal via single-bus
- Sensing element: Polymer capacitor
- Operating range: humidity 0-100%RH; temperature -40~80Celsius
- Accuracy: humidity +-2%RH(Max +-5%RH); temperature <+-0.5Celsius
- Resolution or sensitivity: humidity 0.1%RH; temperature 0.1Celsius
- Repeatability: humidity +-1%RH; temperature +-0.2Celsius
- Humidity hysteresis: +-0.3%RH
- Long-term Stability: +-0.5%RH/year
- Sensing period: Average: 2s
- Interchangeability: fully interchangeable

ELECTRICAL CONNECTION DIAGRAM:



- As you can see the data pin is connected to an I/O pin of the MCU and a 5K pull up resistor is used. This data pin outputs the value of both temperature and humidity as serial data.

- The output given out by the data pin will be in the order of 8bit humidity integer data + 8bit the Humidity decimal data +8 bit temperature integer data + 8bit fractional temperature data +8 bit parity bit. To request the DHT11 module to send these data the I/O pin has to be momentarily made low and then held high as shown in the timing diagram below.



- **Power and Pins:**

  Power's voltage should be 3.3-6V DC. When power is supplied to sensor, don't send any instruction to the sensor within one second to pass unstable status. One capacitor valued 100nF can be added between VDD and GND for wave filtering.

- **Communication and signal:**

  Single-bus data is used for communication between MCU and DHT22, it costs 5mS for single time communication.

  Data is comprised of integral and decimal part, the following is the formula for data. DHT22 send out higher data bit firstly.

  DATA=8 bit integral RH data+8 bit decimal RH data+8 bit integral T data+8 bit decimal T data+8 bit check-sum If the data transmission is right, check-sum should be the last 8 bit of "8 bit integral RH data+8 bit decimal RH data+8 bit integral T data+8 bit decimal T data".

  When MCU send start signal, DHT22 change from low-power-consumption-mode to running-mode. When MCU finish sending the start signal, DHT22 will send response signal of 40-bit data that reflect the relative humidity and temperature information to MCU. Without start signal from MCU, DHT22 will not give response signal to MCU. One start signal for one time's response data that reflect the relative humidity and temperature information from DHT22. DHT22 will change to low-power-consumption-mode when data collecting finish if it don't receive start signal from MCU again.

PIN FUNCTION:

Pin No	Pin Name	Description
1	Vcc	Power supply 3.5V to 5.5V
2	Data	Outputs both Temperature and Humidity through serial Data
3	NC	No Connection and hence not used
4	Ground	Connected to the ground of the circuit

APPLICATIONS:

- Measure temperature and humidity
- Local Weather station
- Automatic climate control
- Environment monitoring

PACKAGE INCLUDES:

1x DHT22 Digital Temperature and Humidity Sensor