Z2M Part Number:
EMS-00002-A
EDT-00005-A

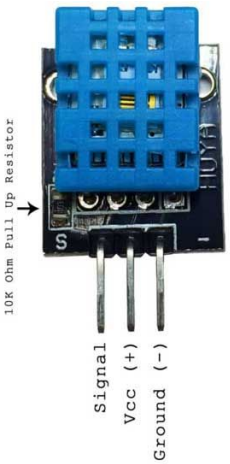
Humidity Sensor (Device/Module)

(Technical Note)

What is Humidity Sensor?

Humidity sensor is used to measure the relative humidity of environment in its proximity. Modern day commonly available sensors of DHT series (DHT11 and DHT22) measure the temperature along with relative humidity. Relative humidity (RH) is the amount of water vapour present in air expressed as percentage of the amount needed for saturation at the same temperature.

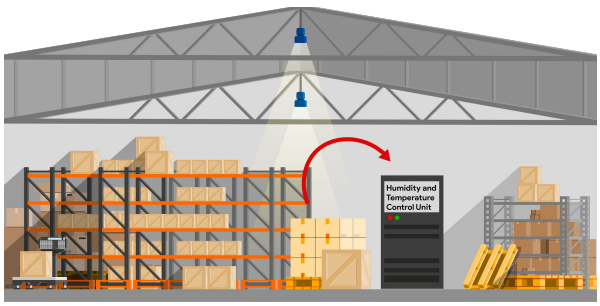
EMS-00002-A



EDT-00005-A

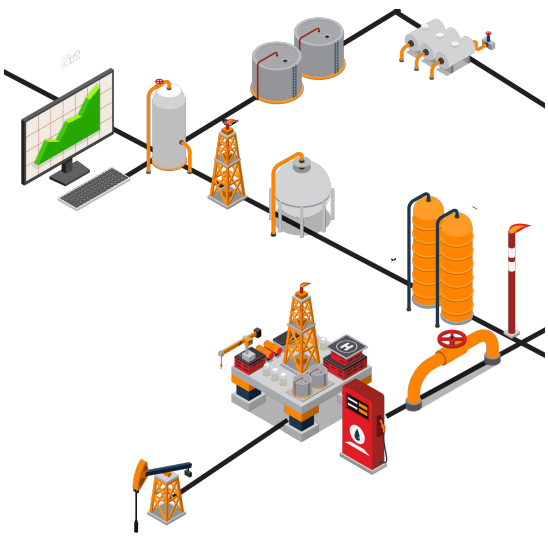
Scientific Fact and Applications

The DHT11 is a commonly utilized temperature and humidity sensor with a digital interface. The sensor accompanies a committed negative temperature coefficient (NTC) to gauge temperature and a 8-bit microcontroller to yield the estimations of temperature and humidity as sequential information.



Food Processing

Humidity plays an important parameter in food processing industries, as any change in humidity could deteriorate the food to be consumed. Therefore real-time humidity needs to be checked often in food processing and transportation industries.



Fuel Industry

Industrial grade sensing apparatuses are equipped in fuel and oil industries, manage constant environmental conditions such as humidity and temperature as these are the most critical factors of concern of fire hazard.

AN-009 Rev 1.0

Z2M Part Number:
EMS-00002-A
EDT-00005-A

Humidity Sensor (Device)

(Application Note)

Project

To check the relative humidity and environmental temperature using DHT11.

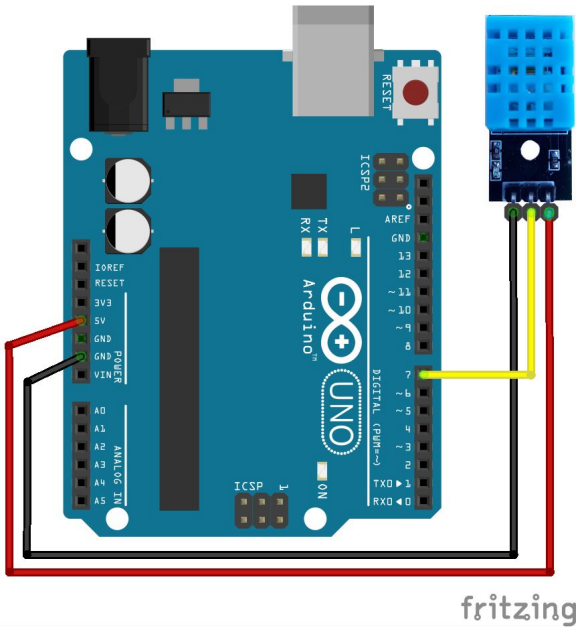
Procedure

DHT11 Sensor Module:

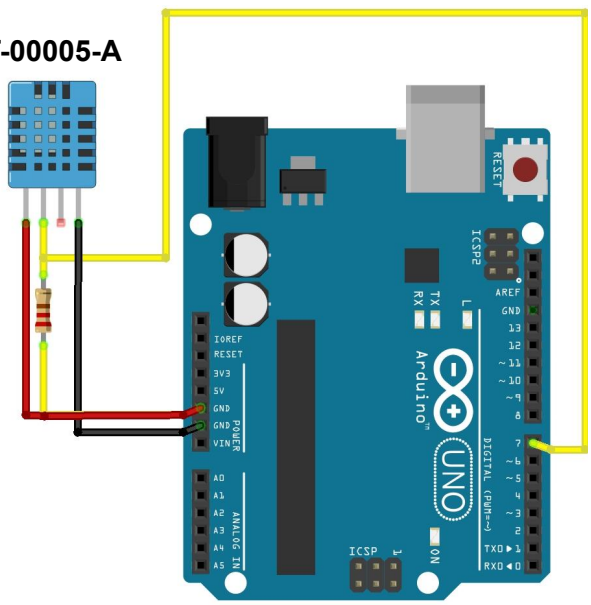
- Connect Power, Ground and Data (Signal) pins of the sensor to Arduino
- Find and install the required libraries (h files) from https://tinyurl.com/Z2MLibraries.
- Upload the code
- Watch data Temperature and Humidity data on Serial Monitor

Schematic

EMS-00002-A



EDT-00005-A



Components Required

Component	Part No.	Qty
Arduino UNO	EMX-00001-A	1
DHT11 Humidity Sensor	EMS-00002-A or EDT-00005-A	1
Jumper Wires - M-F	EDA-00001-A	3
220Ω Resistor	EDR-00001-220Z	1

Code

```
/* Add the library*/
#include <SimpleDHT.h>

/* Set names for the pins and the sensors*/
int pinDHT11 = 7;
SimpleDHT11 dht11(pinDHT11);

void setup()
{
  // Initiate Serial Monitor
  Serial.begin(9600);
}

void loop() {
  // Print intro
  Serial.println("================================");
  Serial.println("Sample DHT11...");

  /* Initiate variables*/
  byte temperature = 0;
  byte humidity = 0;
  int err = SimpleDHTErrSuccess;

  /* Check for error, print error*/
  if ((err = dht11.read(&temperature, &humidity,
NULL)) != SimpleDHTErrSuccess)
  {
    Serial.print("Read DHT11 failed, err=");
    Serial.println(err);
    delay(1000);
    return;
  }
  /* If no error, print the values*/
  Serial.print("Sample OK: ");
  Serial.print((int)temperature); Serial.print(" °C,
");
  Serial.print((int)humidity); Serial.println("RH");

  /* Stay at current state for certain duration*/
  delay(1500);
}
```

Challenge Yourself

1. Make a meter which shows the environmental readings (temperature and humidity).
2. Create a humidity controller that can turn on a fan if humidity exceeds a set level.