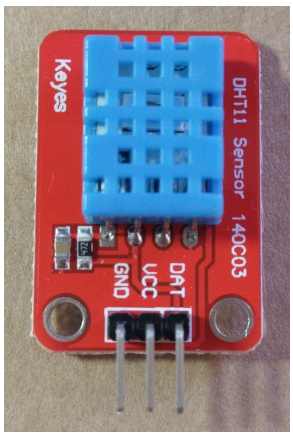
Humidity&Temperature LoRa Reporter

We can easily build an automatically data reporter and collector system by using MOSTLink LoRa Gateway & Node. Here are an example for automatically sending humidity & temperature data and display the collected data in diagrams.

Required Components:

Arduino UNO *1
MOSTLoRa Shield *1
DHT11 Temperature & Humidity sensor *1
breadboard *1
wires * 3
ThingSpeak Account *1

DHT11 Temperature & Humidity sensor



From left to right: GND / VCC / DATA

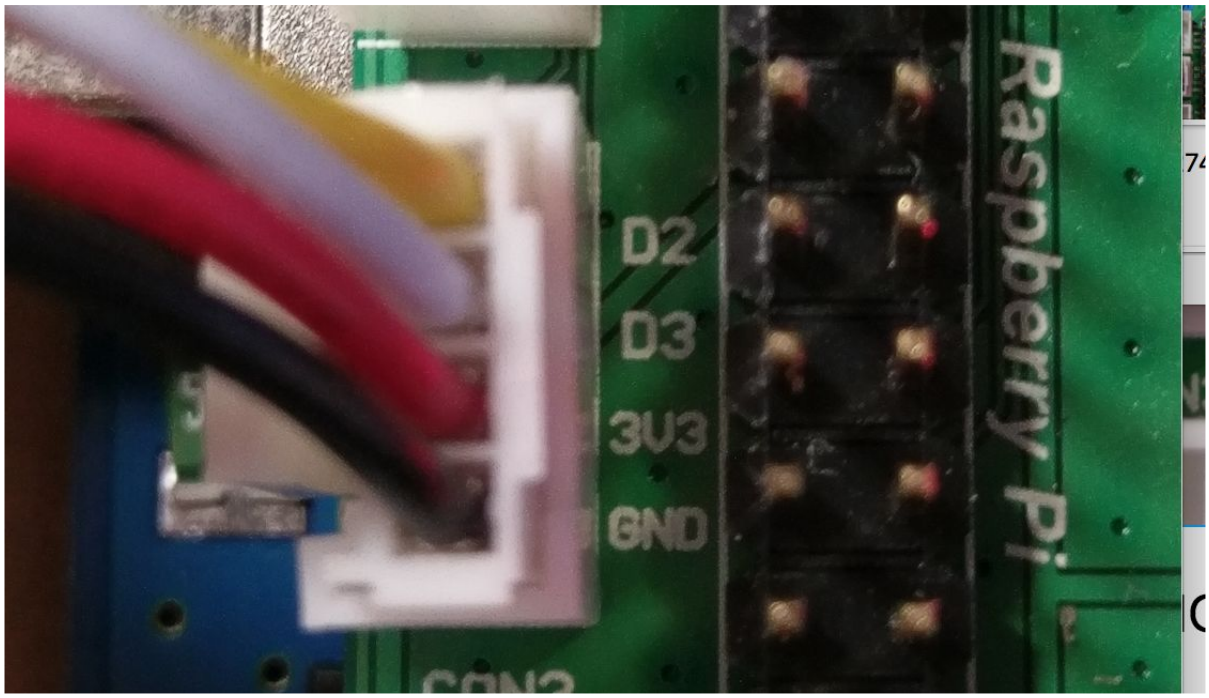
DHT11 Specification:

Humidity Range	20~90% RH
Humidity Accurate	± 5% RH
Temperature Range	0-50 °C
Temperature Accuracy	±2% °C
Operating Voltage	3V to 5.5V

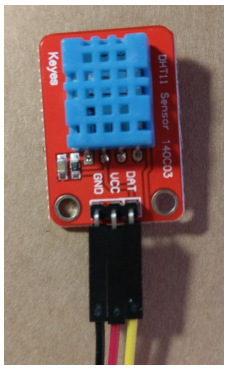
Reference: [How to Set Up the DHT11 Humidity Sensor on an Arduino]

Circuit:

On the Lora Shield, connects the grove to the center of connectors located in the bottom of Raspberry Pi pins.



On the DHT11, connects the black/ red/ yellow cables to the pings of GND/VCC/DAT corresponding to the groves' cables on the LoRa shield board.

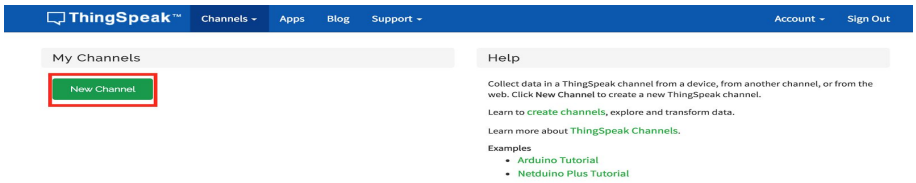


Setup Arduino & MOSTLoRa Library

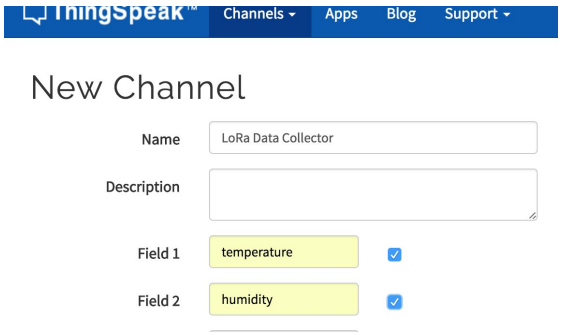
Please refer to "Getting Started with MOSTLink LoRa" guide.

Sign up a ThingSpeak account

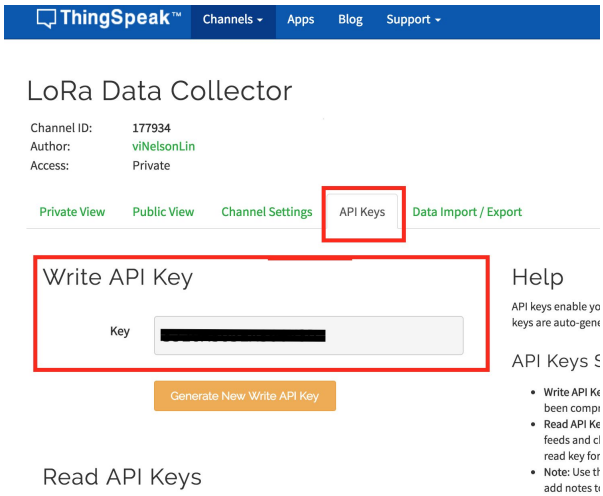
Go to [ThingSpeak website] and sign up an account. After an account has been created, click New Channel to create a channel for receiving data from a LoRa station gateway.



Create a New Channel and set fields for temperature and humidity.



After the channl being created, click on API Keys tab and write down your Write API Key.



Run MOSTLoRa temperature& humidity reporter

Download the sketch [here] and deploy it on your Arduino. Replace the ThingSpeak API key with yours.

```
#include <DHT.h>
#include "MOSTLora.h"
#define DHT_PIN 2

const char *THINKSPEAK_WRITE_API_KEY = "YOUR_THINGSPEAK_WRITE_API_KEY";

DHT dht(DHT_PIN, DHT11);
MOSTLora lora;

void setup() {
  Serial.begin(9600);
  dht.begin();
  lora.begin();
  lora.writeConfig(915000, 0, 0, 7, 5);
  lora.setMode(E_LORA_POWERSAVING);    // module mode: power-saving
  //set callback function when receiving request from a station gateway
  lora.setCallbackPacketReqData(uploadEnvironmentData);
}

void loop() {
  lora.run();  // lora handle input messages
  delay(100);
}

// read temperature, humidity data and send them to ThinkSpeak
void uploadEnvironmentData(unsigned char* data, int szData) {
  float temperature,humidity;
  if (dht.readSensor(humidity, temperature, true)) {
    lora.sendPacketThingSpeak(THINKSPEAK_WRITE_API_KEY, temperature, humidity, 0, 0, 0, 0, 0, 0);
  }
}

```

Now, whenever your MOSTLink LoRa reporter node get a query from MOSTLink LoRa Station Gateway, it will get humidity & temperature data from DHT-11 sensor then send data to ThingSpeak.

Note: For DHT22, you can declare the devices as DHT22 devices:

```
DHT dht(DHT_PIN, DHT22);
```

ThingSpeak state history diagram

Go to ThingSpeak and select Channels. Click on the channel we just created. Then we can see the state histories in the diagram. Now, we have an automatically weather data reporter. Cheers !!