# 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 |
| ThinkSpeak Account *1 |

DHT11 Temperature & Humidity sensor
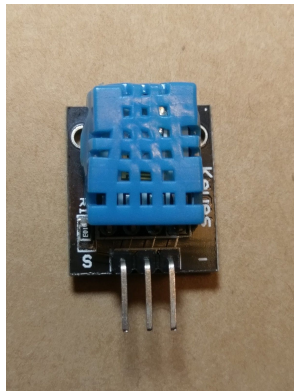
From left to right: Signal / VCC / GND

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:
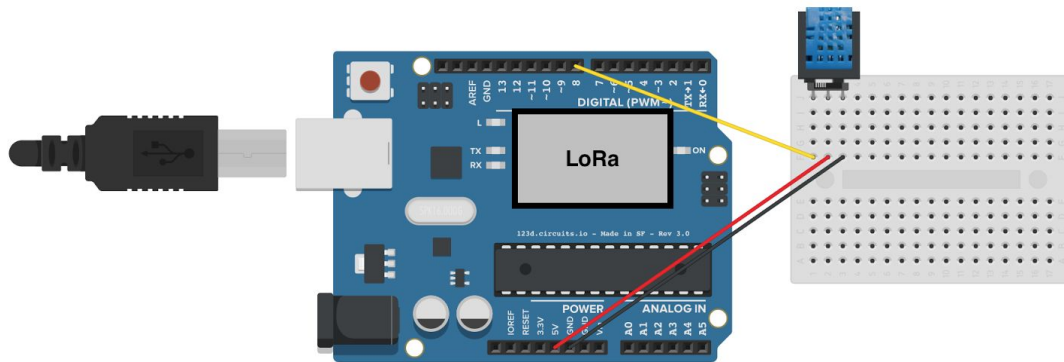
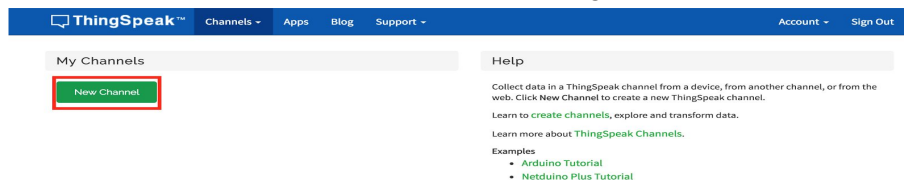# Setup Arduino & MOSTLoRa Library

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

Sign up a ThinkSpeak account

Go to ThinkSpeak 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.
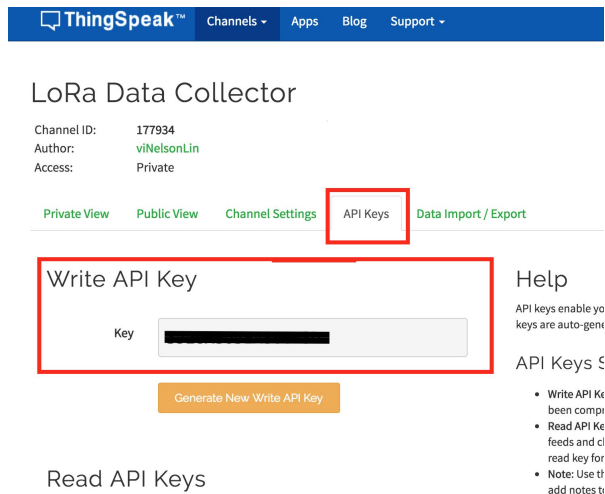
Run MOSTLoRa temperature& humidity reporter

Copy & Paste the codes below to your Arduino's sketch. Replace the ThinkSpeak API key with yours.

```cpp
#include <DHT.h>
#include "MOSTLora.h"
#include "MLPacketParser.h"
#define DHT11_PIN 8

const char *THINKSPEAK_WRITE_API_KEY = "YOUR_THINGSPEAK_WRITE_API_KEY";

DHT dht(DHT11_PIN, DHT11);
MOSTLora lora;

void setup() {
  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() {
  float temperature = dht.readTemperature(false); // true: Farenheit;
false: Celcius
  float humidity = dht.readHumidity();
  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 ThinkSpeak.

Note: For DHT22, you can declare the DHT22 devices and read information as codes below:

```
DHT dht(DHT_22_PIN, DHT22);
```

```
void uploadEnvironmentData() {
  float temperature, humidity;
  dht.readSensor(temperature, humidity, true);
  lora.sendPacketThingSpeak(THINKSPEAK_WRITE_API_KEY, temperature,
humidity, 0, 0, 0, 0, 0, 0);
}
```

ThinkSpeak state history diagram

Go to ThinkSpeak 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 !!