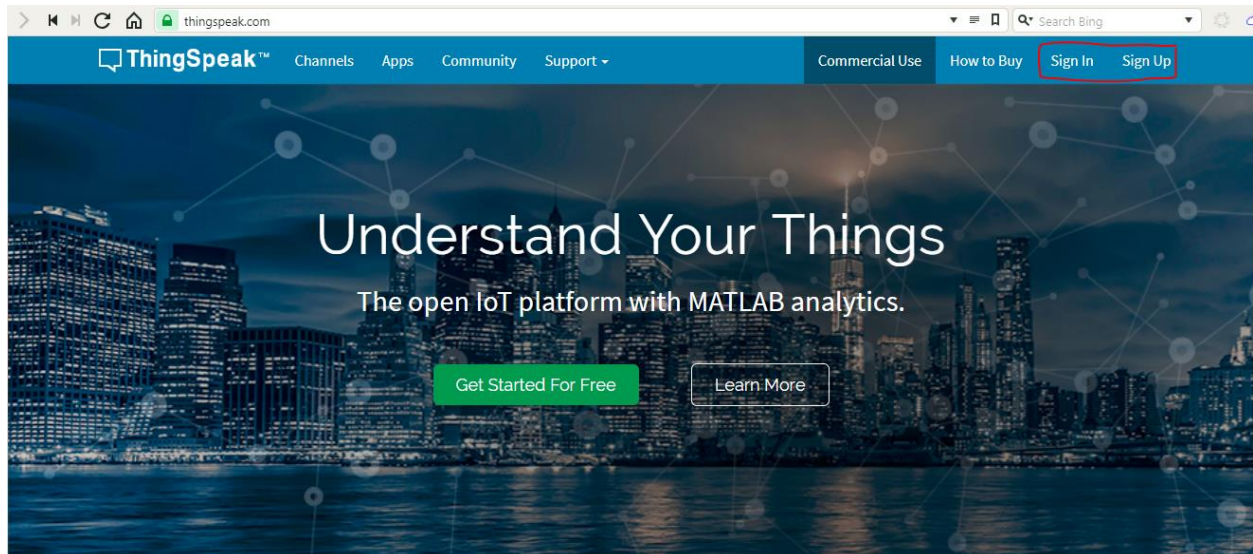
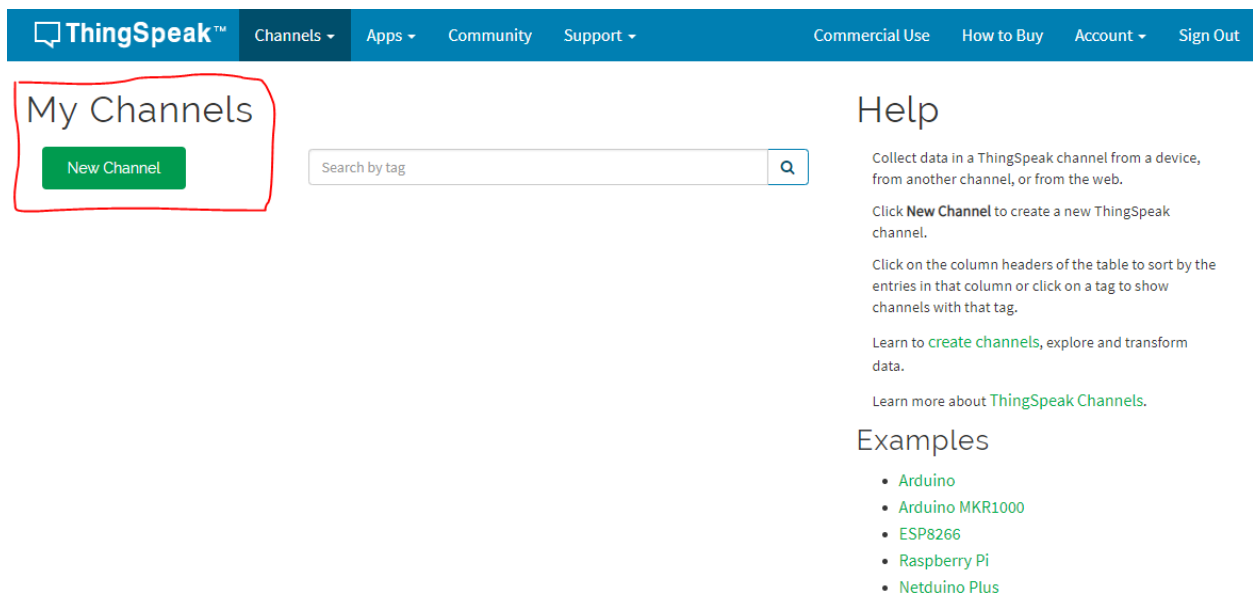


Monitor Temperature and humidity with Raspberry Pi

1. Create an account in <https://thingspeak.com> in order to monitor temperature and humidity online.



2. After you have created an account or logged in, you will see following page. Please click on New Channel button.



3. Now Enter information about the channel. Select two fields in order to send temperature and humidity from Raspberry Pi. Finally, Save your channel.

New Channel

Name

Description

Field 1

☒

Field 2

☒

Field 3

☐

Field 4

☐

Field 5

☐

Field 6

☐

Field 7

☐

Help

Channels store all the data that a ThingSpeak application collects. Each channel includes eight fields that can hold any type of data, plus three fields for location data and one for status data. Once you collect data in a channel, you can use ThingSpeak apps to analyze and visualize it.

Channel Settings

- **Channel Name:** Enter a unique name for the ThingSpeak channel.
- **Description:** Enter a description of the ThingSpeak channel.
- **Field#:** Check the box to enable the field, and enter a field name. Each ThingSpeak channel can have up to 8 fields.
- **Metadata:** Enter information about channel data, including JSON, XML, or CSV data.
- **Tags:** Enter keywords that identify the channel. Separate tags with commas.
- **Link to External Site:** If you have a website that contains information about your ThingSpeak channel, specify the URL.
- **Show Channel Location:**
 - **Latitude:** Specify the latitude position in decimal degrees. For example, the latitude of the city of London is 51.5072.
 - **Longitude:** Specify the longitude position in decimal degrees. For example, the

4. After Saving your channel, you will see following page. Please go to “API keys” tab.

Monitoring

Channel ID: **603382**

Monitoring temperature and humidity

Author: [magsoum](#)

Access: Public

Private View

Public View

Channel Settings

Sharing

API Keys

Data Import / Export

+ Add Visualizations

+ Add Widgets

Export recent data

MATLAB Analysis

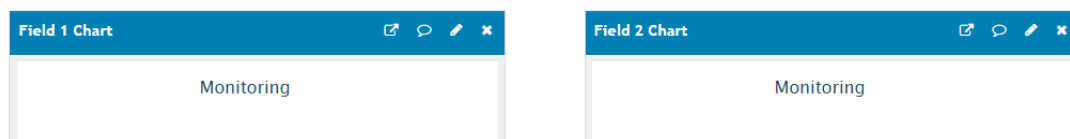
MATLAB Visualization

Channel Stats

Created: [about a minute ago](#)

Updated: [about a minute ago](#)

Entries: 0



5. In the API key page, Copy the “write API key” in order to send data from Raspberry Pi to ThingSpeak.

Write API Key

Key

HIX6M6K9I73YIAJU

[Generate New Write API Key](#)

Help

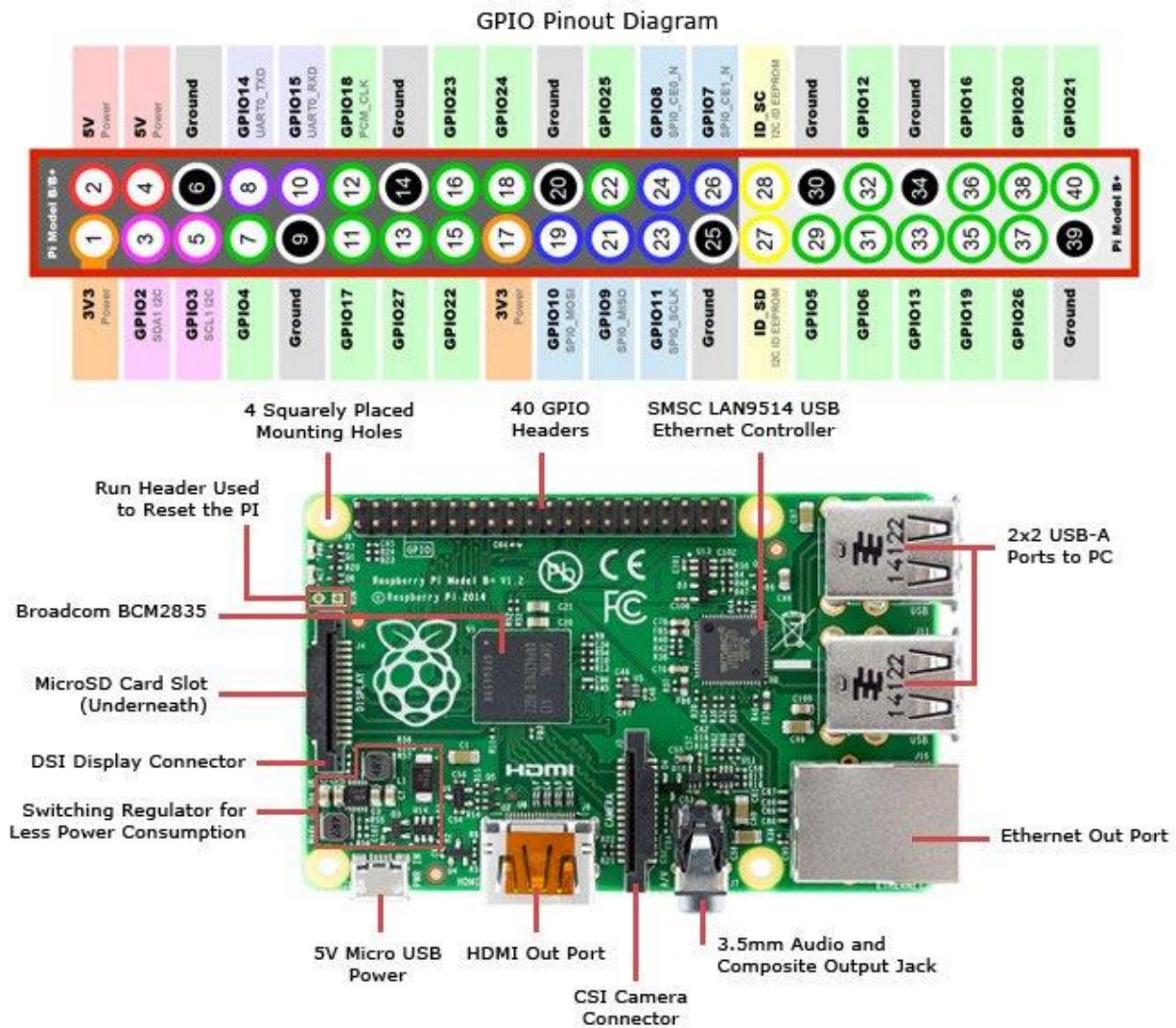
API keys enable you to write data to a channel or read data from a private channel. API keys are auto-generated when you create a new channel.

API Keys Settings

- **Write API Key:** Use this key to write data to a channel. If you feel your key has been compromised, click **Generate New Write API Key**.
- **Read API Keys:** Use this key to allow other people to view your private channel feeds and charts. Click **Generate New Read API Key** to generate an additional read key for the channel.

Setup Raspberry Pi to send Temperature and Humidity to ThingSpeak

Here, we use DHT22 temperature and humidity sensor. We connect the DHT22 to the Raspberry Pi and then Raspberry Pi sends sensor data to ThingSpeak API.

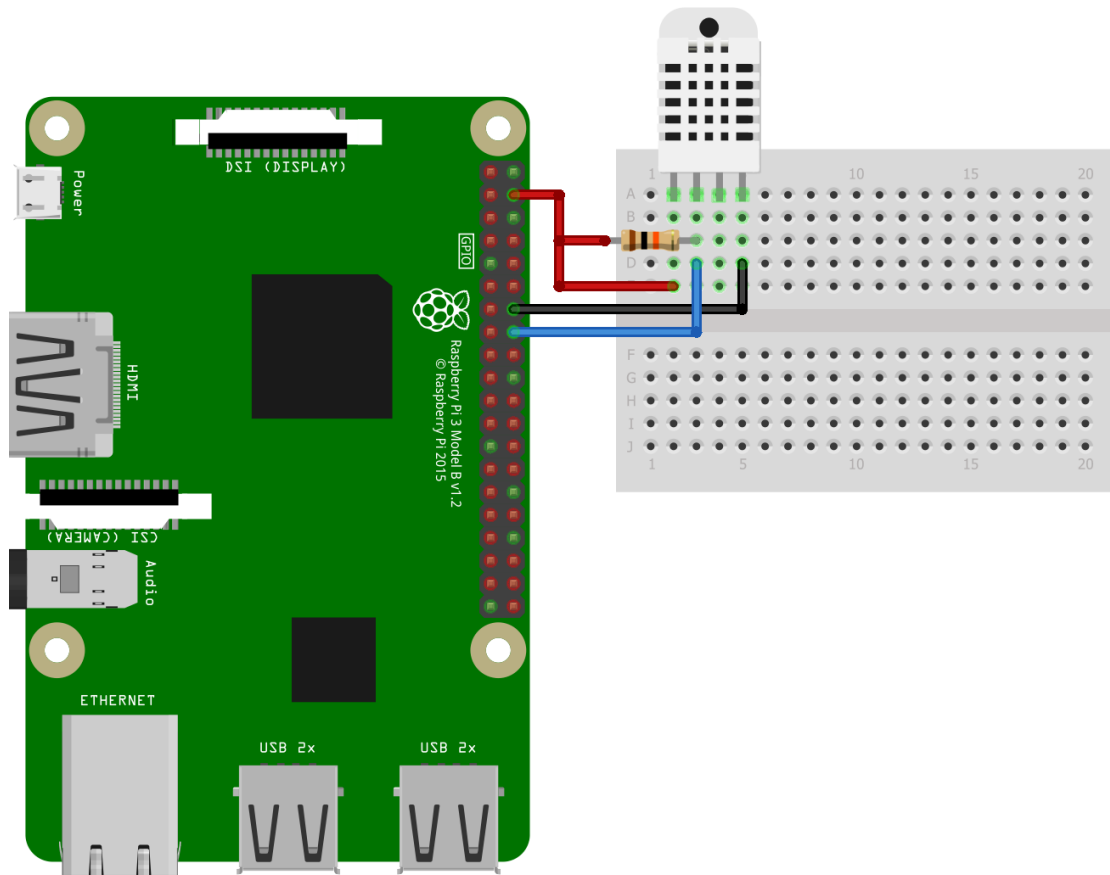


Circuit diagram

The DHT22 has one digital data pin so that it can be connected directly to Raspberry Pi. However, circuit requires 10k ohm pull up resistor. The following diagram illustrates connecting DHT22 data ping to Raspberry Pi GPIO23.

DHT22 pins:

- pin1: 5V
- pin2: Data pin connected with 10K pull up resistor
- pin3: unused
- pin4: Ground



fritzing

Installing Python Library for DHT22

1. Installed required Python libraries
sudo apt-get install build-essential python-dev
2. Use following command to install adafruit Python library
Sudo pip install Adafruit_DHT

Python Script to read DHT22 data and send to ThingSpeak API

```
import requests
from time import sleep
import Adafruit_DHT as dht

#Enter Your API key here
APIKey="HIX6M6K9I73YIAJU"
#ThingSpeak API URL
URL='https://api.thingspeak.com/update?api_key=%s' % APIKey

while True:
    try:
```

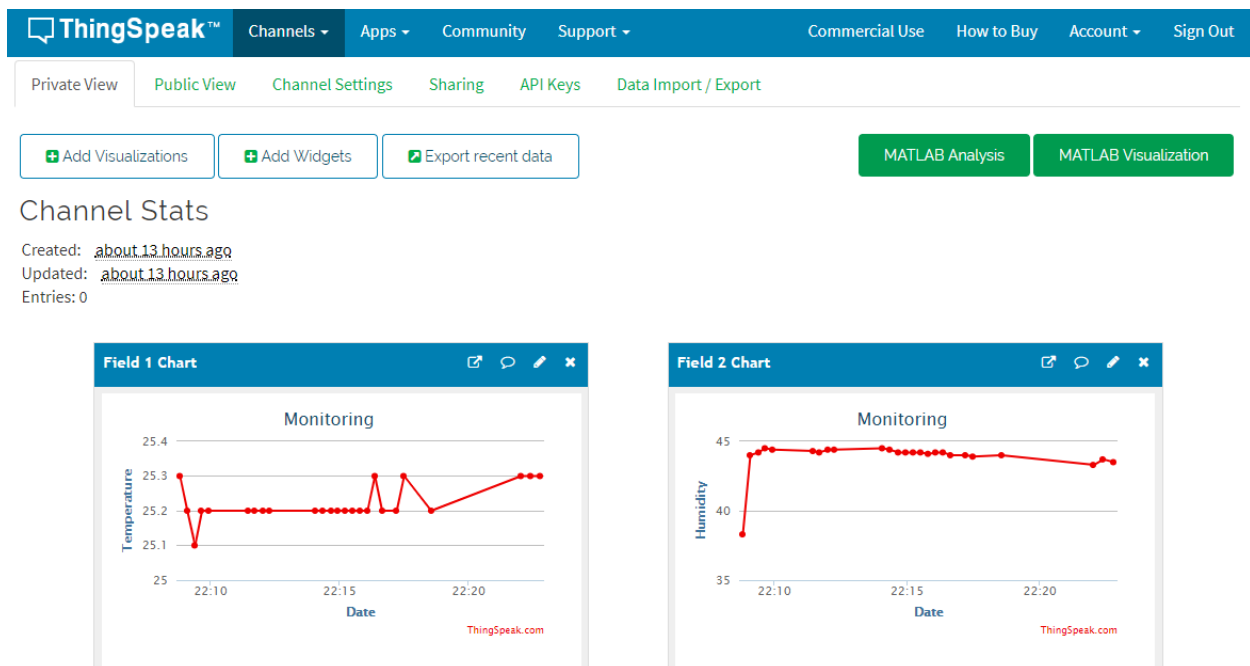
```

#Reading temperature and humidity from DHT22 in Raspberry Pi
#In this setup, DHT22 connected to GPIO23
humidity, temperature=dht.read_retry(dht.DHT22,23)
print(humidity,temperature)
#Send sensor data to ThingSpeak
connection=requests.post(URL+'&field1=%.2f&field2=%.2f'%(temperature,humidity))

sleep(10)
except:
    print('Error occured')
    break

```

After running the script in Raspberry Pi, ThingSpeak charts can look like as following:



References

1. Temperature and Humidity Sensor DHT22 Raspberry pi Interfacing, (2018), <https://electronics hobbyists.com/raspberry-pi-sending-data-to-thingspeak-simplest-raspberry-pi-iot-project/>
2. Fritzing, (2018). <http://fritzing.org/home/>