

UPDATING THINGSPEAK CHANNEL USING DHT11 AND RASPBERRY PI

This manual is about creating and updating ThingSpeak channel using Temperature and Humidity values from DHT11 humidity sensor with Raspberry Pi.

To learn how to connect DHT11 with RaspberryPi download the project form this link:

<https://github.com/ashishk7/raspberrydht11.git>

1. Components Required

DHT11 Humidity sensor

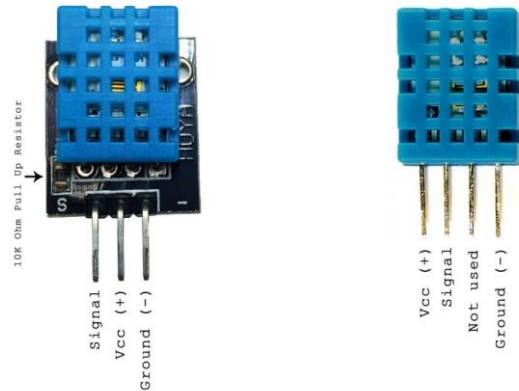
10K Resistor

Raspberry Pi

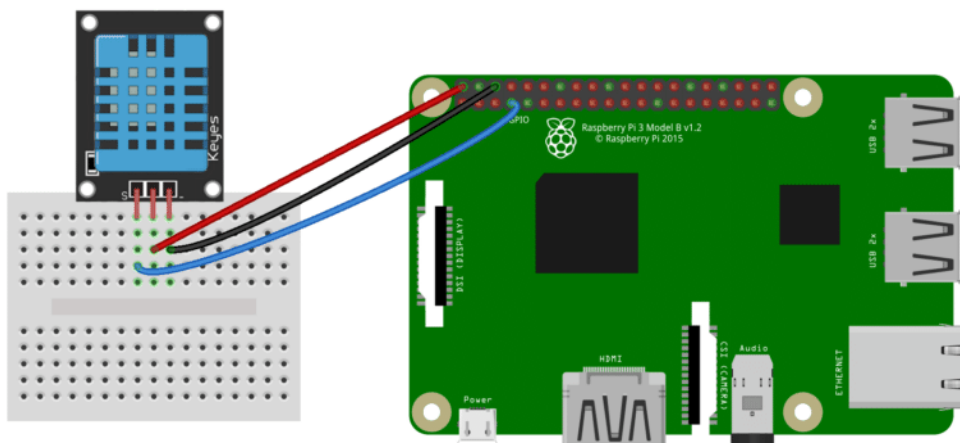
Jumper wires

2. Connecting DHT11 to Raspberry Pi

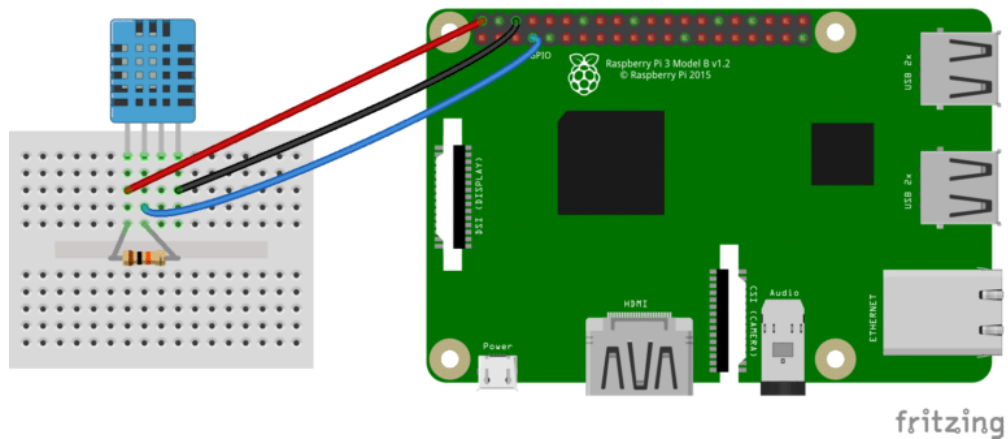
There are two variants of the DHT11 you're likely to come across.



Three pin DHT11 with SSH output:



Four pin DHT11 with SSH output:



3. Creating Channel on ThingSpeak Server.

Step 1: SignUp and fill in your details.

ThingSpeak™ Channels Apps Community Support ▾ Commercial Use How to Buy Sign In **Sign Up**

Sign up for ThingSpeak

It is free to sign up for ThingSpeak. Free accounts offer a fully functional experience on ThingSpeak with limits on certain functionality. Commercial users may sign up for a time-limited free evaluation. To send data faster to ThingSpeak or to send more data, consider our [paid license options](#) for commercial, academic, home and student usage. To start using ThingSpeak you must create a new MathWorks account, or, click cancel and log in using an existing MathWorks account.

Create MathWorks Account

Email Address

i To access your organization's MATLAB license, use your school or work email.

User ID ⓘ

Password ⓘ

India ▾

First Name

Last Name

☐ I accept the Online Services Agreement

[See our privacy policy for details.](#)

Already have a ThingSpeak account?
[Sign In](#)

DATA AGGREGATION AND ANALYTICS
ThingSpeak

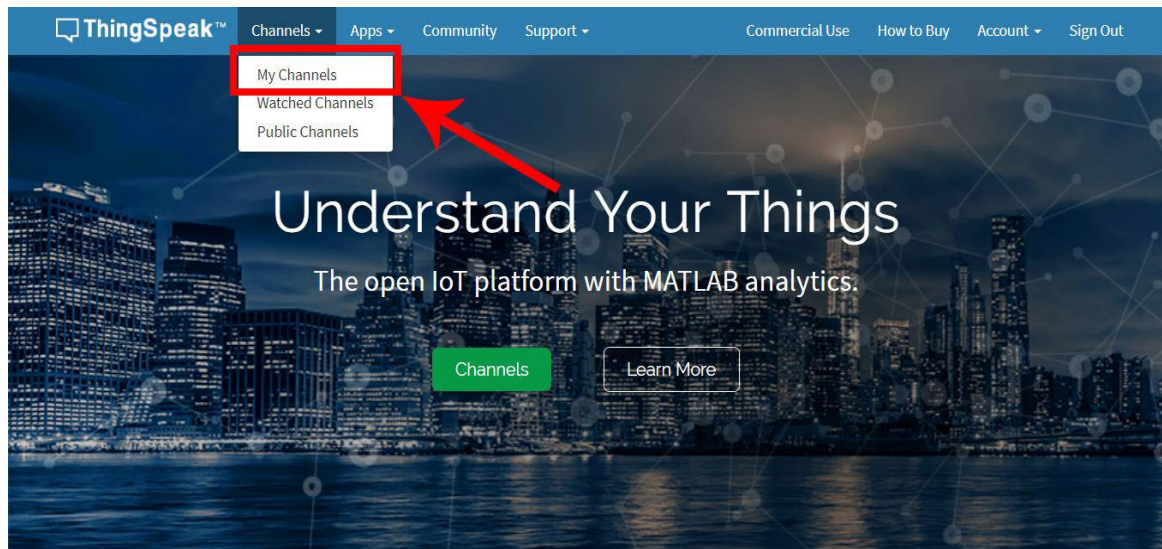
SMART CONNECTED DEVICES

MATLAB
ALGORITHM DEVELOPMENT
SENSOR ANALYTICS

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Step 2: Sign in and click on Channels



Step 3: Now create new Channel

The screenshot shows the 'My Channels' page in ThingSpeak. The navigation bar is the same as in the previous image. The 'My Channels' section has a 'New Channel' button highlighted with a red box and a red arrow pointing to it. Below this is a search bar labeled 'Search by tag'. A table lists the user's channels:

Name	Created	Updated
Raspberrypi Private Public Settings Sharing API Keys Data Import / Export	2017-09-17	2018-02-02 22:35
Workshop Private Public Settings Sharing API Keys Data Import / Export	2018-02-03	2018-02-03 11:27
ESP8266 Wifi Private Public Settings Sharing API Keys Data Import / Export	2018-07-28	2018-07-29 12:56

To the right of the table is a 'Help' section with instructions on how to create a new channel and examples of channels. Below the 'Help' section is an 'Examples' section with a list of channels: Arduino, Arduino MKR1000, ESP8266, Raspberry Pi, and Netduino Plus. At the bottom of the page is a footer with links to 'Community', 'Documentation', 'Tutorials', 'Terms', and 'Privacy Policy', and a copyright notice for '© 2018 The MathWorks, Inc.'.

Step 4: Fill the following details and click on Save Channel.

The screenshot shows the 'New Channel' form on the ThingSpeak website. A red box highlights the 'Name' field (containing 'DHT11'), the 'Description' field (containing 'updating thingspeak with Temperature and humidity values using DHT11 and Raspberry Pi'), and the first two 'Field' entries (Field 1: Temperature, Field 2: Humidity). Another red box highlights the 'Save Channel' button at the bottom. A red arrow points from the 'Save Channel' button to the 'Field 2' input, and another red arrow points from the 'Field 2' input to the 'Show Channel Location' section.

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New Channel

Name

Description

Field 1 ☒

Field 2 ☒

Field 3 ☐

Field 4 ☐

Field 5 ☐

Field 6 ☐

Field 7 ☐

Field 8 ☐

Metadata

Tags

Link to External Site

Link to GitHub

Elevation

Show Channel Location ☐

Latitude

Longitude

Show Video ☐

☒ YouTube ☐ Vimeo

Video URL

Show Status ☐

Save Channel

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 longitude of the city of London is -0.1275.
 - Elevation:** Specify the elevation position meters. For example, the elevation of the city of London is 35.052.
- Video URL:** If you have a YouTube™ or Vimeo® video that displays your channel information, specify the full path of the video URL.
- Link to GitHub:** If you store your ThingSpeak code on GitHub®, specify the GitHub repository URL.

Using the Channel

You can get data into a channel from a device, website, or another ThingSpeak channel. You can then visualize data and transform it using [ThingSpeak Apps](#).

See [Tutorial: ThingSpeak and MATLAB](#) for an example of measuring dew point from a weather station that acquires data from an Arduino® device.

[Learn More](#)

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When channel is created, Select “API keys” in the tabs above and note the API key of your channel. See the picture on next page.

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DHT11

Channel ID: 573086
Author: ashishmarch12
Access: Private

updating thingspeak with Temperature and humidity values using DHT11 and Raspberry Pi

Private View Public View Channel Settings Sharing API Keys Data Import / Export

Write API Key

Key: 0GVK13PASHPE73AS

Generate New Write API Key

Read API Keys

Key: 1135FZD12JH7HP5P

Note:

Save Note Delete API Key

Generate New Read 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.
- **Note:** Use this field to enter information about channel read keys. For example, add notes to keep track of users with access to your channel.

API Requests

Update Channel Feed

```
GET https://api.thingspeak.com/update?api_key=0GVK13PASHPE73AS&field=
```

Get a Channel Feed

```
GET https://api.thingspeak.com/channels/573086/feeds.json?api_key=1135FZD12JH7HP5P
```

Get a Channel Field

```
GET https://api.thingspeak.com/channels/573086/fields/1.json?api_key=1135FZD12JH7HP5P
```

Get Channel Status Updates

```
GET https://api.thingspeak.com/channels/573086/status.json?api_key=1135FZD12JH7HP5P
```

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4. Installing necessary libraries

We'll be using the Adafruit DHT11 and psutil Python libraries.

To install the Adafruit DHT11 library:

Enter this at the command prompt to download the library:

`git clone https://github.com/adafruit/Adafruit_Python_DHT.git`

Change directories with

`cd Adafruit_Python_DHT`

Now enter this:

`sudo apt-get install build-essential python-dev`

Then install the library with:

`sudo python setup.py install`

To install psutil library:

Enter this at the command prompt to download the library:

<https://github.com/giampaolo/psutil>

Change directories with

`cd psutil`

Then install the library with:

`sudo python setup.py install`

To install Paho client library library:

Enter this at the command prompt to install the library:

`sudo pip install paho-mqtt`

To install requests:

Enter this at the command prompt to install the library:

`sudo pip install requests`

5. Code :

```
import json
```

```
import requests
```

```
import time
```

```
import sys
```

```
import Adafruit_DHT
```

```
API = "OGVK13PASHPE73AS" # enter you Thingspeak Write API key here
```

```
while(True):
```

```
    humidity, temperature = Adafruit_DHT.read_retry(11, 4) #11=DHT11, 4=GPIO4
```

```
    print("Temperature = %s Humidity = %s" % (temperature, humidity))
```

```
    payload = "https://api.thingspeak.com/update?api_key=" + str(API) + "&" + "field1=" +  
str(temperature) + "&field2=" + str(humidity)
```

```
    data=requests.get(payload)
```

```
    if data.status_code!=200:
```

```
        print("error!!! uploading")
```

```
    else:
```

```
        print("uploaded to server sucessfully")
```