

# ESP32 to The Moon

Digital Internet of Things Course

Chiang Mai Technical College



# Introduce

- ESP32 to [Thingspeak.com](https://thingspeak.com)
- ESP32 to [CloudMqtt.com](https://cloudmqtt.com)
- ESP32 to [Line Notification](#)

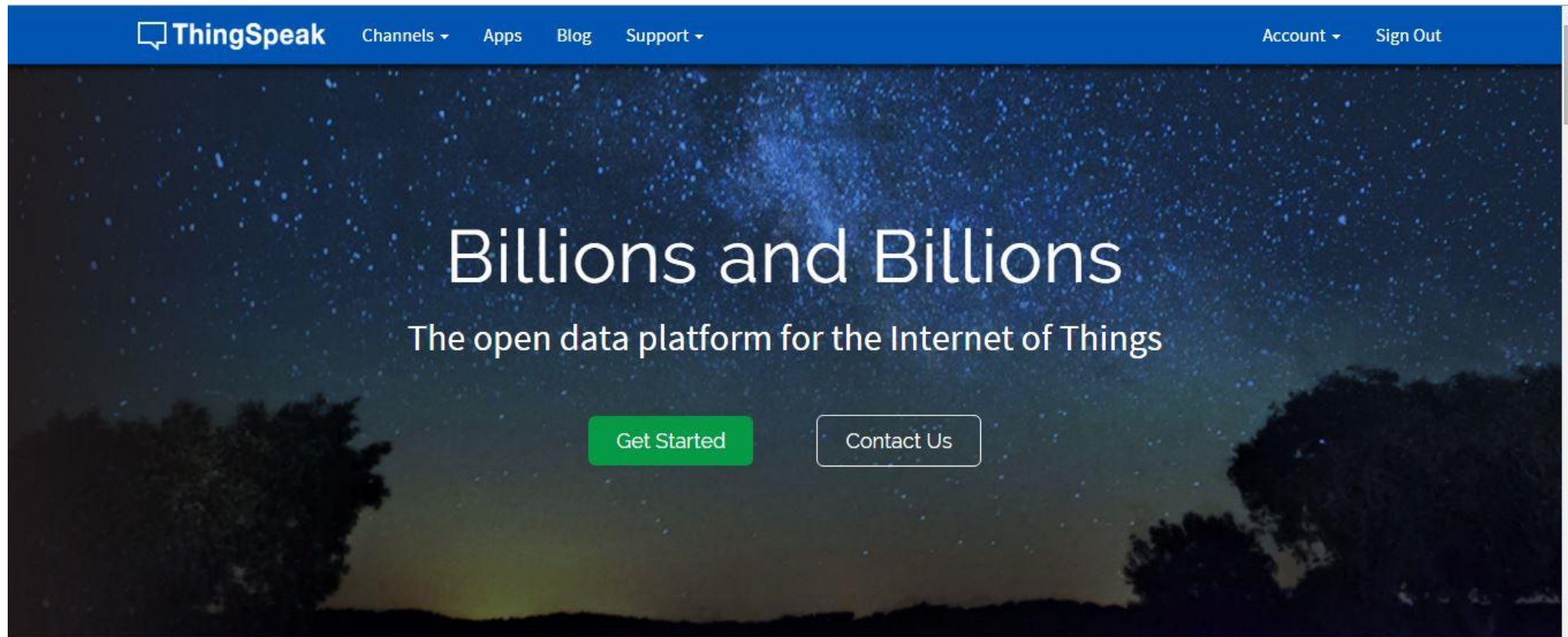


# Introduce

Download : [Github.com/bavensky/IoT-CMTC](https://github.com/bavensky/IoT-CMTC)



# ESP32 to [Thingspeak.com](https://thingspeak.com)



 Collect

 Analyze

 Act



# ESP32 to Thingspeak.com

## Sign up for ThingSpeak

The ThingSpeak service is operated by MathWorks. In order to sign up for ThingSpeak, you must create a new MathWorks Account or log in to your MathWorks Account.

### Create MathWorks Account

Email Address !

Missing required information

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

User ID ?

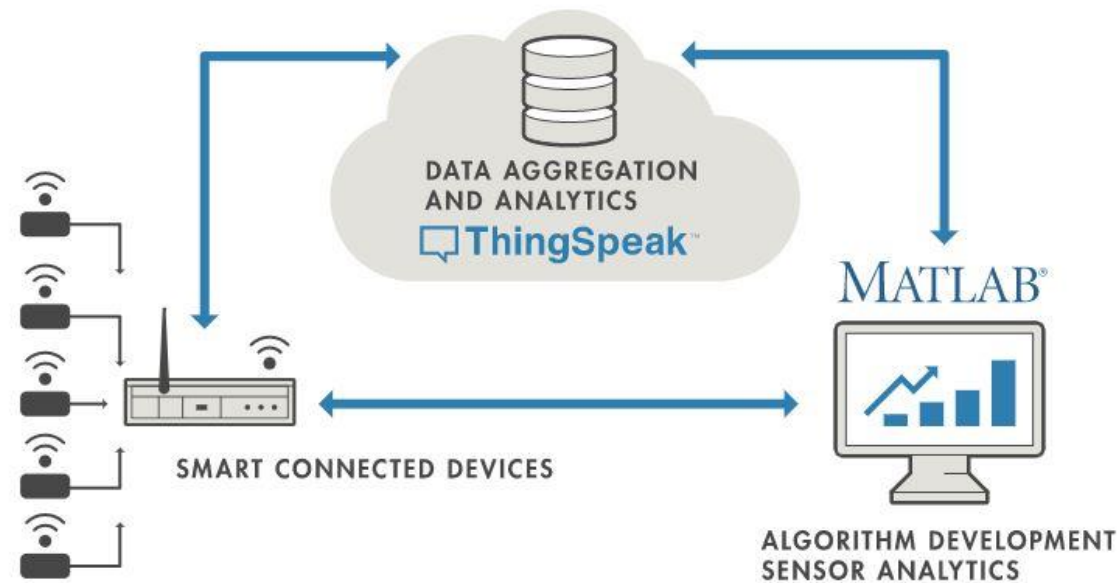
Password 👁

Thailand ▾


First Name

Last Name

By clicking continue, you agree to our [privacy policy](#)



# ESP32 to [Thingspeak.com](https://thingspeak.com)

 **ThingSpeak™** [Channels](#) [Apps](#) [Community](#) [Support ▾](#)

## Sign In to ThingSpeak

Email Address

Password

[Forgot your password?](#)

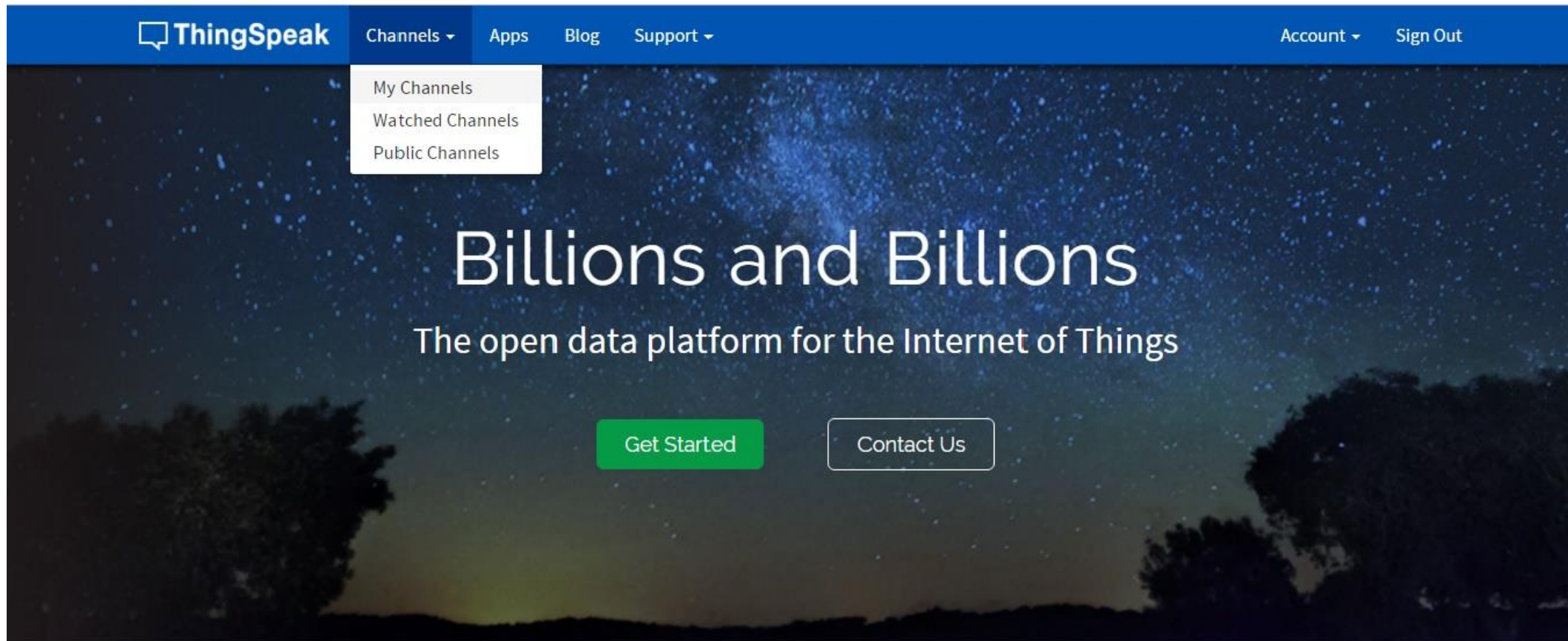
[Sign In](#)

New user?  
[Sign up for the first time](#)





# ESP32 to [Thingspeak.com](https://thingspeak.com)




<https://thingspeak.com/channels>

Analyze

Act






# ESP32 to [Thingspeak.com](https://thingspeak.com)

 Channels ▾ Apps Blog Support ▾ Account ▾ Sign Out

### My Channels

New Channel

Name	Created
 <div>Private Public Settings API Key Data Import / Export</div>	2015-10-08
 Myroom330 <div>Private Public Settings API Key Data Import / Export</div>	2015-10-10
 Espresso_CMMC <div>Private Public Settings API Key Data Import / Export</div>	2015-11-19

### Help

Collect data in a ThingSpeak channel from a device, from another channel, or from the web. Click **New Channel** to create a new ThingSpeak channel.

Learn to [create channels](#), explore and transform data.

Learn more about [ThingSpeak Channels](#).

#### Examples

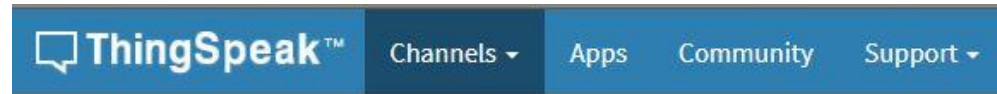
- [Arduino Tutorial](#)
- [Netduino Plus Tutorial](#)

<https://thingspeak.com/channels/new>





# ESP32 to [Thingspeak.com](https://thingspeak.com)



## New Channel

Name	<input type="text" value="CMTC IoT Course"/>	
Description	<input type="text"/>	
Field 1	<input type="text" value="Temp"/>	<input checked="" type="checkbox"/>
Field 2	<input type="text" value="Humid"/>	<input checked="" type="checkbox"/>
Field 3	<input type="text" value="Current"/>	<input checked="" type="checkbox"/>
Field 4	<input type="text" value="Power"/>	<input checked="" type="checkbox"/>
Field 5	<input type="text"/>	<input type="checkbox"/>
Field 6	<input type="text"/>	<input type="checkbox"/>
Field 7	<input type="text"/>	<input type="checkbox"/>
Field 8	<input type="text"/>	<input type="checkbox"/>



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# ESP32 to [Thingspeak.com](https://thingspeak.com)

## CMTC IoT Course

Channel ID: **348671**

Author: [bavensky](#)

Access: Private

Private View

Public View

Channel Settings

Sharing

API Keys

Data Import / Export

+ Add Visualizations

Data Export

MATLAB Analysis

MATLAB Visualization

## Channel Stats

Created: [less than a minute ago](#)

Updated: [less than a minute ago](#)

Entries: 0



# ESP32 to [Thingspeak.com](https://thingspeak.com)

## Channel Stats

Created: 22 minutes ago

Updated: 21 minutes ago

Entries: 0



# ESP32 to Thingspeak.com

## CMTC IoT Course

Channel ID: 348671

Author: bavensky

Access: Private

Private View

Public View

Channel Settings

Sharing

API Keys

Data Import / Export

### Write API Key



Key

98L8YNT5TZ3RGCAZ

Generate New Write API Key

### Read API Keys

Key

F7KJX23KSXP56JF2

### 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



# ESP32 to [Thingspeak.com](https://thingspeak.com)

Data Import / Export

## Help

Select a CSV file on your hard drive and import all of its data directly into this channel. Your CSV file should contain a date field in the first column. If your data doesn't contain timezone info, select one appropriately.

[Learn More](#)

## API Requests

### Update a Channel Feed

```
GET https://api.thingspeak.com/update?api_key=98L8YNT5TZ3RGCAZ&field1=0
```





# ESP32 to [Thingspeak.com](https://thingspeak.com)

Data Import / Export

## Help

Select a CSV file on your hard drive and import all of its data directly into this channel. Your CSV file should contain a date field in the first column. If your data doesn't contain timezone info, select one appropriately.

[Learn More](#)

## API Requests

### Update a Channel Feed

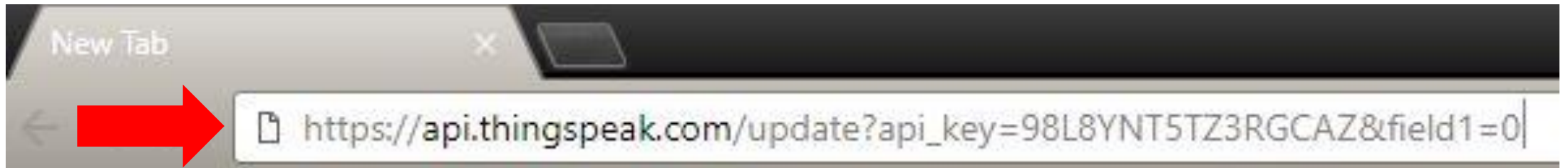
```
GET https://api.thingspeak.com/update?api_key=98L8YNT5TZ3RGCAZ&field1=0
```



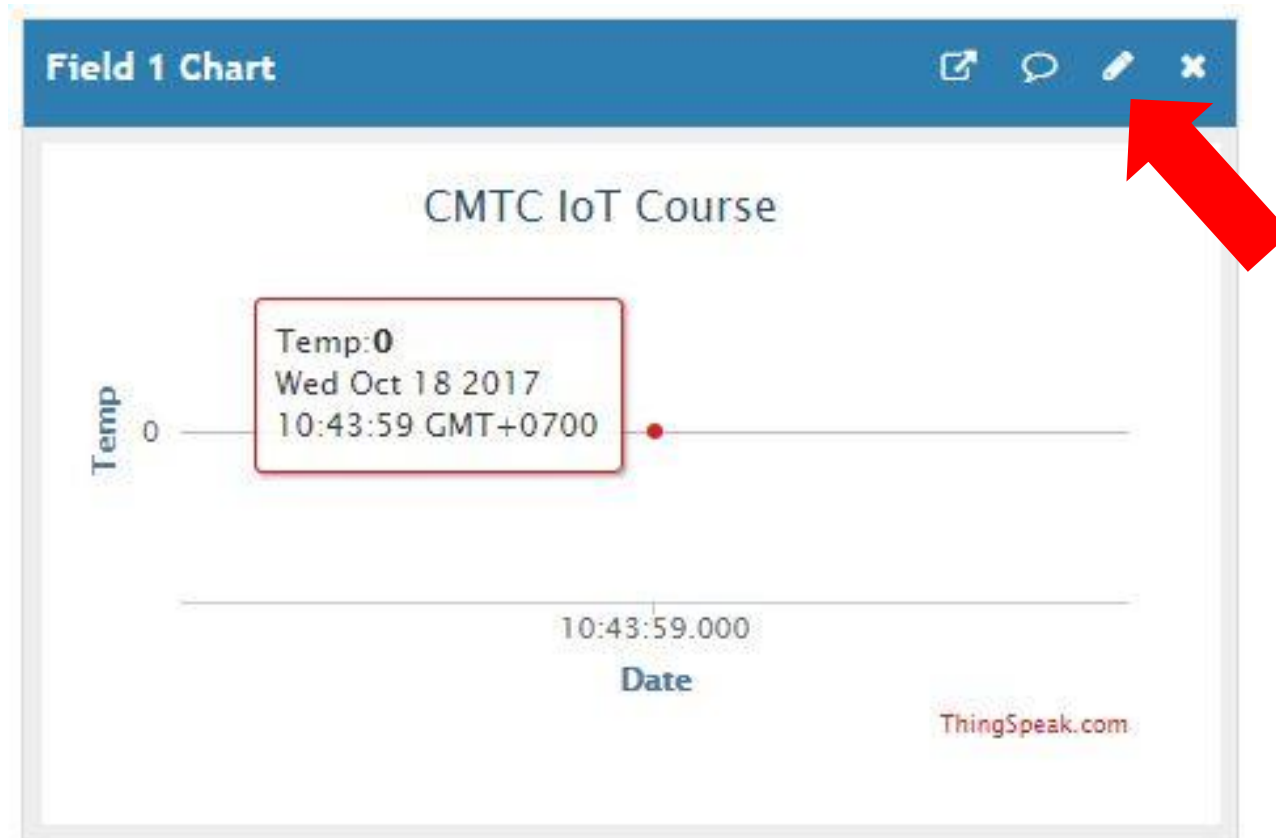
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# ESP32 to [Thingspeak.com](https://thingspeak.com)



# ESP32 to [Thingspeak.com](https://thingspeak.com)



# ESP32 to [Thingspeak.com](https://thingspeak.com)

ThingSpeak™ Channels Apps Community Support

## Channel Stats

Created: 22 minutes ago  
Updated: 21 minutes ago  
Entries: 0

### Field 1 Chart

Temp

### Field 1 Chart Options

Title:	<input type="text"/>	Timescale:	<input type="text"/>
X-Axis:	<input type="text"/>	Average:	<input type="text"/>
Y-Axis:	<input type="text"/>	Median:	<input type="text"/>
Color:	<input type="text" value="#d62020"/>	Sum:	<input type="text"/>
Background:	<input type="text" value="#ffffff"/>	Rounding:	<input type="text"/>
Type:	<input type="text" value="line"/>	Data Min:	<input type="text"/>
Dynamic?:	<input type="text" value="true"/>	Data Max:	<input type="text"/>
Days:	<input type="text"/>	Y-Axis Min:	<input type="text"/>
Results:	<input type="text" value="60"/>	Y-Axis Max:	<input type="text"/>



# ESP32 to [Thingspeak.com](https://thingspeak.com)

Field 1 Chart Options

Title:

อุณหภูมิต

X-Axis:

เวลา

Y-Axis:

องศา

Color:

Blue

Background:

White

Type:

line

Dynamic?:

true

Days:

Results:

10

Timescale:

Average:

Median:

Sum:

Rounding:

Data Min:

Data Max:

Y-Axis Min:

0

Y-Axis Max:

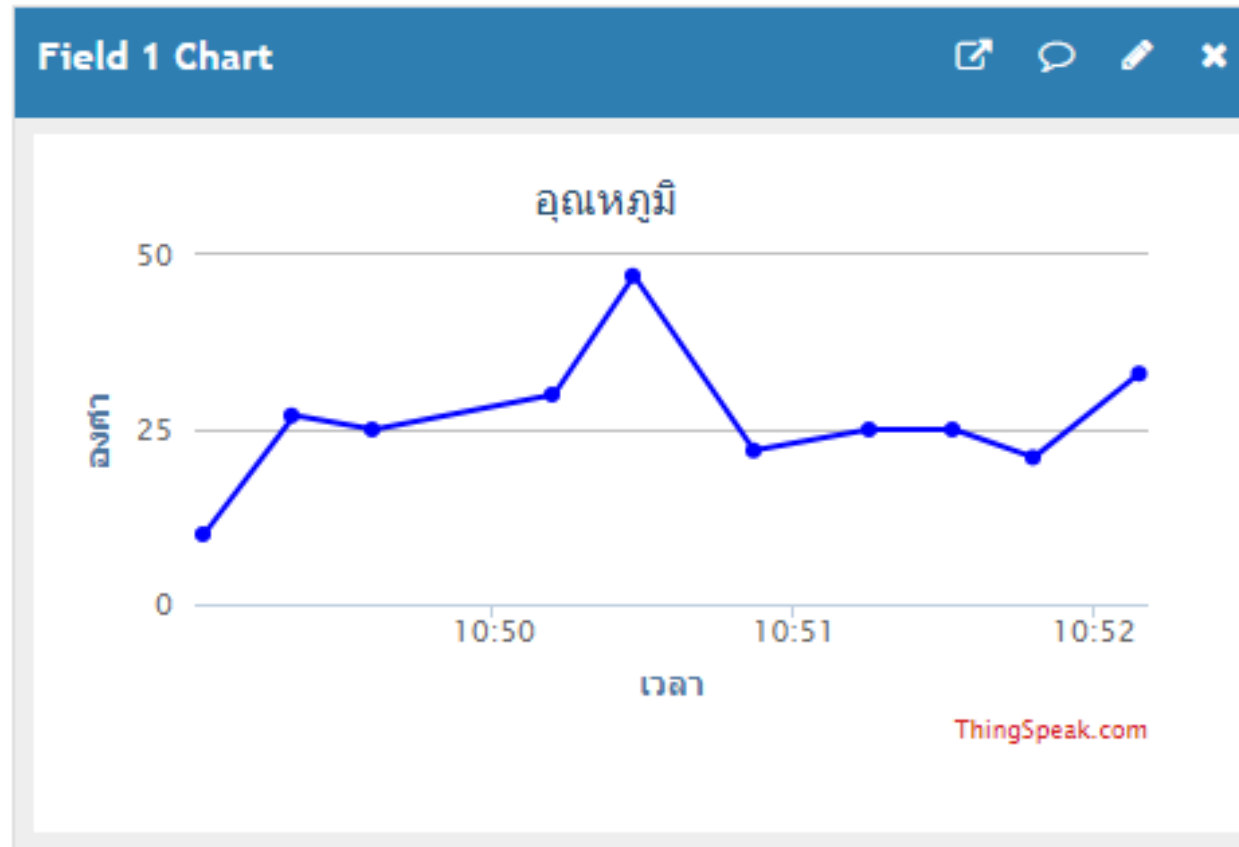
50

Save

Cancel



# ESP32 to [Thingspeak.com](https://thingspeak.com)



# ESP32 to [Thingspeak.com](https://thingspeak.com)



# ESP32 to [Thingspeak.com](https://thingspeak.com)

```
esp32Thingspeak | Arduino 1.8.5
File Edit Sketch Tools Help

esp32Thingspeak

1 #include <WiFi.h>
2 #include <HTTPClient.h>
3
4 #define YOUR_WIFI_NAME "xxxxxxx" // ชื่อไวไฟที่ต้องการเชื่อมต่อ
5 #define YOUR_WIFI_PASS "xxxxxxx" // รหัสไวไฟที่ต้องการเชื่อมต่อ
6 #define YOUR_API_KEY "xxxxxxx" // กรอกร API key ที่ได้จากเว็บ Thingspeak
7
8
9 // ฟังก์ชันส่งข้อมูลเข้าเว็บ Thingspeak โดยรับพารามิเตอร์ชื่อ url
10 void sent2Thingspeak(String url) {
11     // ประกาศออบเจกต์ และส่งค่าแบบ HTTP
12     HTTPClient http;
13     Serial.println("Send data" + url);
14     http.begin(url);
15
16     // รับข้อมูลจากเว็บเพื่อตรวจสอบว่าส่งข้อมูลได้หรือไม่
17     int httpCode = http.GET();
18     if (httpCode == 200) {
19         Serial.println("Success. code = " + String(httpCode));
20     }
21 }
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```

# ESP32 to [Thingspeak.com](https://thingspeak.com)

esp32Thingspeak

```
1 #include <WiFi.h>
2 #include <HTTPClient.h>
3
4 #define YOUR_WIFI_NAME "xxxxxxxx" // ชื่อไวไฟที่ต้องการเชื่อมต่อ
5 #define YOUR_WIFI_PASS "xxxxxxxx" // รหัสไวไฟที่ต้องการเชื่อมต่อ
6 #define YOUR_API_KEY   "xxxxxxxx" // กรอกร API key ที่ได้จากเว็บ Thingspeak
```



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# ESP32 to [Thingspeak.com](https://thingspeak.com)

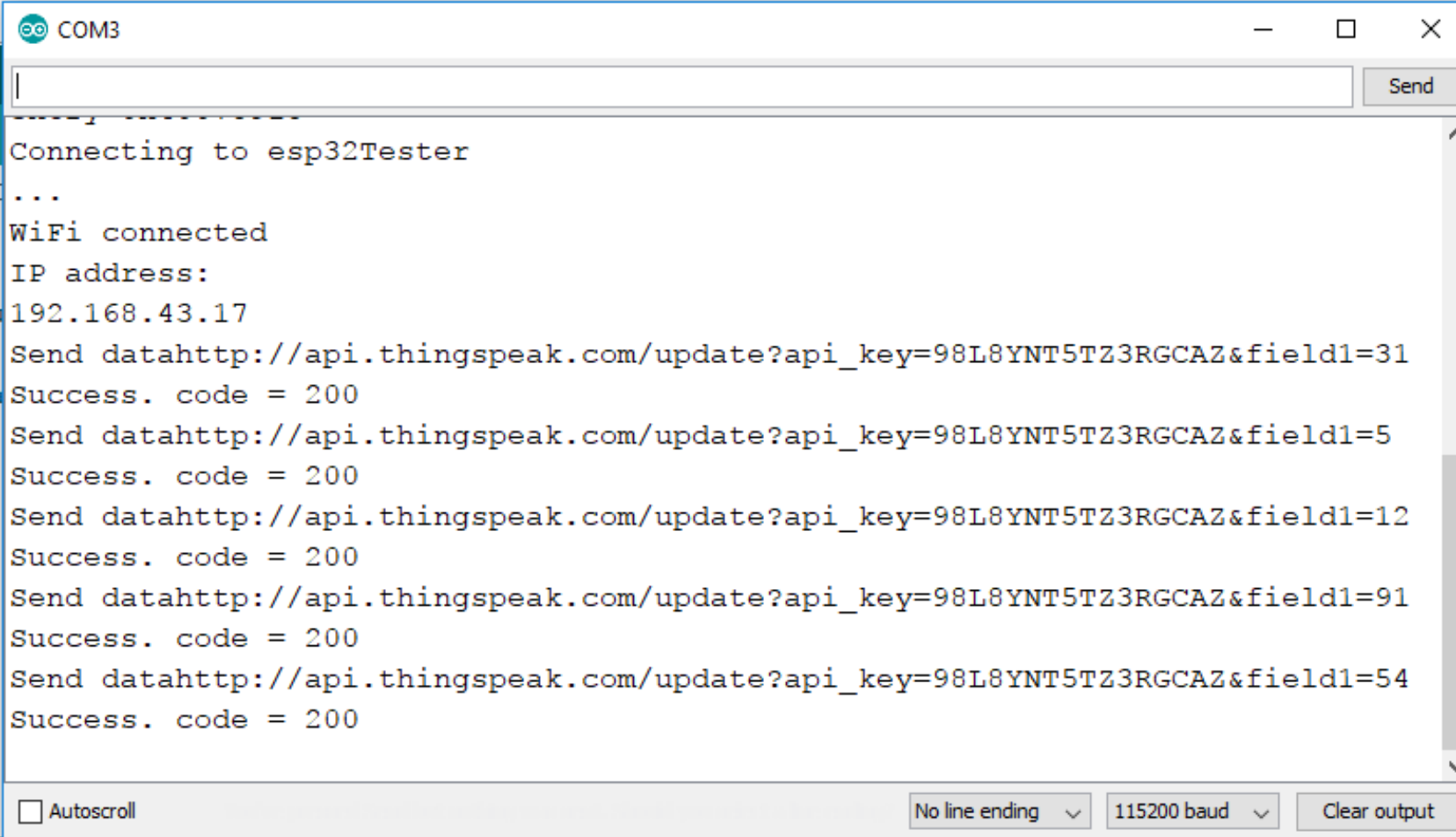


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# ESP32 to [Thingspeak.com](https://thingspeak.com)



```
COM3
Connecting to esp32Tester
...
WiFi connected
IP address:
192.168.43.17
Send datahttp://api.thingspeak.com/update?api_key=98L8YNT5TZ3RGCAZ&field1=31
Success. code = 200
Send datahttp://api.thingspeak.com/update?api_key=98L8YNT5TZ3RGCAZ&field1=5
Success. code = 200
Send datahttp://api.thingspeak.com/update?api_key=98L8YNT5TZ3RGCAZ&field1=12
Success. code = 200
Send datahttp://api.thingspeak.com/update?api_key=98L8YNT5TZ3RGCAZ&field1=91
Success. code = 200
Send datahttp://api.thingspeak.com/update?api_key=98L8YNT5TZ3RGCAZ&field1=54
Success. code = 200
```

☐ Autoscroll    No line ending    115200 baud    Clear output



## ESP32 to [Thingspeak.com](https://thingspeak.com)

```
9 // ฟังก์ชันส่งข้อมูลเข้าเว็บ Thingspeak โดยรับพารามิเตอร์ชื่อ url
10 void sent2Thingspeak(String url) {
11     // ประกาศออบเจกต์ และตั้งค่าแบบ HTTP
12     HTTPClient http;
13     Serial.println("Send data" + url);
14     http.begin(url);
15
16     // รับข้อมูลจากเว็บเพื่อตรวจสอบว่าส่งข้อมูลได้หรือไม่
17     int httpCode = http.GET();
18     if (httpCode == 200) {
19         Serial.println("Success. code = " + String(httpCode));
20     } else {
21         Serial.println("Fail. error code = " + String(httpCode));
22     }
23 }
```



# ESP32 to [Thingspeak.com](https://thingspeak.com)

```
27 void setup() {  
28     Serial.begin(115200);           // กำหนดความเร็วในการติดต่อสื่อสาร  
29     pinMode(LED_BUILTIN, OUTPUT);  // กำหนดให้ LED บนบอร์ดเป็น OUTPUT  
30  
31  
32     Serial.print("Connecting to ");  
33     Serial.println(YOUR_WIFI_NAME); // แสดงชื่อไวไฟที่เชื่อมต่อใน Serial monitor  
34  
35  
36     WiFi.mode(WIFI_STA);           // เชื่อมต่อไวไฟที่กำหนด  
37     WiFi.begin(YOUR_WIFI_NAME, YOUR_WIFI_PASS);  
38  
39     // วนรอบเชื่อมต่อไวไฟเรื่อย ๆ จนกว่าจะติด  
40     while (WiFi.status() != WL_CONNECTED) {  
41         delay(500);  
42         Serial.print(".");  
43         digitalWrite(LED_BUILTIN, !digitalRead(LED_BUILTIN));  
44     }
```



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## ESP32 to [Thingspeak.com](https://thingspeak.com)

```
56 void loop() {  
57  
58     int number = random(0, 100); // สุ่มเลข 0 - 100 เก็บไว้ในตัวแปรชื่อ number  
59  
60     String url = "http://api.thingspeak.com/update?api_key=" +  
61                 String(YOUR_API_KEY) + "&field1=" + String(number);  
62  
63     sent2Thingspeak(url); // ส่งค่าไปยังเว็บ Thingspeak.com  
64     delay(20000);        // หน่วงเวลา 20 วินาที  
65 }
```



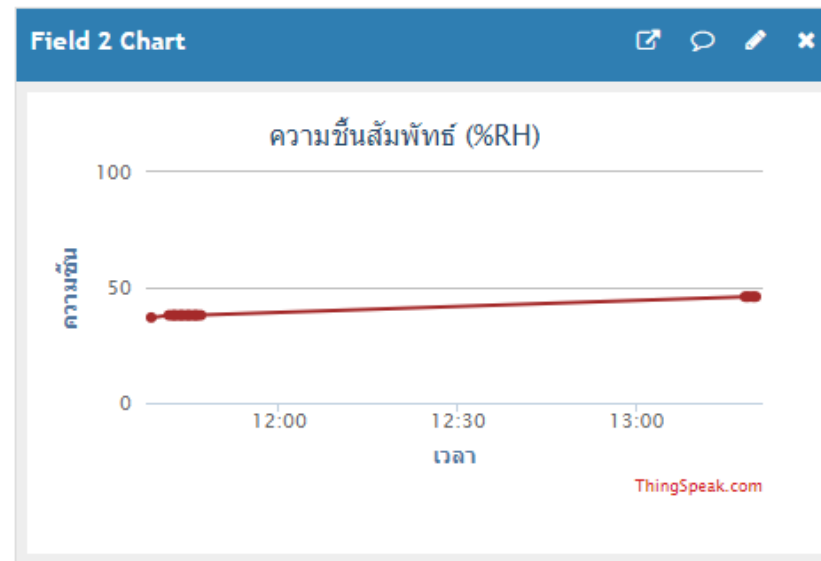
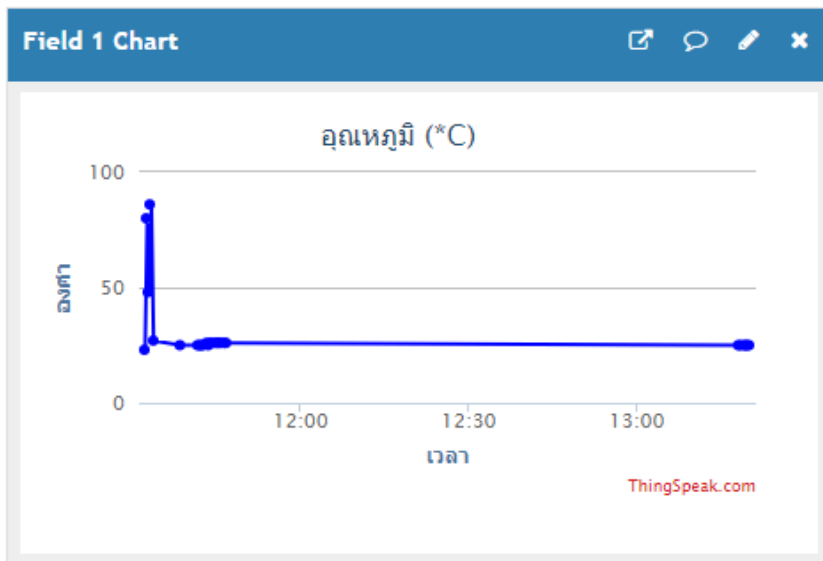
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# ESP32 to [Thingspeak.com](https://thingspeak.com)

## Quick test

จงเขียนโปรแกรมอ่านค่าอุณหภูมิ และความชื้น โดยอัปโหลดข้อมูลขึ้นเว็บ Thingspeak แสดงผลเป็นกราฟแบบ spline





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# ESP32 to [Thingspeak.com](https://thingspeak.com)

esp32Thingspeak-dht11 | Arduino 1.8.5

File Edit Sketch Tools Help



esp32Thingspeak-dht11




```
1 #include <WiFi.h>
2 #include <HTTPClient.h>
3
4 #include "DHT.h"           // เรียกใช้งานไลบรารี DHT.h
5 #define DHTPIN 14          // เชื่อมต่อเซ็นเซอร์ขา 14
6 #define DHTTYPE DHTxx     // เลือกชนิดเซ็นเซอร์แบบ DHT
7 DHT dht(DHTPIN, DHTTYPE);
8
9 #define YOUR_WIFI_NAME "xxxxxxx" // ชื่อไวไฟที่ต้องการเชื่อมต่อ
10 #define YOUR_WIFI_PASS "xxxxxxx" // รหัสไวไฟที่ต้องการเชื่อมต่อ
11 #define YOUR_API_KEY "xxxxxxx"  // กรอก API key ที่ได้จากเว็บ Thingspeak
```



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# ESP32 to [Thingspeak.com](https://thingspeak.com)



```
33 void setup() {
34   Serial.begin(115200);           // กำหนดความเร็วในการติดต่อสื่อสาร
35   pinMode(LED_BUILTIN, OUTPUT);  // กำหนดให้ LED บนบอร์ดเป็น OUTPUT
36   dht.begin();                  // ประกาศใช้งาน dht library
37
38   Serial.print("Connecting to ");
39   Serial.println(YOUR_WIFI_NAME); // แสดงชื่อไวไฟที่เชื่อมต่อใน Serial monitor
40
41
42   WiFi.mode(WIFI_STA);          // เชื่อมต่อไวไฟที่กำหนด
43   WiFi.begin(YOUR_WIFI_NAME, YOUR_WIFI_PASS);
44
45   // วนรอบเชื่อมต่อไวไฟเรื่อย ๆ จนกว่าจะติด
46   while (WiFi.status() != WL_CONNECTED) {
47     delay(500);
48     Serial.print(".");
49     digitalWrite(LED_BUILTIN, !digitalRead(LED_BUILTIN));
50   }
```



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# ESP32 to Thingspeak.com

```
62 void loop() {  
63     float h = dht.readHumidity();    // อ่านค่าอุณหภูมิจาก dht11  
64     float t = dht.readTemperature(); // อ่านค่าความชื้นจาก dht11  
65  
66     // แสดงผลค่าอุณหภูมิ และความชื้นสัมพัทธ์ผ่าน serial monitor  
67     Serial.print("Humidity: ");  
68     Serial.print(h);  
69     Serial.print(" %\t");  
70     Serial.print("Temperature: ");  
71     Serial.print(t);  
72     Serial.println(" *C ");  
73  
74  
75     // สร้าง url ที่จะส่งไปยัง thingspeak  
76     String url = "http://api.thingspeak.com/update?api_key=" + String(YOUR_API_KEY)  
77                 + "&field1=" + String(t) + "&field2=" + String(h);  
78  
79     sent2Thingspeak(url); // ส่งค่าไปยังเว็บ Thingspeak.com  
80     delay(20000);         // หน่วงเวลา 20 วินาที  
81 }
```



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