ThingsBoard

Arduino and Thingsboard user guide

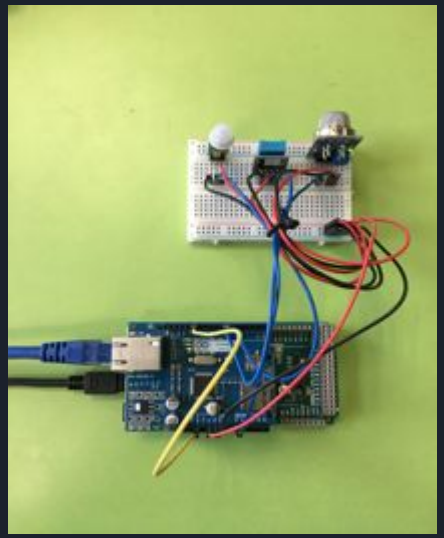
Sensors station

ARDUINO

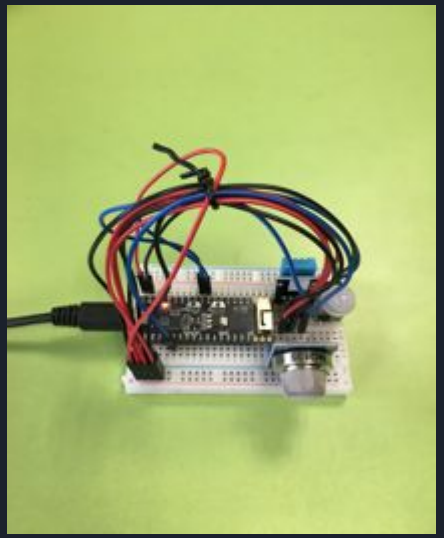
Arduino User Guide

2 ways to proceed

Ethernet Sensor Station



ESP32 Wifi Sensor Station



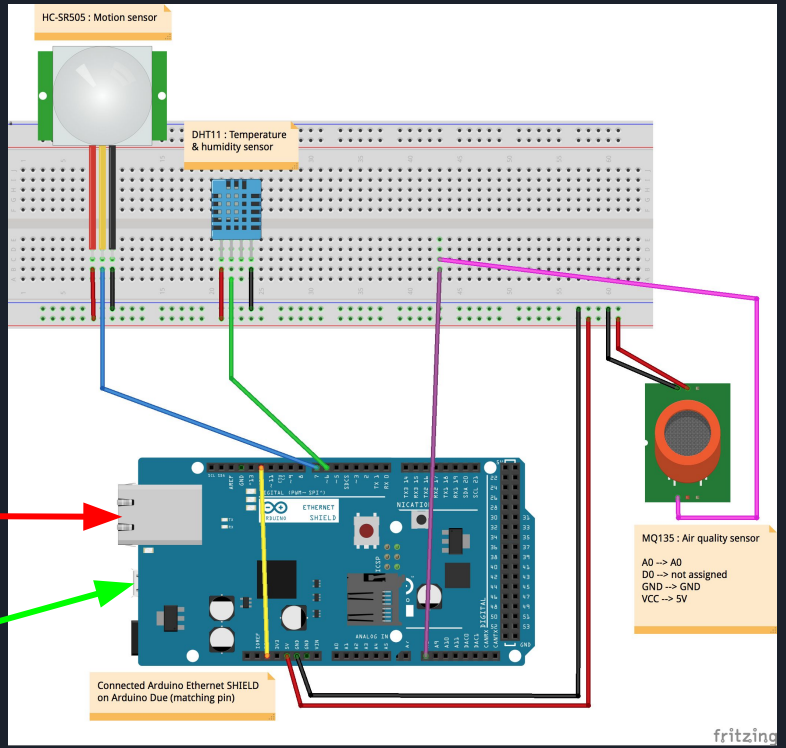
Ethernet sensor station

On the diagram, we use an Arduino Due card but it is quite possible to use an Arduino Uno card. However, you must be careful to match the pins of the arduino ethernet placed above the pins corresponding to one of the chosen cards.

→ Be careful to use the correct type of card in the tools section (Arduino Due programming port or Arduino/Genuino Uno).

Ethernet port

Upload the arduino code with the micro USB cable from the computer to Arduino card



Ethernet sensor station - Settings (1/2)

Arduino code for Ethernet communication is available on Gitlab

→ The different **components**:

- Arduino UNO (or DUE)
- Arduino ETHERNET shield (normal or PoE)
- Adafruit DHT11: temperature & humidity sensor
- MQ135: gas sensor
- HC-SR505: motion sensor

→ **Settings** for running the code on Arduino IDE (Tools):

- Board: "Arduino Genuino/Uno" or "Arduino Due (Programming Port)"
- Upload Speed: "9600"
- Programmer: "AVRISP mkII"

Ethernet sensor station - Settings (2/2)

Arduino code for Ethernet communication is available on Gitlab

→ The different **libraries** to download:

- Adafruit_Sensor-master
- DHT-sensor-library-master
- Ethernet-2.0.0
- PubSubClient-2.7.0

→ The only data that must be checked or changed by users in this code are the:

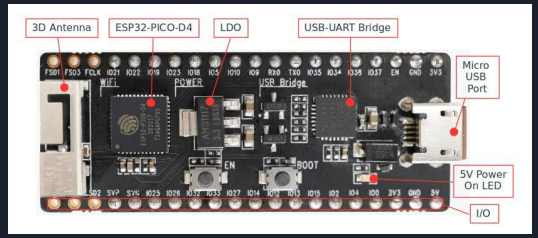
- ThingsBoard login details

```
const char* server = "[ThingsBoard account url]";
const char* username = "[Authentification token]";
```

ESP32 Wifi sensor station

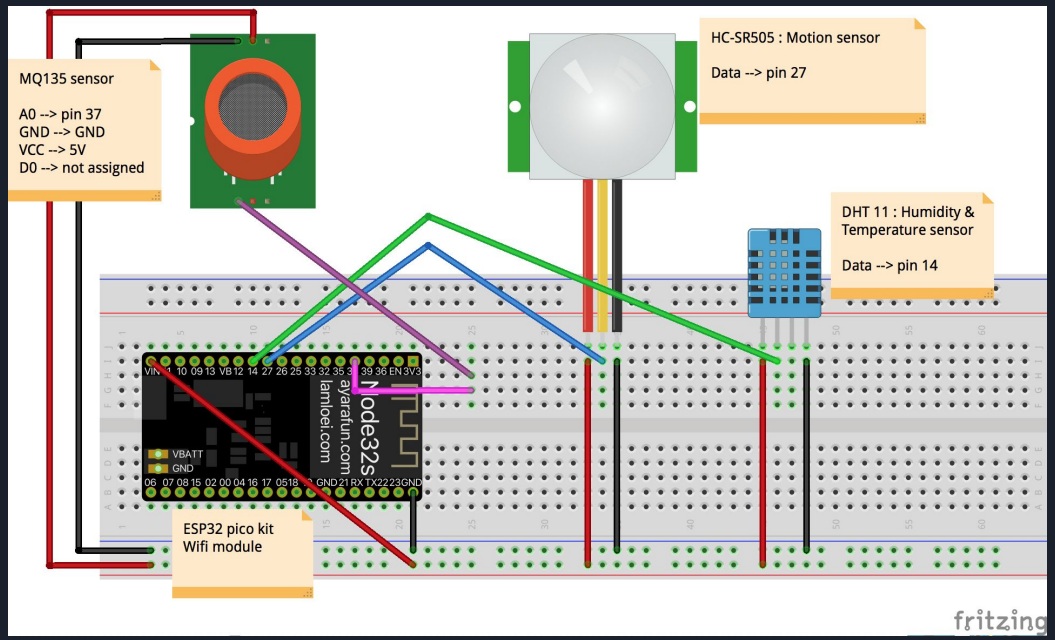
In the tools section:

Card type: “ESP32 pico kit”
Upload speed: “115200”
Core Debug Level: “Nothing”



ESP32 pico kit

The only connection is made with a micro USB cable.



WiFi sensor station - Settings (1/2)

Arduino code for Ethernet communication is available on Gitlab

→ The different **components**:

- ESP32 Pico Kit: WiFi/Bluetooth module
- Adafruit DHT11: temperature & humidity sensor
- MQ135: gas sensor
- HC-SR505: motion sensor

→ **Settings** for running the code on Arduino IDE (Tools):

- Board: "ESP32 Pico Kit"
- Upload Speed: "115200"
- Core Debug Level: "None"
- Programmer: "AVRISP mkII"

WiFi sensor station - Settings (2/2)

Arduino code for Ethernet communication is available on Gitlab

→ The different **libraries** to download:

- Adafruit_Sensor-master
- DHT-sensor-library-master
- PubSubClient-2.7.0

→ The only data that must be checked or changed by users in this code are the:

- WiFi login details

```
#define NETWORK "[Name of the network]"
#define PASSWORD "[Password for the network]"
```

- ThingsBoard login details

```
const char* server = "[ThingsBoard account url]";
const char* username = "[Authentification token]";
```

ThingsBoard User guide

Different steps:

- Create an account
- Create a device
- Create a dashboard

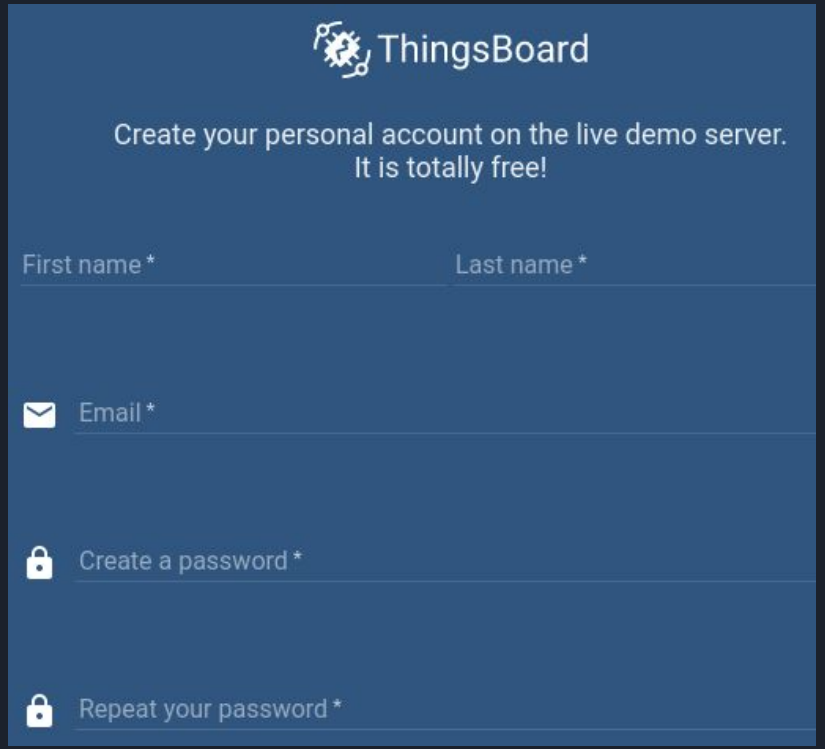
Create an account

2 possibilities:

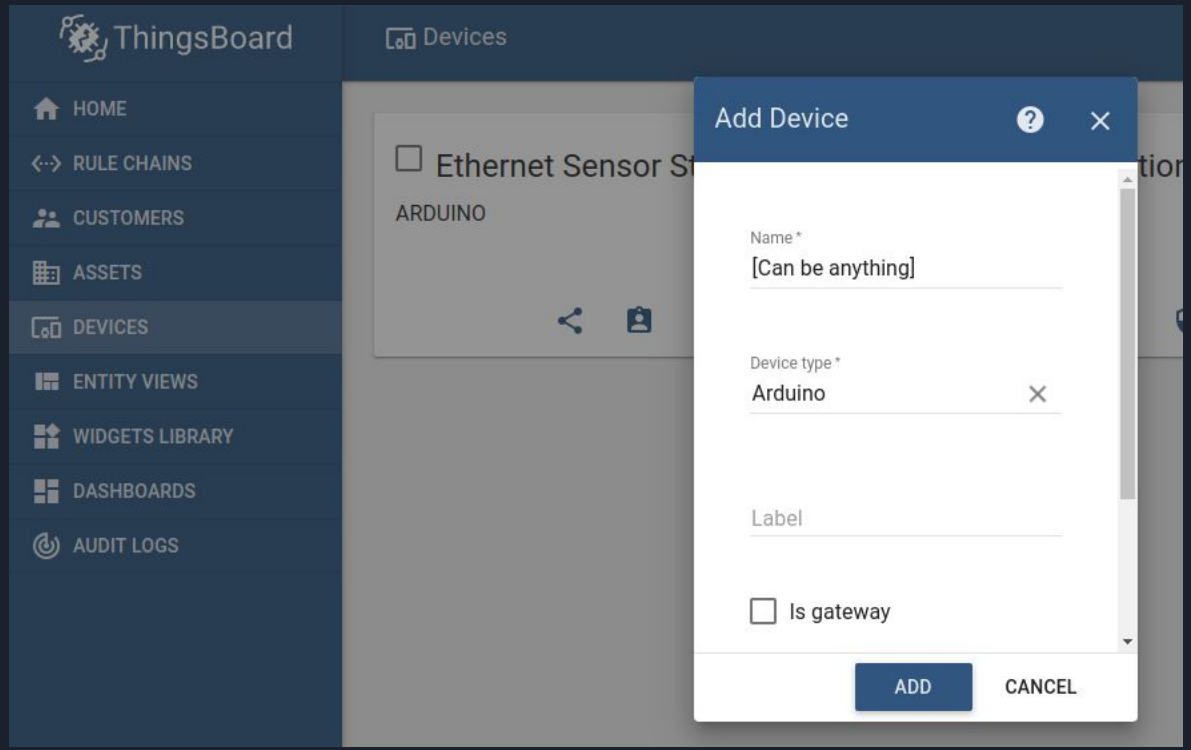
- http://demo.thingsboard.io
- https://thingsboard.tec-gateway.com

These **url** will be the “const char* server” in the Arduino code

Provide a mail address and a password

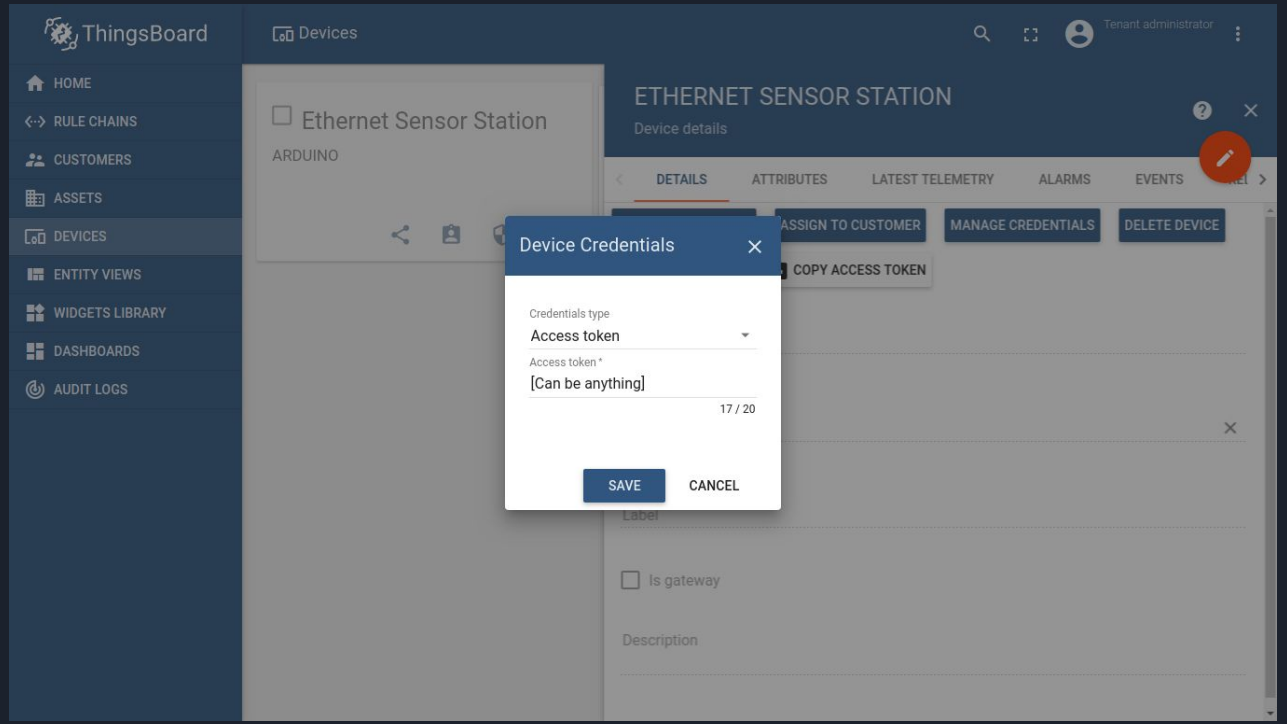


Create a device (1/2)

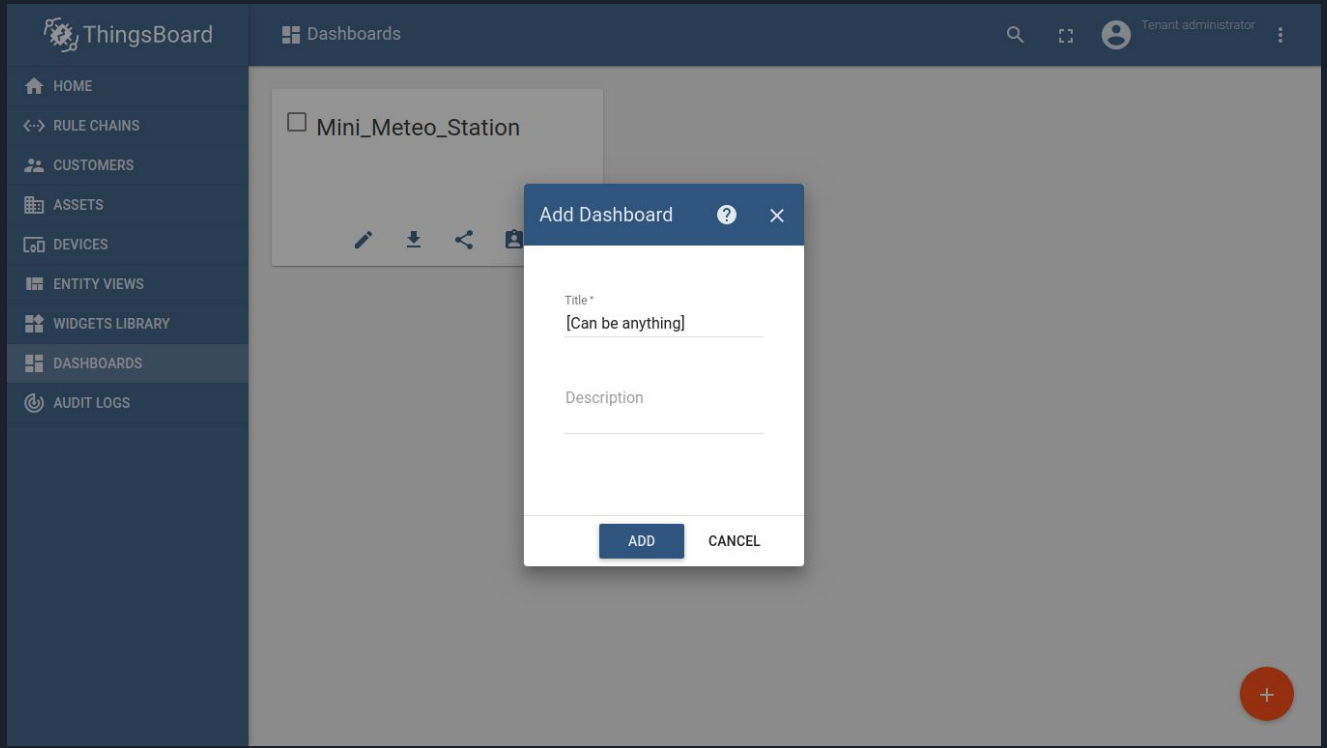


Create a device (2/2)

Edit a **token**, that will be the “const char* username” and replace it inthe Arduino code

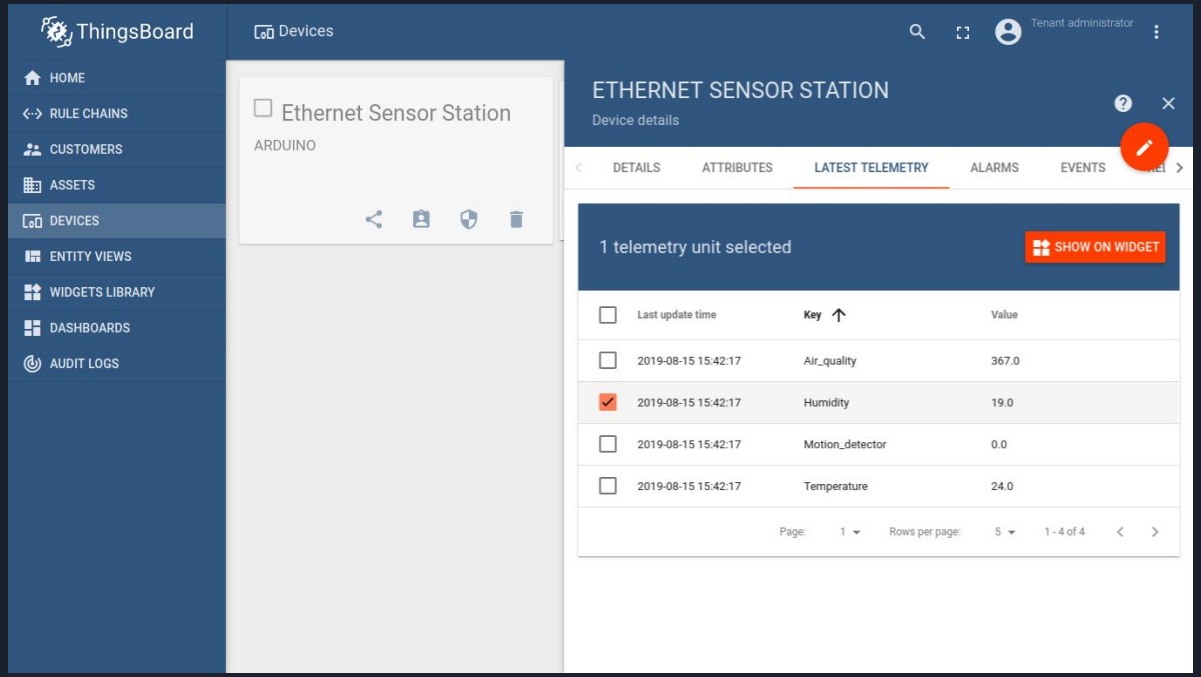


Create a dashboard (1/2)



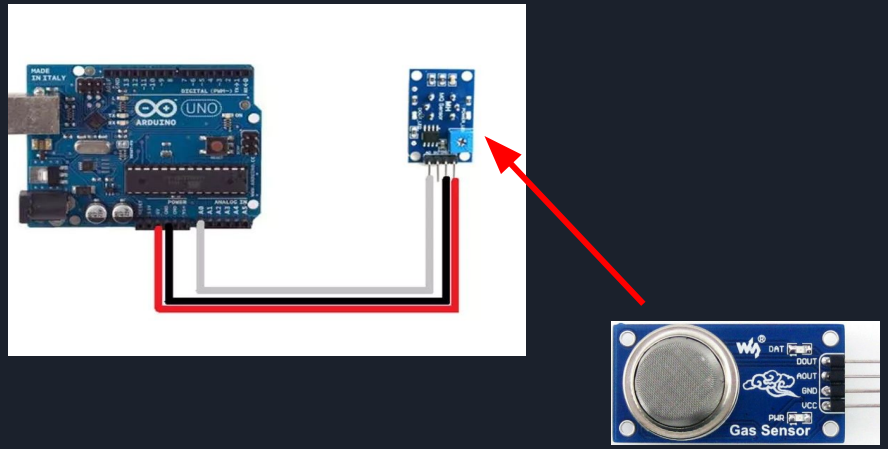
Create a dashboard (2/2)

- Select a telemetry
- Show it on widget
- Select the widget bundle (Analogue / Digital gauges, charts….)
- Add to dashboard

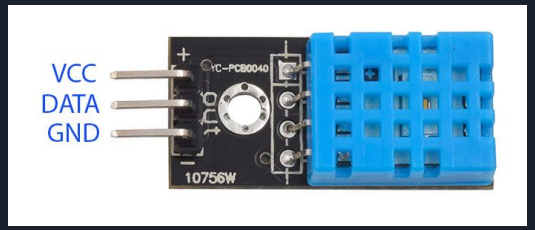


Appendice: sensor details

MQ135: Gas sensor



DHT11: Humidity & Temperature sensor



HC-SR505: Motion sensor