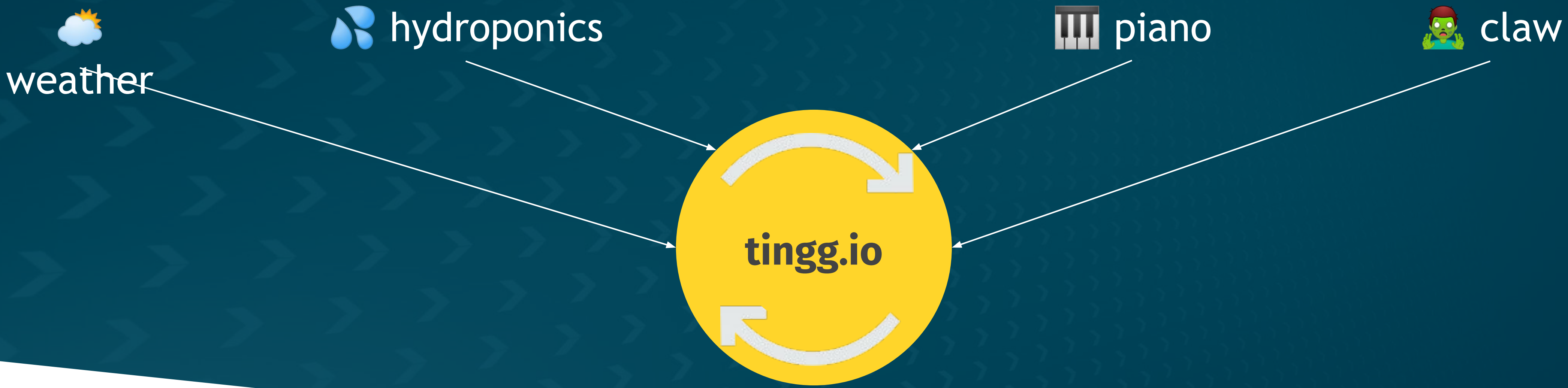
Wettersensor mit ESP32 und tingg.io

René Bohne, rene@geeny.io

2019

Maker Faire Berlin

Projekte an unserem Stand



⛅ weather

💦 hydroponics

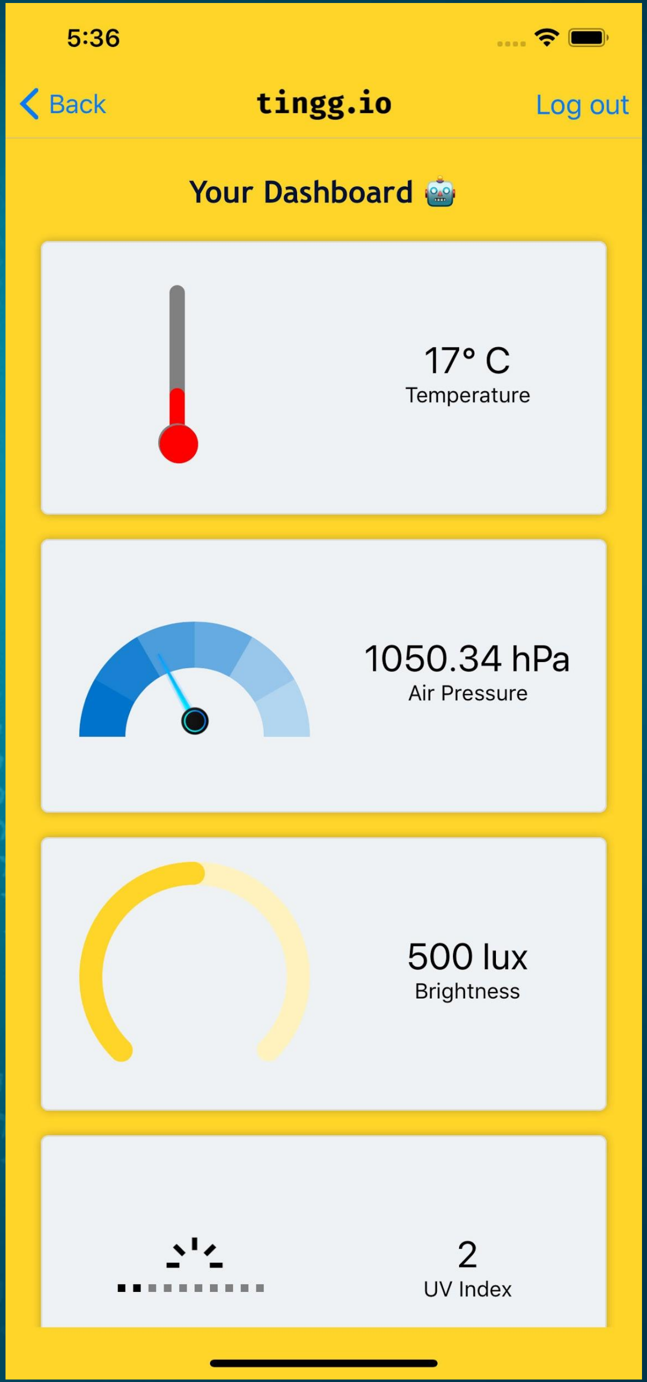
🎹 piano

🧟 claw

tingg.io

Ziel des Workshops:

- tingg.io Accounts erstellen
- Hardware in Betrieb nehmen
- Visualisierung der Daten im Browser und in der Mobile App



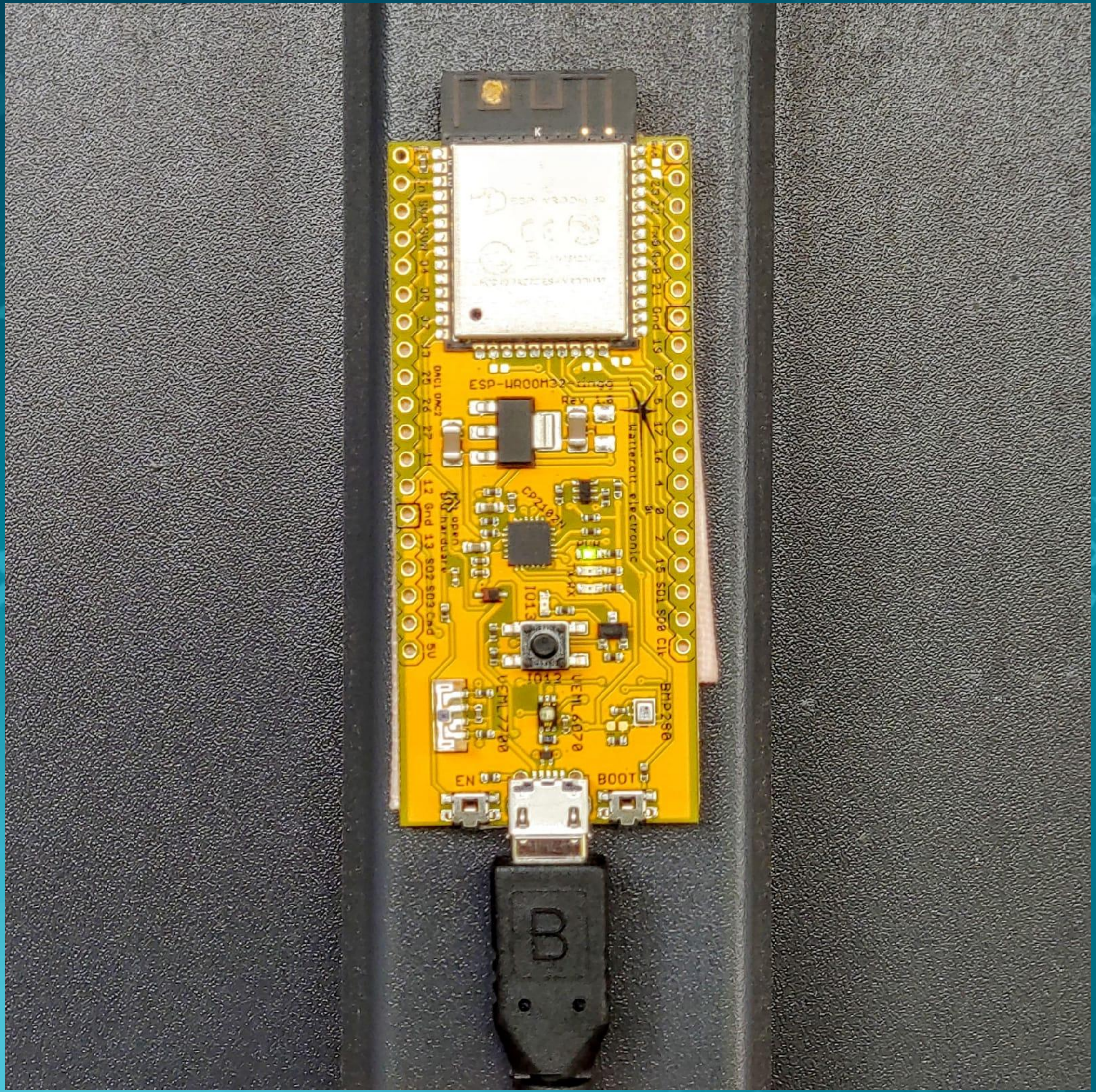
Your Dashboard 🤖

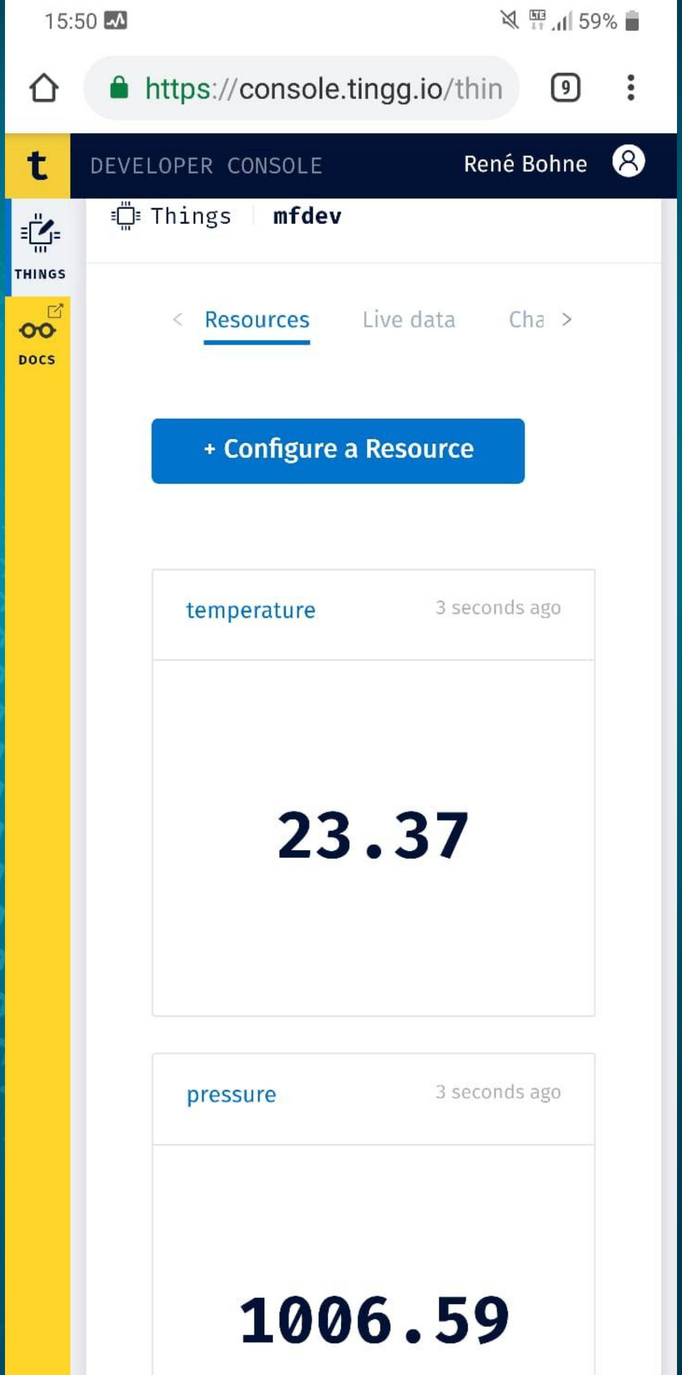
17° C
Temperature

1050.34 hPa
Air Pressure

500 lux
Brightness

2
UV Index





Things mfdev

Resources | Live data | Cha

+ Configure a Resource

temperature 3 seconds ago

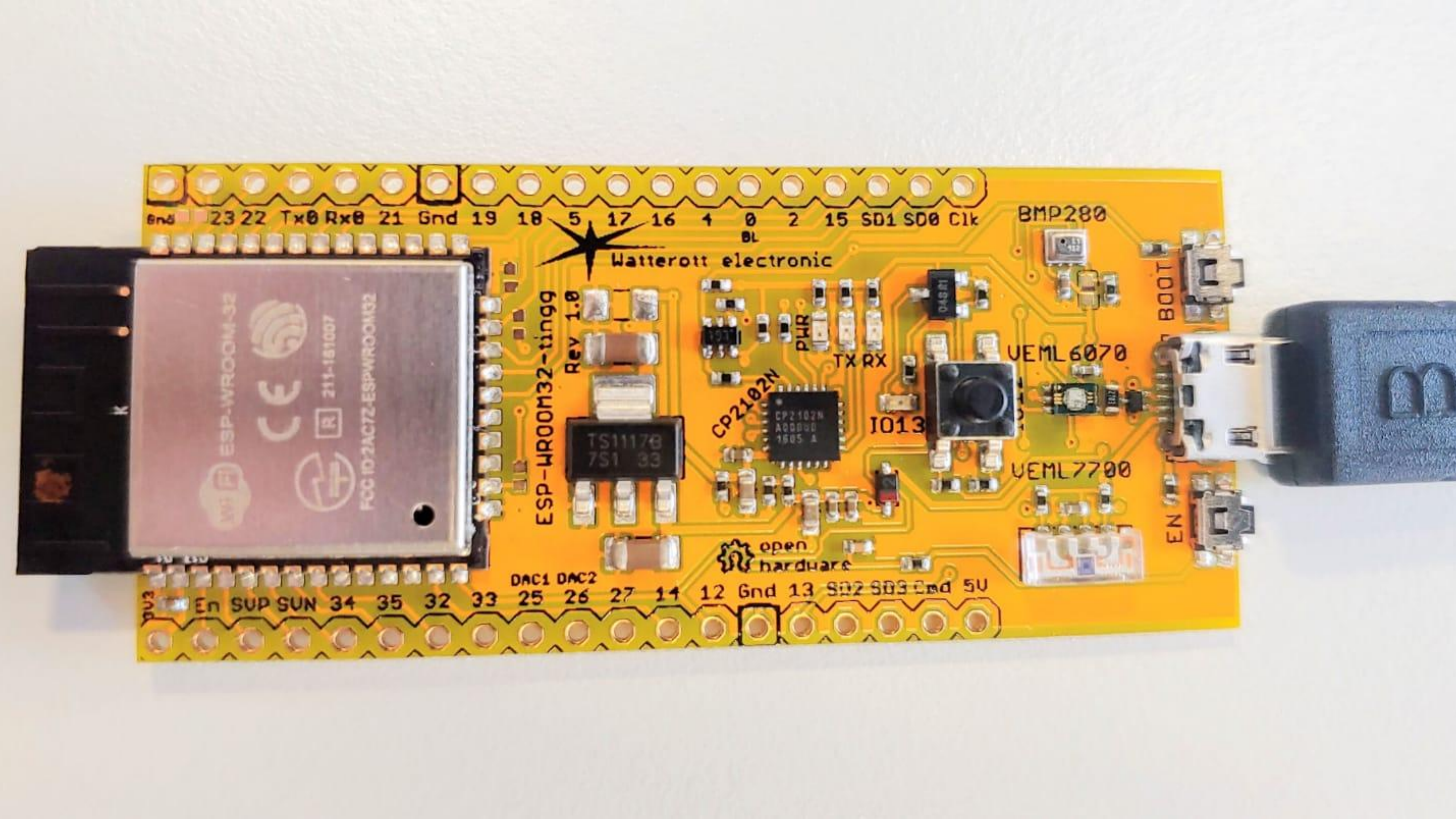
23.37

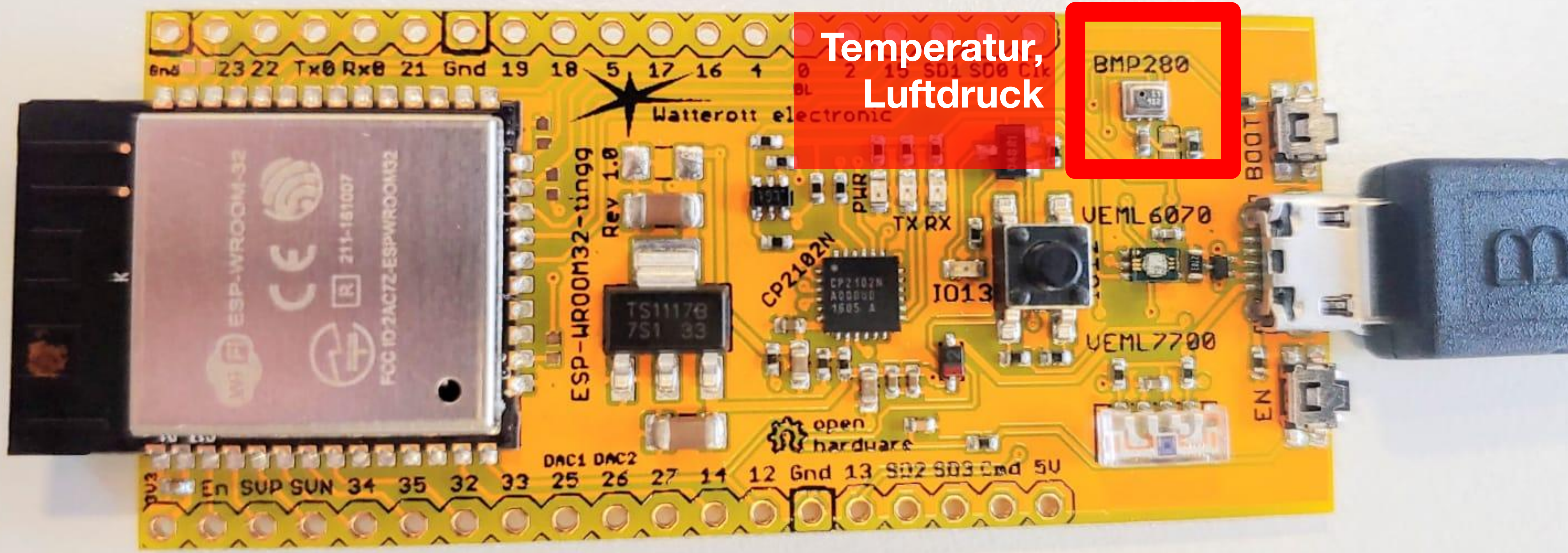
pressure 3 seconds ago

1006.59

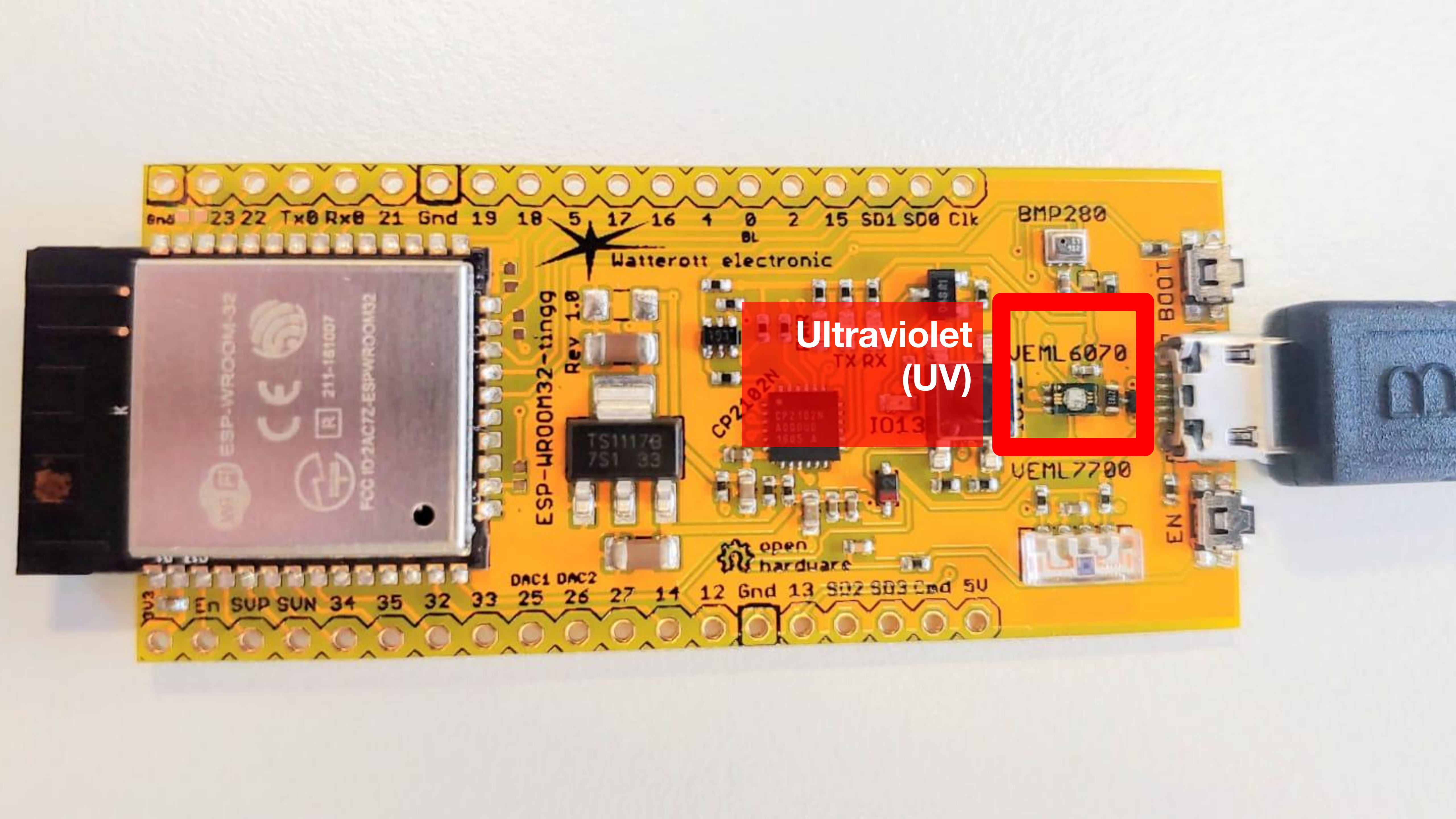
Das tingg.io Board

CSA 204790 TYPE CM


Gnd
23
22
Tx0
Rx0
21
Gnd
19
18
5
17
16
4
0
BL
2
15
SD1
SD0
Clk
Watterott electronic
BMP280
BOOT
ESP-WROOM-32
ESP-WROOM32-tingg
Rev 1.0
TS1117B
7S1 33
CP2102N
PWR
TX
RX
IO13
VEML6070
VEML7700
EN
open hardware
3V3
En
SVP
SVN
34
35
32
33
DAC1
25
DAC2
26
27
14
12
Gnd
13
SD2
SD3
Cmd
5V

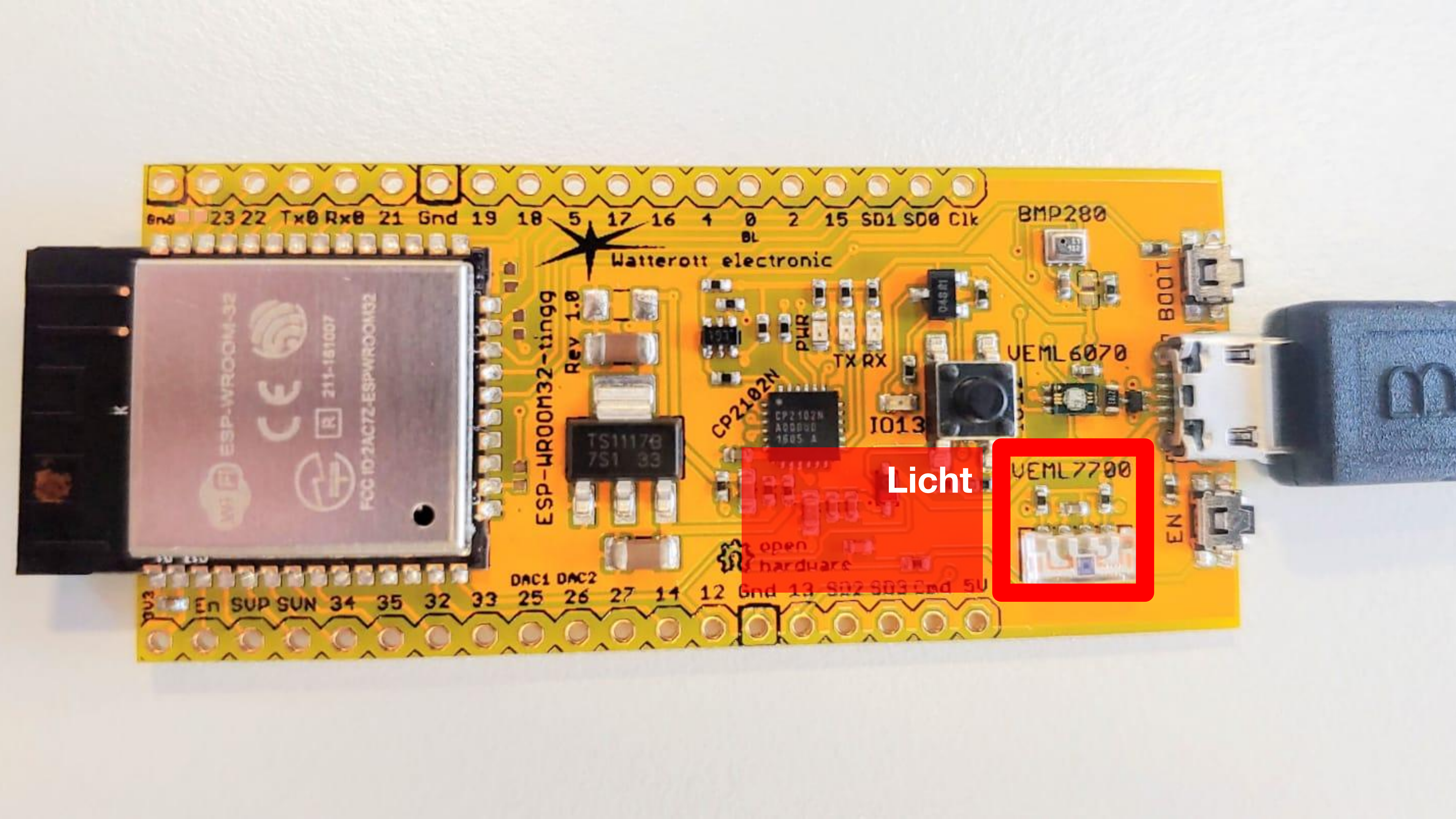


Temperatur, Luftdruck



Ultraviolet (UV)

BMP280
VEML6070
VEML7700
BOOT
EN
Watterott electronic
ESP-WROOM32-tingg Rev 1.0
ESP-WROOM-32
CP2102N
TX RX
IO13
TS1117B
open hardware
Gnd 23 22 Tx0 Rx0 21 Gnd 19 18 5 17 16 4 0 2 15 SD1 SD0 Clk
BL
3V3 En SVP SVN 34 35 32 33 25 26 27 14 12 Gnd 13 SD2 SD3 Cmd 5V
DAC1 DAC2


Licht
VEML7700
VEML6070
BMP280
ESP-WROOM32-tingg
Rev 1.0
Watterott electronic
CP2102N
IO13
BOOT
EN
PWR
TX RX
open hardware
Gnd 23 22 Tx0 Rx0 21 Gnd 19 18 5 17 16 4 0 2 15 SD1 SD0 Clk
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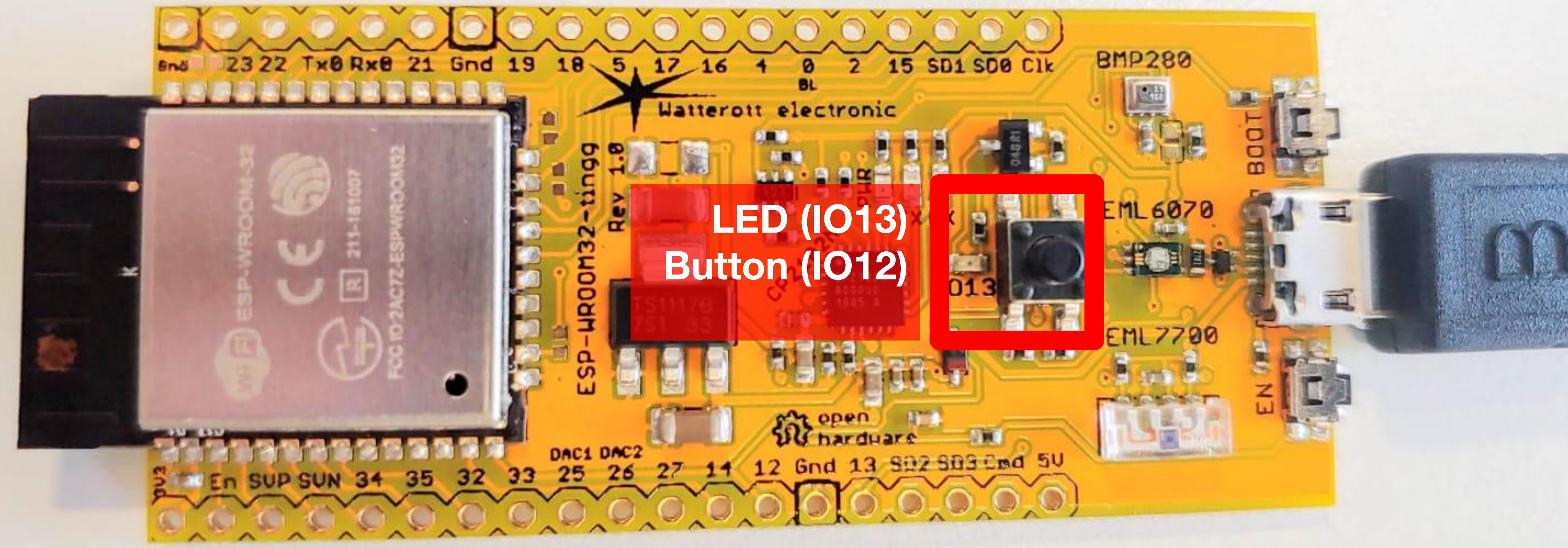
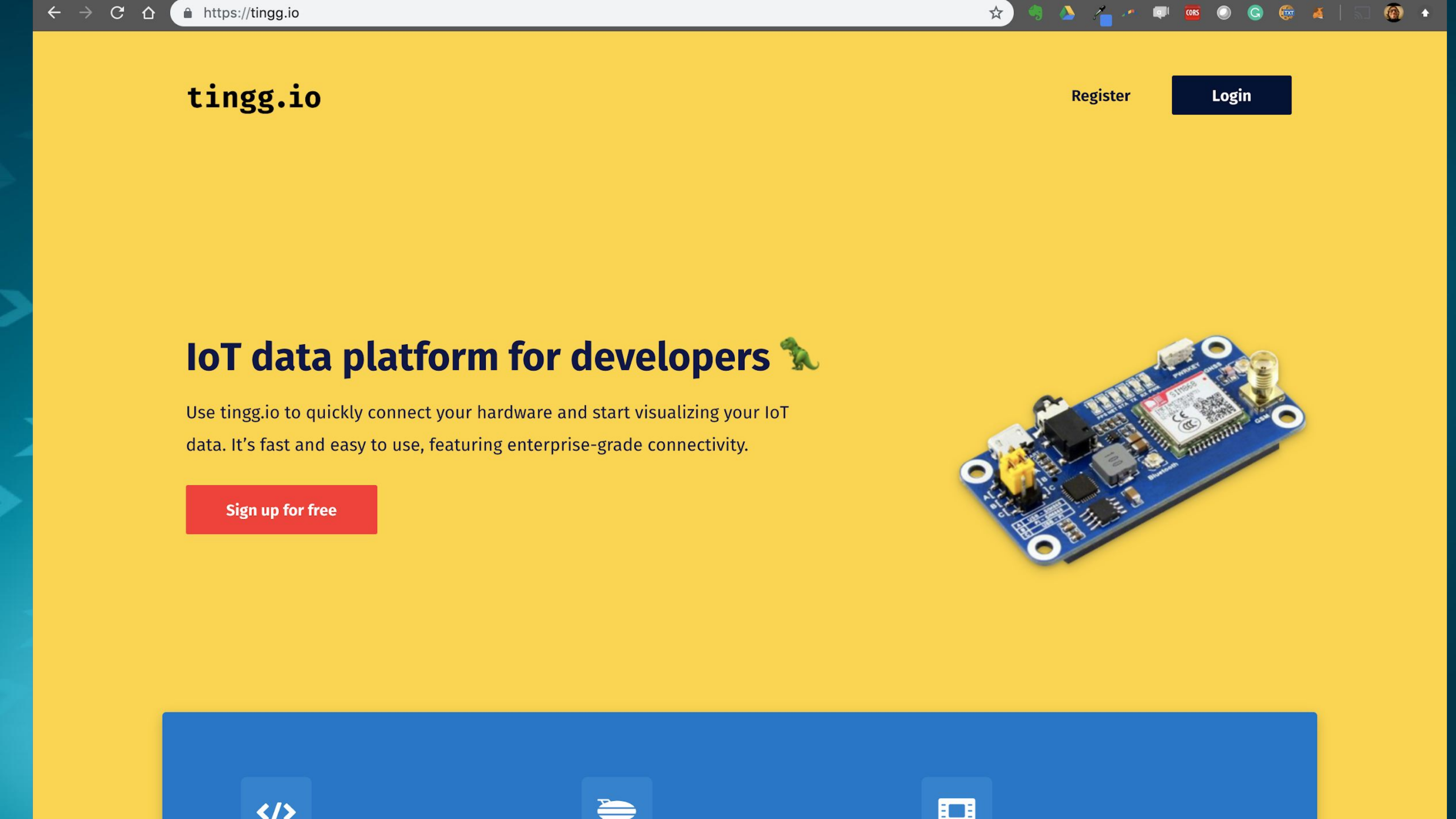
DAC1 DAC2
BL
ESP-WROOM-32
TS1117B


Gnd 23 22 Tx0 Rx0 21 Gnd 19 18 5 17 16 4 0 2 15 SD1 SD0 Clk
BL
BMP280
Watterott electronic
ESP-WROOM32-tingg
Rev 1.0
BOOT
EML6070
IO13
EML7700
EN
open hardware
3V3 En SVP SVN 34 35 32 33 25 26 27 14 12 Gnd 13 SD2 SD3 Cmd 5V
DAC1 DAC2
ESP-WROOM-32

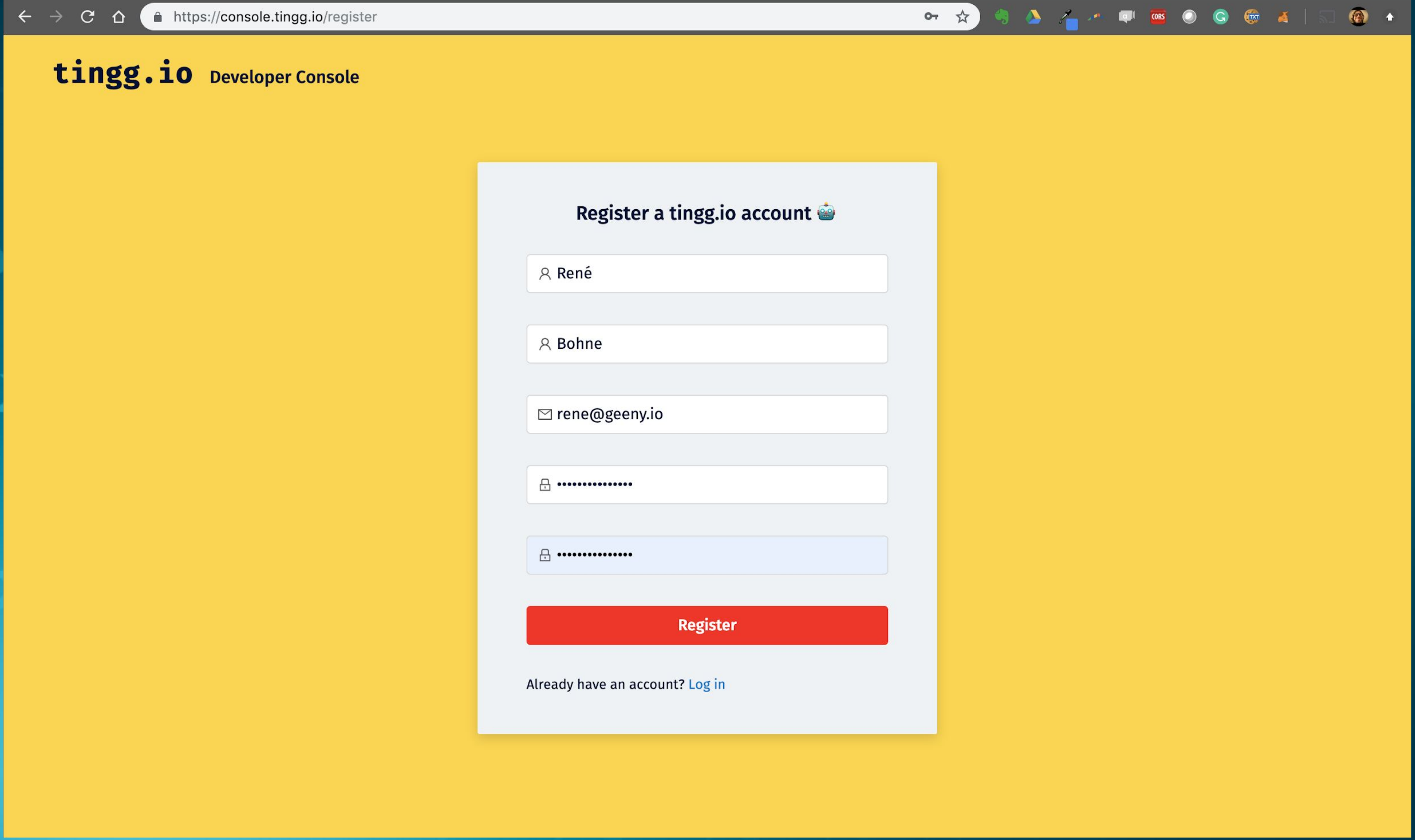
LED (IO13)
Button (IO12)

Die tingg.io IoT Plattform



IoT data platform for developers 🦖

Use tingg.io to quickly connect your hardware and start visualizing your IoT data. It’s fast and easy to use, featuring enterprise-grade connectivity.



tingg.io Developer Console

Register a tingg.io account 🤖

René

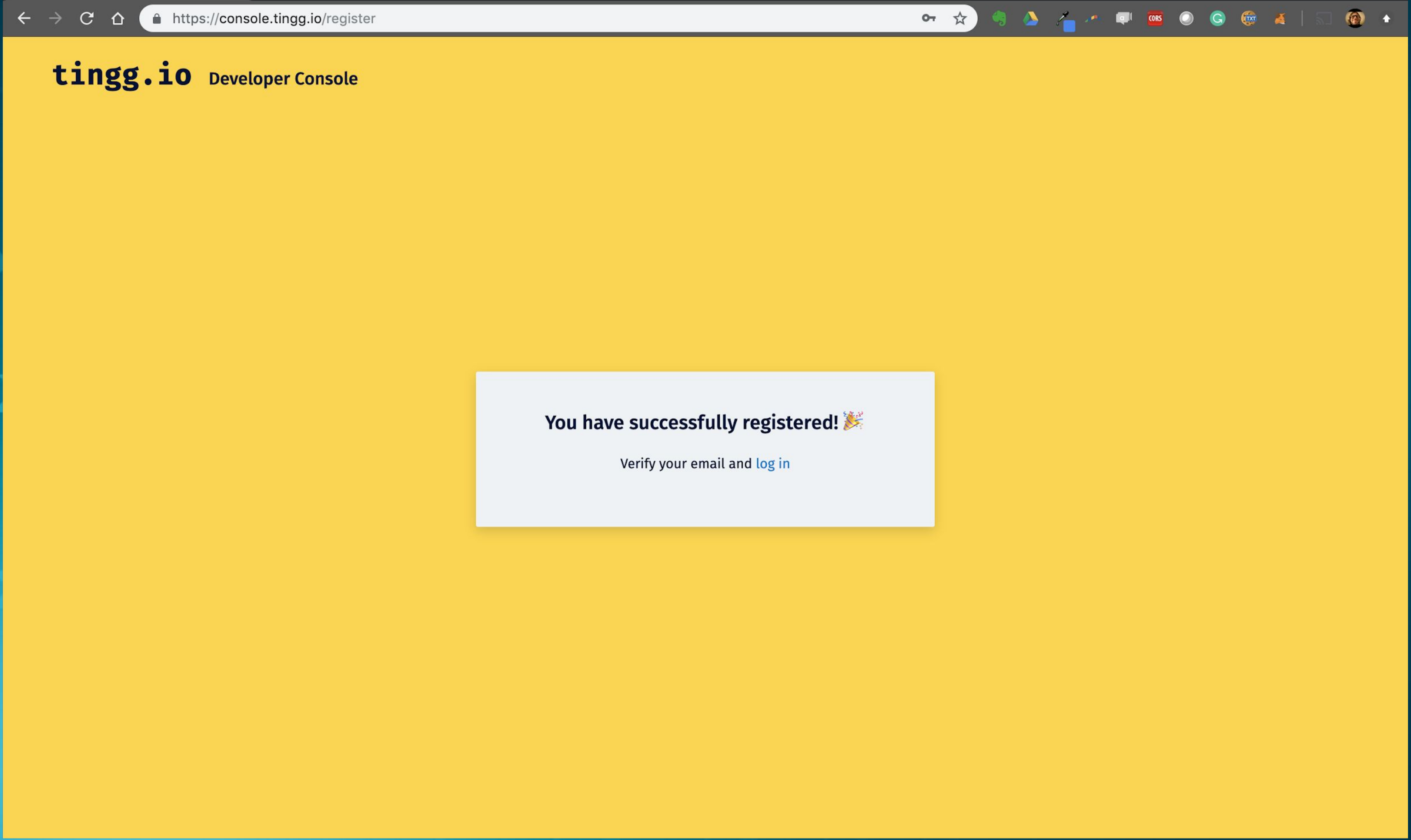
Bohne

rene@geeny.io

•••••••••••••••

•••••••••••••••

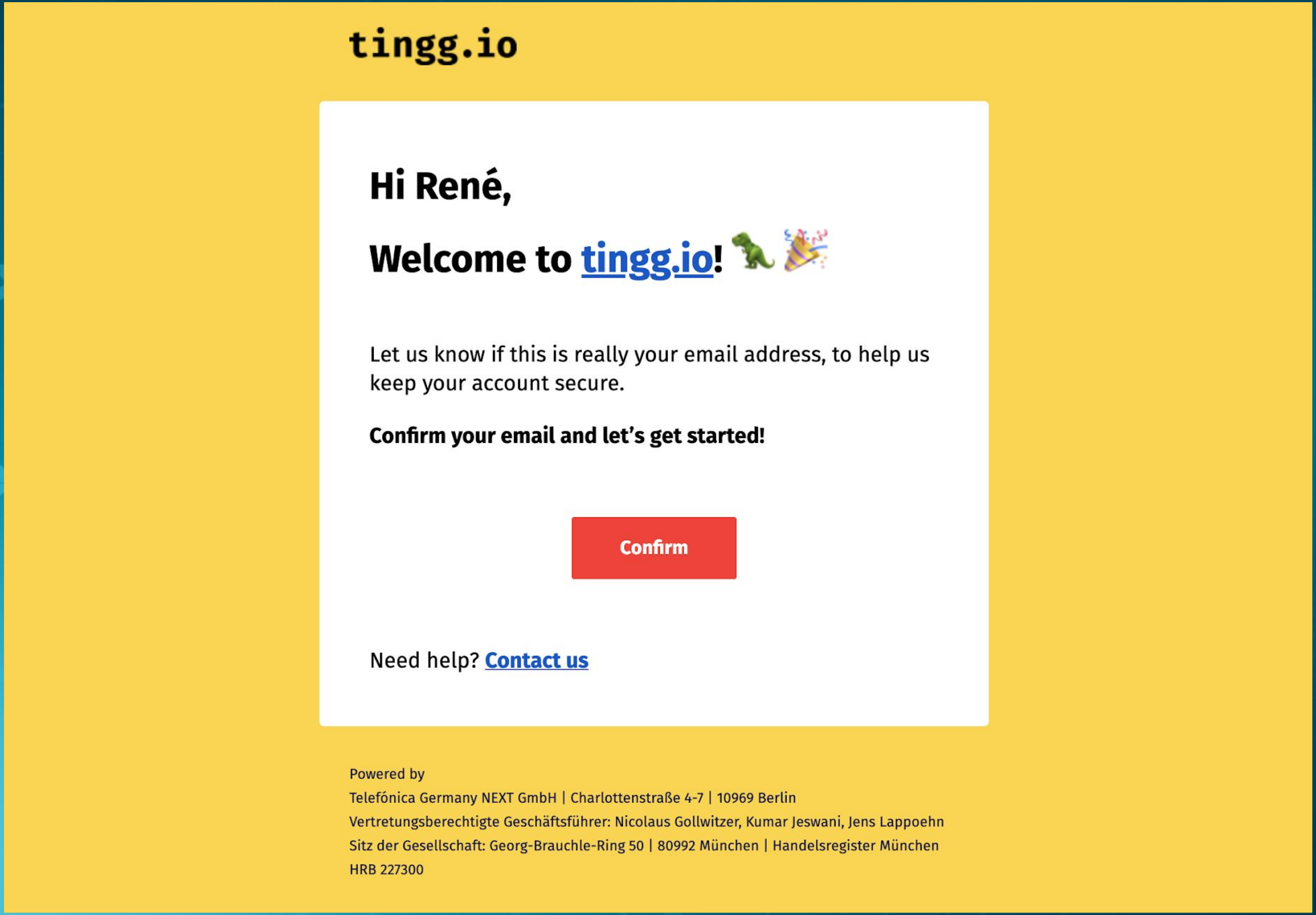
Already have an account? Log in



tingg.io Developer Console

You have successfully registered! 🎉

Verify your email and log in



tingg.io

Hi René,

Welcome to tingg.io! 🦖 🎉

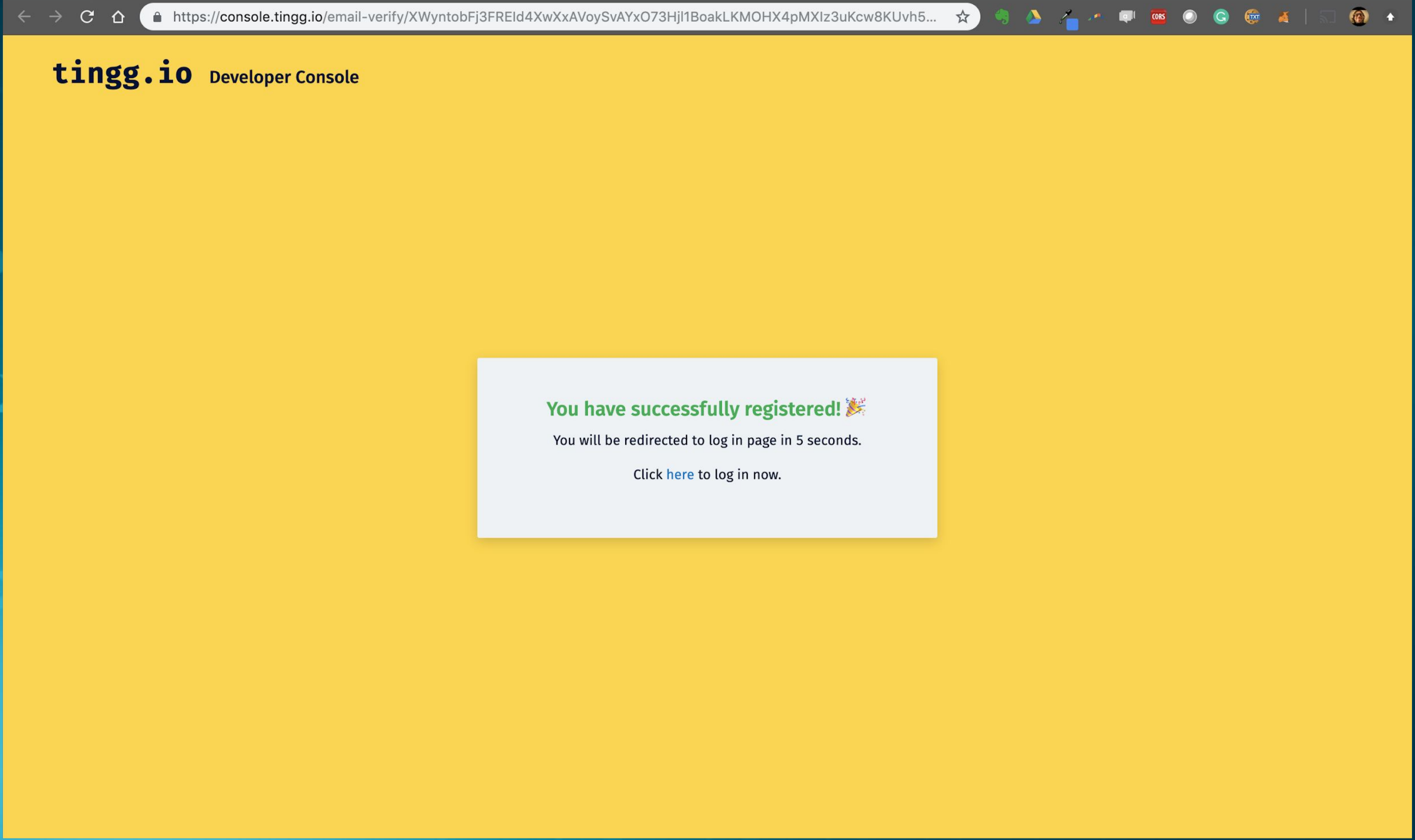
Let us know if this is really your email address, to help us keep your account secure.

Confirm your email and let's get started!

Confirm

Need help? **Contact us**

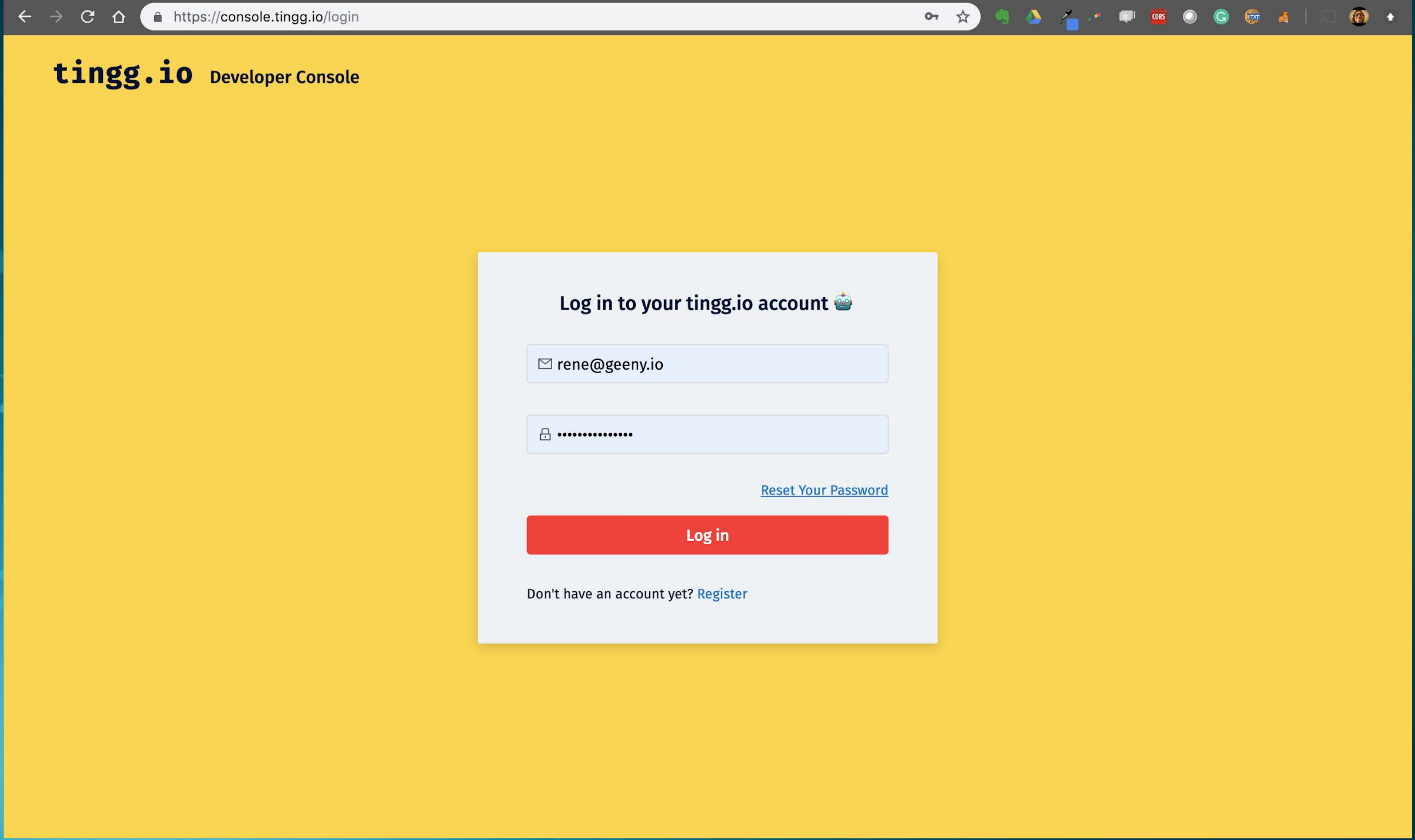
Powered by
Telefónica Germany NEXT GmbH | Charlottenstraße 4-7 | 10969 Berlin
Vertretungsberechtigte Geschäftsführer: Nicolaus Gollwitzer, Kumar Jeswani, Jens Lappoehn
Sitz der Gesellschaft: Georg-Brauchle-Ring 50 | 80992 München | Handelsregister München
HRB 227300


https://console.tingg.io/email-verify/XWyntobFj3FREId4XwXxAVoySvAYxO73Hjl1BoakLKMOHX4pMXIz3uKcw8KUvh5...
tingg.io
Developer Console

You have successfully registered! 🎉

You will be redirected to log in page in 5 seconds.

Click here to log in now.



https://console.tingg.io/login

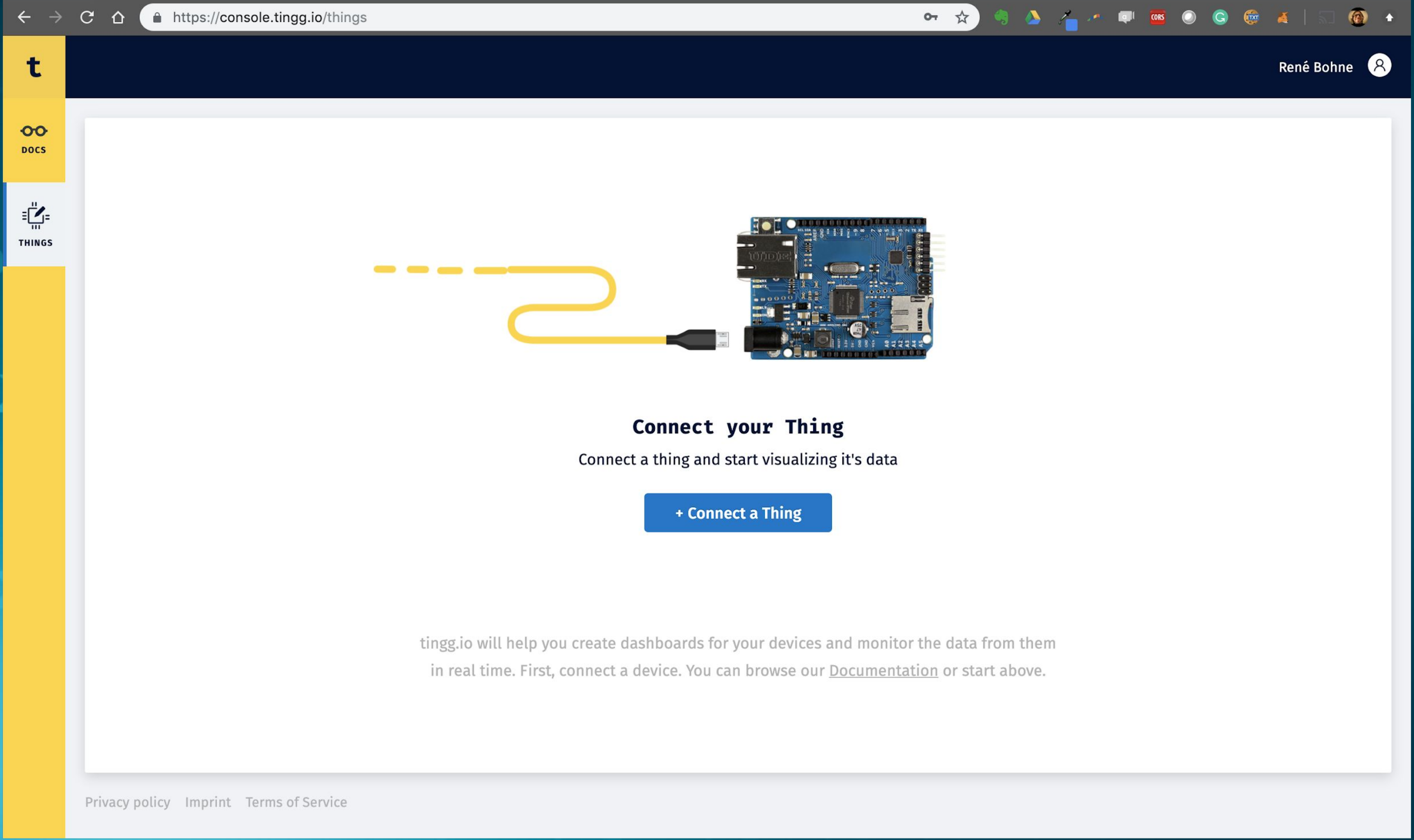
tingg.io Developer Console

Log in to your tingg.io account 🤖

rene@geeny.io

•••••••••••••••

Don't have an account yet? Register

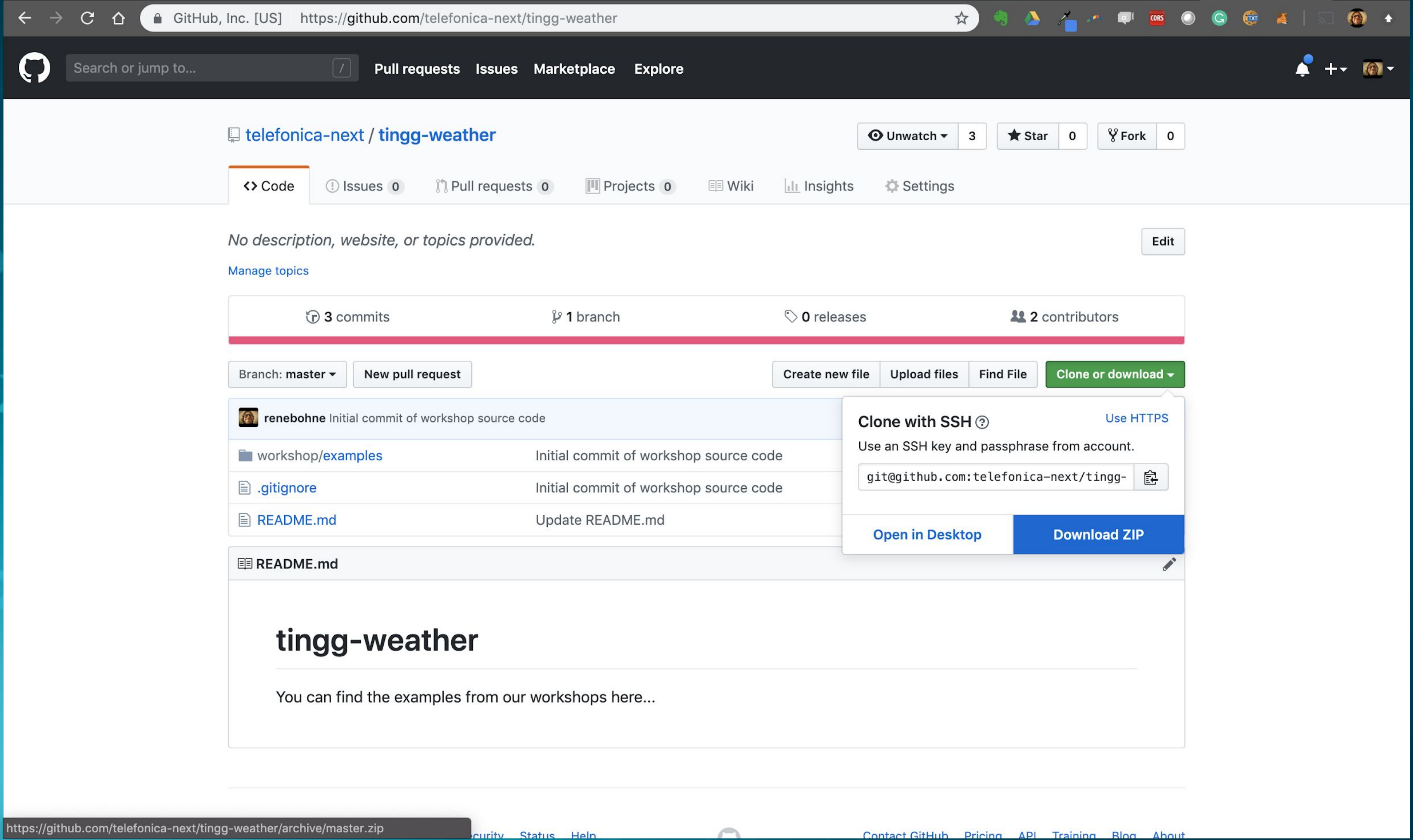


Connect your Thing

Connect a thing and start visualizing it's data

tingg.io will help you create dashboards for your devices and monitor the data from them in real time. First, connect a device. You can browse our Documentation or start above.

Software



https://github.com/telefonica-next/tingg-weather

telefonica-next / tingg-weather

No description, website, or topics provided.

renebohne Initial commit of workshop source code

workshop/examples	Initial commit of workshop source code
.gitignore	Initial commit of workshop source code
README.md	Update README.md

Clone with SSH

Use an SSH key and passphrase from account.

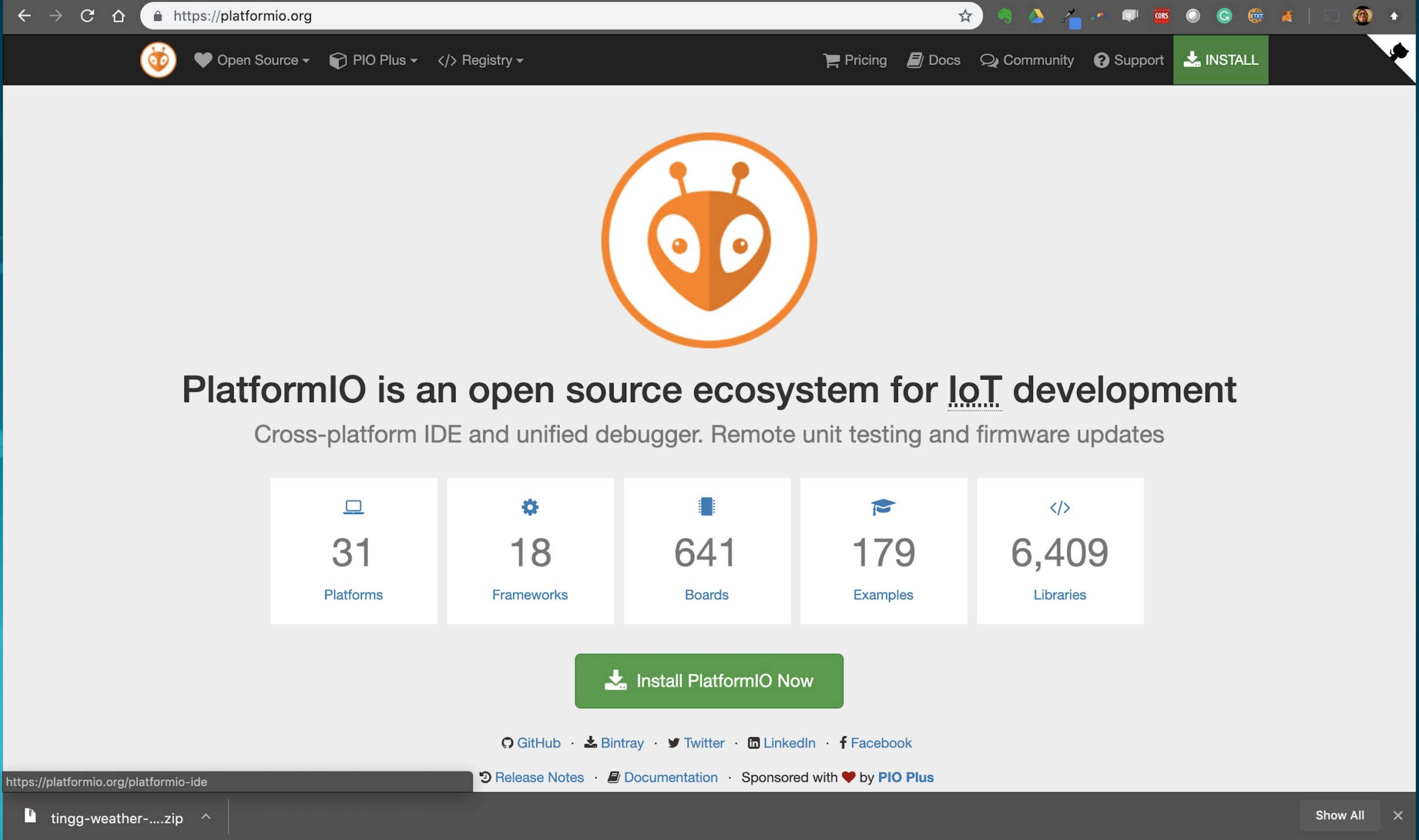
```
git@github.com:telefonica-next/tingg-
```

README.md

tingg-weather

You can find the examples from our workshops here...

https://github.com/telefonica-next/tingg-weather/archive/master.zip


https://platformio.org
Open Source
PIO Plus
Registry
Pricing
Docs
Community
Support
INSTALL

PlatformIO is an open source ecosystem for IoT development

Cross-platform IDE and unified debugger. Remote unit testing and firmware updates

31	18	641	179	6,409
Platforms	Frameworks	Boards	Examples	Libraries

Install PlatformIO Now
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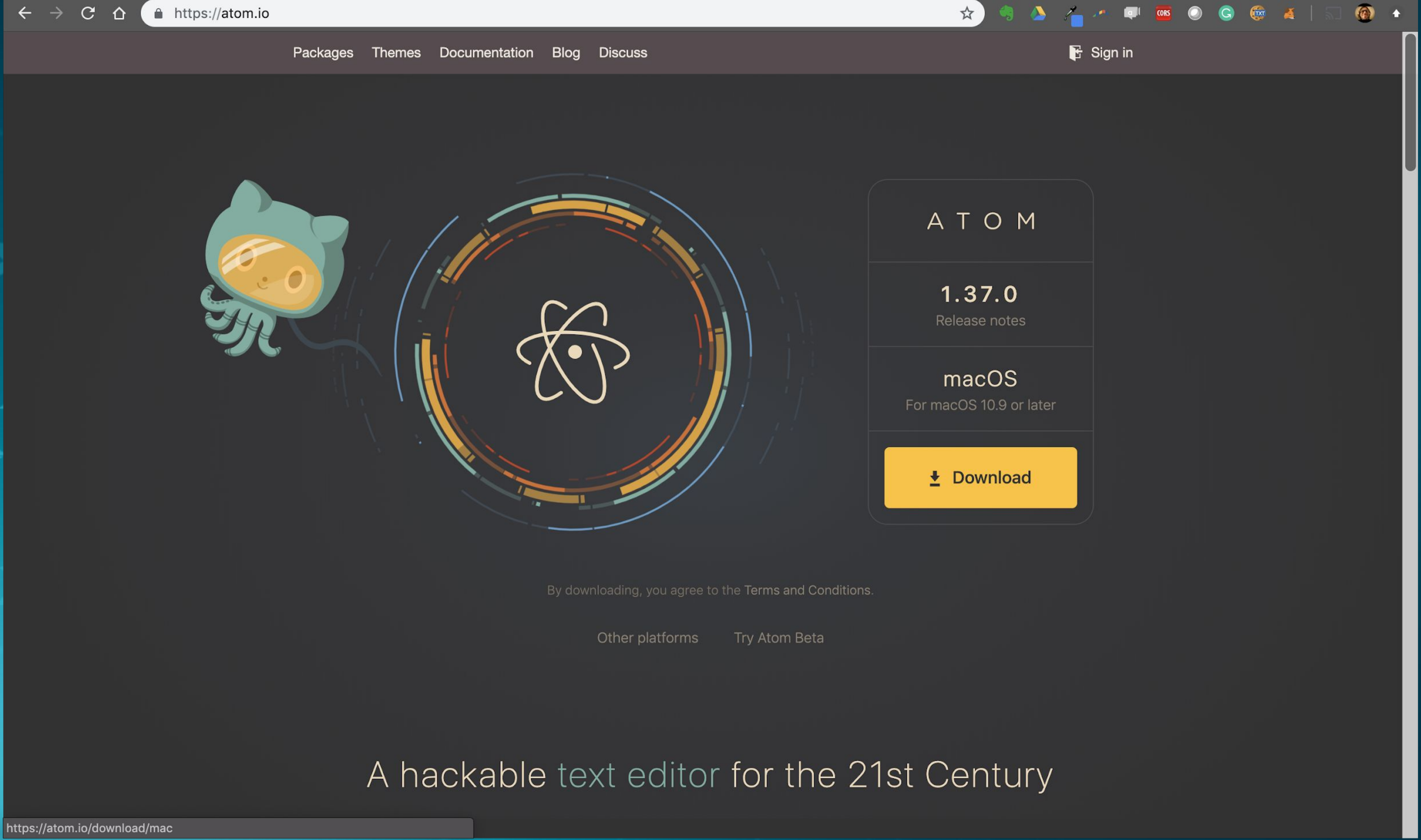
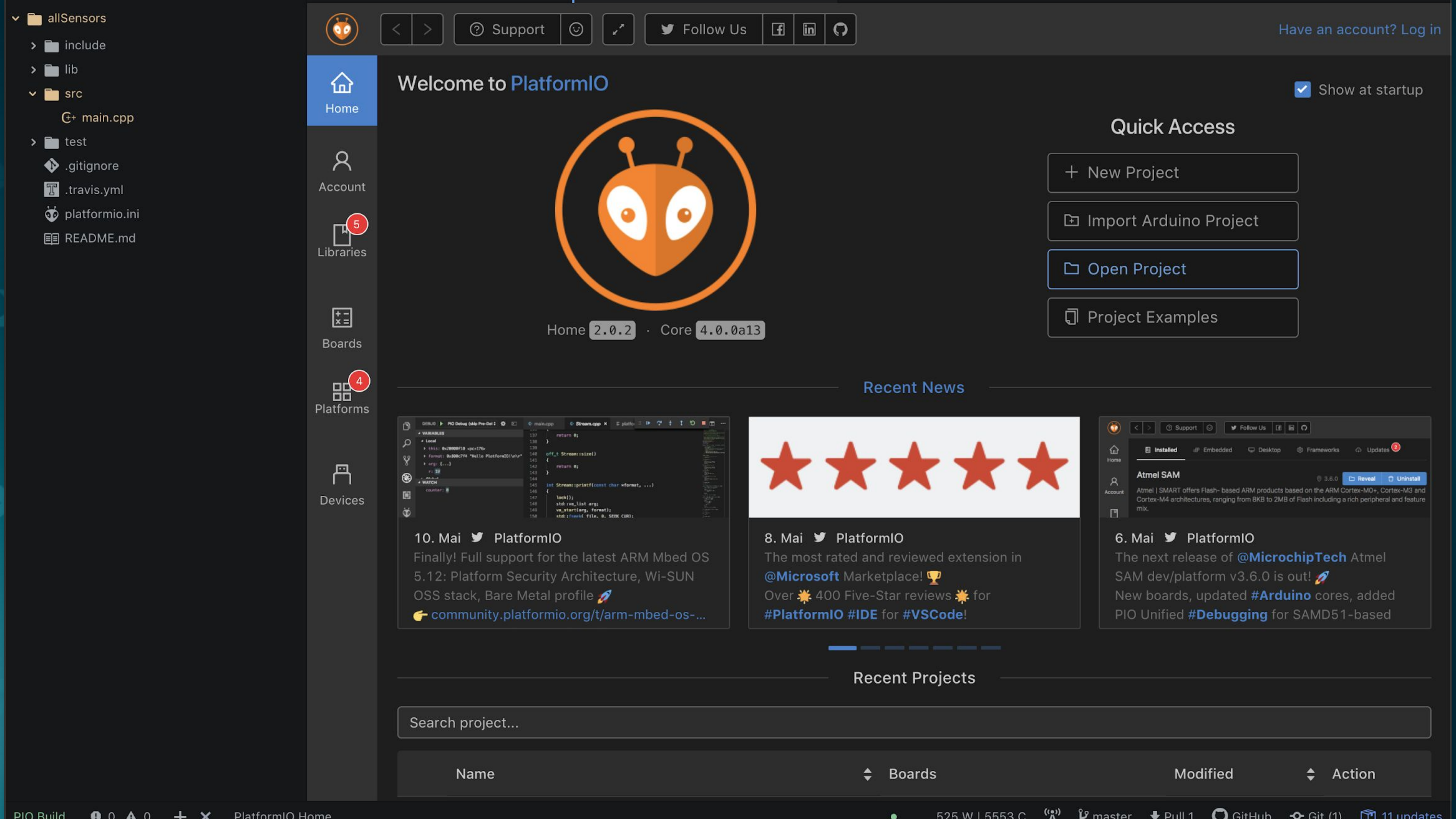
https://platformio.org/platformio-ide
tingg-weather-....zip
Show All



By downloading, you agree to the Terms and Conditions.

A hackable text editor for the 21st Century



Welcome to PlatformIO

☑ Show at startup

Home 2.0.2 · Core 4.0.0a13

Quick Access

Recent News

10. Mai PlatformIO
Finally! Full support for the latest ARM Mbed OS 5.12: Platform Security Architecture, Wi-SUN OSS stack, Bare Metal profile 🚀
👉 community.platformio.org/t/arm-mbed-os-...

8. Mai PlatformIO
The most rated and reviewed extension in @Microsoft Marketplace! 🏆
Over 🌟 400 Five-Star reviews 🌟 for #PlatformIO #IDE for #VSCode!

6. Mai PlatformIO
The next release of @MicrochipTech Atmel SAM dev/platform v3.6.0 is out! 🚀
New boards, updated #Arduino cores, added PIO Unified #Debugging for SAMD51-based

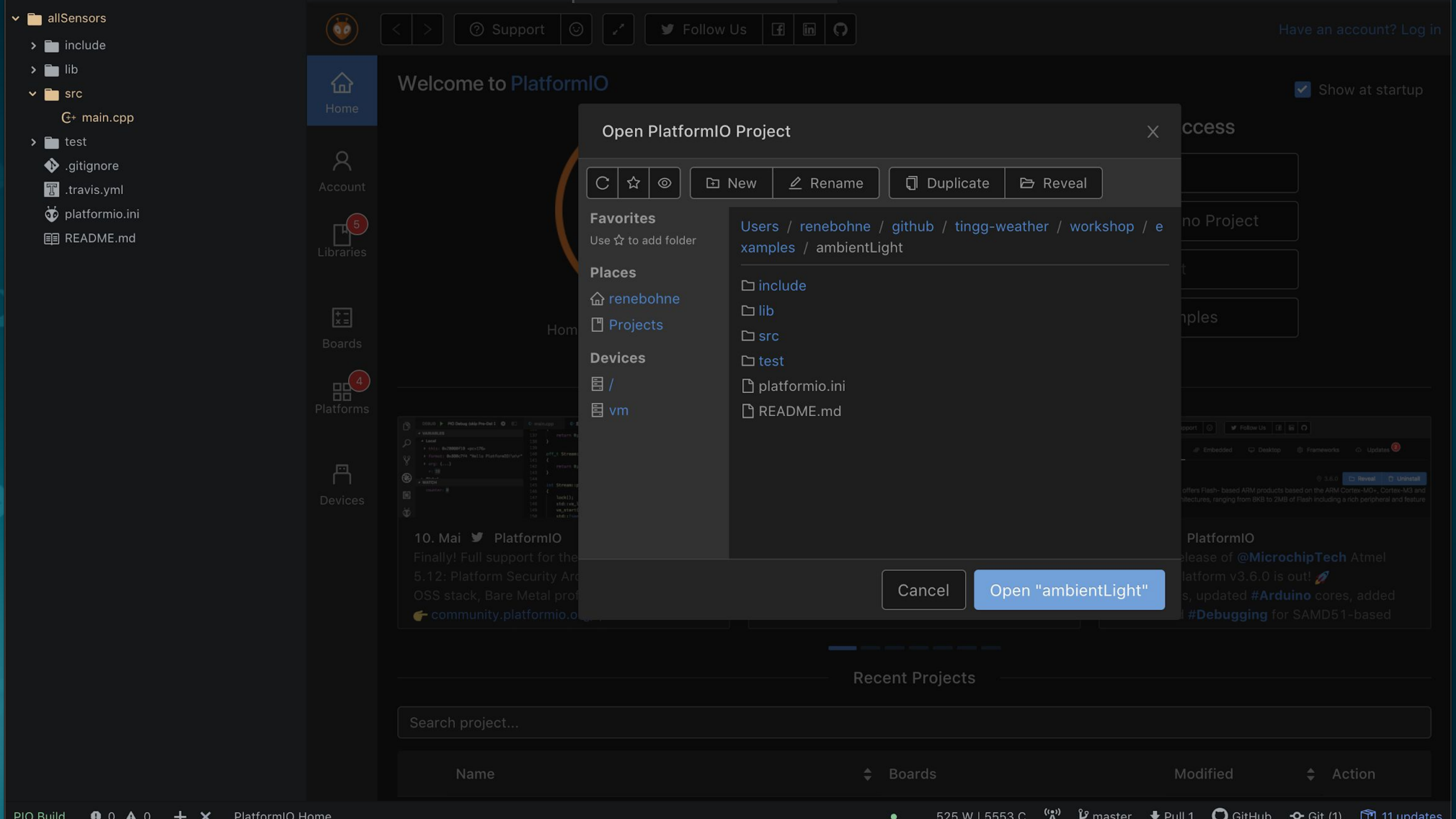
Atmel | SMART offers Flash- based ARM products based on the ARM Cortex-M0+, Cortex-M3 and Cortex-M4 architectures, ranging from 8KB to 2MB of Flash including a rich peripheral and feature mix.

Recent Projects

Search project...

Name	Boards	Modified	Action

Software Test:
offline Lichtsensor



allSensors
- include
- lib
- src
  - main.cpp
- test
- .gitignore
- .travis.yml
- platformio.ini
- README.md

Support · Follow Us · Have an account? Log in

Welcome to PlatformIO

☑ Show at startup

Open PlatformIO Project

New · Rename · Duplicate · Reveal

Favorites

Use ☆ to add folder

Places

- renebohne
- Projects

Devices

- /
- vm

Users / renebohne / github / tingg-weather / workshop / examples / ambientLight

- include
- lib
- src
- test
- platformio.ini
- README.md

Cancel · Open "ambientLight"

10. Mai PlatformIO

Finally! Full support for the … 5.12: Platform Security Ar… OSS stack, Bare Metal prof… community.platformio.o…

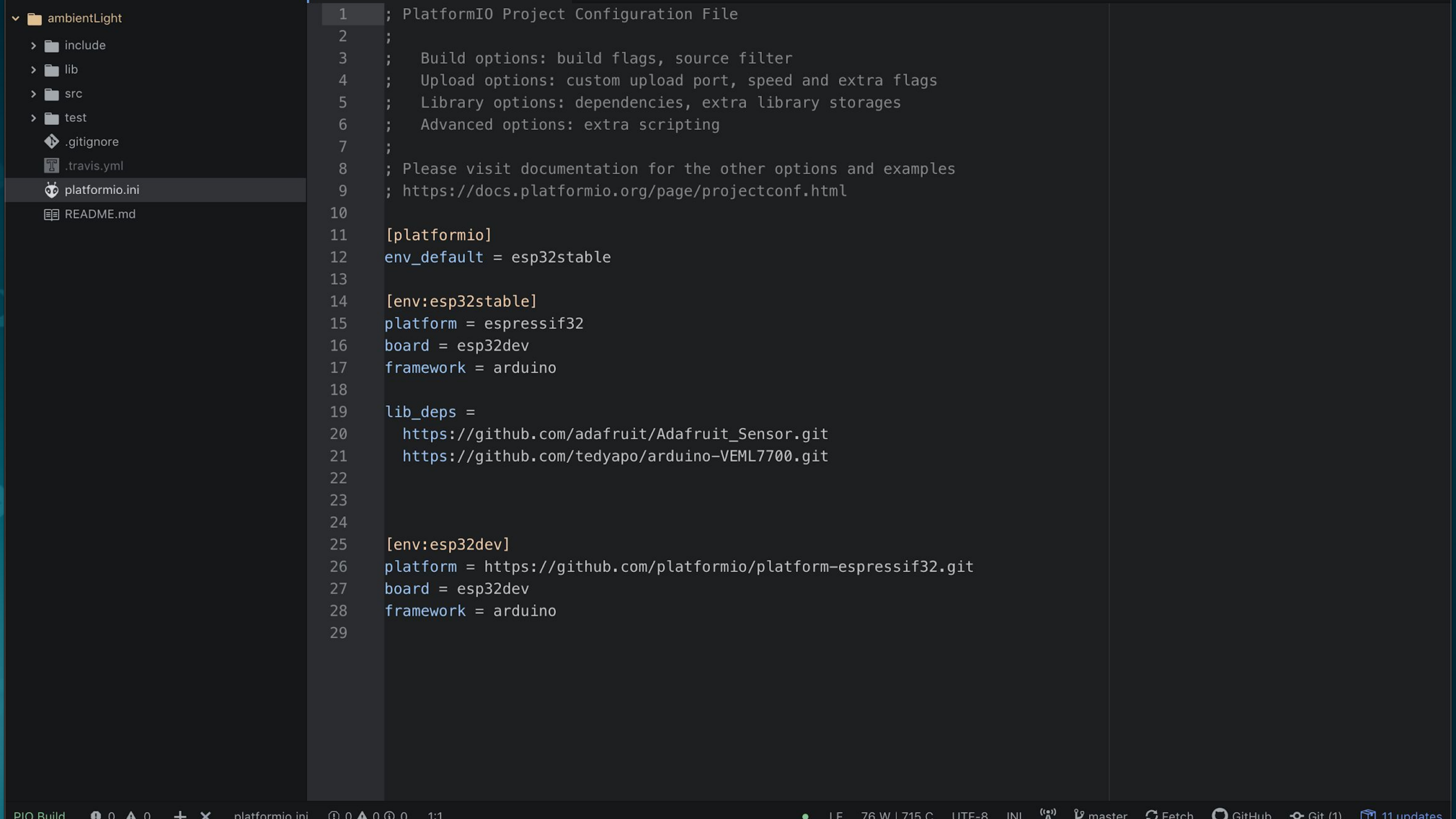
PlatformIO

…lease of @MicrochipTech Atmel …latform v3.6.0 is out! …s, updated #Arduino cores, added … #Debugging for SAMD51-based

Recent Projects

Search project...

Name	Boards	Modified	Action



```ini
; PlatformIO Project Configuration File
;
;   Build options: build flags, source filter
;   Upload options: custom upload port, speed and extra flags
;   Library options: dependencies, extra library storages
;   Advanced options: extra scripting
;
; Please visit documentation for the other options and examples
; https://docs.platformio.org/page/projectconf.html

[platformio]
env_default = esp32stable

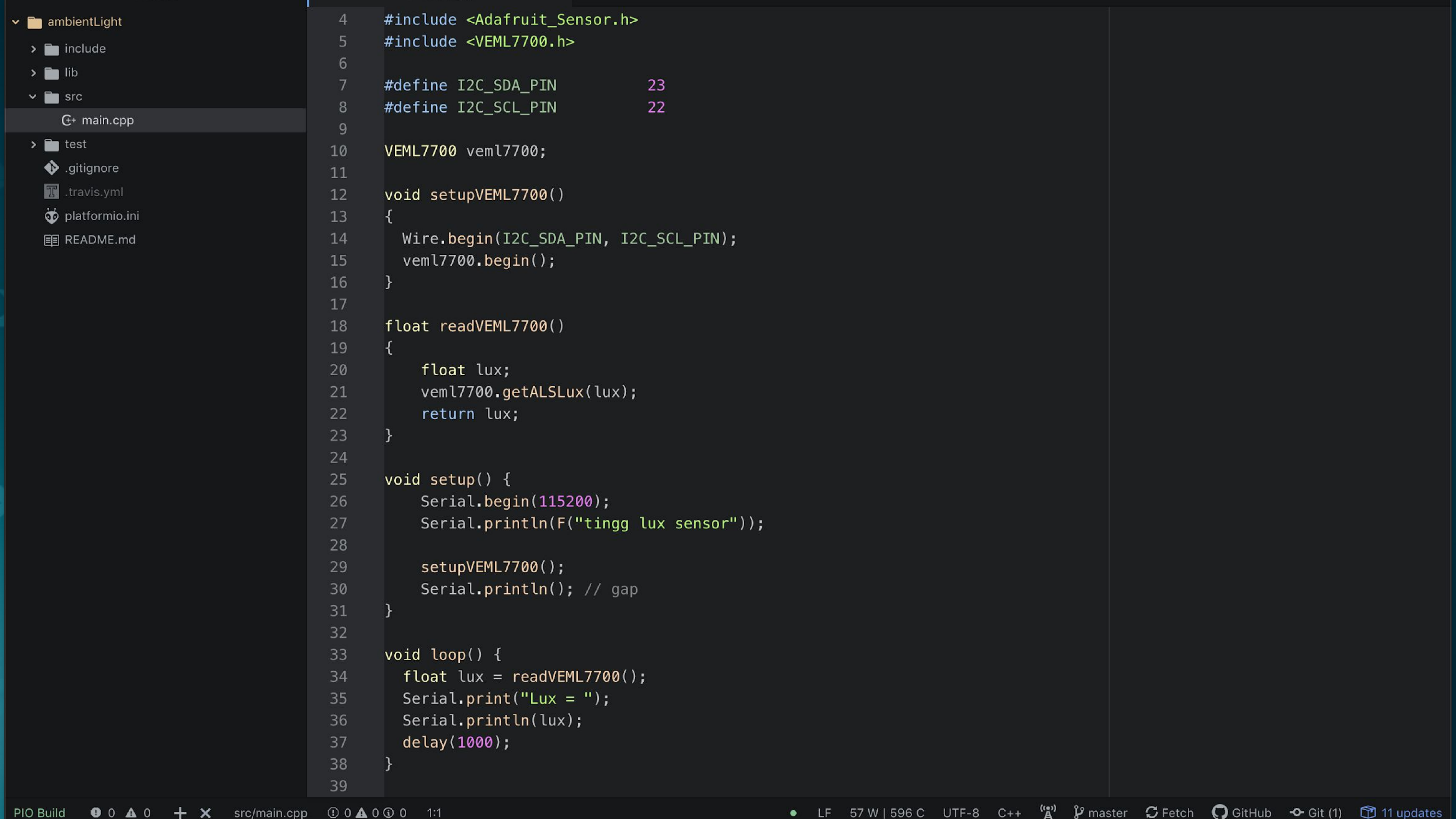
[env:esp32stable]
platform = espressif32
board = esp32dev
framework = arduino

lib_deps =
  https://github.com/adafruit/Adafruit_Sensor.git
  https://github.com/tedyapo/arduino-VEML7700.git



[env:esp32dev]
platform = https://github.com/platformio/platform-espressif32.git
board = esp32dev
framework = arduino

```



```
#include <Adafruit_Sensor.h>
#include <VEML7700.h>

#define I2C_SDA_PIN          23
#define I2C_SCL_PIN          22

VEML7700 veml7700;

void setupVEML7700()
{
  Wire.begin(I2C_SDA_PIN, I2C_SCL_PIN);
  veml7700.begin();
}

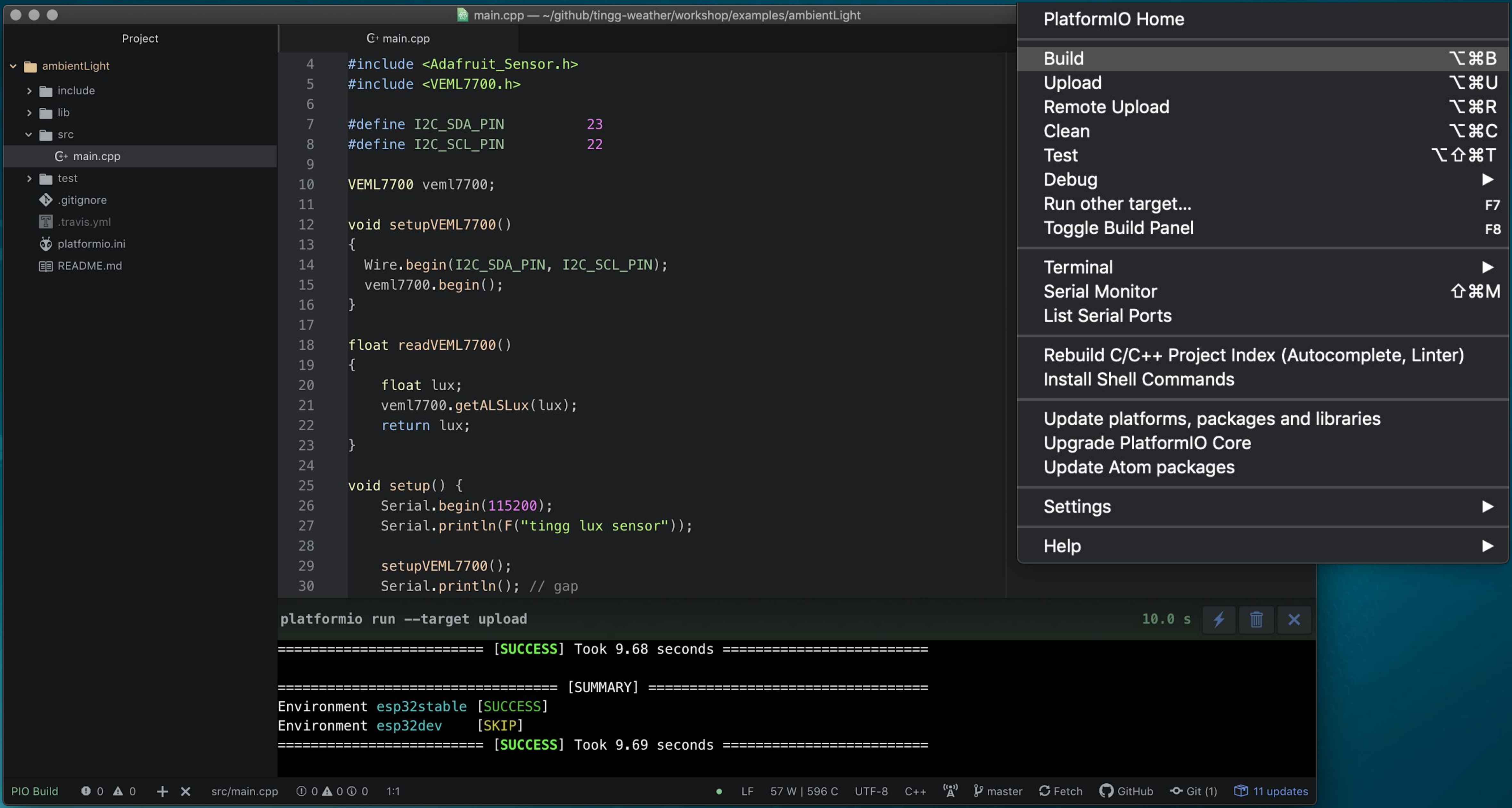
float readVEML7700()
{
    float lux;
    veml7700.getALSLux(lux);
    return lux;
}

void setup() {
    Serial.begin(115200);
    Serial.println(F("tingg lux sensor"));

    setupVEML7700();
    Serial.println(); // gap
}

void loop() {
  float lux = readVEML7700();
  Serial.print("Lux = ");
  Serial.println(lux);
  delay(1000);
}

```



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    return lux;
}

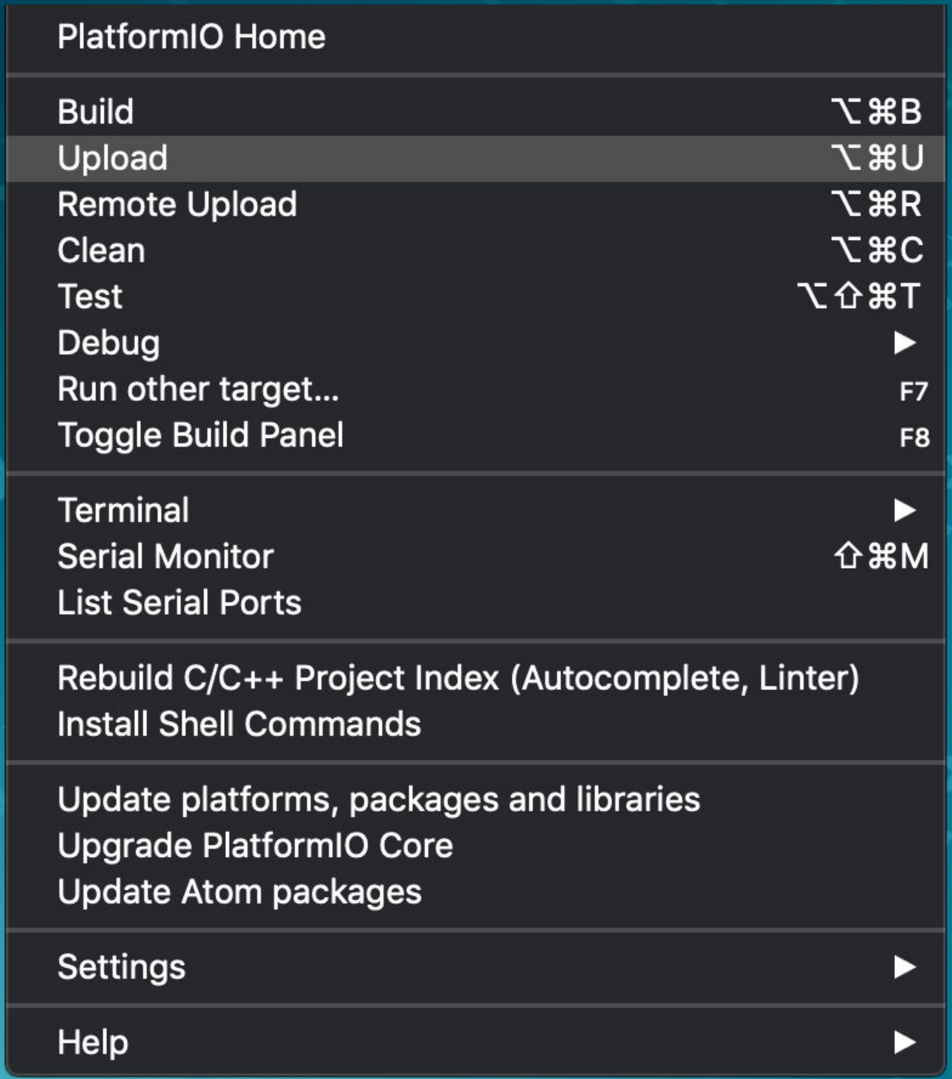
void setup() {
    Serial.begin(115200);
    Serial.println(F("tingg lux sensor"));

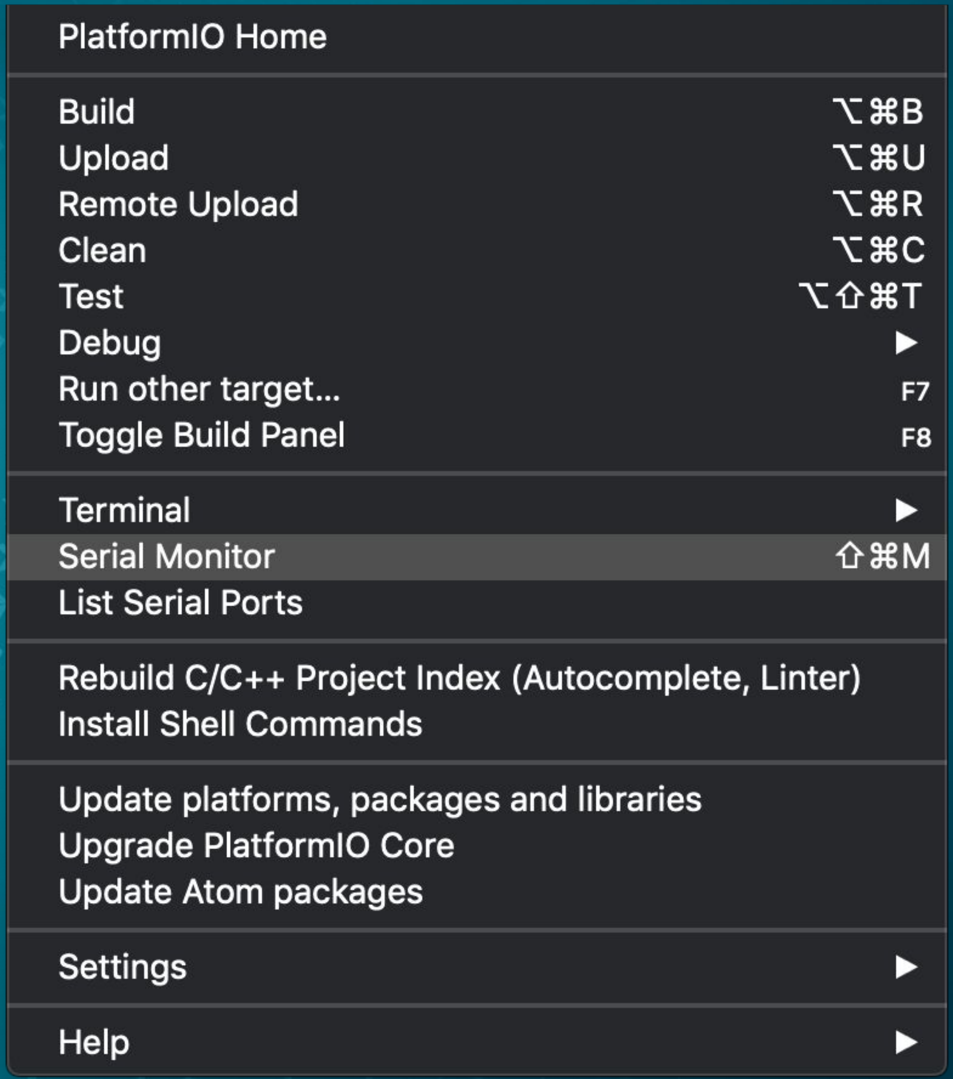
    setupVEML7700();
    Serial.println(); // gap
```

```
platformio run --target upload
```

```
======================== [SUCCESS] Took 9.68 seconds ========================

================================== [SUMMARY] ==================================
Environment esp32stable [SUCCESS]
Environment esp32dev    [SKIP]
======================== [SUCCESS] Took 9.69 seconds ========================
```


PlatformIO Home
Build ⌥⌘B
Upload ⌥⌘U
Remote Upload ⌥⌘R
Clean ⌥⌘C
Test ⌥⇧⌘T
Debug ▶
Run other target... F7
Toggle Build Panel F8
Terminal ▶
Serial Monitor ⇧⌘M
List Serial Ports
Rebuild C/C++ Project Index (Autocomplete, Linter)
Install Shell Commands
Update platforms, packages and libraries
Upgrade PlatformIO Core
Update Atom packages
Settings ▶
Help ▶


PlatformIO Home
Build ⌥⌘B
Upload ⌥⌘U
Remote Upload ⌥⌘R
Clean ⌥⌘C
Test ⌥⇧⌘T
Debug ▶
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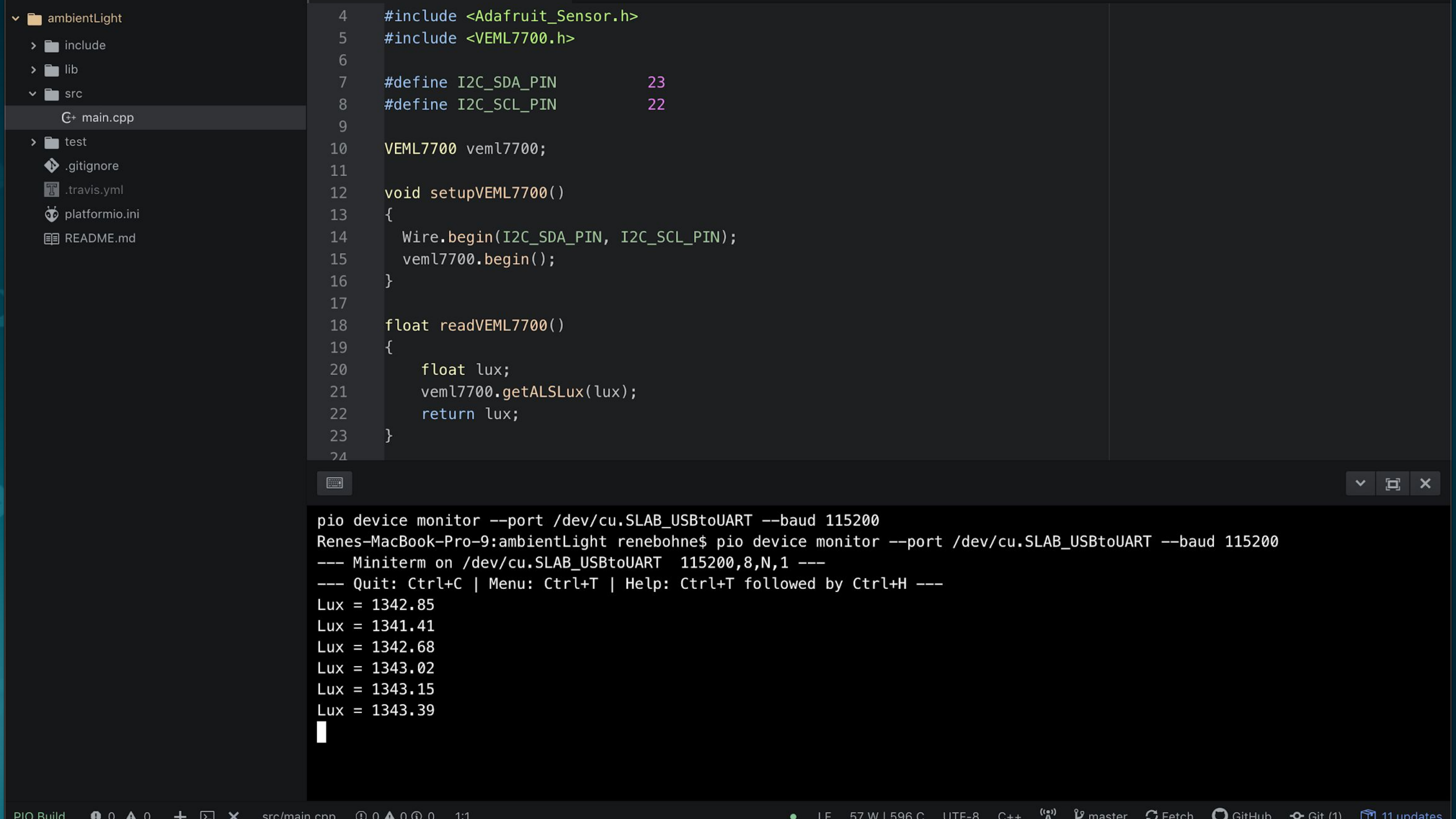

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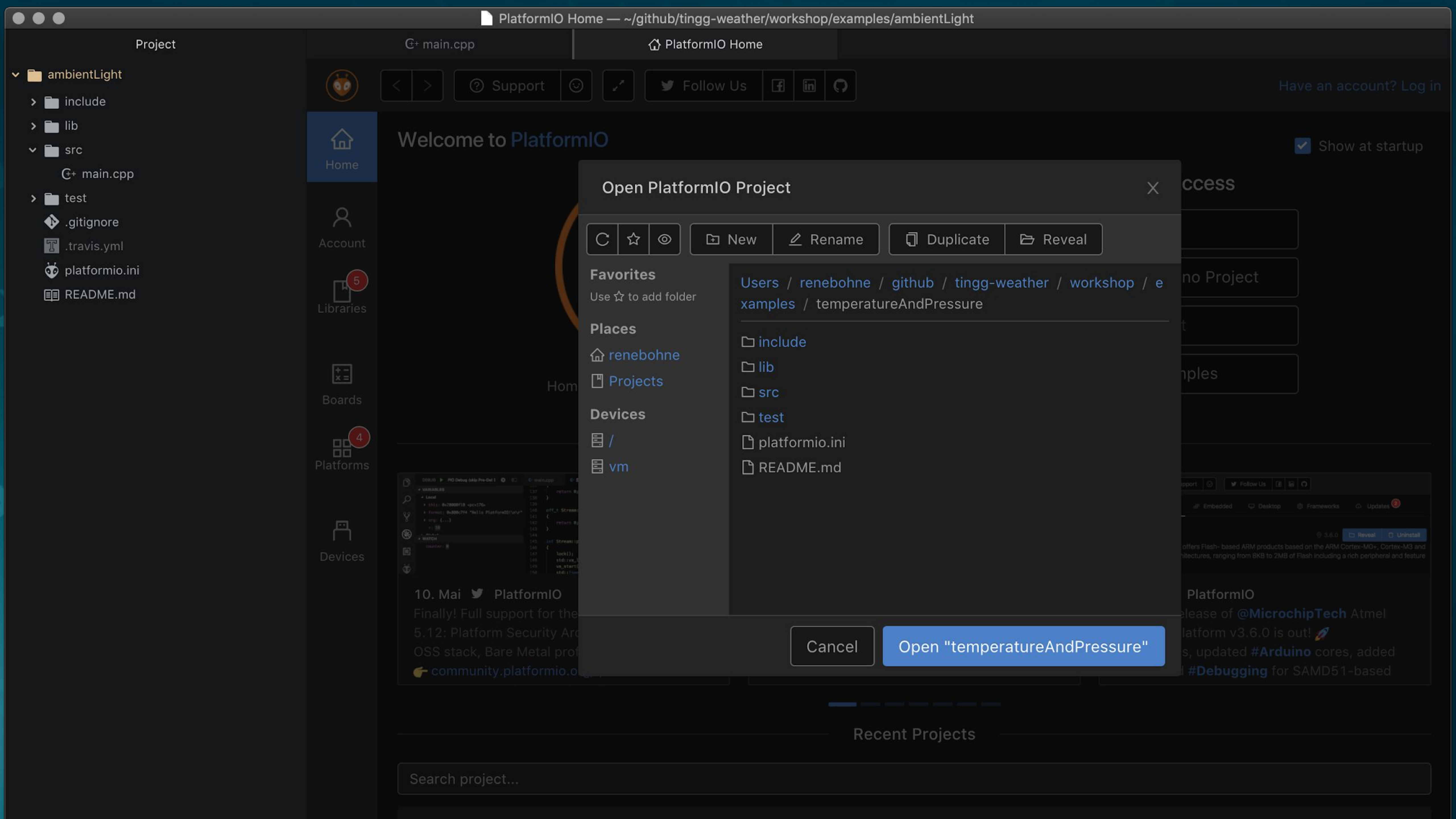
}

float readVEML7700()
{
    float lux;
    veml7700.getALSLux(lux);
    return lux;
}
```

```
pio device monitor --port /dev/cu.SLAB_USBtoUART --baud 115200
Renes-MacBook-Pro-9:ambientLight renebohne$ pio device monitor --port /dev/cu.SLAB_USBtoUART --baud 115200
--- Miniterm on /dev/cu.SLAB_USBtoUART  115200,8,N,1 ---
--- Quit: Ctrl+C | Menu: Ctrl+T | Help: Ctrl+T followed by Ctrl+H ---
Lux = 1342.85
Lux = 1341.41
Lux = 1342.68
Lux = 1343.02
Lux = 1343.15
Lux = 1343.39
```

Software Test: offline Temperatur und Luftdruck



PlatformIO Home — ~/github/tingg-weather/workshop/examples/ambientLight

Open PlatformIO Project

Users / renebohne / github / tingg-weather / workshop / examples / temperatureAndPressure

include
lib
src
test
platformio.ini
README.md

Welcome to PlatformIO

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Finally! Full support for the
5.12: Platform Security Arc
OSS stack, Bare Metal prof
👉 community.platformio.o

PlatformIO
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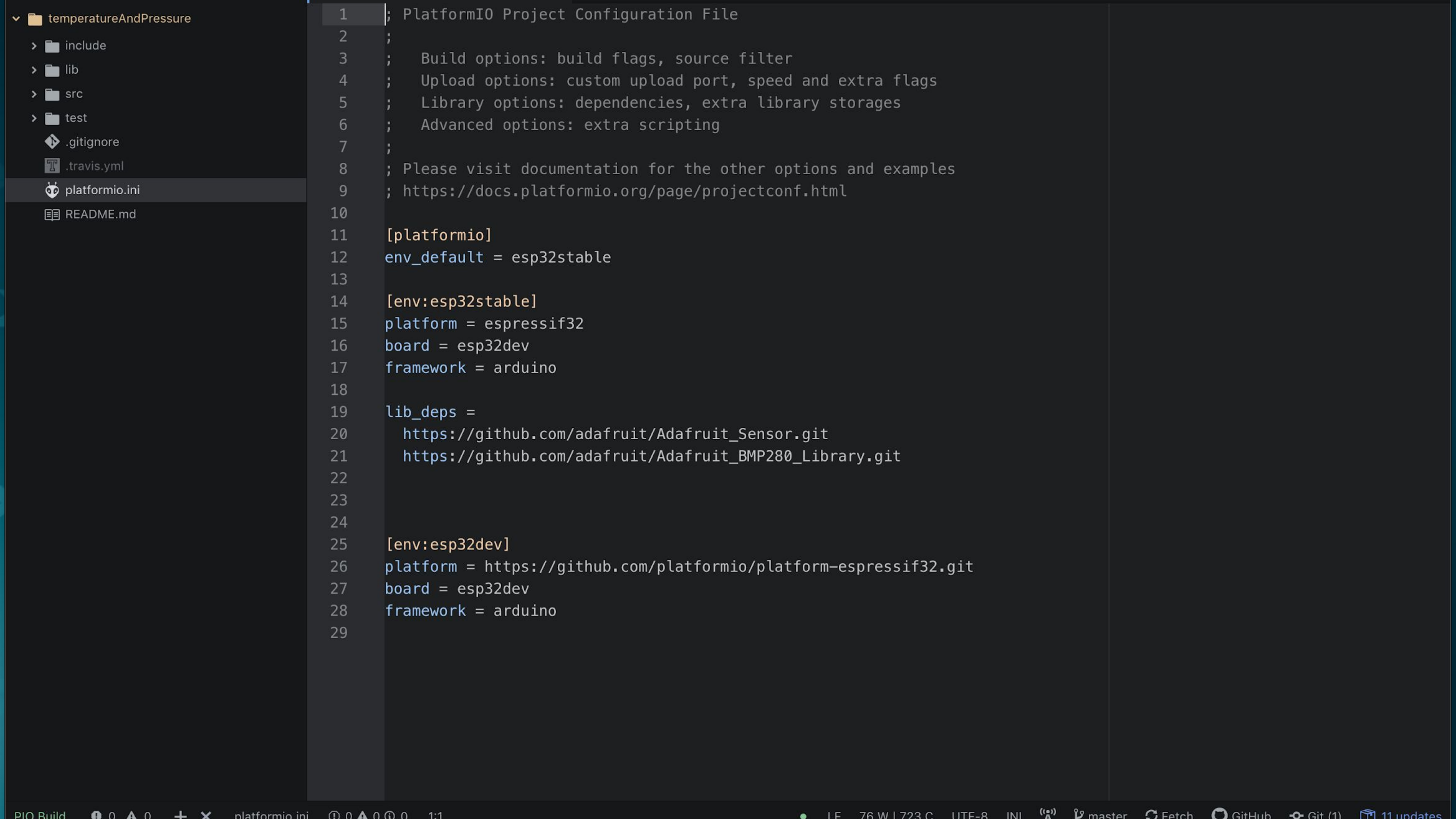
#Debugging for SAMD51-based

Recent Projects



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;   Library options: dependencies, extra library storages
;   Advanced options: extra scripting
;
; Please visit documentation for the other options and examples
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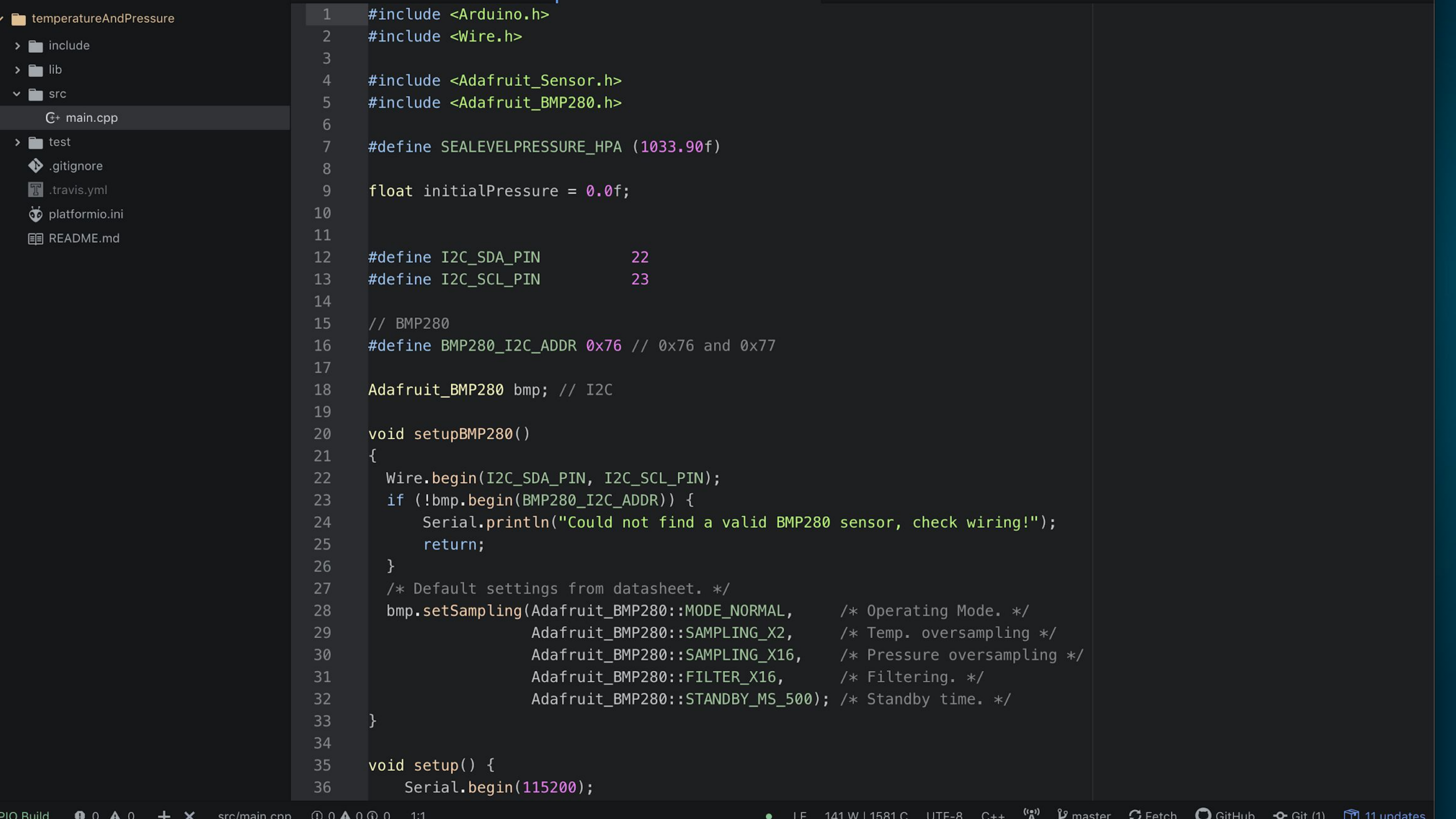
[env:esp32stable]
platform = espressif32
board = esp32dev
framework = arduino

lib_deps =
  https://github.com/adafruit/Adafruit_Sensor.git
  https://github.com/adafruit/Adafruit_BMP280_Library.git

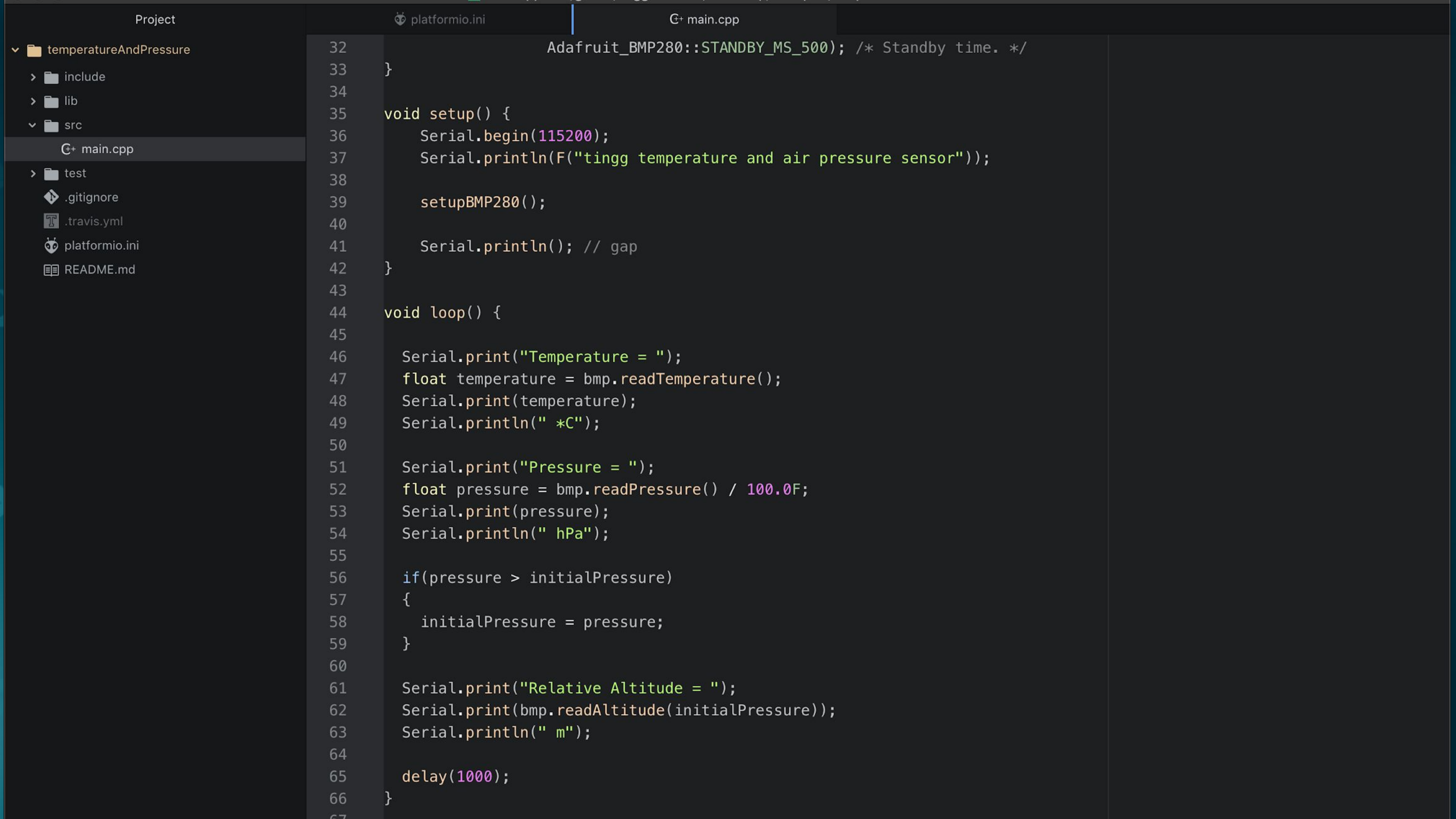


[env:esp32dev]
platform = https://github.com/platformio/platform-espressif32.git
board = esp32dev
framework = arduino

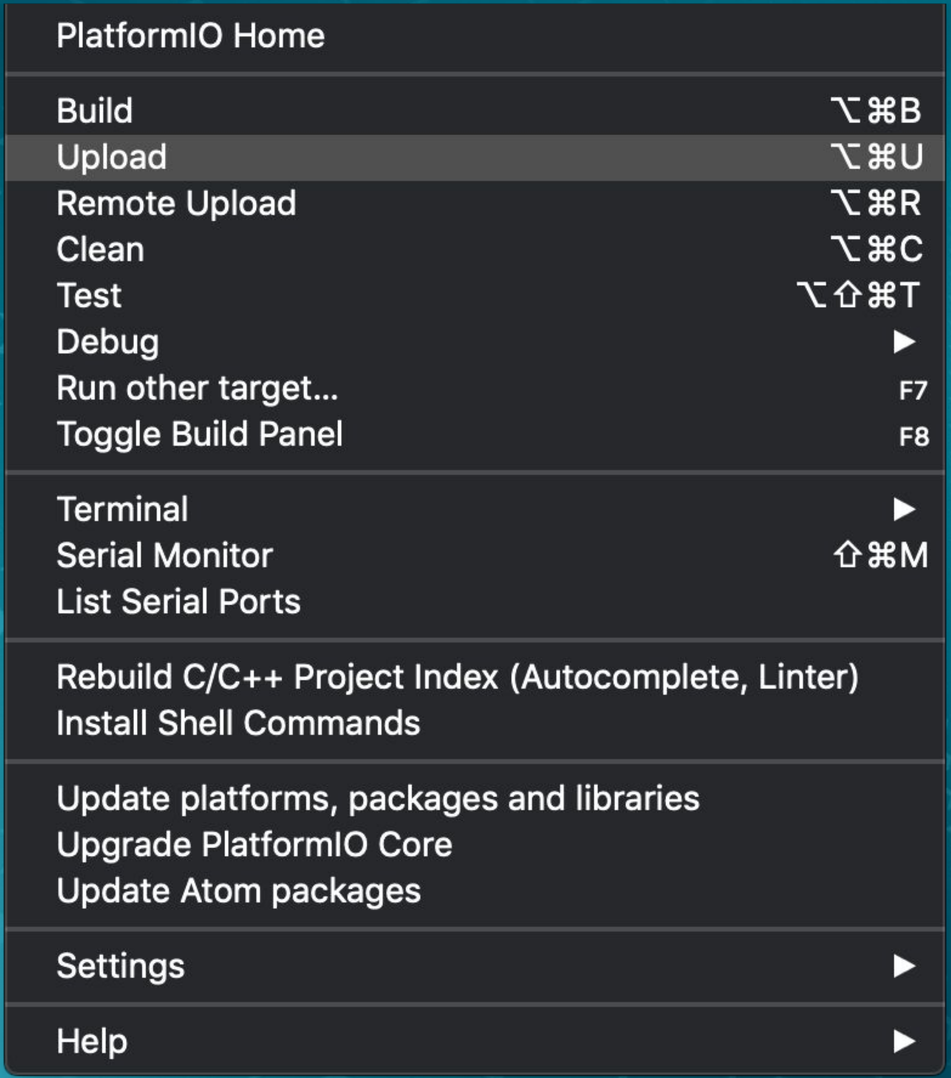
```

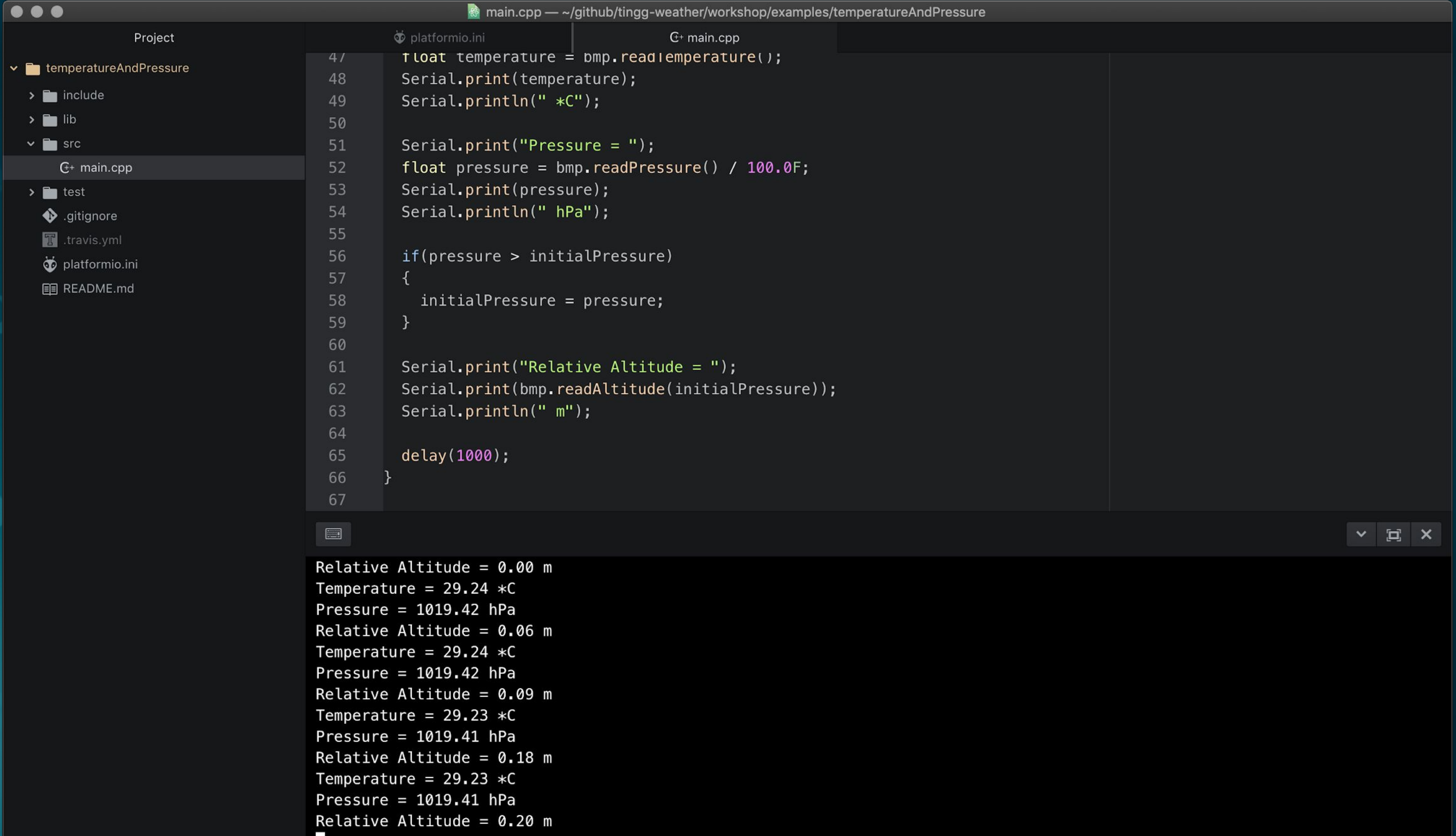


```cpp
#include <Arduino.h>
#include <Wire.h>

#include <Adafruit_Sensor.h>
#include <Adafruit_BMP280.h>

#define SEALEVELPRESSURE_HPA (1033.90f)

float initialPressure = 0.0f;


#define I2C_SDA_PIN          22
#define I2C_SCL_PIN          23

// BMP280
#define BMP280_I2C_ADDR 0x76 // 0x76 and 0x77

Adafruit_BMP280 bmp; // I2C

void setupBMP280()
{
  Wire.begin(I2C_SDA_PIN, I2C_SCL_PIN);
  if (!bmp.begin(BMP280_I2C_ADDR)) {
      Serial.println("Could not find a valid BMP280 sensor, check wiring!");
      return;
  }
  /* Default settings from datasheet. */
  bmp.setSampling(Adafruit_BMP280::MODE_NORMAL,     /* Operating Mode. */
                  Adafruit_BMP280::SAMPLING_X2,     /* Temp. oversampling */
                  Adafruit_BMP280::SAMPLING_X16,    /* Pressure oversampling */
                  Adafruit_BMP280::FILTER_X16,      /* Filtering. */
                  Adafruit_BMP280::STANDBY_MS_500); /* Standby time. */
}

void setup() {
    Serial.begin(115200);
```



```cpp
                  Adafruit_BMP280::STANDBY_MS_500); /* Standby time. */
}

void setup() {
    Serial.begin(115200);
    Serial.println(F("tingg temperature and air pressure sensor"));

    setupBMP280();

    Serial.println(); // gap
}

void loop() {

  Serial.print("Temperature = ");
  float temperature = bmp.readTemperature();
  Serial.print(temperature);
  Serial.println(" *C");

  Serial.print("Pressure = ");
  float pressure = bmp.readPressure() / 100.0F;
  Serial.print(pressure);
  Serial.println(" hPa");

  if(pressure > initialPressure)
  {
    initialPressure = pressure;
  }

  Serial.print("Relative Altitude = ");
  Serial.print(bmp.readAltitude(initialPressure));
  Serial.println(" m");

  delay(1000);
}
```

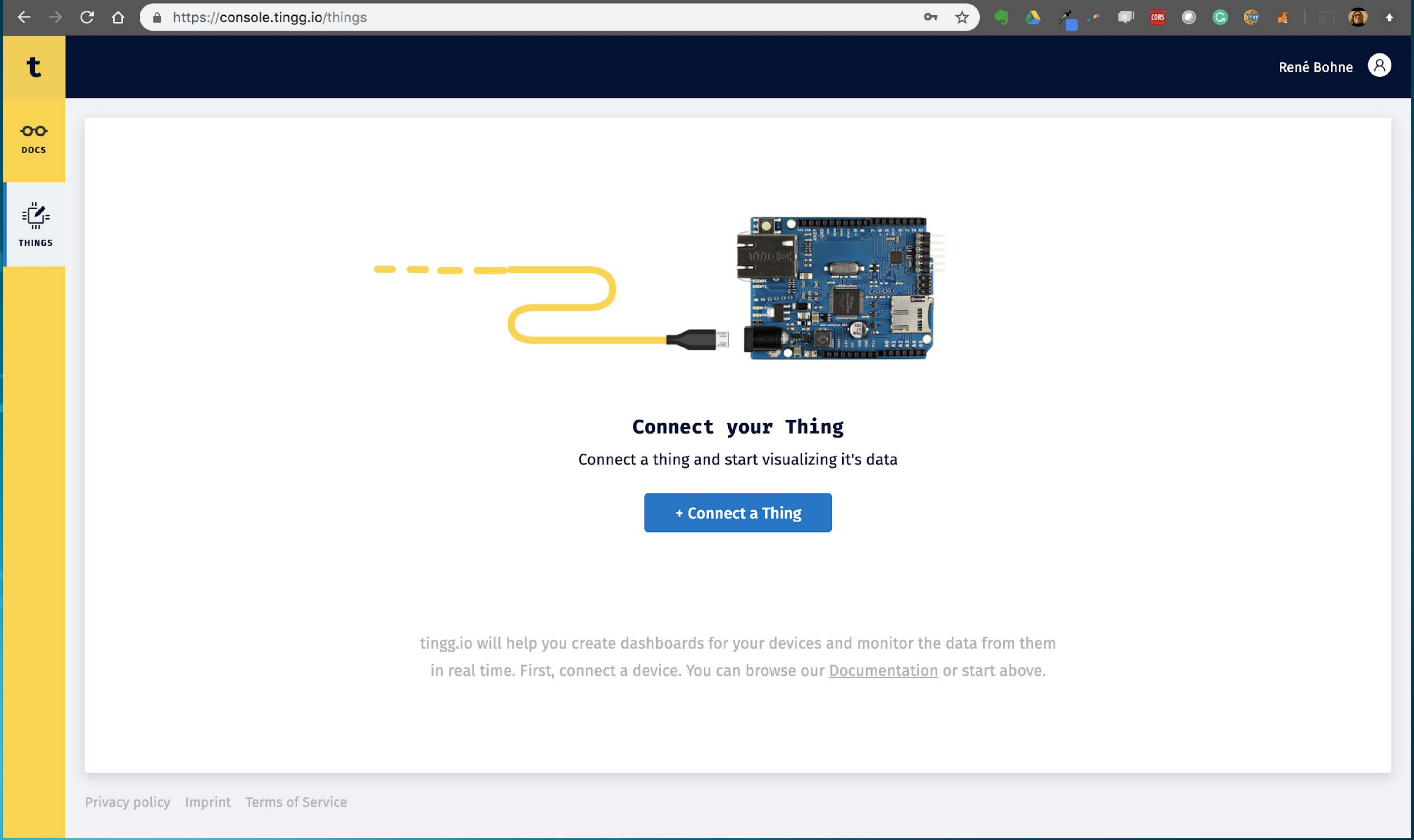

PlatformIO Home
Build ⌥⌘B
Upload ⌥⌘U
Remote Upload ⌥⌘R
Clean ⌥⌘C
Test ⌥⇧⌘T
Debug ▶
Run other target... F7
Toggle Build Panel F8
Terminal ▶
Serial Monitor ⇧⌘M
List Serial Ports
Rebuild C/C++ Project Index (Autocomplete, Linter)
Install Shell Commands
Update platforms, packages and libraries
Upgrade PlatformIO Core
Update Atom packages
Settings ▶
Help ▶



```
  float temperature = bmp.readTemperature();
  Serial.print(temperature);
  Serial.println(" *C");

  Serial.print("Pressure = ");
  float pressure = bmp.readPressure() / 100.0F;
  Serial.print(pressure);
  Serial.println(" hPa");

  if(pressure > initialPressure)
  {
    initialPressure = pressure;
  }

  Serial.print("Relative Altitude = ");
  Serial.print(bmp.readAltitude(initialPressure));
  Serial.println(" m");

  delay(1000);
}

```

```
Relative Altitude = 0.00 m
Temperature = 29.24 *C
Pressure = 1019.42 hPa
Relative Altitude = 0.06 m
Temperature = 29.24 *C
Pressure = 1019.42 hPa
Relative Altitude = 0.09 m
Temperature = 29.23 *C
Pressure = 1019.41 hPa
Relative Altitude = 0.18 m
Temperature = 29.23 *C
Pressure = 1019.41 hPa
Relative Altitude = 0.20 m
```

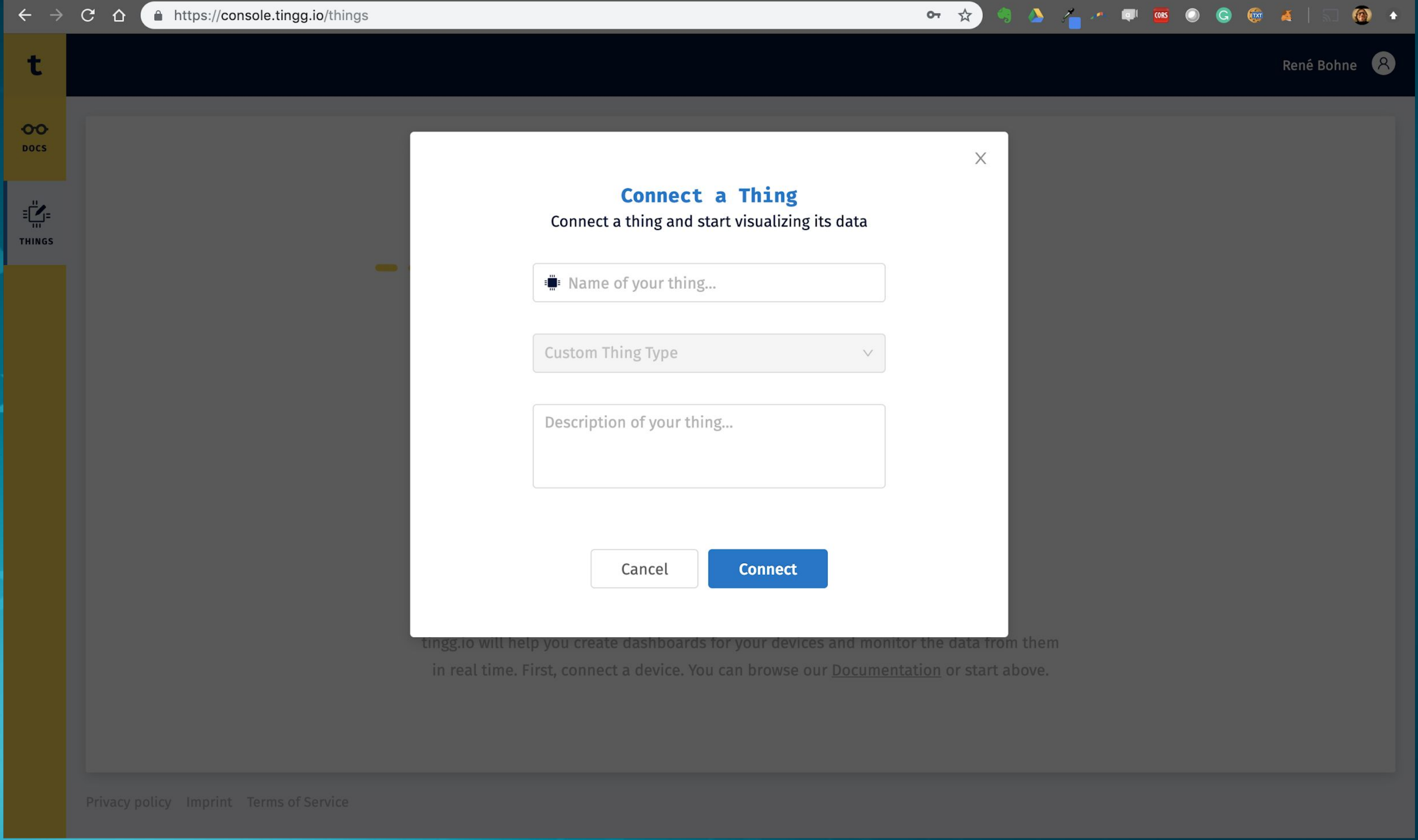
Sensorwerte in der tingg.io Cloud



Connect your Thing

Connect a thing and start visualizing it's data

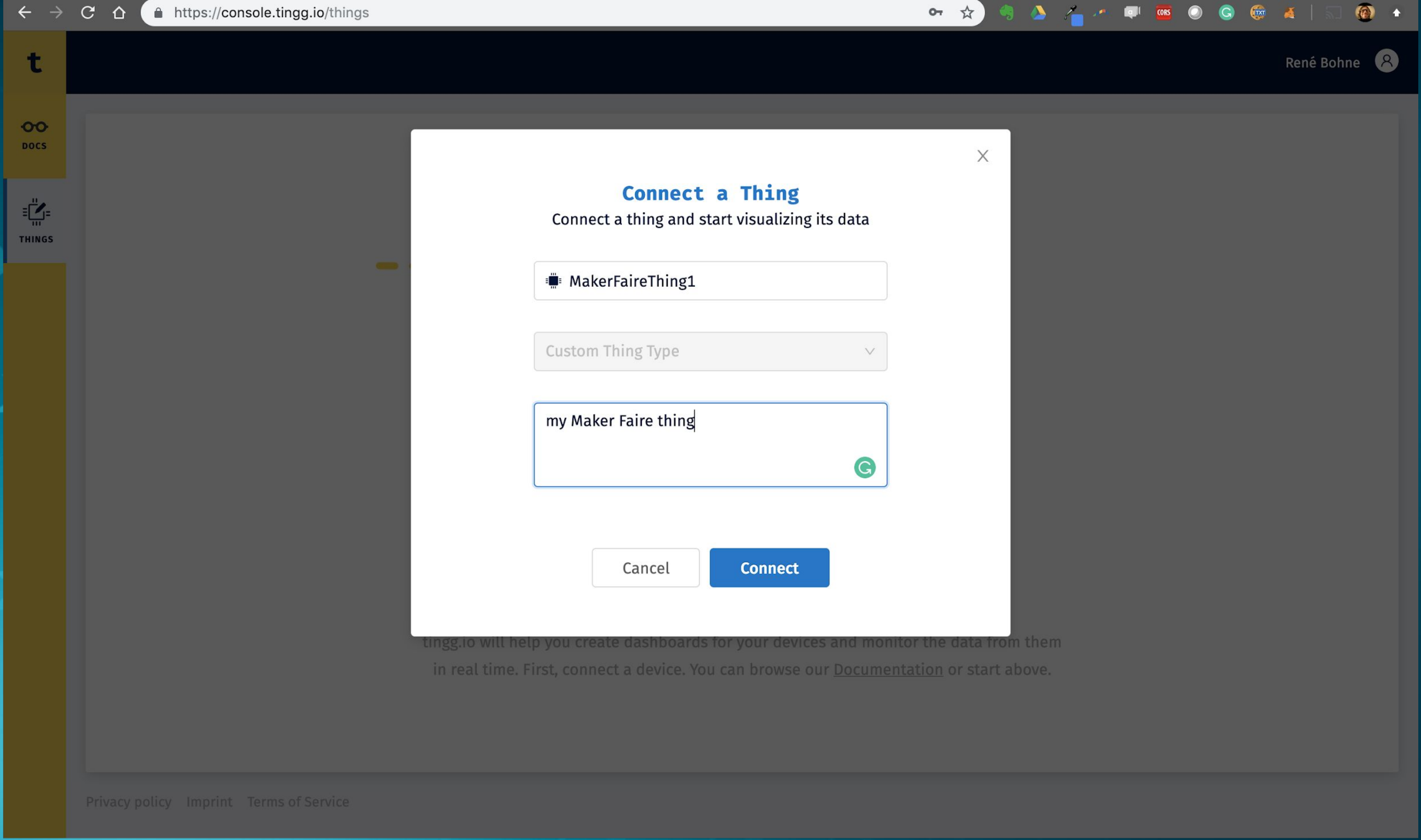
tingg.io will help you create dashboards for your devices and monitor the data from them in real time. First, connect a device. You can browse our Documentation or start above.



Connect a Thing

Connect a thing and start visualizing its data

tingg.io will help you create dashboards for your devices and monitor the data from them in real time. First, connect a device. You can browse our Documentation or start above.



Connect a Thing

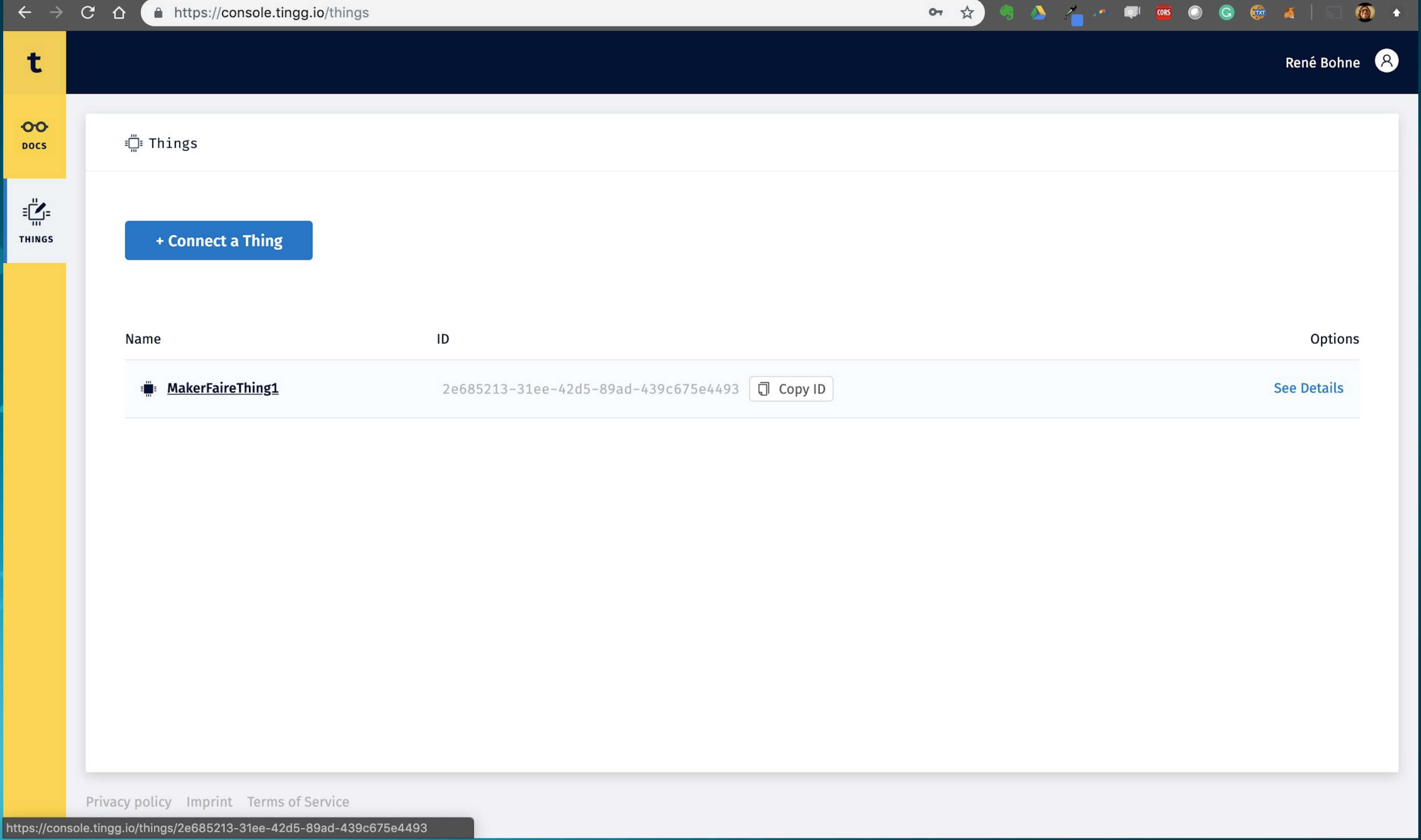
Connect a thing and start visualizing its data

MakerFaireThing1

Custom Thing Type

my Maker Faire thing

tingg.io will help you create dashboards for your devices and monitor the data from them in real time. First, connect a device. You can browse our Documentation or start above.

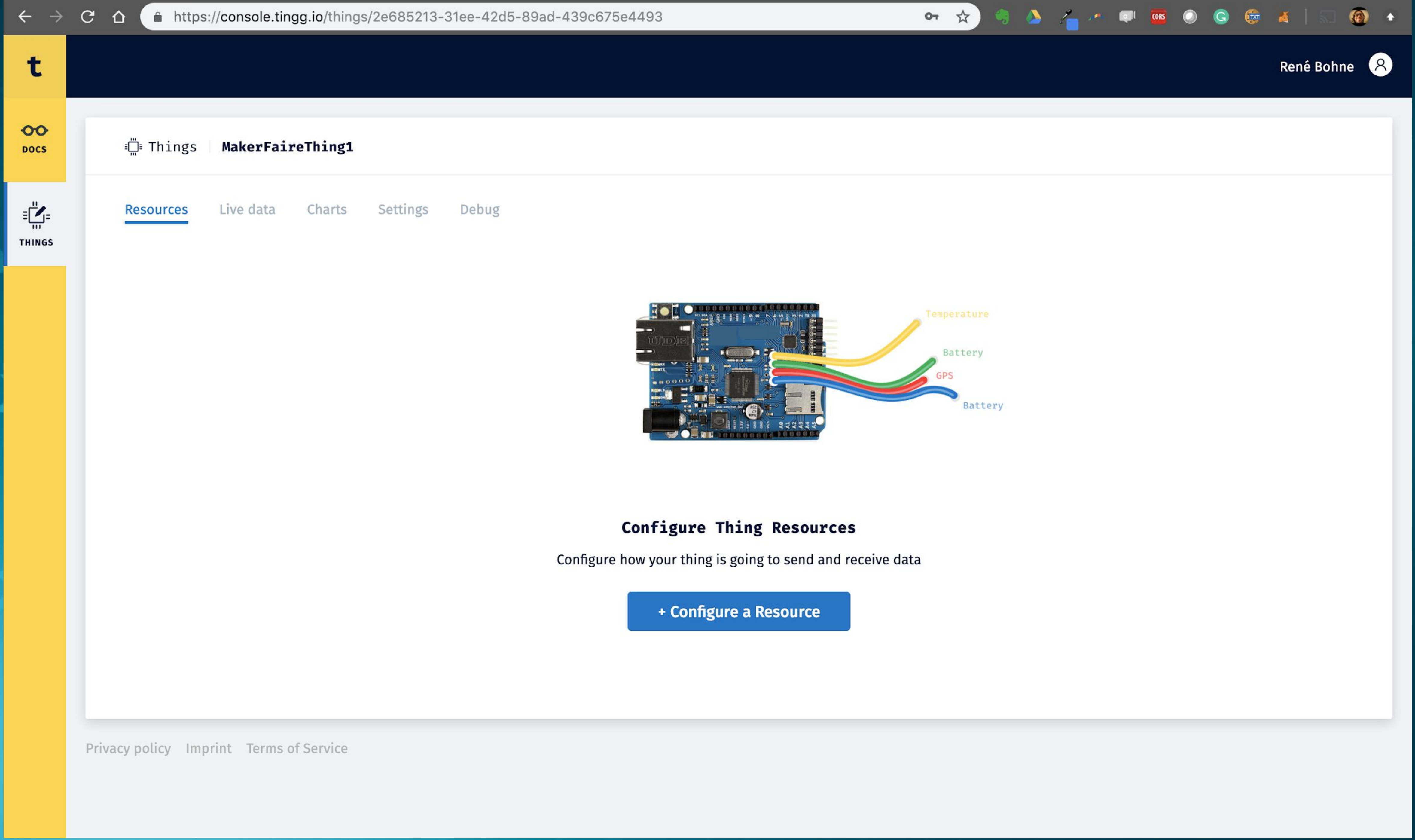


Things

+ Connect a Thing

Name	ID		Options
MakerFaireThing1	2e685213-31ee-42d5-89ad-439c675e4493	Copy ID	See Details

https://console.tingg.io/things/2e685213-31ee-42d5-89ad-439c675e4493

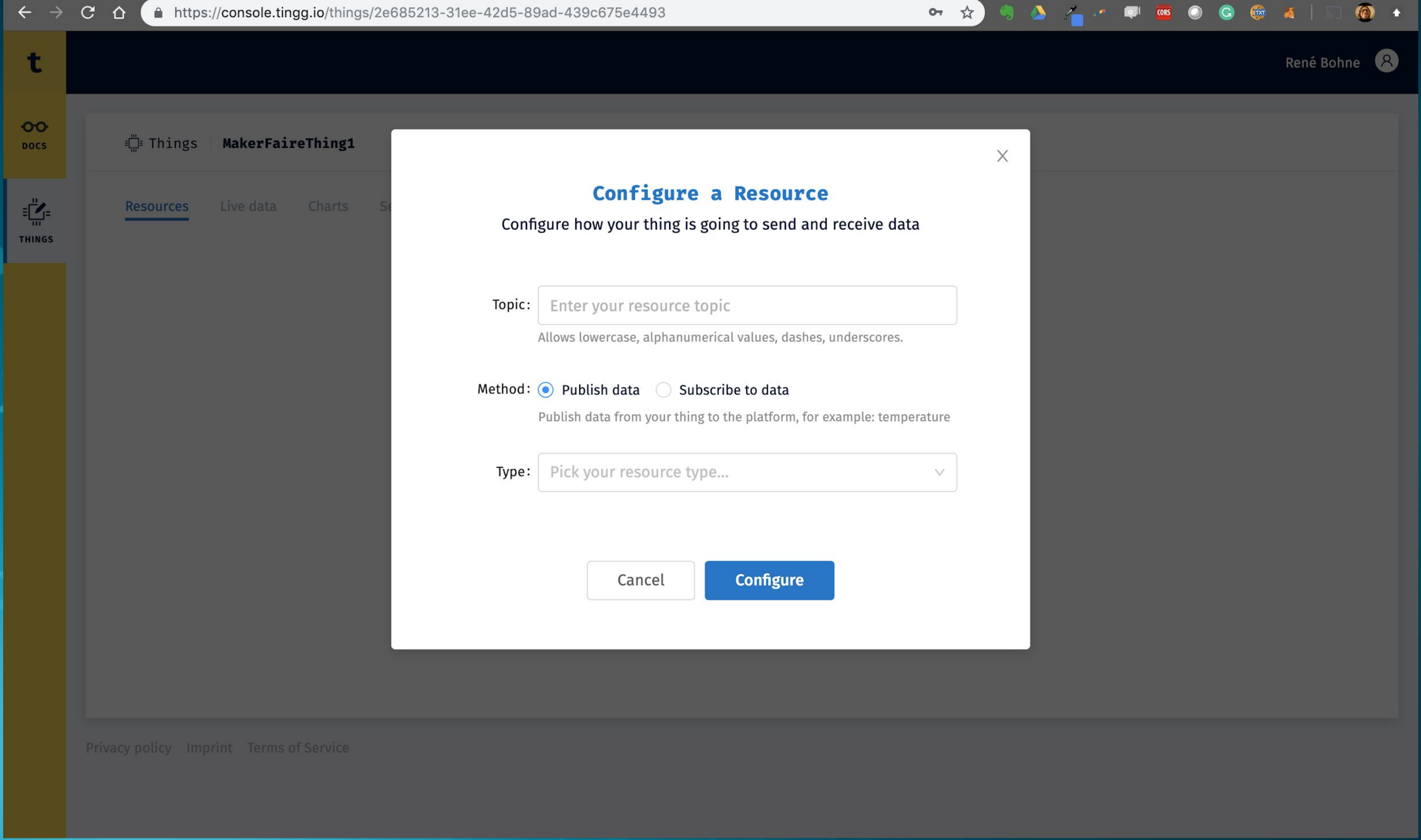


https://console.tingg.io/things/2e685213-31ee-42d5-89ad-439c675e4493

Things | MakerFaireThing1

Configure Thing Resources

Configure how your thing is going to send and receive data



Configure a Resource

Configure how your thing is going to send and receive data

Topic: Enter your resource topic

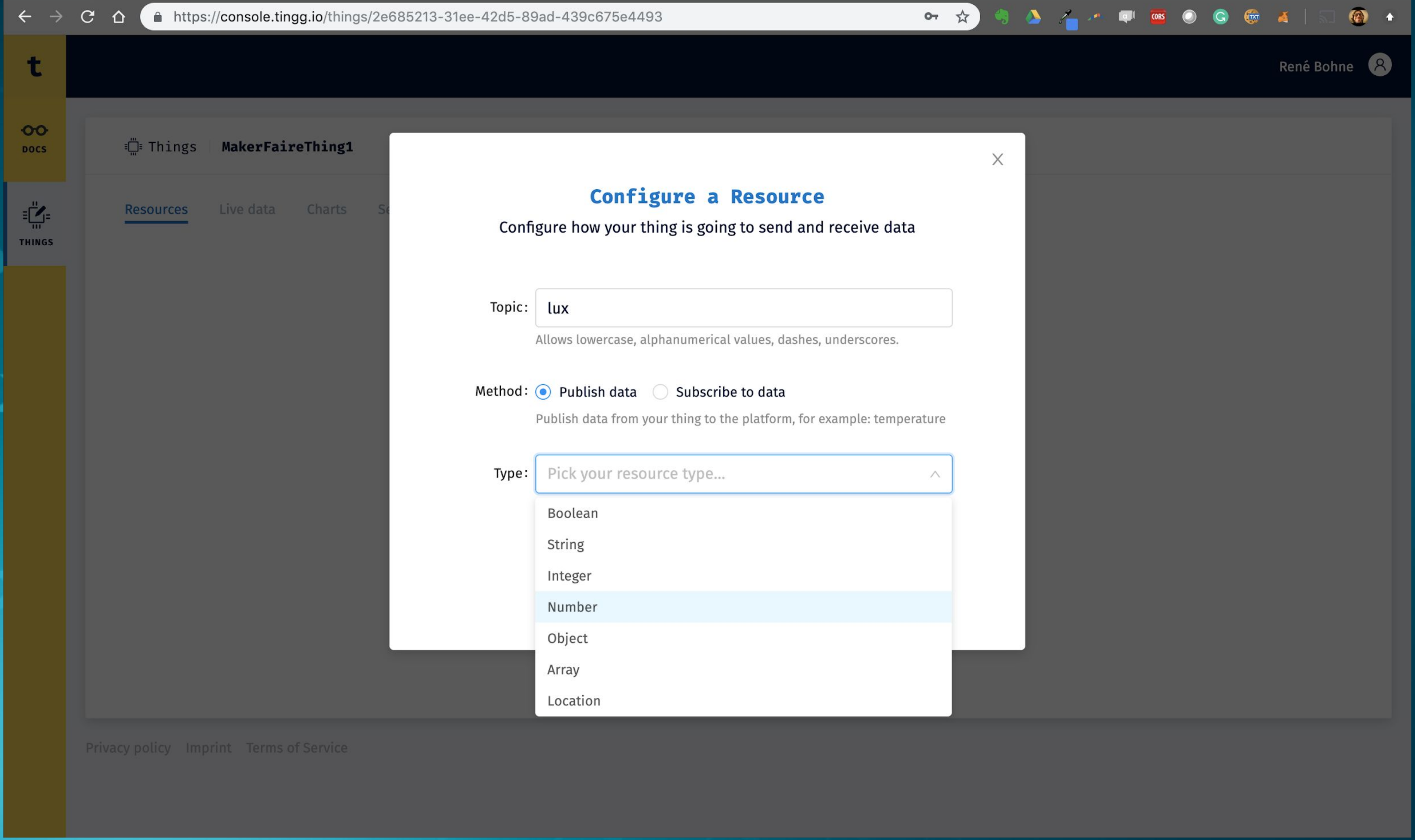
Allows lowercase, alphanumerical values, dashes, underscores.

Method: ● Publish data ○ Subscribe to data

Publish data from your thing to the platform, for example: temperature

Type: Pick your resource type...

Cancel Configure



Configure a Resource

Configure how your thing is going to send and receive data

Topic: lux

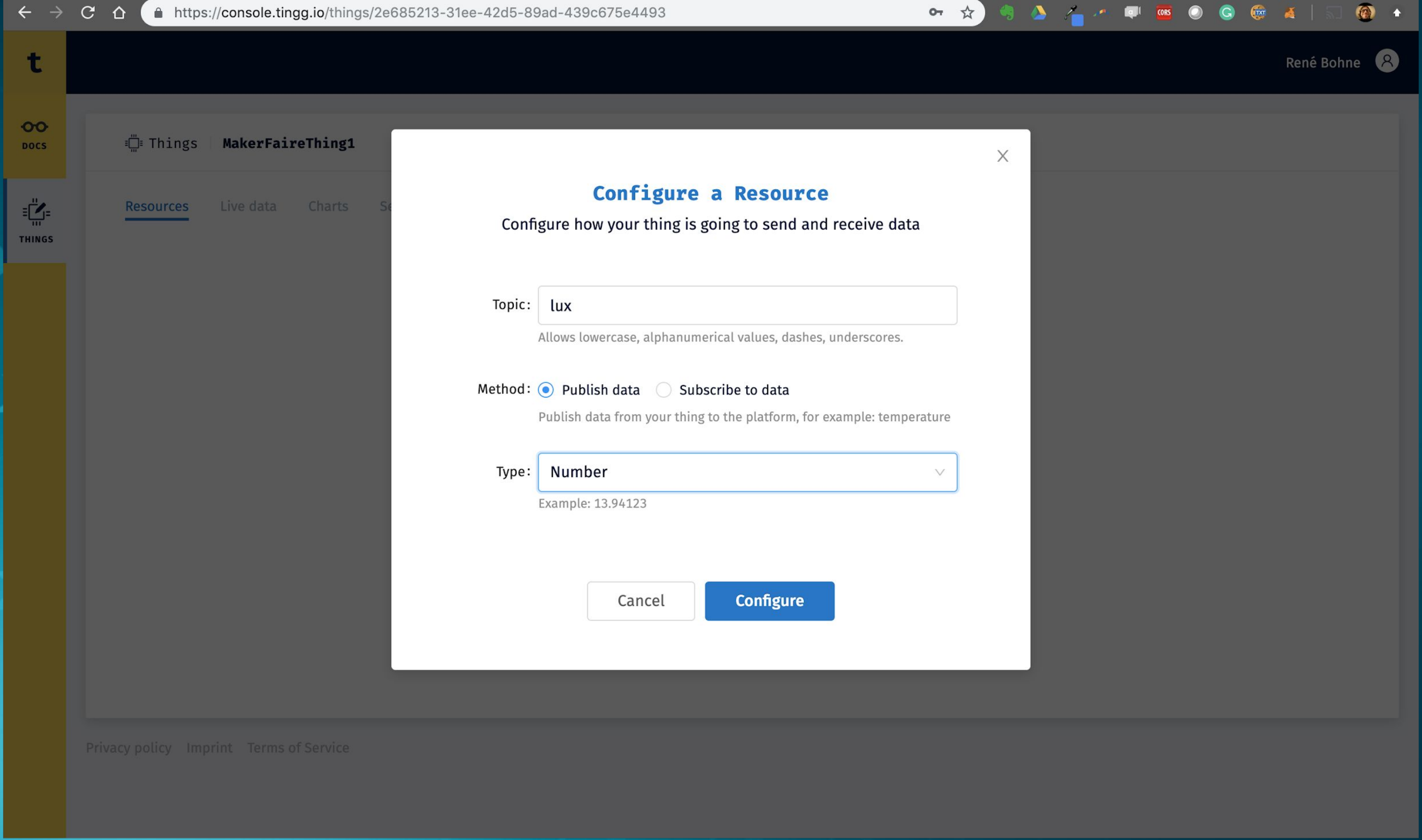
Allows lowercase, alphanumerical values, dashes, underscores.

Method: ● Publish data ○ Subscribe to data

Publish data from your thing to the platform, for example: temperature

Type: Pick your resource type...

- Boolean
- String
- Integer
- Number
- Object
- Array
- Location



https://console.tingg.io/things/2e685213-31ee-42d5-89ad-439c675e4493

Configure a Resource

Configure how your thing is going to send and receive data

Topic: lux

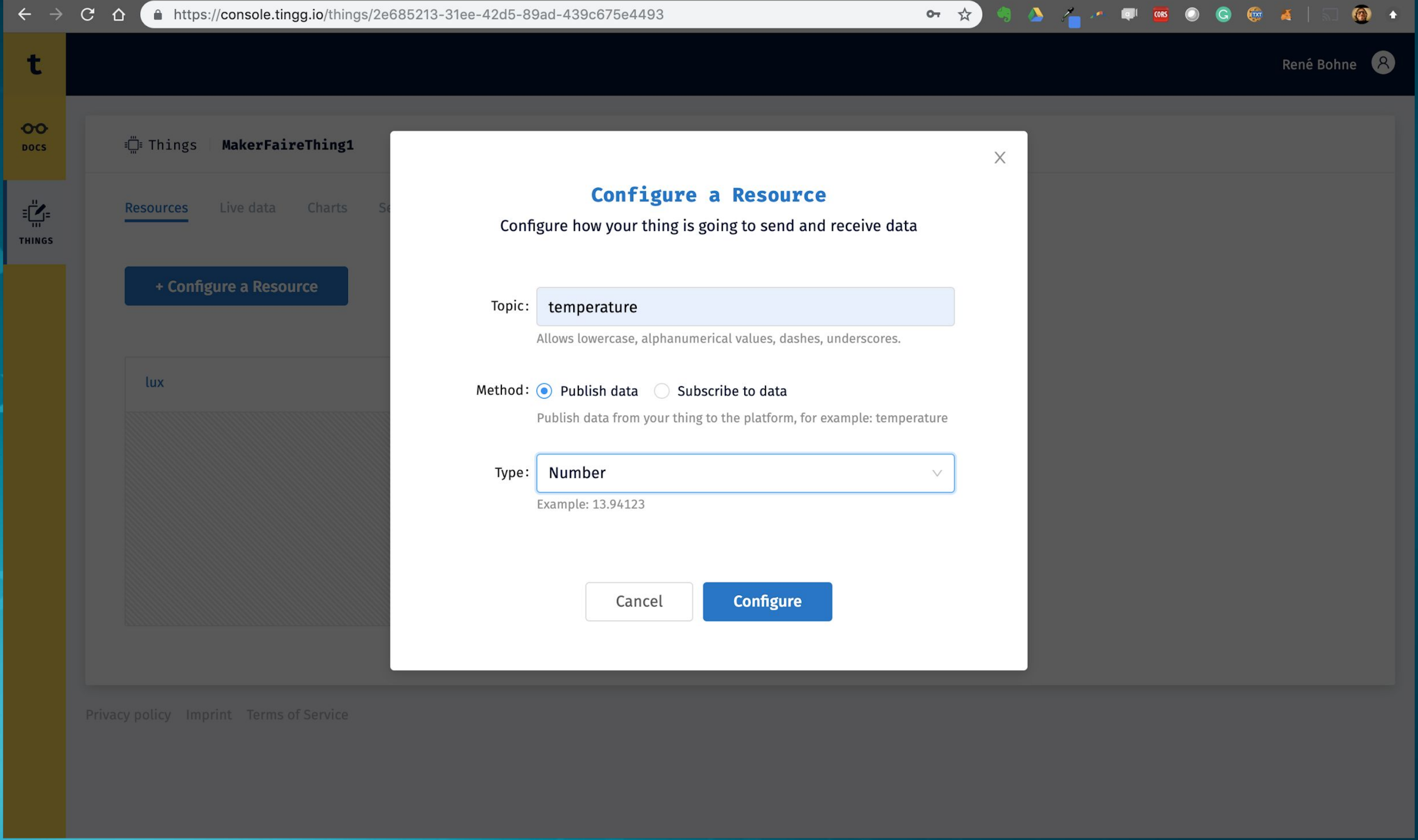
Allows lowercase, alphanumerical values, dashes, underscores.

Method: ● Publish data ○ Subscribe to data

Publish data from your thing to the platform, for example: temperature

Type: Number

Example: 13.94123



Configure a Resource

Configure how your thing is going to send and receive data

Topic: temperature

Allows lowercase, alphanumerical values, dashes, underscores.

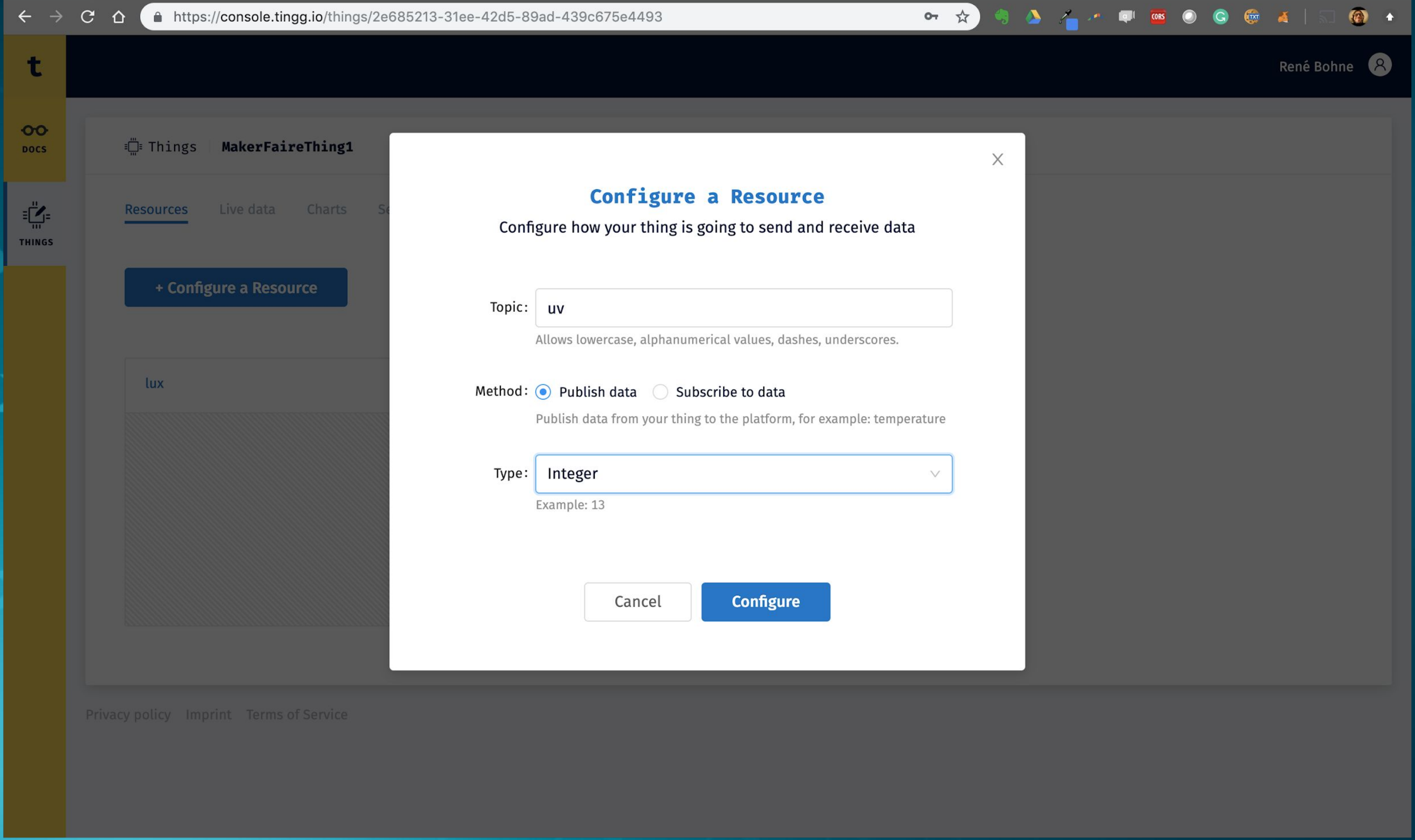
Method: ● Publish data ○ Subscribe to data

Publish data from your thing to the platform, for example: temperature

Type: Number

Example: 13.94123

Cancel Configure



Configure a Resource

Configure how your thing is going to send and receive data

Topic: uv

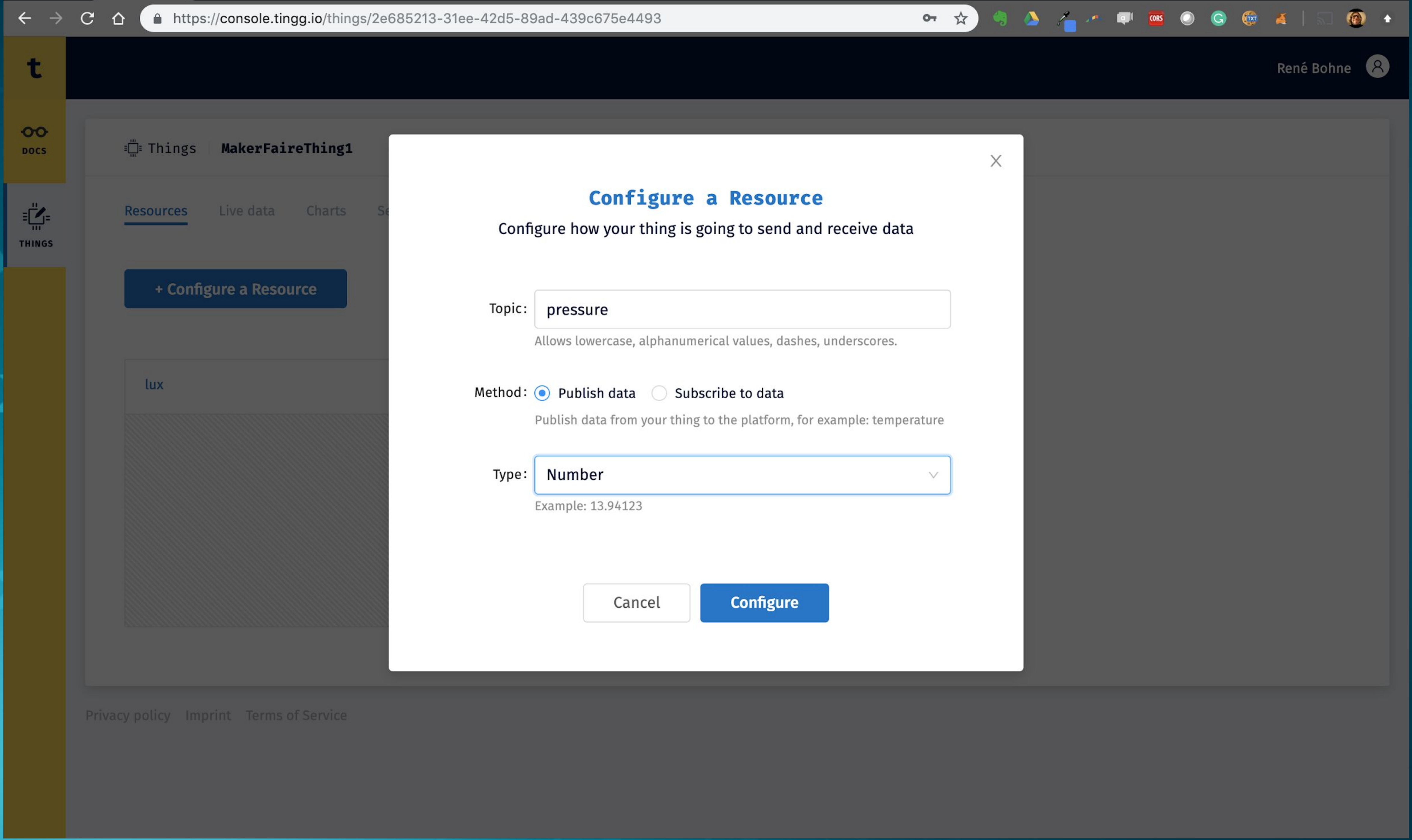
Allows lowercase, alphanumerical values, dashes, underscores.

Method: ● Publish data ○ Subscribe to data

Publish data from your thing to the platform, for example: temperature

Type: Integer

Example: 13



https://console.tingg.io/things/2e685213-31ee-42d5-89ad-439c675e4493

Configure a Resource

Configure how your thing is going to send and receive data

Topic: pressure

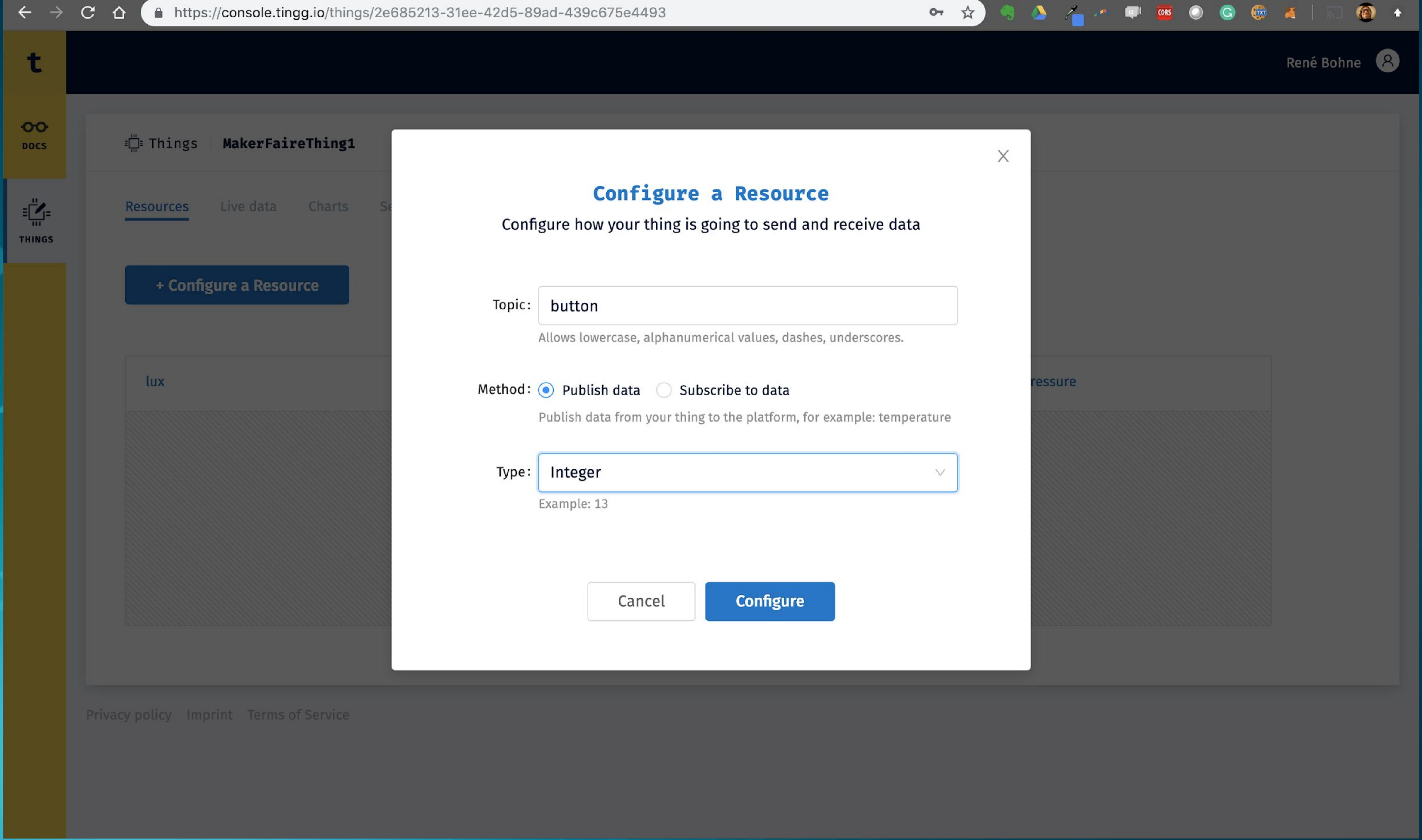
Allows lowercase, alphanumerical values, dashes, underscores.

Method: ● Publish data ○ Subscribe to data

Publish data from your thing to the platform, for example: temperature

Type: Number

Example: 13.94123



Configure a Resource

Configure how your thing is going to send and receive data

Topic: button

Allows lowercase, alphanumerical values, dashes, underscores.

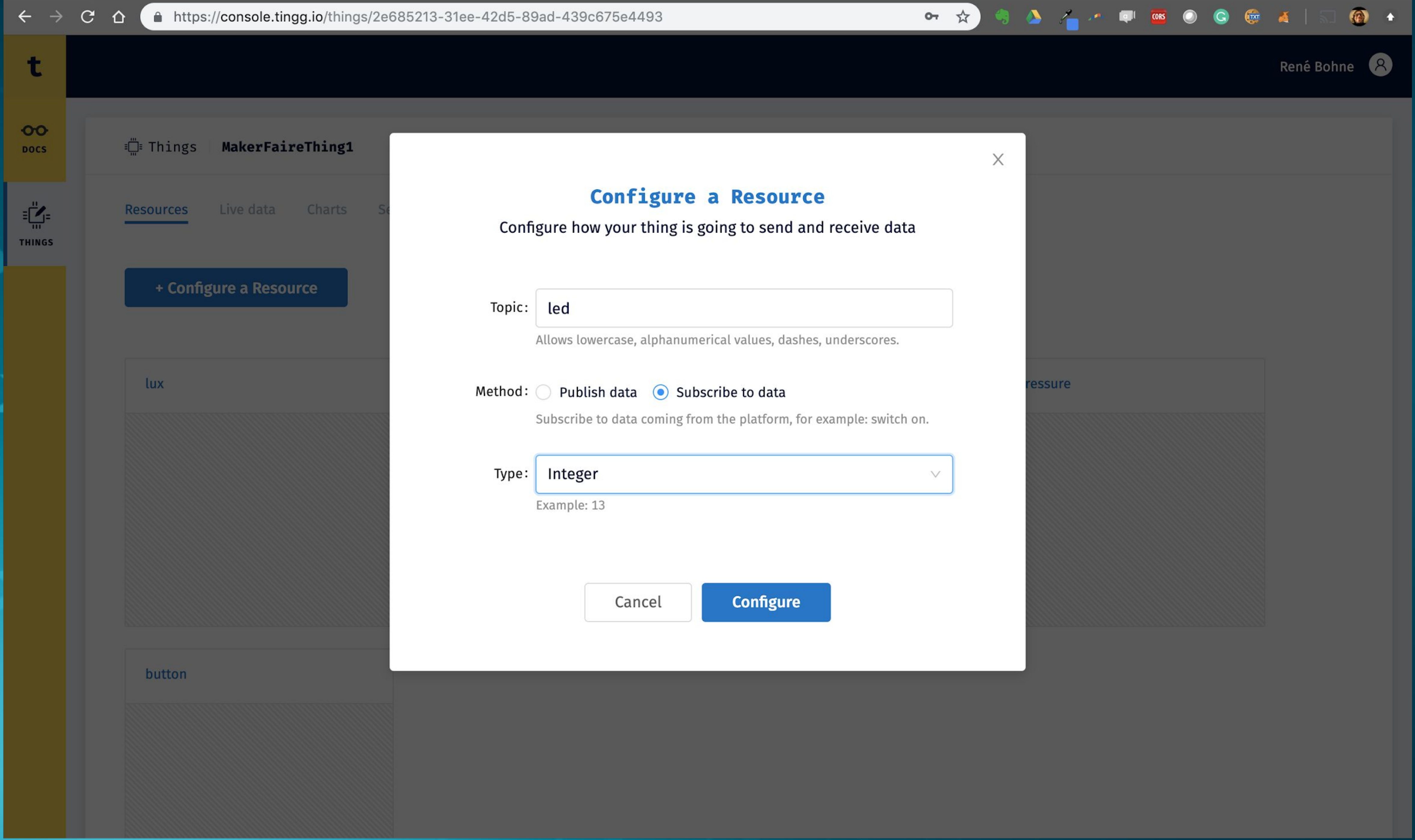
Method: ● Publish data ○ Subscribe to data

Publish data from your thing to the platform, for example: temperature

Type: Integer

Example: 13

Cancel Configure



Configure a Resource

Configure how your thing is going to send and receive data

Topic: led

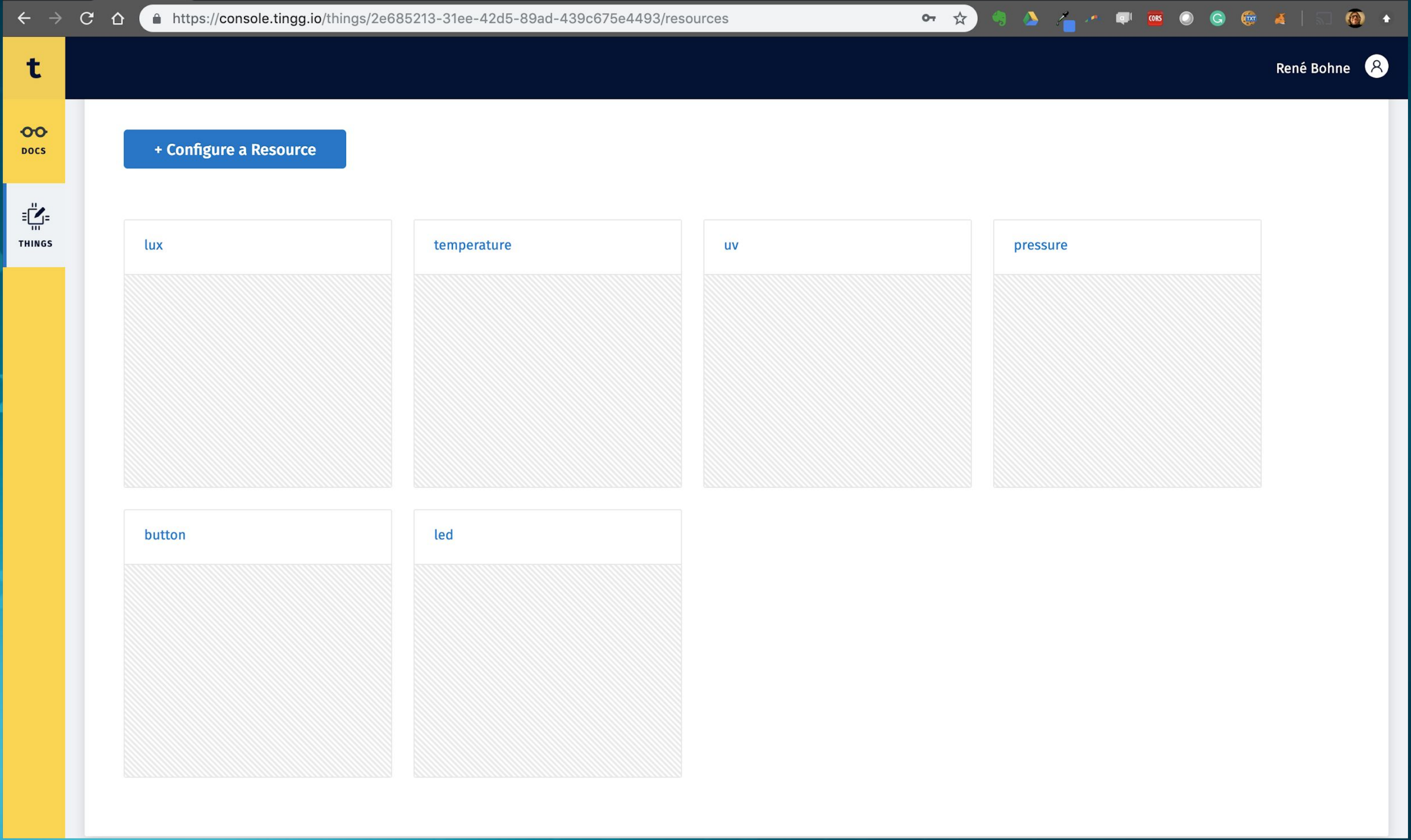
Allows lowercase, alphanumerical values, dashes, underscores.

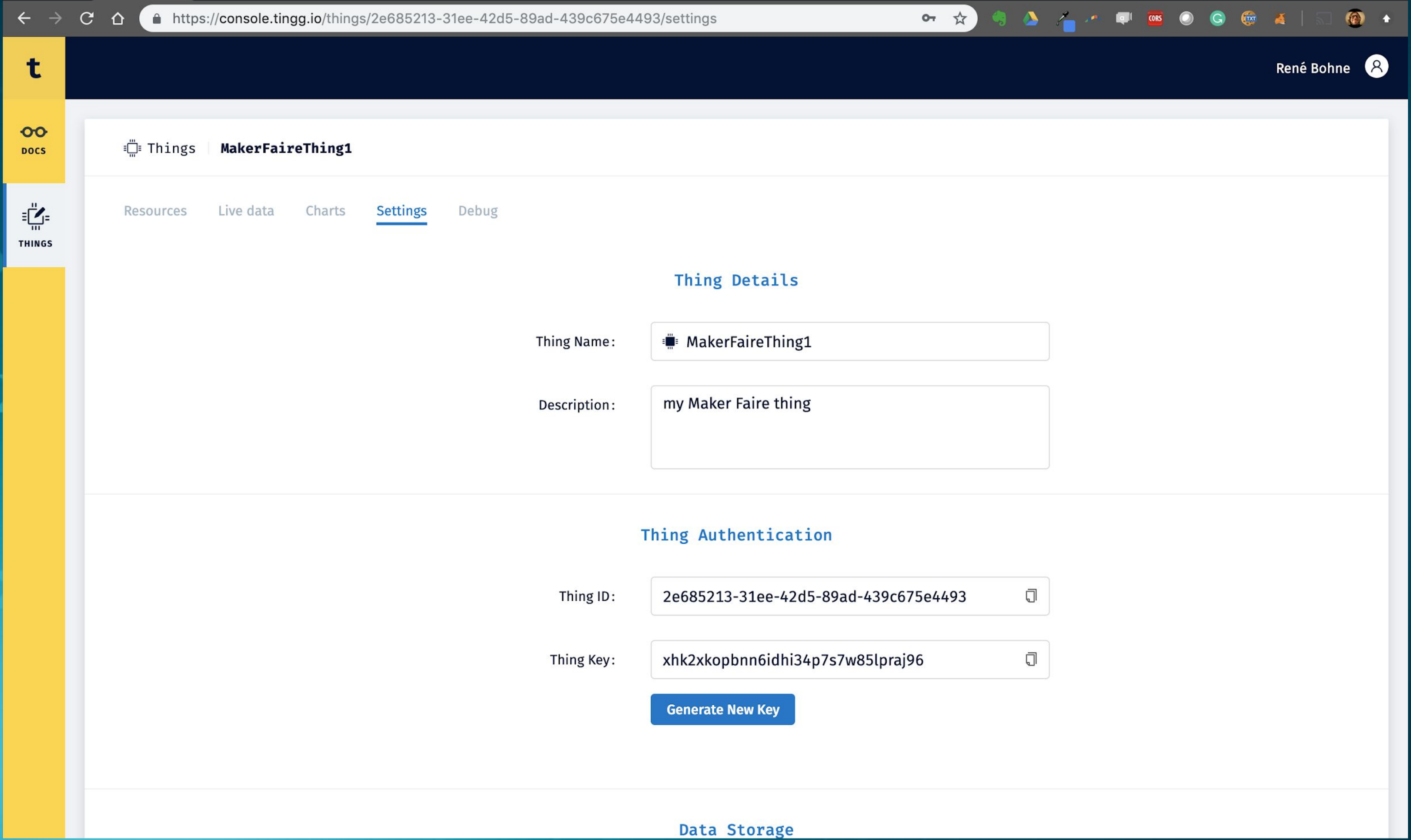
Method: ○ Publish data ● Subscribe to data

Subscribe to data coming from the platform, for example: switch on.

Type: Integer

Example: 13


https://console.tingg.io/things/2e685213-31ee-42d5-89ad-439c675e4493/resources
t
DOCS
THINGS
René Bohne
+ Configure a Resource
lux
temperature
uv
pressure
button
led



Thing Details

Thing Name: MakerFaireThing1

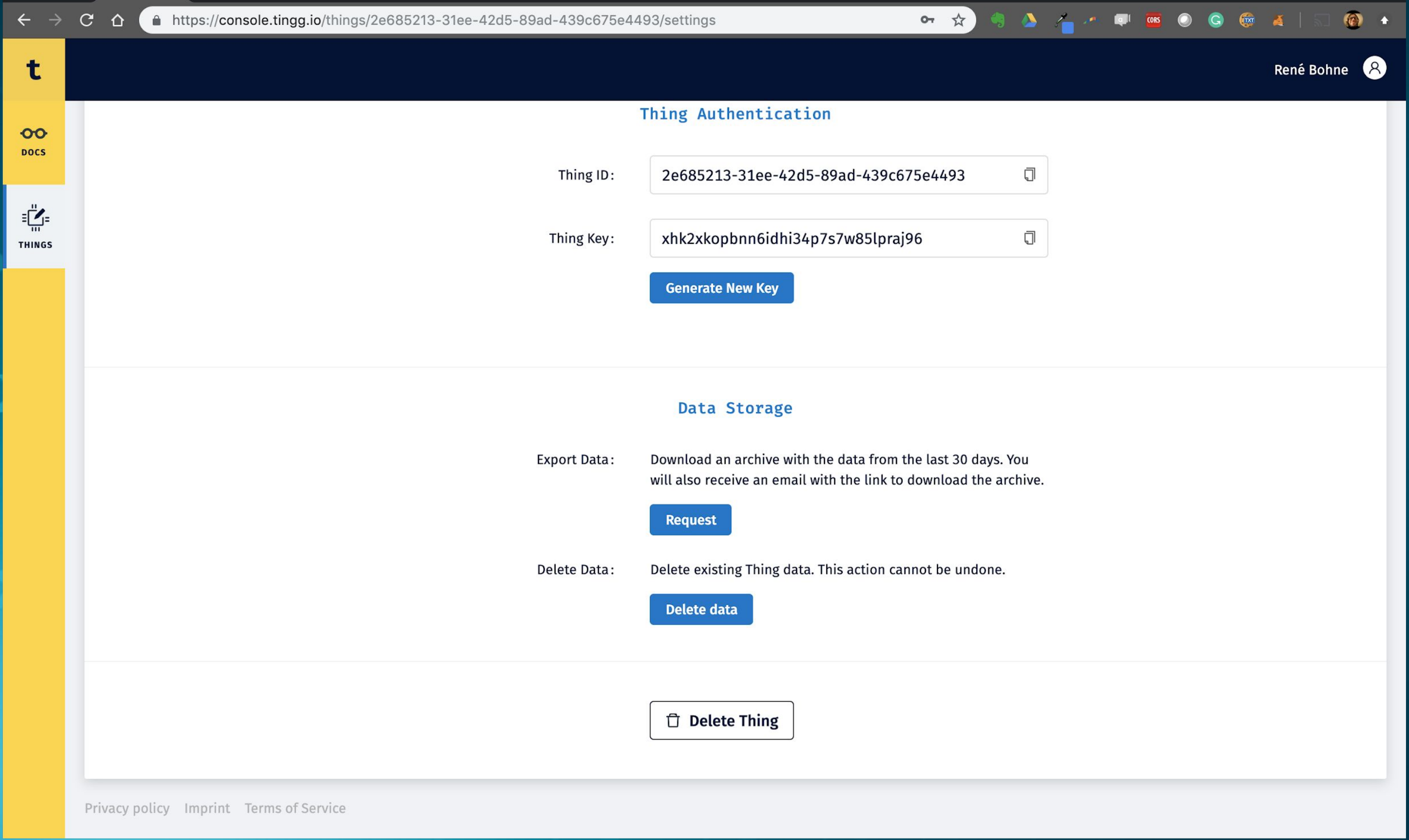
Description: my Maker Faire thing

Thing Authentication

Thing ID: 2e685213-31ee-42d5-89ad-439c675e4493

Thing Key: xhk2xkopbnn6idhi34p7s7w85lpraj96

Data Storage



Thing Authentication

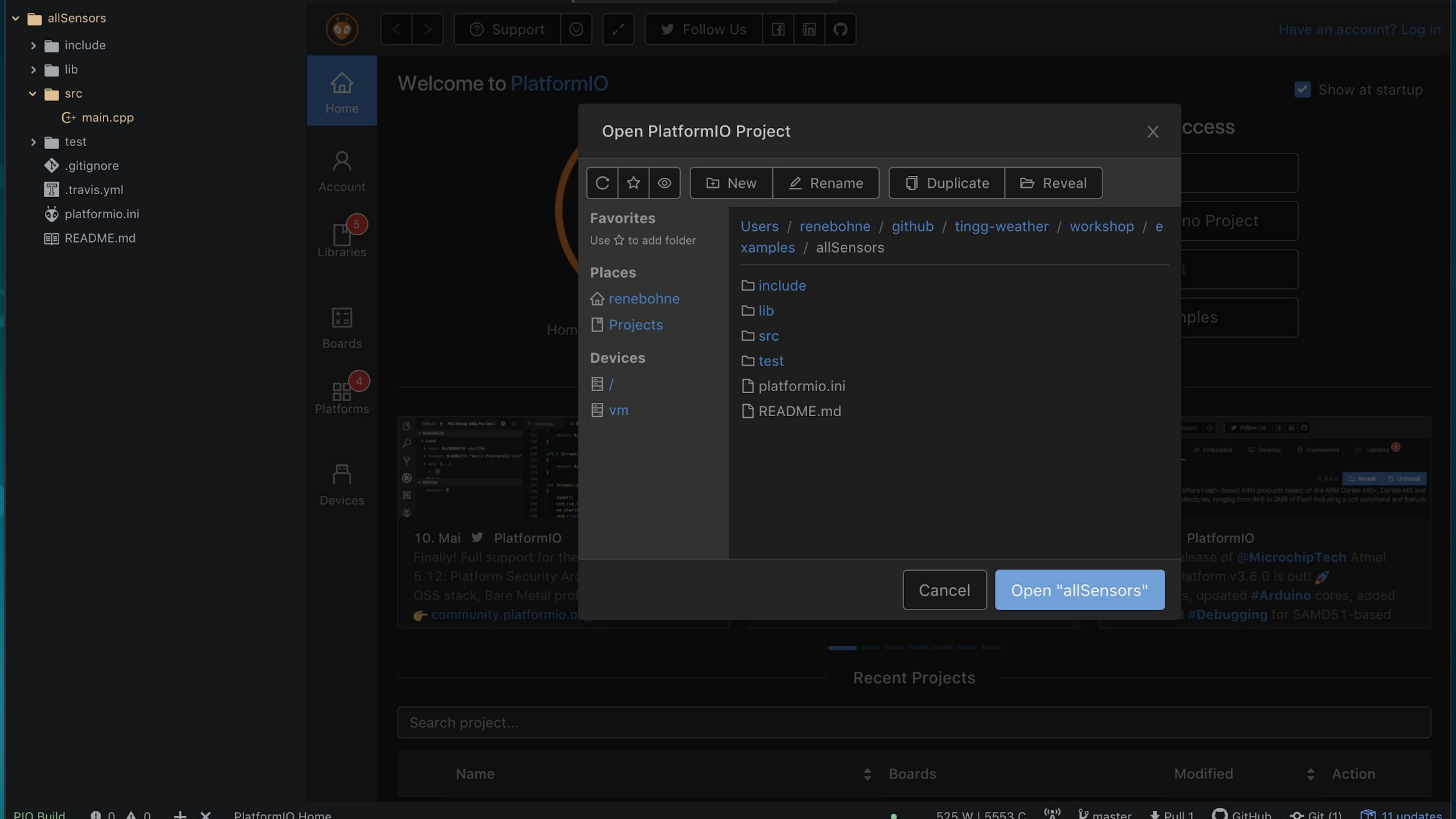
Thing ID: 2e685213-31ee-42d5-89ad-439c675e4493

Thing Key: xhk2xkopbnn6idhi34p7s7w85lpraj96

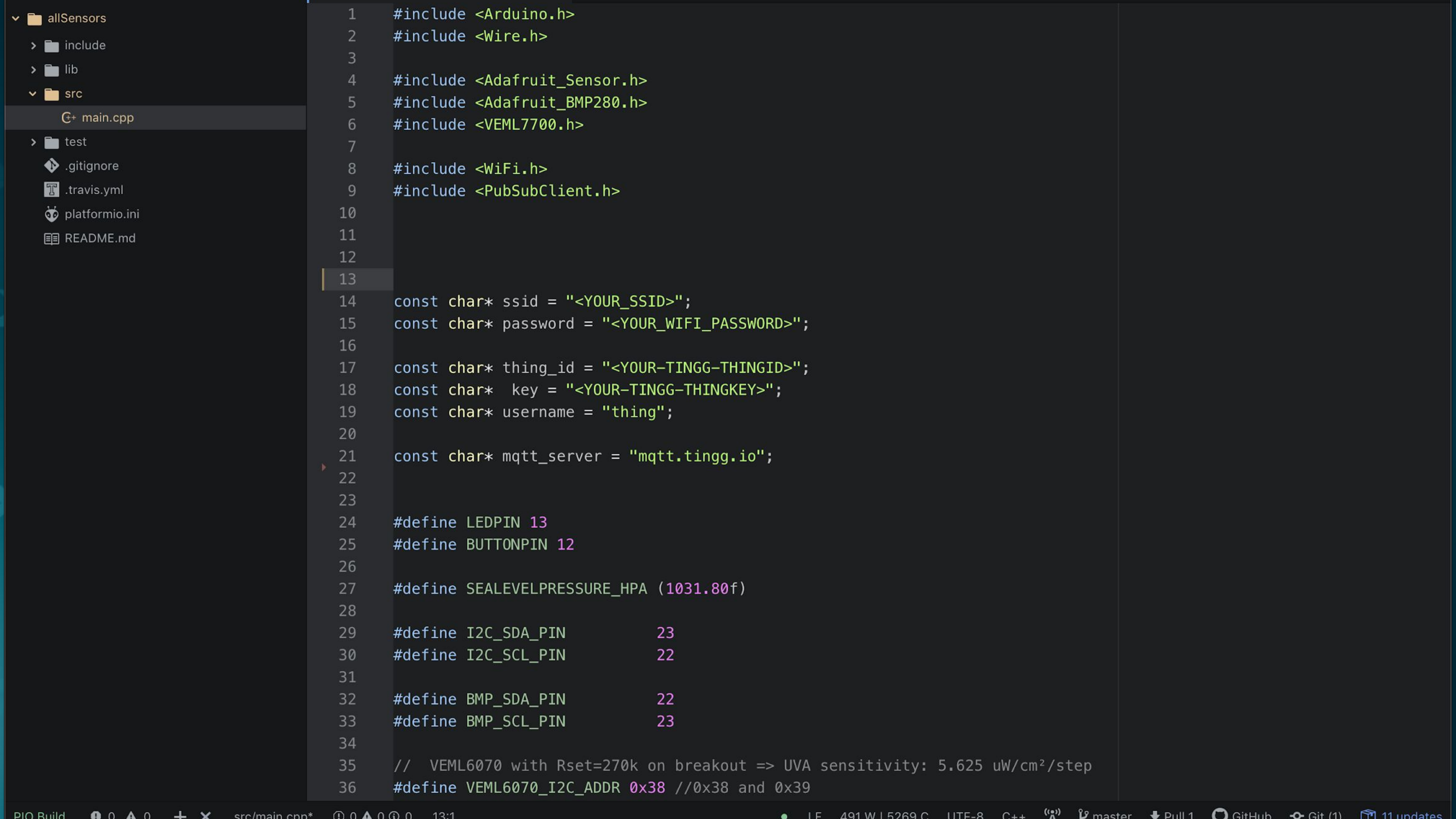
Data Storage

Export Data: Download an archive with the data from the last 30 days. You will also receive an email with the link to download the archive.

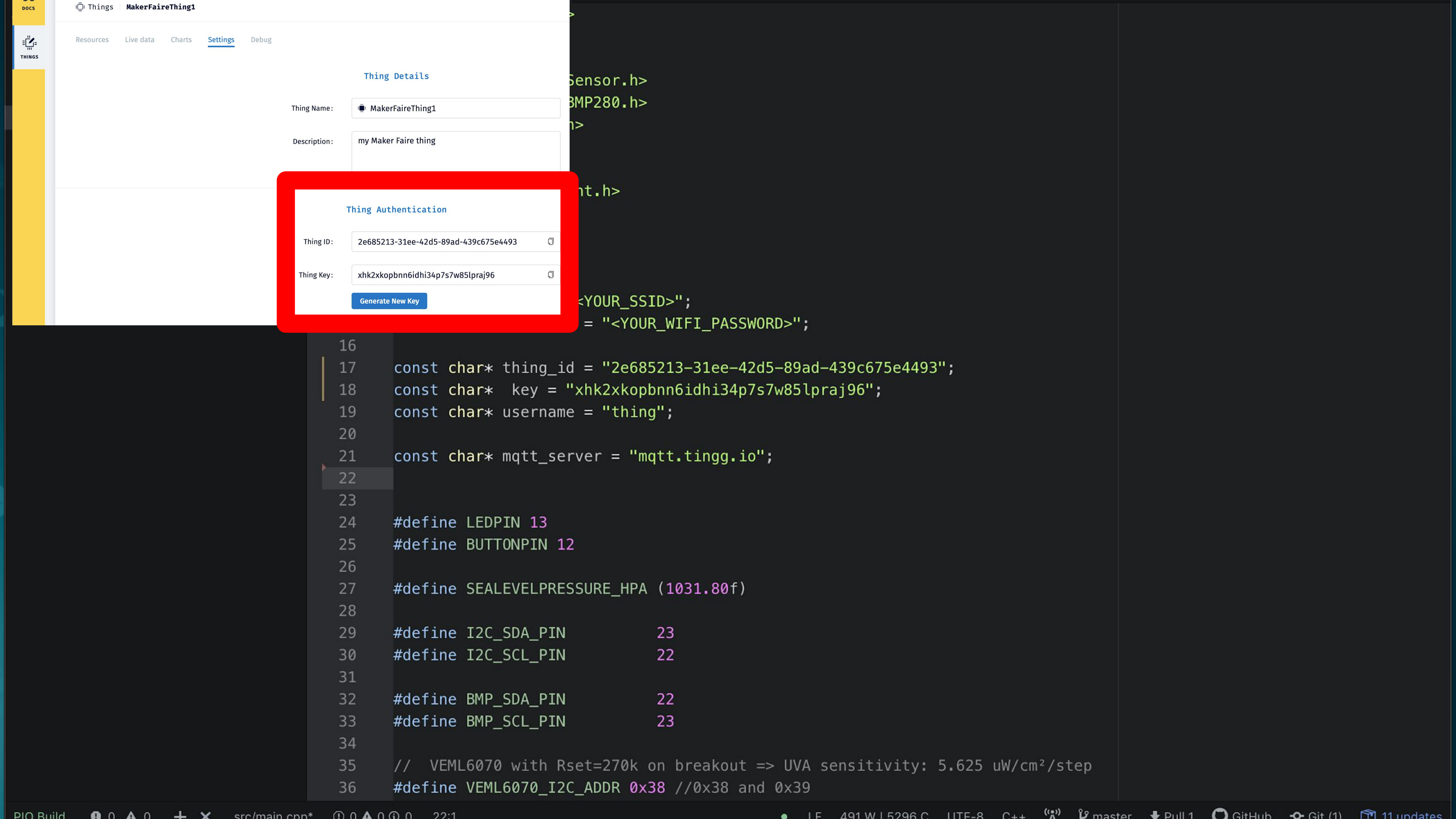
Delete Data: Delete existing Thing data. This action cannot be undone.



allSensors
include
lib
src
main.cpp
test
.gitignore
.travis.yml
platformio.ini
README.md
Support
Follow Us
Have an account? Log in
Home
Account
Libraries
5
Boards
Platforms
4
Devices
Welcome to PlatformIO
Show at startup
Open PlatformIO Project
New
Rename
Duplicate
Reveal
Favorites
Use ☆ to add folder
Places
renebohne
Projects
Devices
/
vm
Users / renebohne / github / tingg-weather / workshop / examples / allSensors
include
lib
src
test
platformio.ini
README.md
Cancel
Open "allSensors"
10. Mai
PlatformIO
Finally! Full support for the
5.12: Platform Security Ar
OSS stack, Bare Metal prof
community.platformio.o
PlatformIO
elease of @MicrochipTech Atmel
latform v3.6.0 is out!
s, updated #Arduino cores, added
#Debugging for SAMD51-based
Recent Projects
Search project...
Name
Boards
Modified
Action
PIO Build
PlatformIO Home
master
Pull 1
GitHub
Git (1)
11 updates



```cpp
#include <Arduino.h>
#include <Wire.h>

#include <Adafruit_Sensor.h>
#include <Adafruit_BMP280.h>
#include <VEML7700.h>

#include <WiFi.h>
#include <PubSubClient.h>




const char* ssid = "<YOUR_SSID>";
const char* password = "<YOUR_WIFI_PASSWORD>";

const char* thing_id = "<YOUR-TINGG-THINGID>";
const char*  key = "<YOUR-TINGG-THINGKEY>";
const char* username = "thing";

const char* mqtt_server = "mqtt.tingg.io";


#define LEDPIN 13
#define BUTTONPIN 12

#define SEALEVELPRESSURE_HPA (1031.80f)

#define I2C_SDA_PIN          23
#define I2C_SCL_PIN          22

#define BMP_SDA_PIN          22
#define BMP_SCL_PIN          23

//  VEML6070 with Rset=270k on breakout => UVA sensitivity: 5.625 uW/cm²/step
#define VEML6070_I2C_ADDR 0x38 //0x38 and 0x39
```



Thing Details

Thing Name: MakerFaireThing1

Description: my Maker Faire thing

Thing Authentication

Thing ID: 2e685213-31ee-42d5-89ad-439c675e4493

Thing Key: xhk2xkopbnn6idhi34p7s7w85lpraj96

```
>

Sensor.h>
BMP280.h>
h>

nt.h>

<YOUR_SSID>";
= "<YOUR_WIFI_PASSWORD>";

const char* thing_id = "2e685213-31ee-42d5-89ad-439c675e4493";
const char*  key = "xhk2xkopbnn6idhi34p7s7w85lpraj96";
const char* username = "thing";

const char* mqtt_server = "mqtt.tingg.io";


#define LEDPIN 13
#define BUTTONPIN 12

#define SEALEVELPRESSURE_HPA (1031.80f)

#define I2C_SDA_PIN          23
#define I2C_SCL_PIN          22

#define BMP_SDA_PIN          22
#define BMP_SCL_PIN          23

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#define VEML6070_I2C_ADDR 0x38 //0x38 and 0x39
```
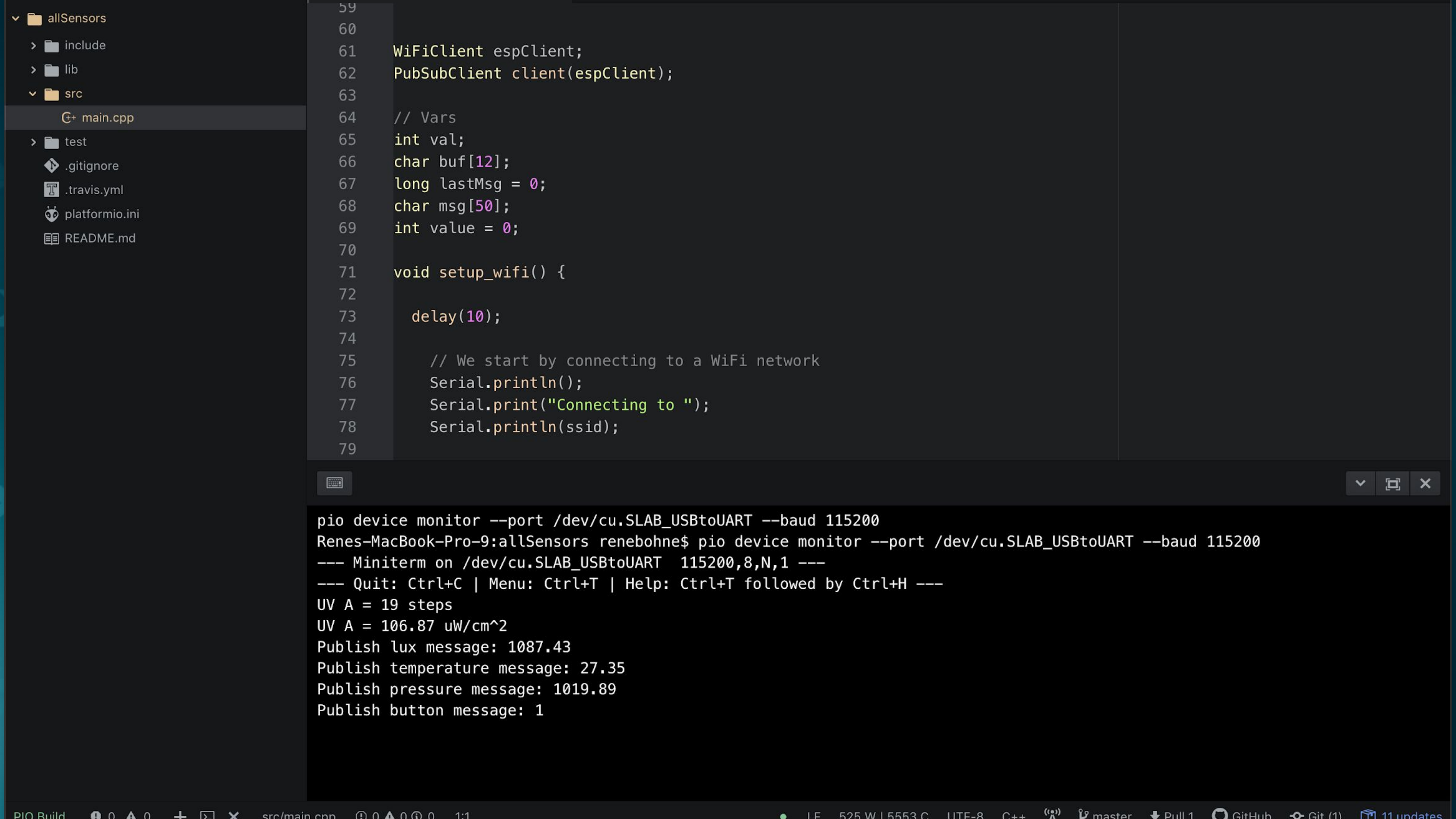
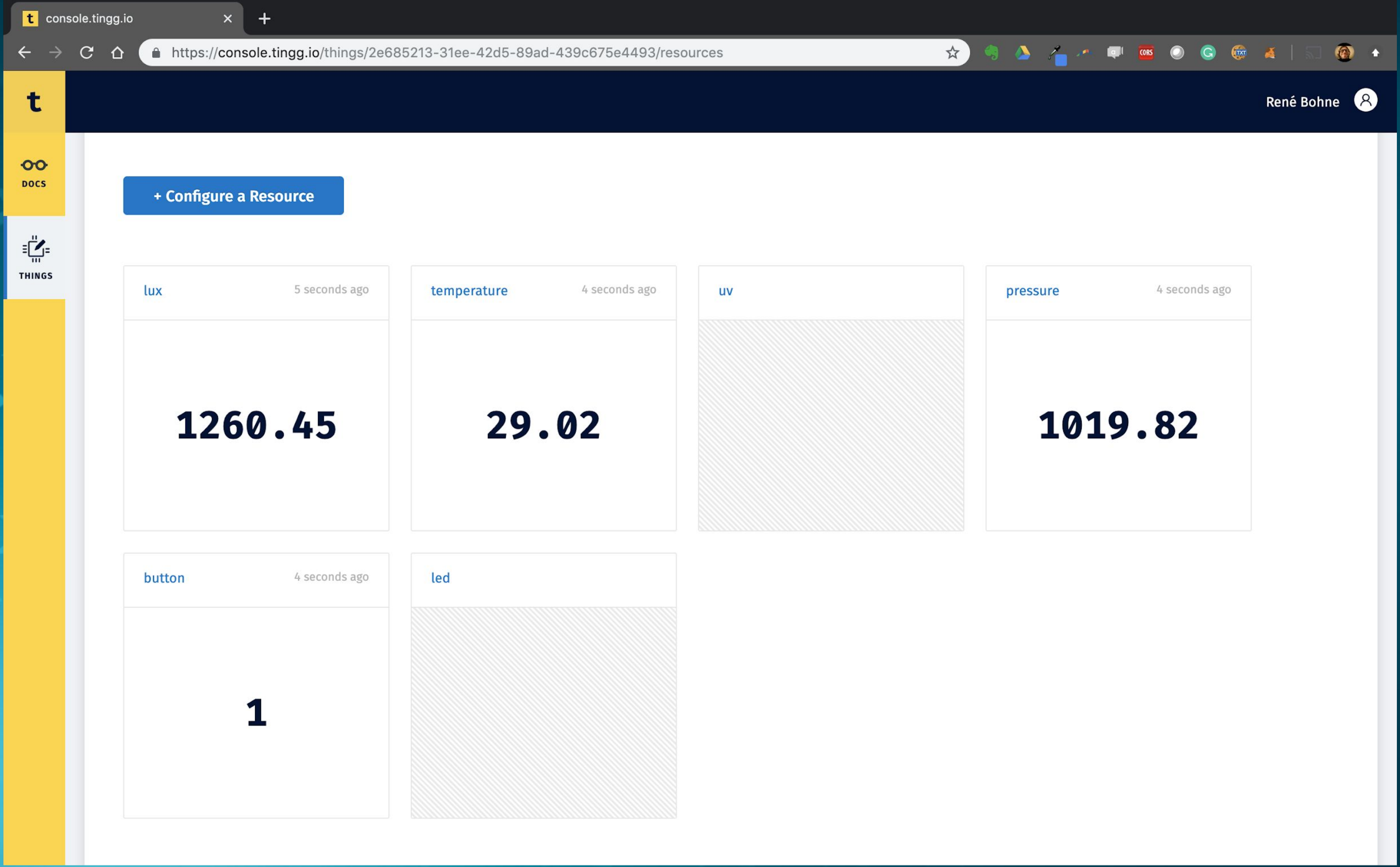



```cpp


WiFiClient espClient;
PubSubClient client(espClient);

// Vars
int val;
char buf[12];
long lastMsg = 0;
char msg[50];
int value = 0;

void setup_wifi() {

  delay(10);

    // We start by connecting to a WiFi network
    Serial.println();
    Serial.print("Connecting to ");
    Serial.println(ssid);

```

```
pio device monitor --port /dev/cu.SLAB_USBtoUART --baud 115200
Renes-MacBook-Pro-9:allSensors renebohne$ pio device monitor --port /dev/cu.SLAB_USBtoUART --baud 115200
--- Miniterm on /dev/cu.SLAB_USBtoUART  115200,8,N,1 ---
--- Quit: Ctrl+C | Menu: Ctrl+T | Help: Ctrl+T followed by Ctrl+H ---
UV A = 19 steps
UV A = 106.87 uW/cm^2
Publish lux message: 1087.43
Publish temperature message: 27.35
Publish pressure message: 1019.89
Publish button message: 1
```



https://console.tingg.io/things/2e685213-31ee-42d5-89ad-439c675e4493/resources

lux 5 seconds ago
1260.45

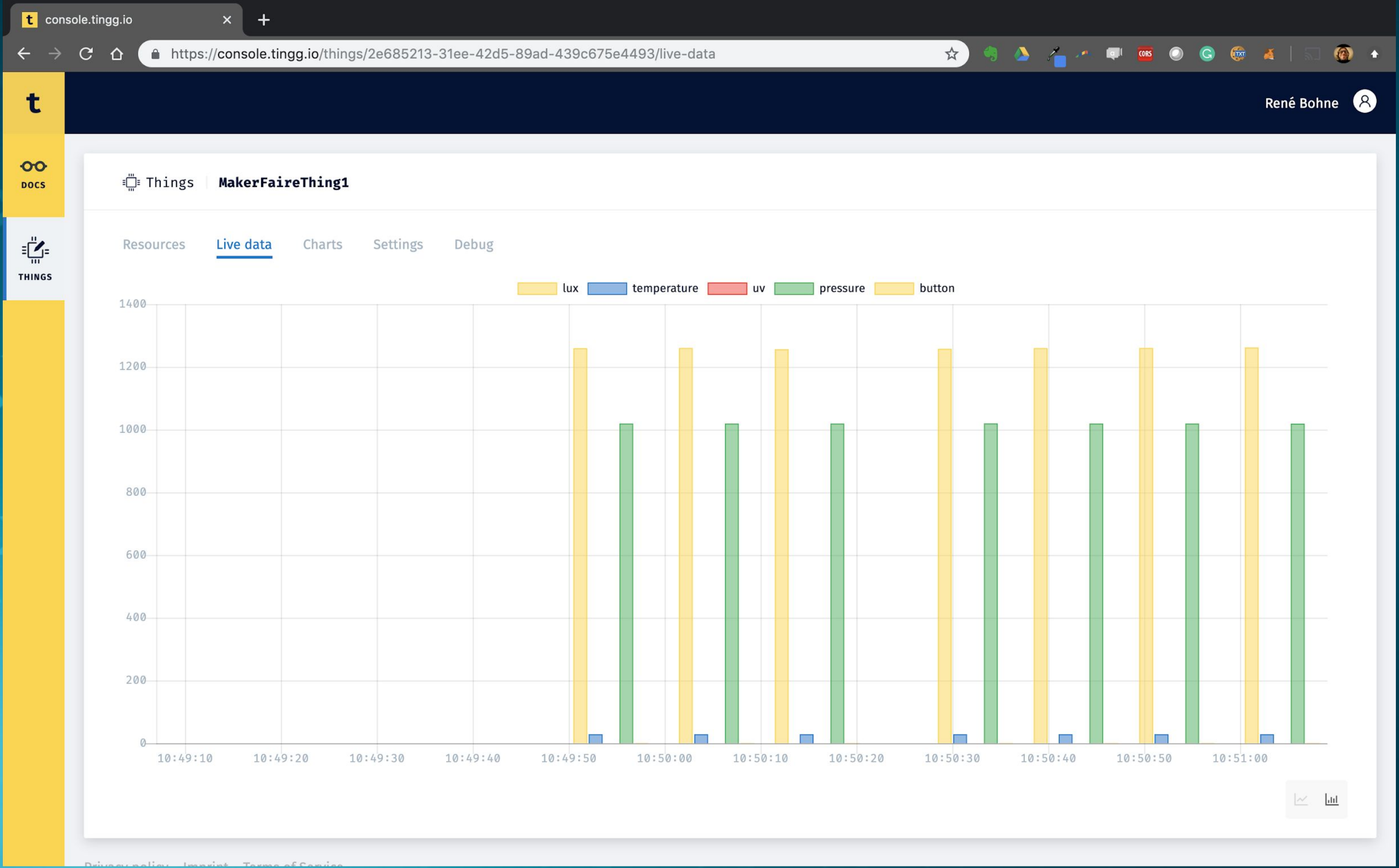
temperature 4 seconds ago
29.02

uv

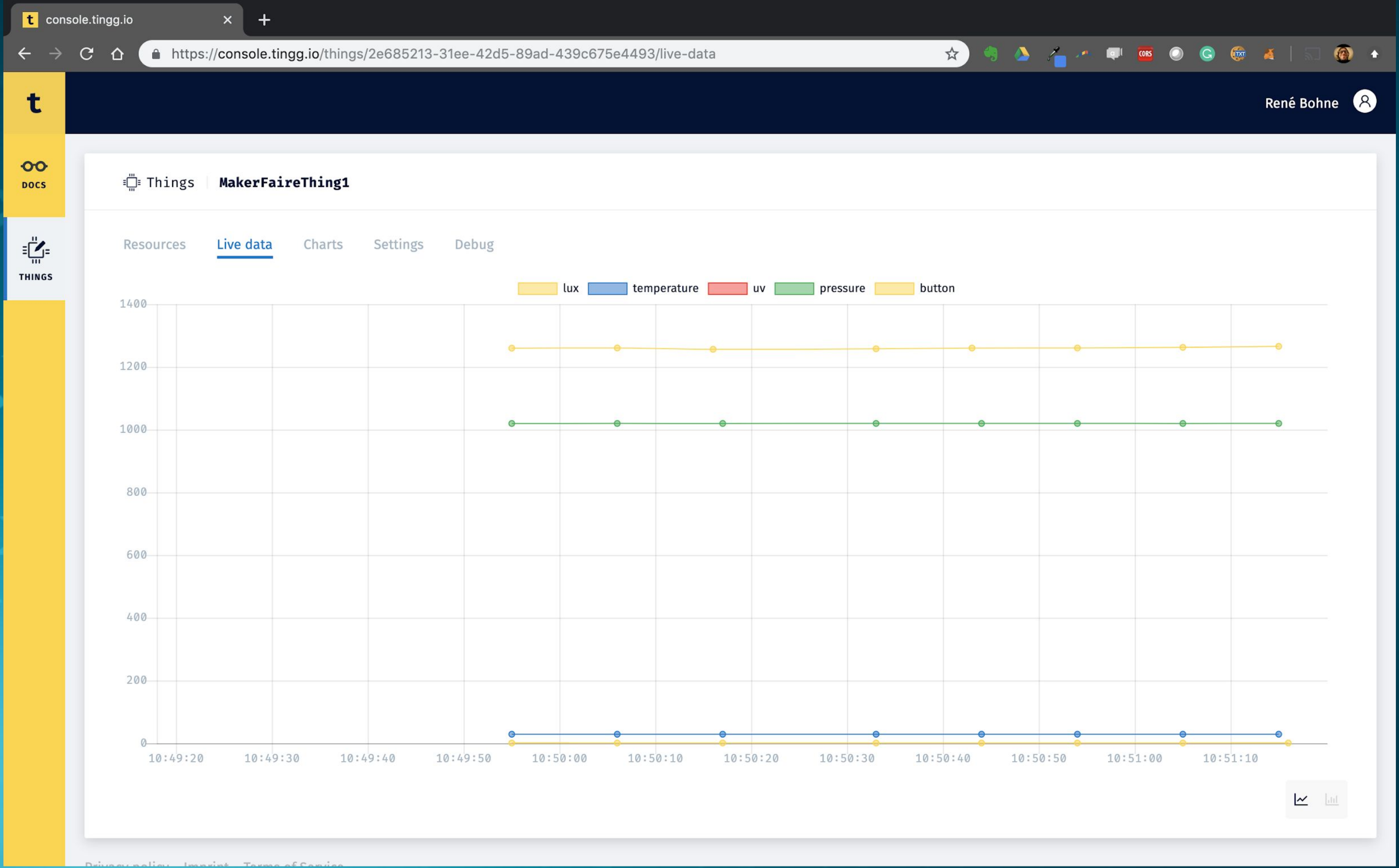
pressure 4 seconds ago
1019.82

button 4 seconds ago
1

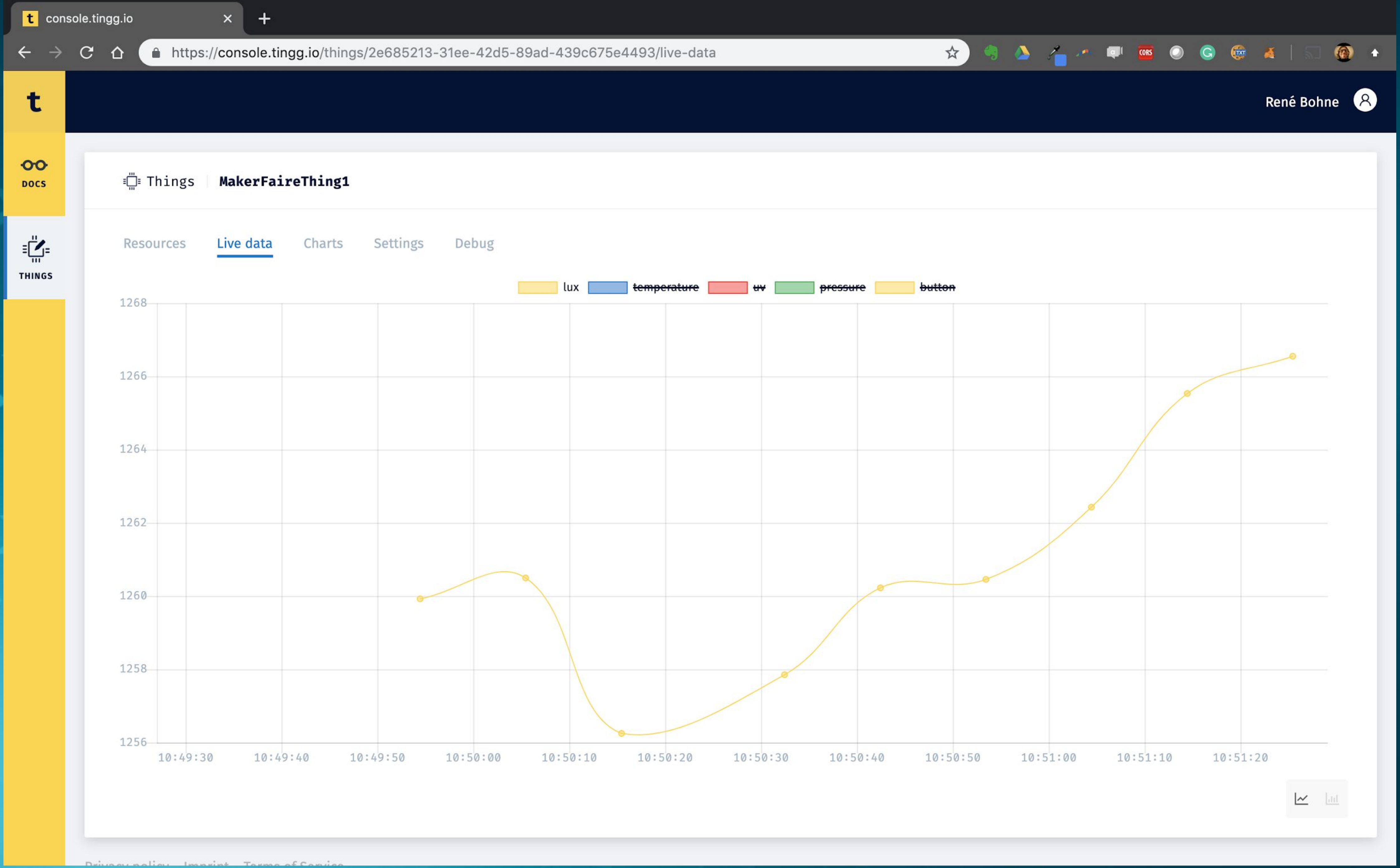
led

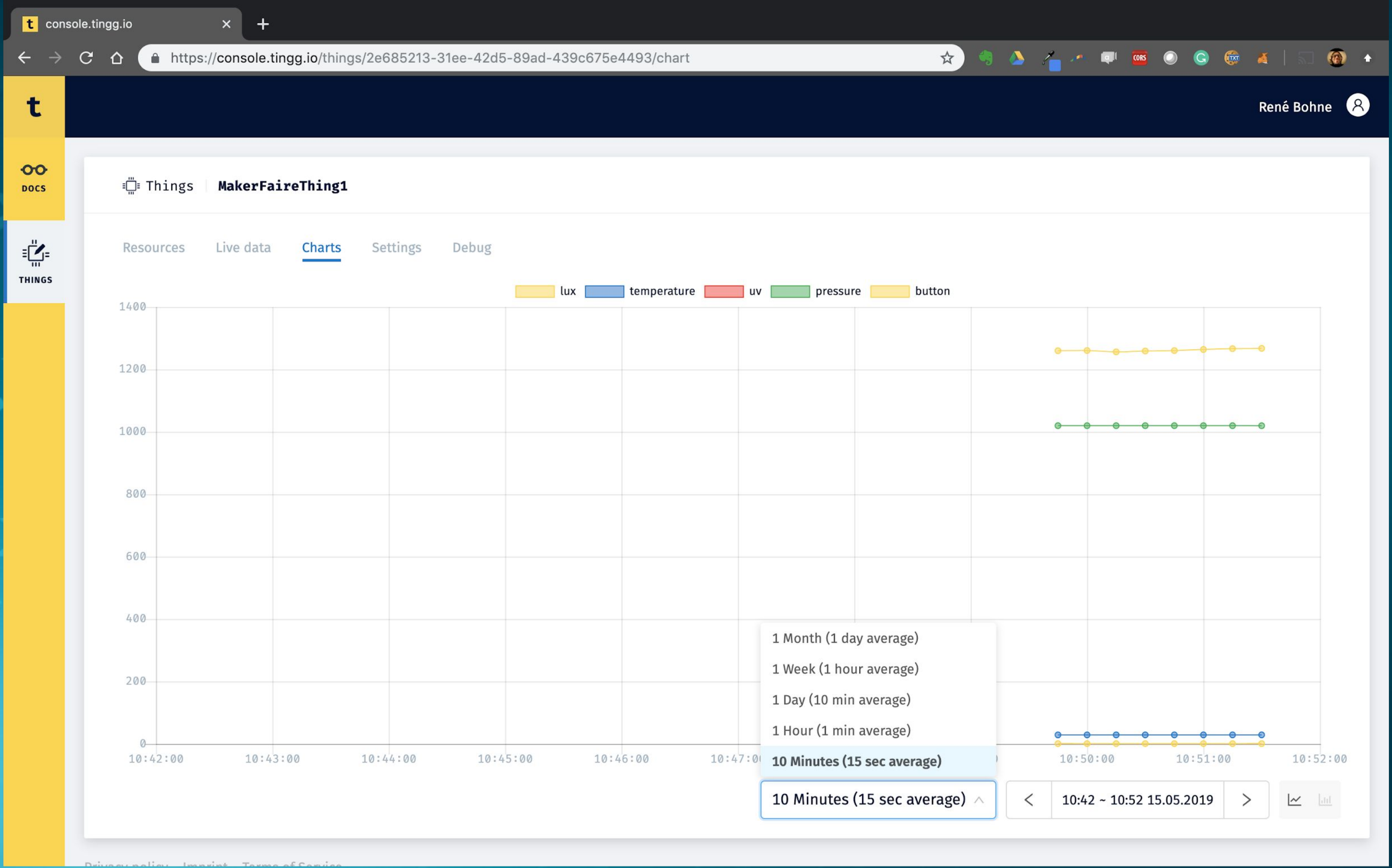


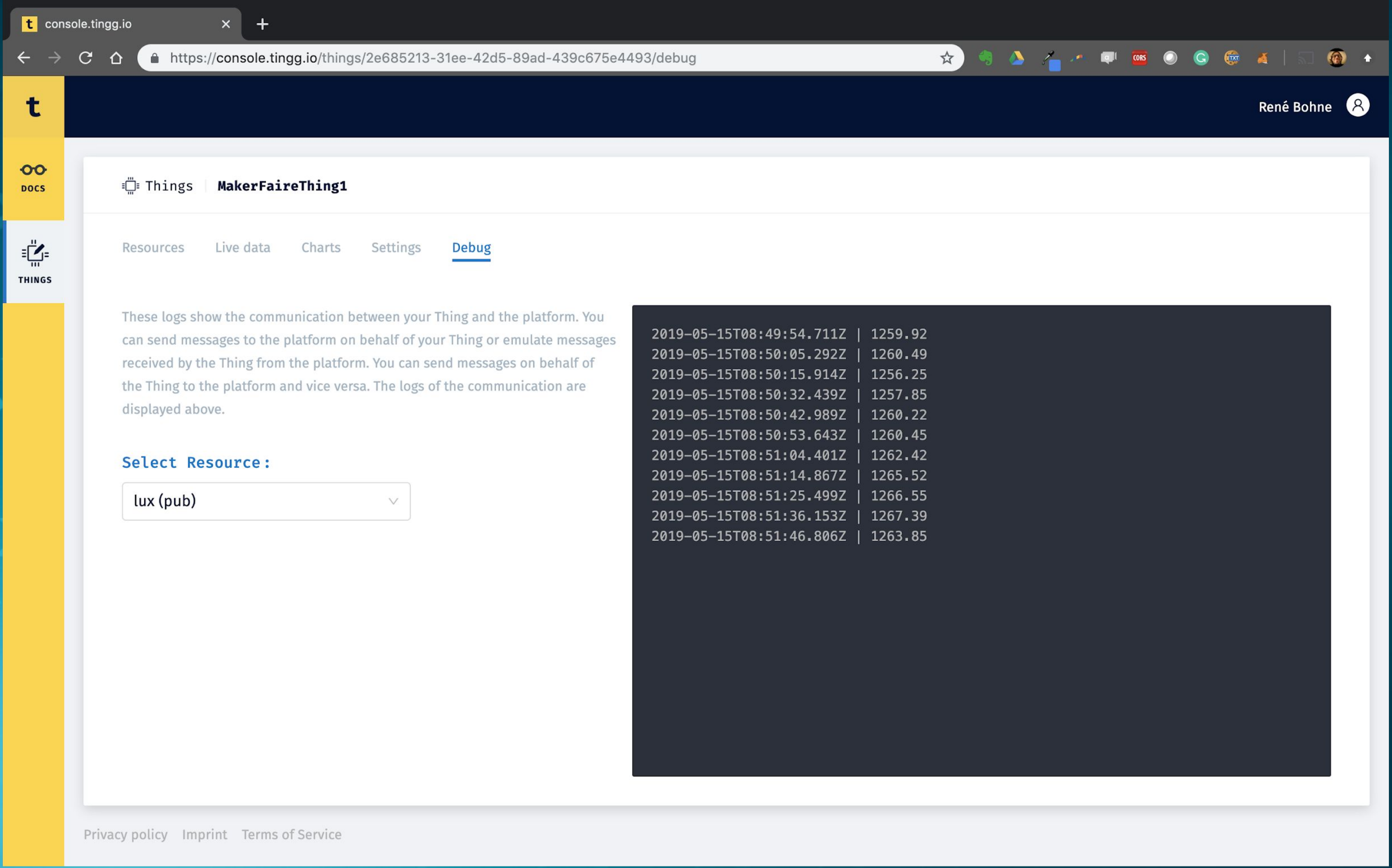
console.tingg.io
https://console.tingg.io/things/2e685213-31ee-42d5-89ad-439c675e4493/live-data
t
René Bohne
DOCS
THINGS
Things
MakerFaireThing1
Resources
Live data
Charts
Settings
Debug
lux
temperature
uv
pressure
button
1400
1200
1000
800
600
400
200
0
10:49:10
10:49:20
10:49:30
10:49:40
10:49:50
10:50:00
10:50:10
10:50:20
10:50:30
10:50:40
10:50:50
10:51:00
Privacy policy
Imprint
Terms of Service



https://console.tingg.io/things/2e685213-31ee-42d5-89ad-439c675e4493/live-data


console.tingg.io
https://console.tingg.io/things/2e685213-31ee-42d5-89ad-439c675e4493/live-data
t
René Bohne
DOCS
THINGS
Things
MakerFaireThing1
Resources
Live data
Charts
Settings
Debug
lux
~~temperature~~
~~uv~~
~~pressure~~
~~button~~
1268
1266
1264
1262
1260
1258
1256
10:49:30
10:49:40
10:49:50
10:50:00
10:50:10
10:50:20
10:50:30
10:50:40
10:50:50
10:51:00
10:51:10
10:51:20
Privacy policy
Imprint
Terms of Service

console.tingg.io
https://console.tingg.io/things/2e685213-31ee-42d5-89ad-439c675e4493/chart
t
René Bohne
DOCS
THINGS
Things
MakerFaireThing1
Resources
Live data
Charts
Settings
Debug
lux
temperature
uv
pressure
button
1400
1200
1000
800
600
400
200
0
10:42:00
10:43:00
10:44:00
10:45:00
10:46:00
10:47:00
10:50:00
10:51:00
10:52:00
1 Month (1 day average)
1 Week (1 hour average)
1 Day (10 min average)
1 Hour (1 min average)
10 Minutes (15 sec average)
10 Minutes (15 sec average)
10:42 ~ 10:52 15.05.2019
Privacy policy Imprint Terms of Service

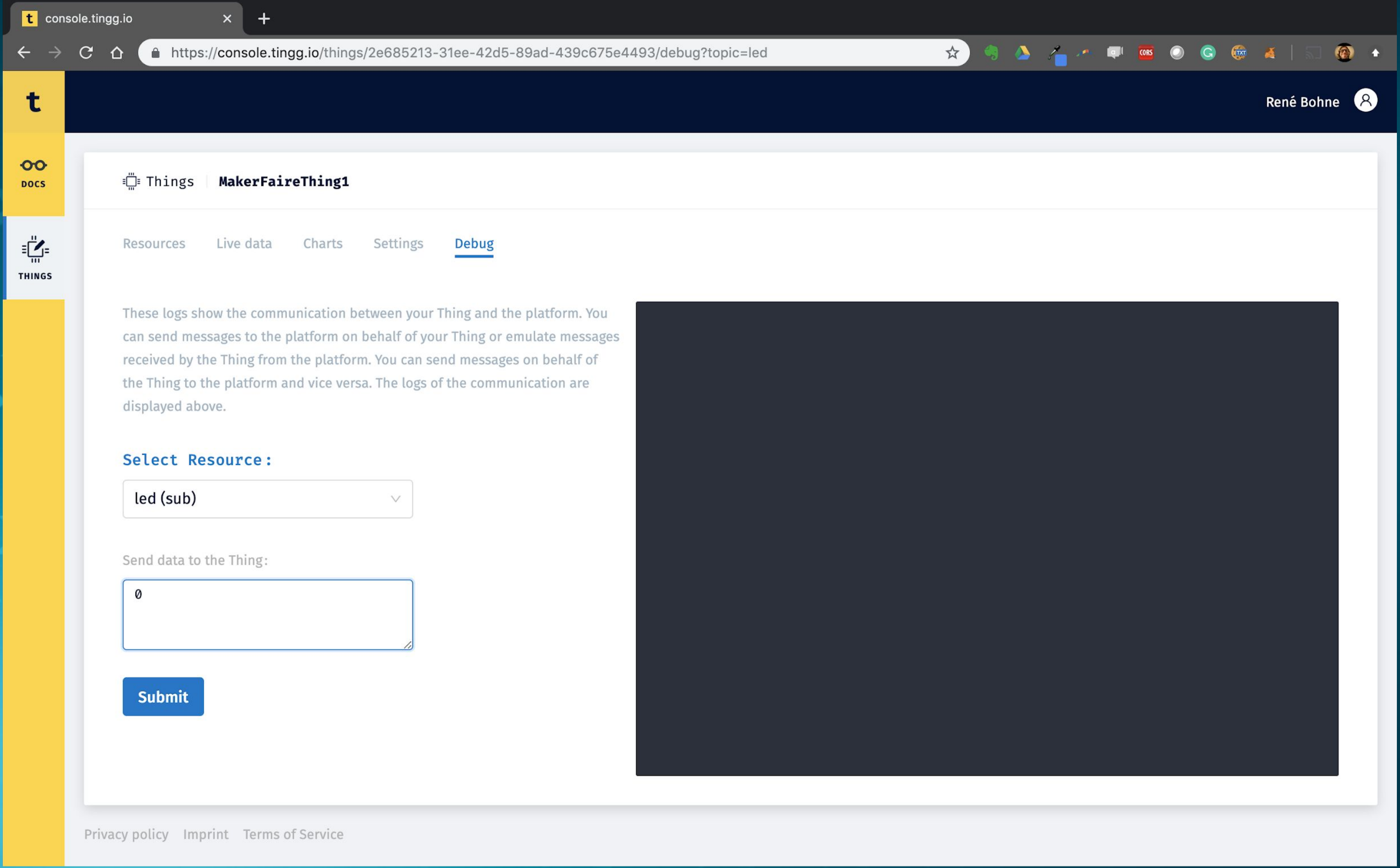


These logs show the communication between your Thing and the platform. You can send messages to the platform on behalf of your Thing or emulate messages received by the Thing from the platform. You can send messages on behalf of the Thing to the platform and vice versa. The logs of the communication are displayed above.

Select Resource:

lux (pub)

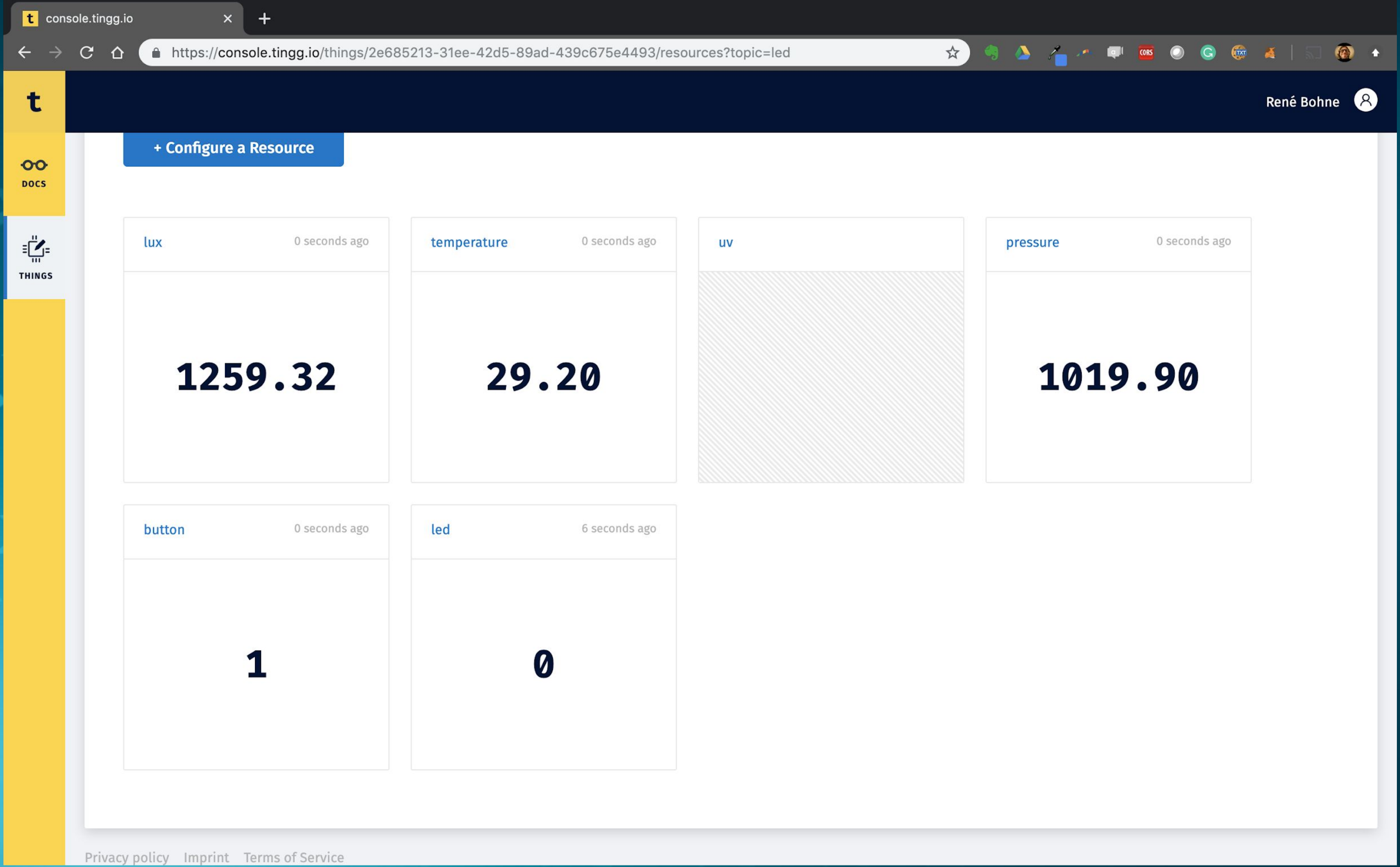
```
2019-05-15T08:49:54.711Z | 1259.92
2019-05-15T08:50:05.292Z | 1260.49
2019-05-15T08:50:15.914Z | 1256.25
2019-05-15T08:50:32.439Z | 1257.85
2019-05-15T08:50:42.989Z | 1260.22
2019-05-15T08:50:53.643Z | 1260.45
2019-05-15T08:51:04.401Z | 1262.42
2019-05-15T08:51:14.867Z | 1265.52
2019-05-15T08:51:25.499Z | 1266.55
2019-05-15T08:51:36.153Z | 1267.39
2019-05-15T08:51:46.806Z | 1263.85
```



These logs show the communication between your Thing and the platform. You can send messages to the platform on behalf of your Thing or emulate messages received by the Thing from the platform. You can send messages on behalf of the Thing to the platform and vice versa. The logs of the communication are displayed above.

Select Resource: led (sub)

Send data to the Thing: 0



lux 0 seconds ago

1259.32

temperature 0 seconds ago

29.20

uv

pressure 0 seconds ago

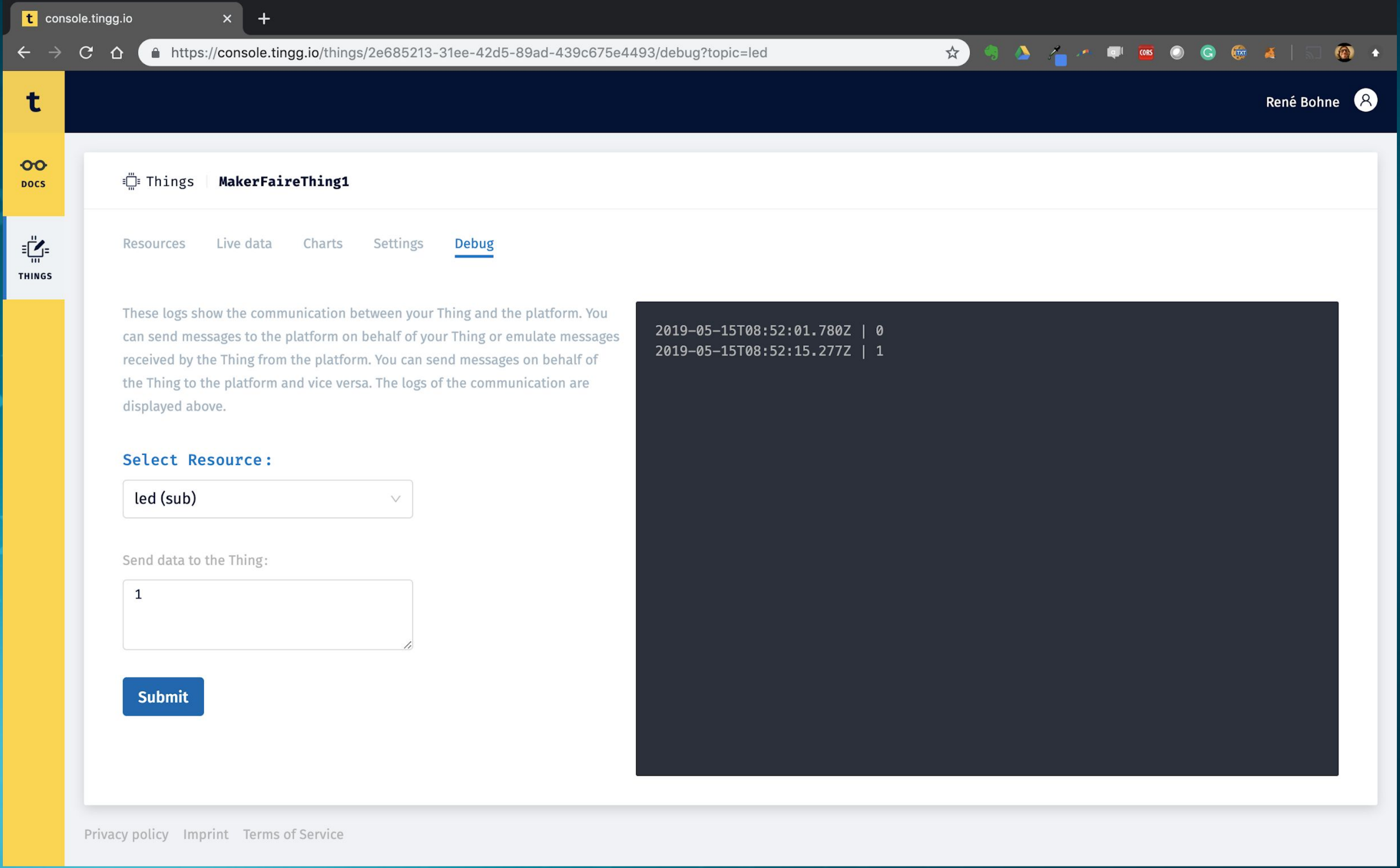
1019.90

button 0 seconds ago

1

led 6 seconds ago

0

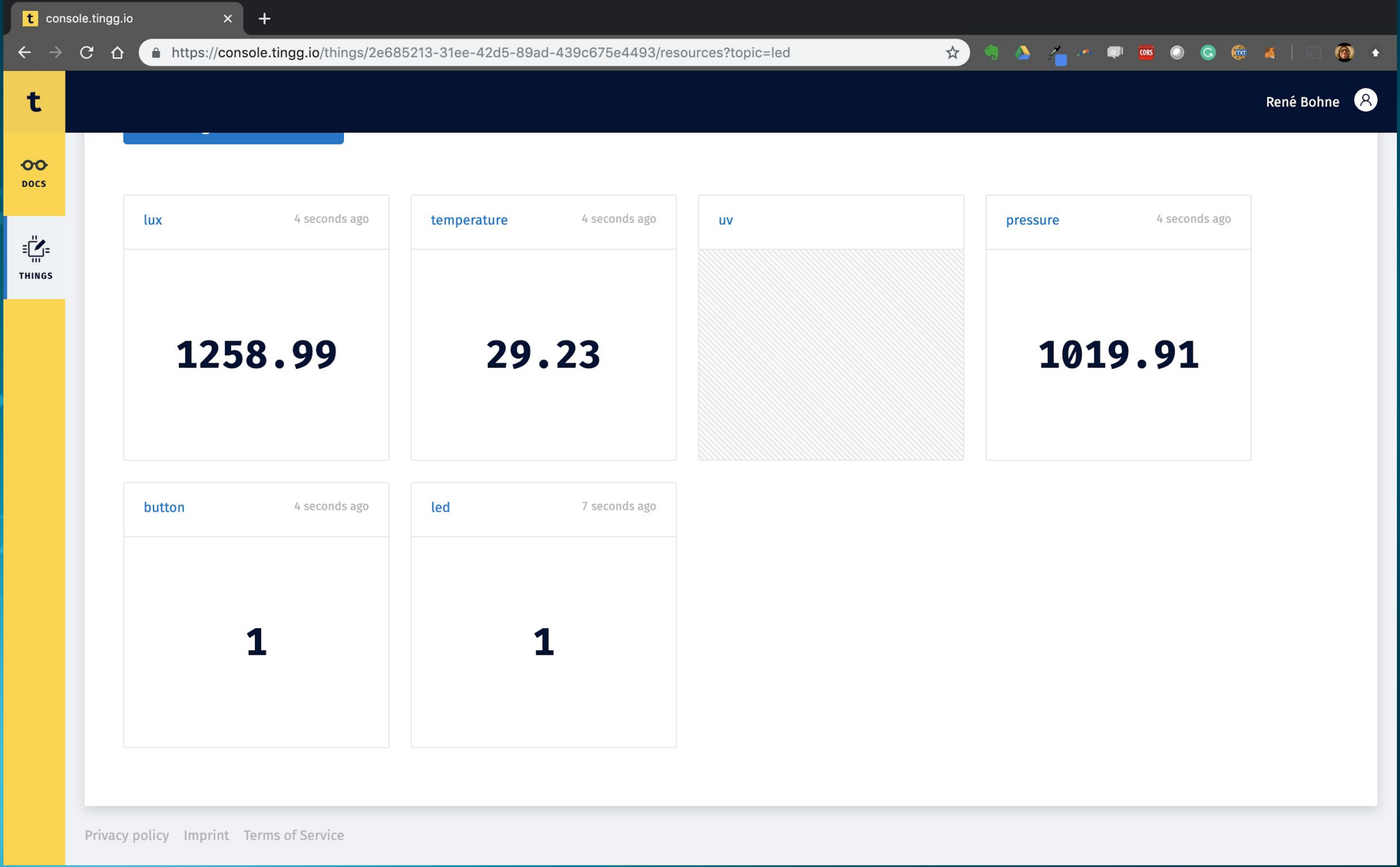


These logs show the communication between your Thing and the platform. You can send messages to the platform on behalf of your Thing or emulate messages received by the Thing from the platform. You can send messages on behalf of the Thing to the platform and vice versa. The logs of the communication are displayed above.

Select Resource: led (sub)

Send data to the Thing: 1

```
2019-05-15T08:52:01.780Z | 0
2019-05-15T08:52:15.277Z | 1
```



https://console.tingg.io/things/2e685213-31ee-42d5-89ad-439c675e4493/resources?topic=led

lux 4 seconds ago
1258.99

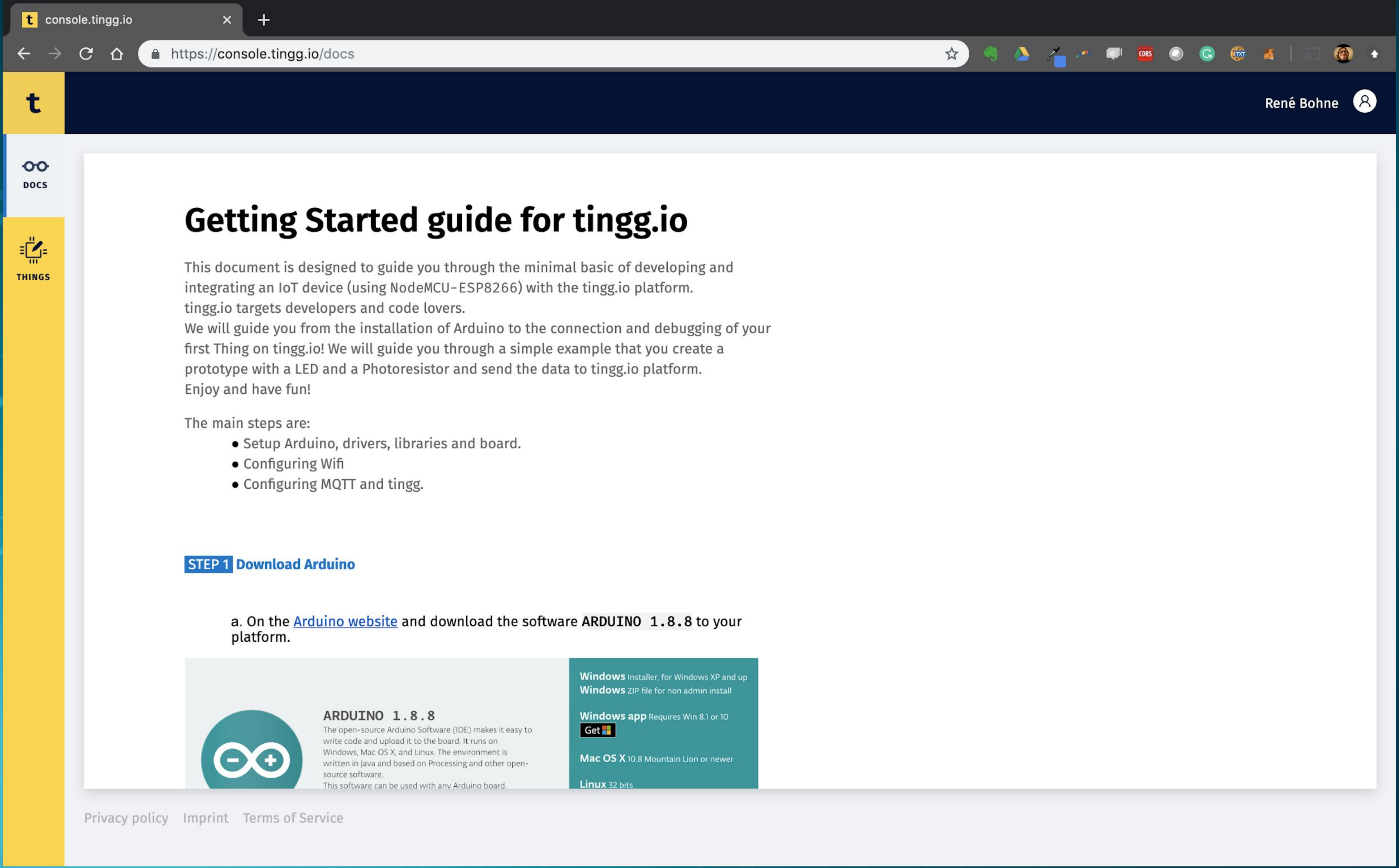
temperature 4 seconds ago
29.23

uv

pressure 4 seconds ago
1019.91

button 4 seconds ago
1

led 7 seconds ago
1



Getting Started guide for tingg.io

This document is designed to guide you through the minimal basic of developing and integrating an IoT device (using NodeMCU-ESP8266) with the tingg.io platform.
tingg.io targets developers and code lovers.
We will guide you from the installation of Arduino to the connection and debugging of your first Thing on tingg.io! We will guide you through a simple example that you create a prototype with a LED and a Photoresistor and send the data to tingg.io platform.
Enjoy and have fun!

The main steps are:

- Setup Arduino, drivers, libraries and board.
- Configuring Wifi
- Configuring MQTT and tingg.

STEP 1 Download Arduino

a. On the Arduino website and download the software `ARDUINO 1.8.8` to your platform.

ARDUINO 1.8.8
The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software.
This software can be used with any Arduino board.

Windows Installer, for Windows XP and up
Windows ZIP file for non admin install
Windows app Requires Win 8.1 or 10
Get
Mac OS X 10.8 Mountain Lion or newer
Linux 32 bits

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