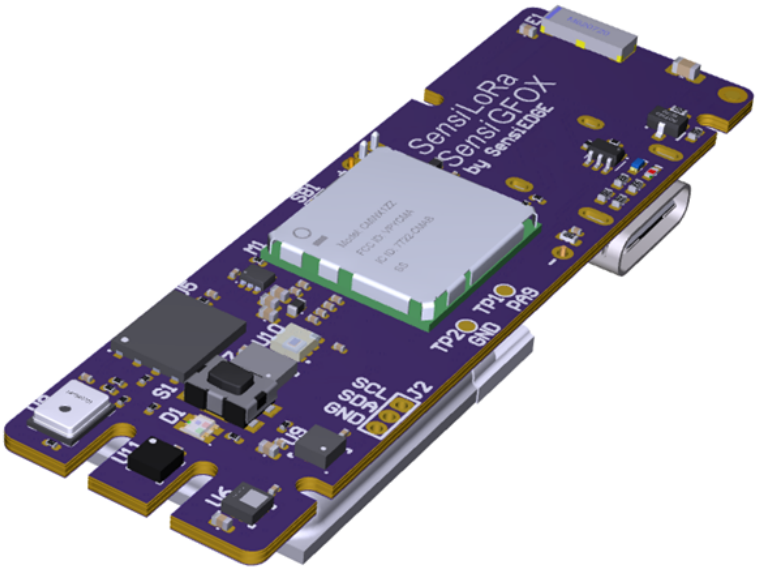
*Sensi*GFOX | LoRa 2.0

Getting Started



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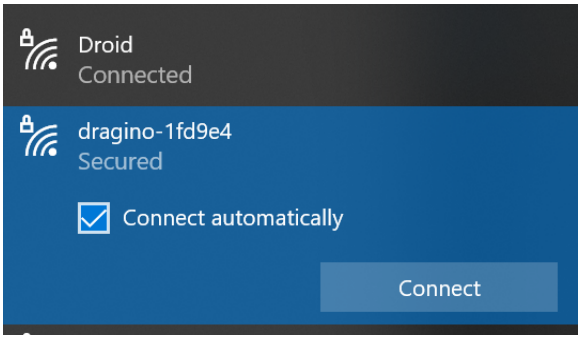
1. Config Dragino Pico Station

1.1 Connect to Dragino

1. Connect the antenna, network cable and turn on the device. After starting the device, it should be defined on the Wi-Fi network as " **dragino-**

xxxxxx " (Figure 1). When the device is found, we connect to it and enter the default password: "**dragino+dragino**".

Figure 1. Wi-Fi network

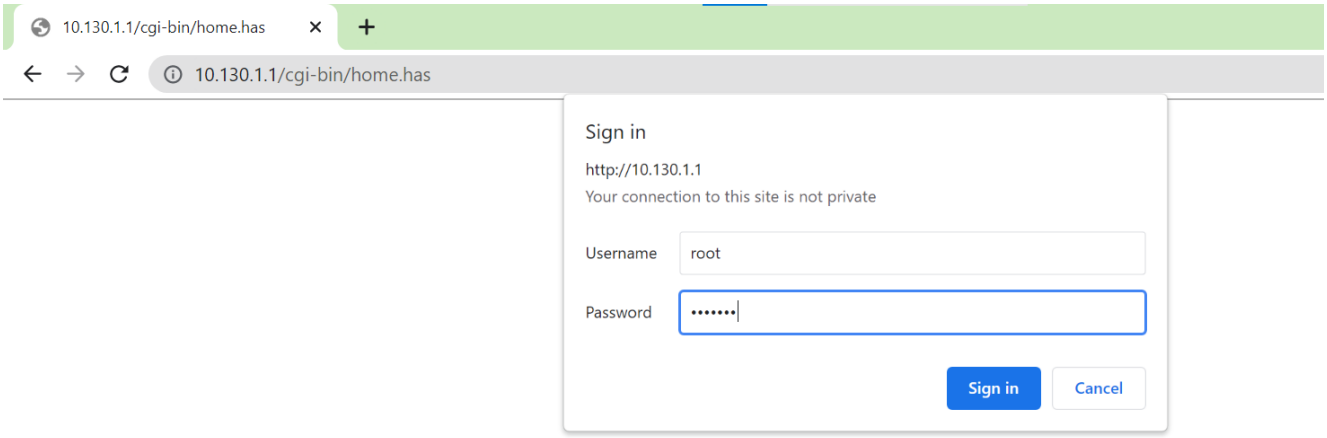


2. When connected to the device, open the browser and enter the address: http://10.130.1.1/ and enter (Figure 2) :

User Name: root

Password: dragino

Figure 2. Site



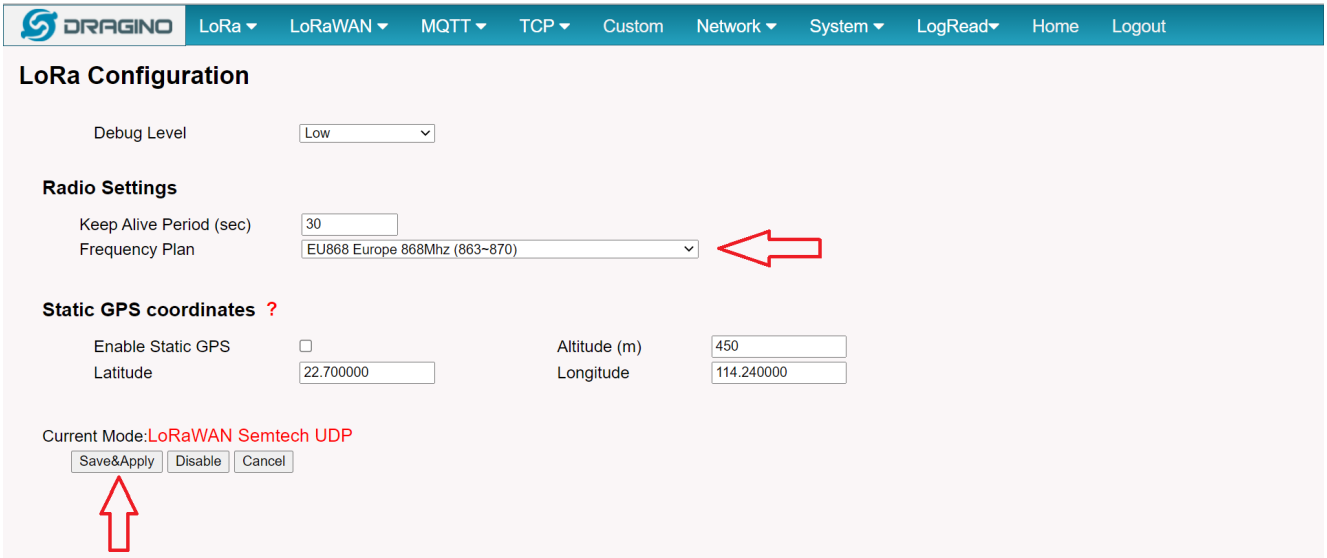
3. Go to network settings Lora (Figure 3).

Figure 3. Go to Lora settings

1.2 Configuration LoRa

1. In LoRa Configuration select the desired frequency (EU868 or US915) and click on **Save&Apply** (Figure 4).

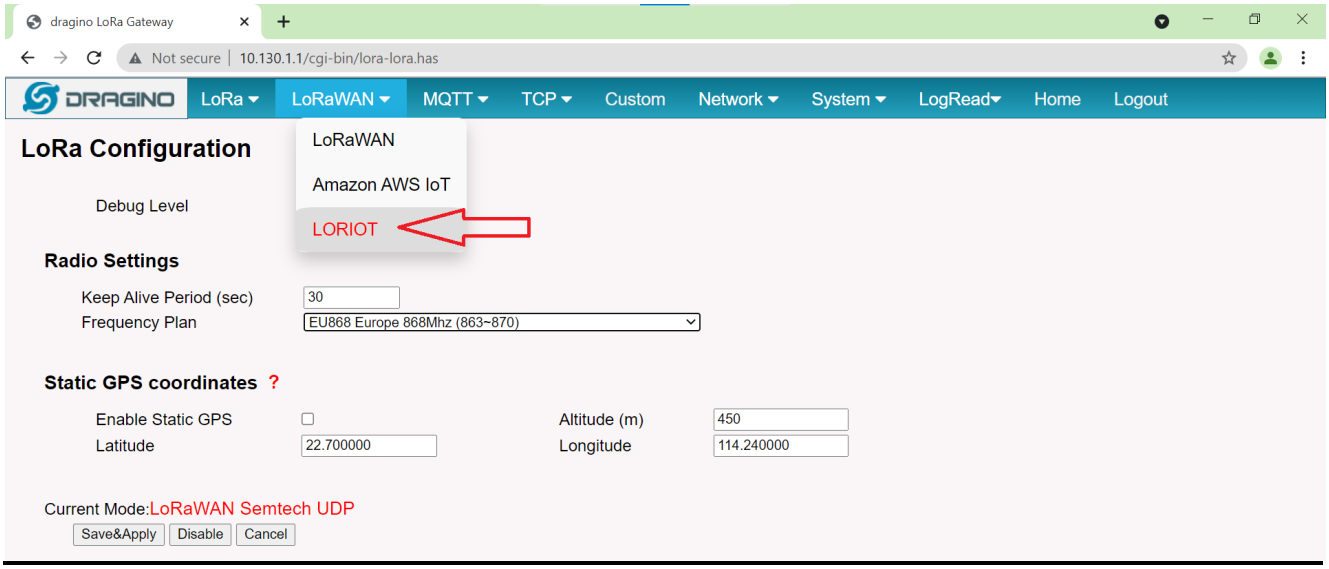
Figure 4. Configuration Lora



1.3 Configuration LORIOT

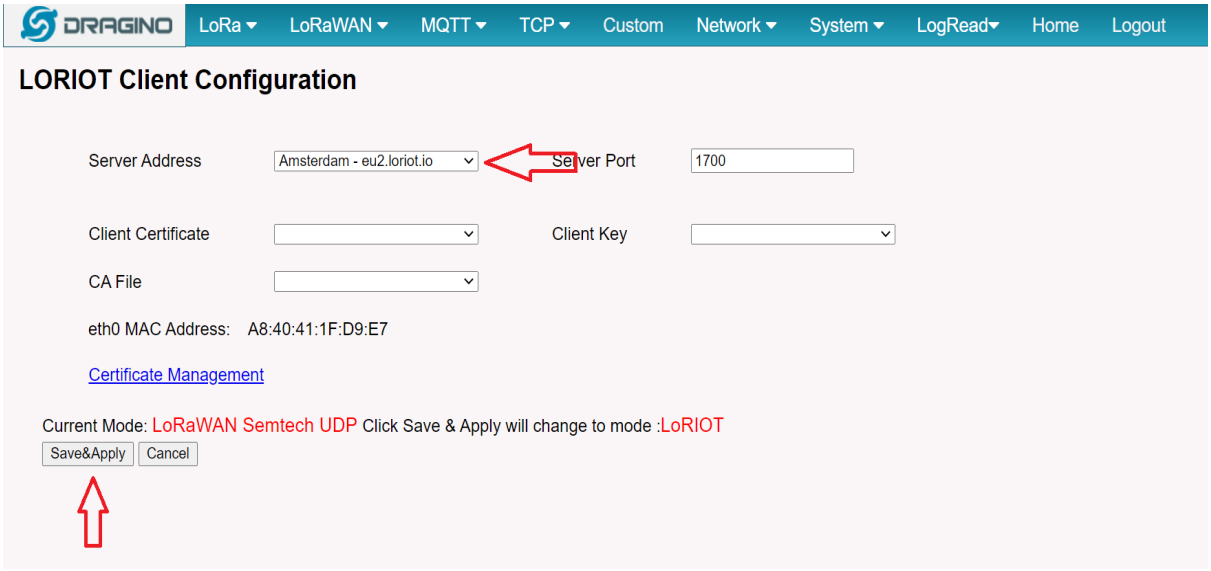
1. Go to configuration **LORIOT** (Figure 5).

Figure 5. Go to Loriot settings



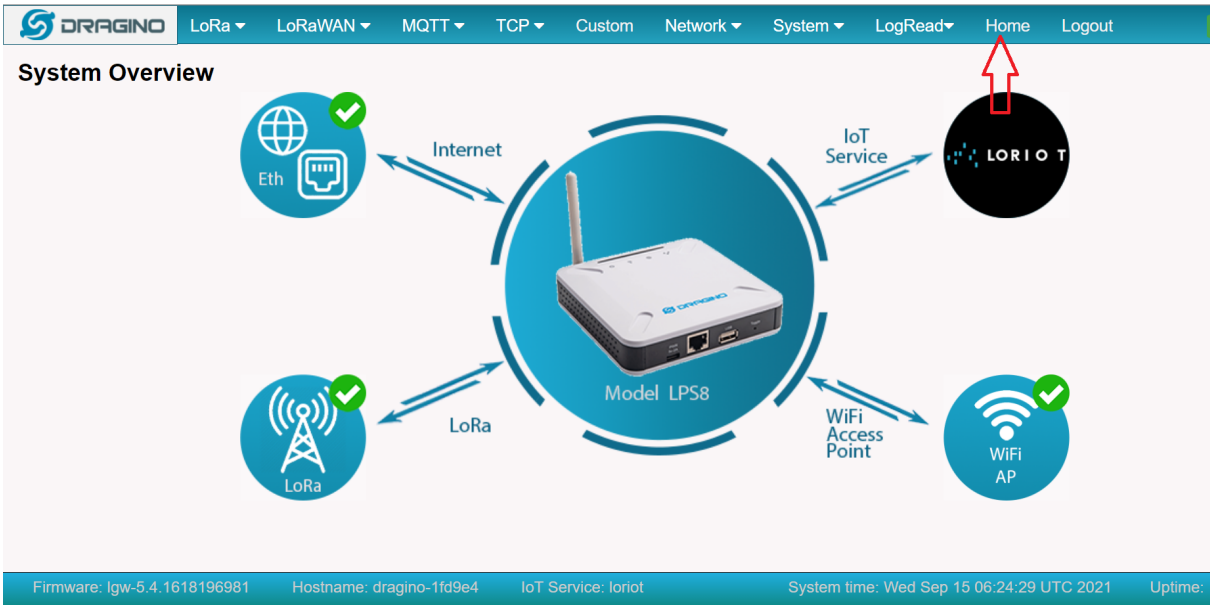
2. In the configuration LORIOT, select the desired server (example: **Amsterdam - eu2.loriot.io**) and click on **Save&Apply** (Figure 6).

Figure 6. Configuration Loriot



3. After configuring the LORIOT, go to the **Home** tab and you should see green checkmarks as in the picture, this means that everything is working (Figure 7).

Figure 7. Home page

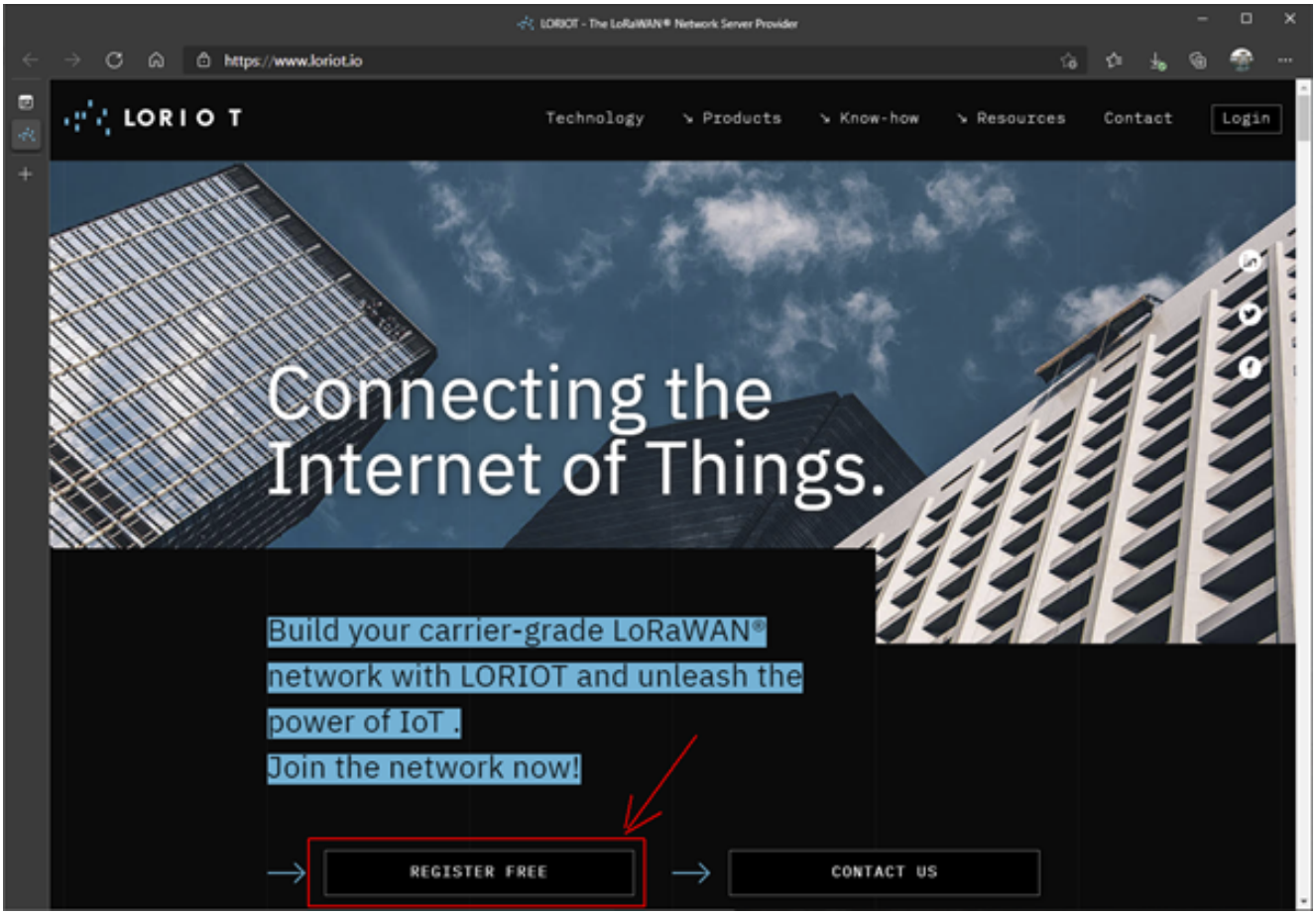


2. Registration in Loriot

2.1 Registration in Server

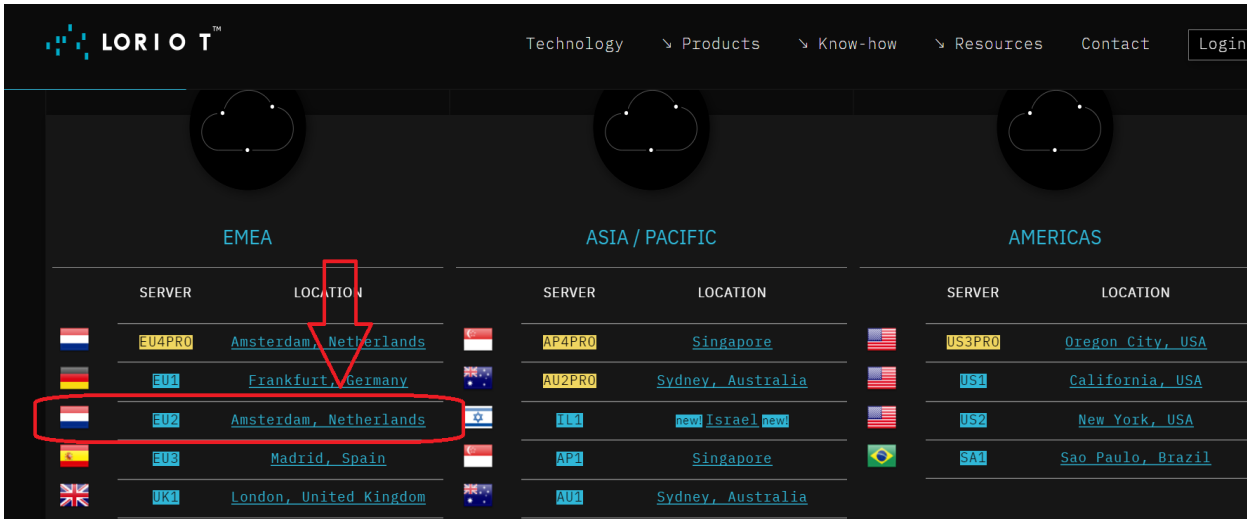
1 Go to https://www.loriot.io/ and press **REGISTER FREE** (Figure 8).

Figure 8. Loriot site



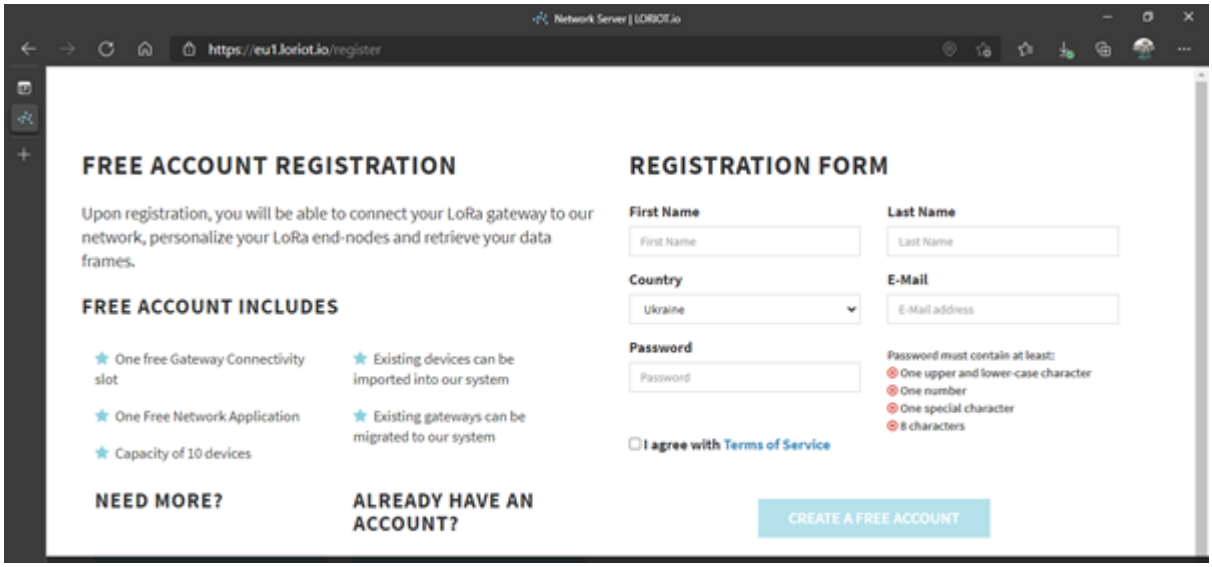
2 Select server **EU2 Amsterdam, Netherlands** (Figure 9).

Figure 9. Select server



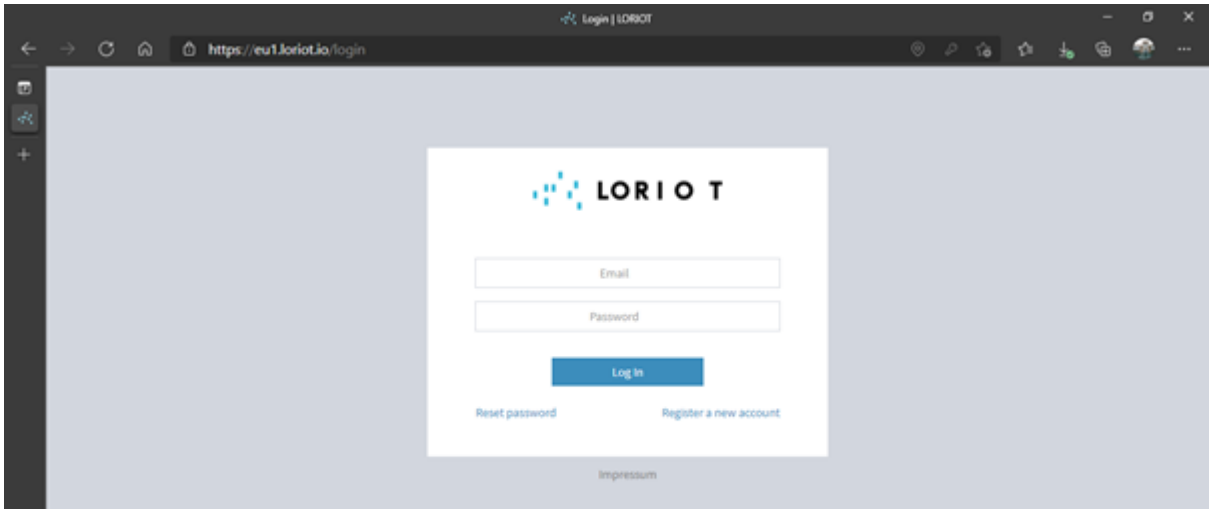
3 Input all data and press the button **CREATE A FREE ACCOUNT** (Figure 10).

Figure 10. Create account



4 After confirmation via email enter the site (Figure 11).

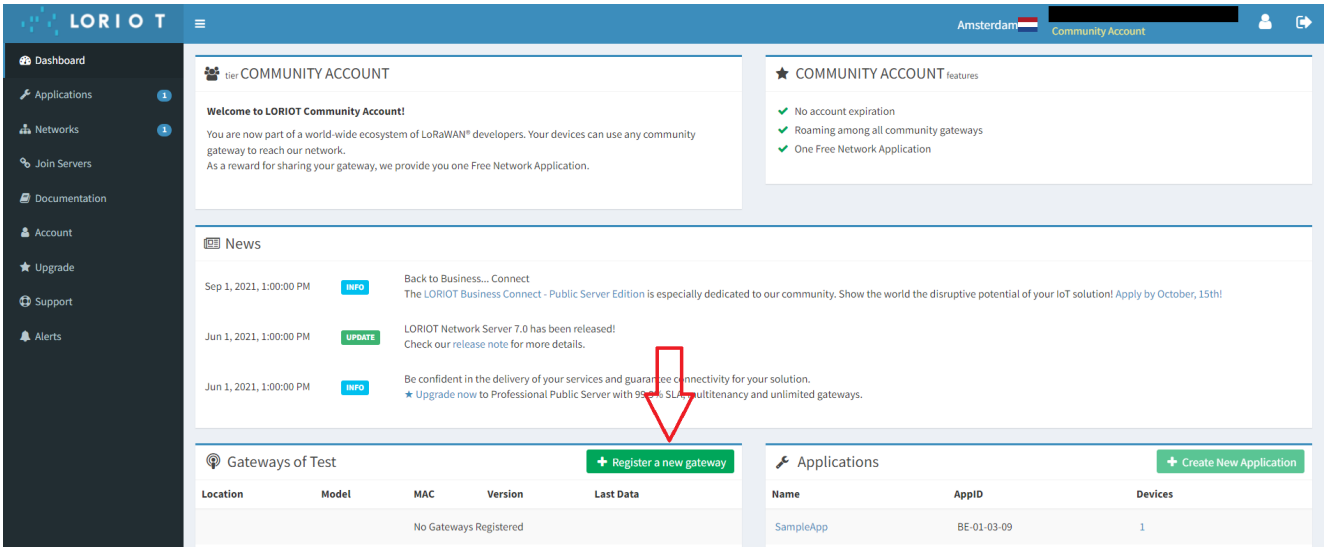
Figure 11. Login to server



2.2 Register a gateway

1. Add Gateway. Press the button **Register a new gateway** (Figure 12).

Figure 12. Register gateway

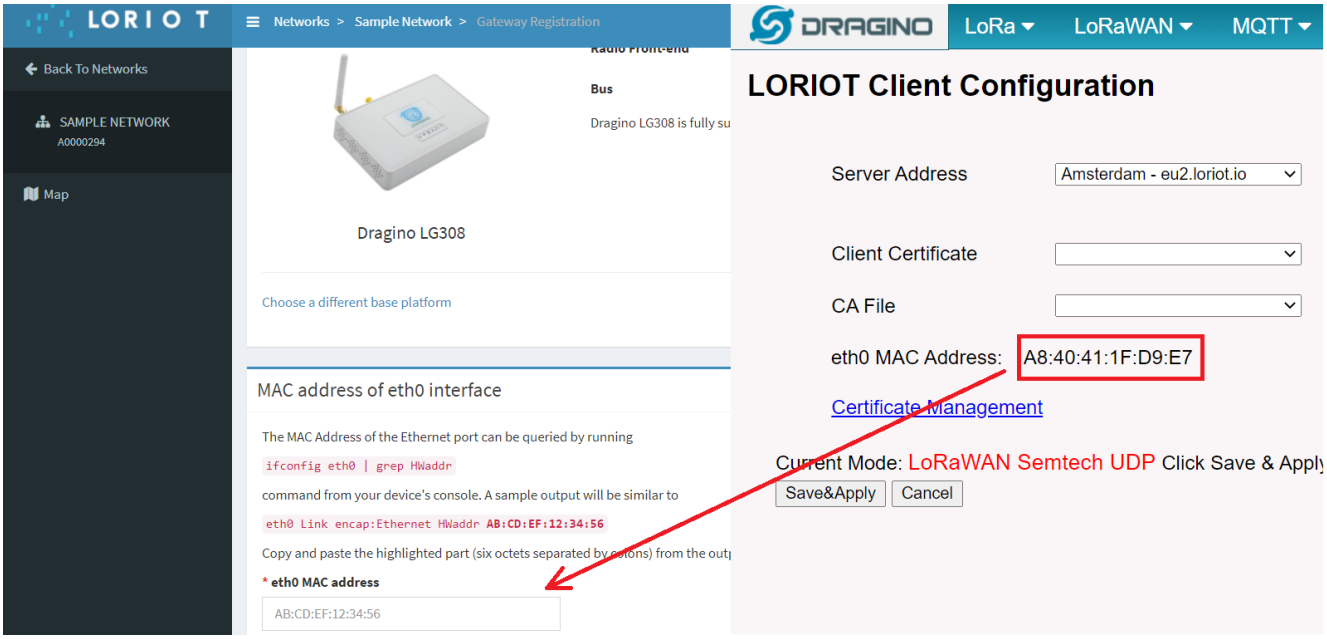


2. Scroll down and select **Dragino LG308** if you use Dragino pico station LPS8 or LG308 (Figure 13).

Figure 13. Add the Dragino

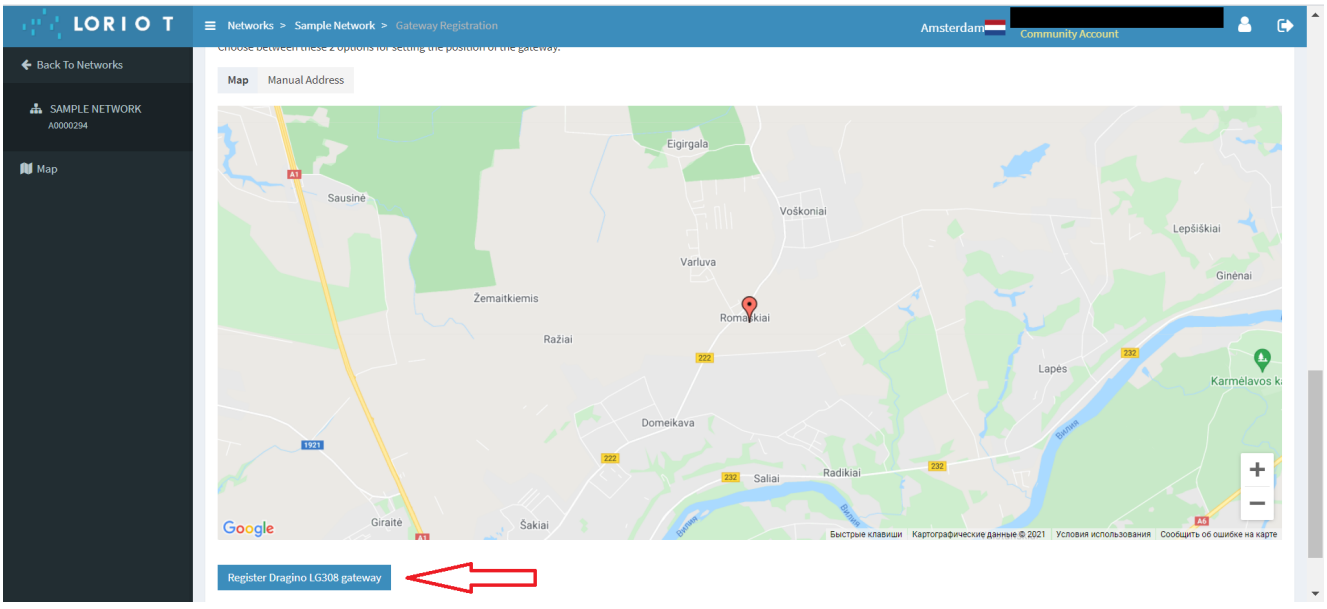
3. Scroll a little below and you will see a field for entering the device address (Figure 14). If a Dragoni Pico Station is used, then the Eth0 Mac address can be taken on a *web-based GUI Dragino website* in LORIOT Client Configuration 1.3 Configuration LORIOT.

Figure 14. Eth0 Mac address



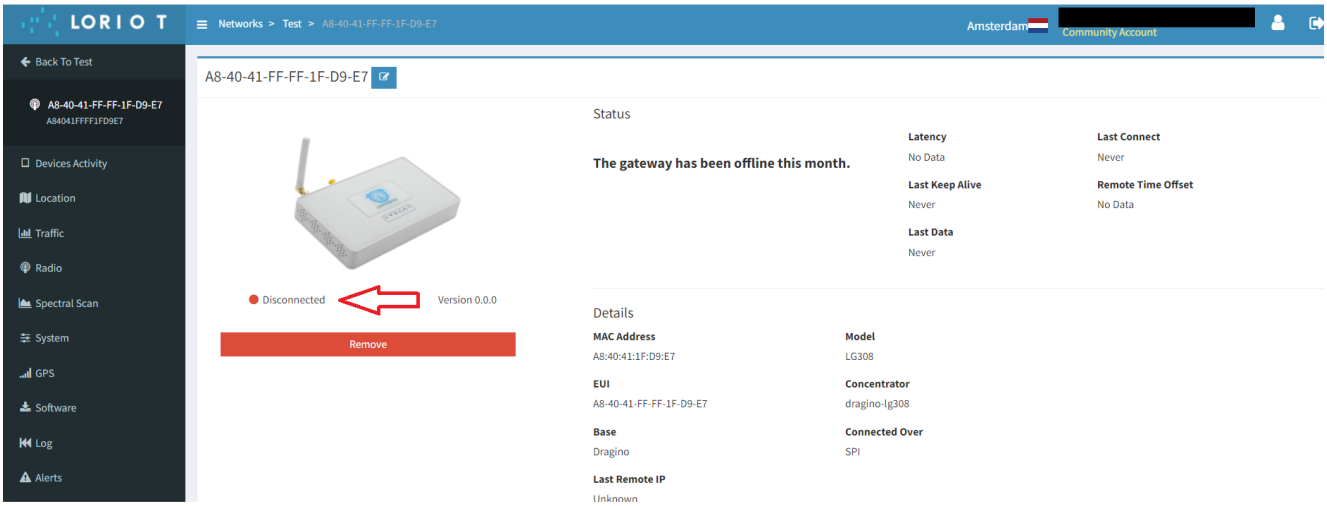
4. Scroll down and here indicates the location of the modem and then click on **Register Dragino LG308 gateway (Figure 15)**.

Figure 15. Register Gateway



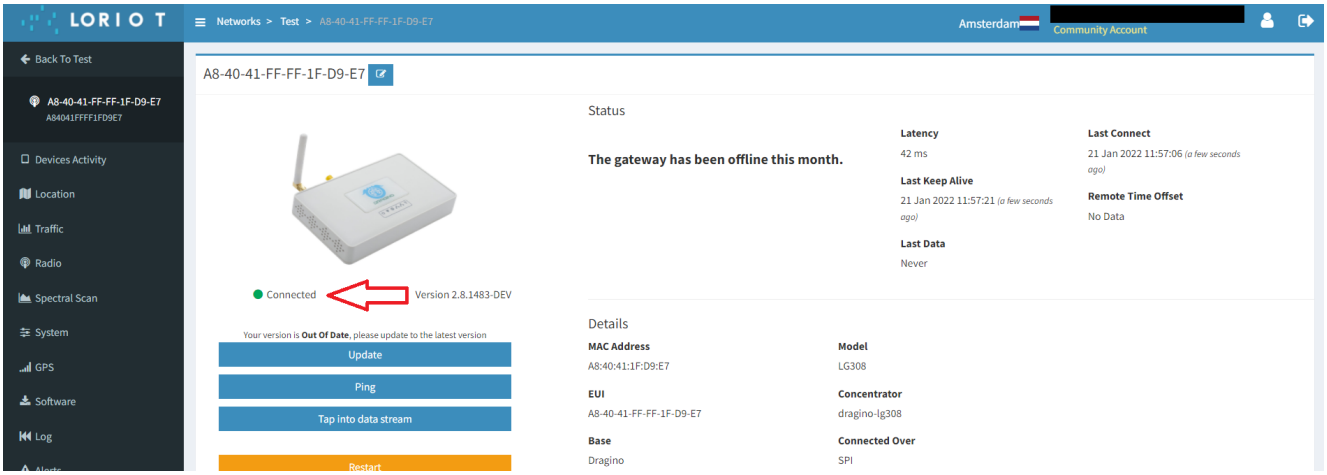
5. After registering the gateway, a page with the gateway status will appear where it will be written that the connection status is **Disconnected** (Figure 16).

Figure 16. Gateway status



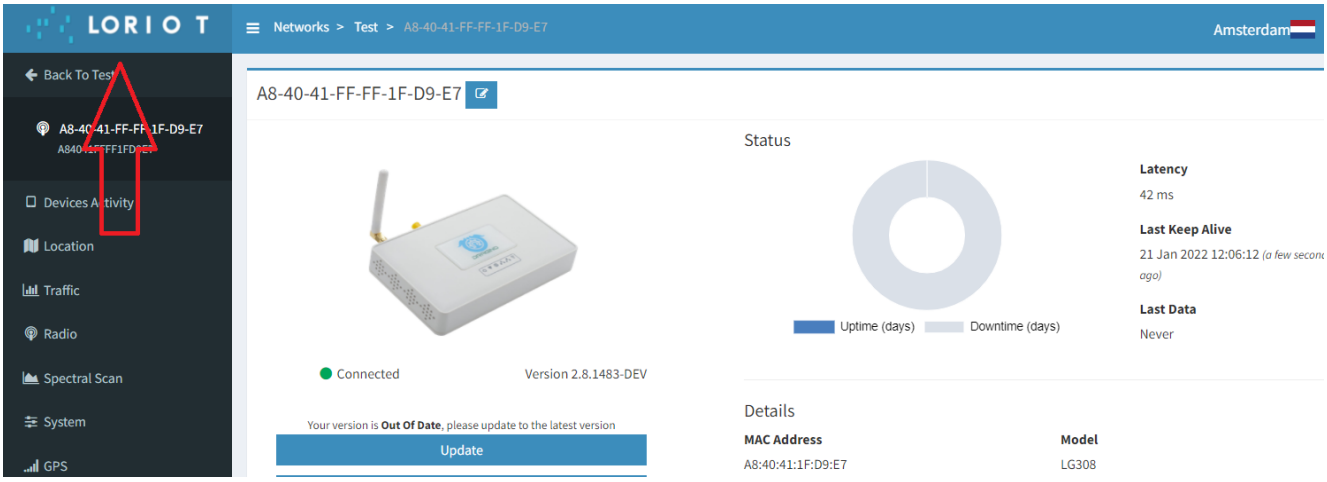
6. To speed up the procedure for connecting the gateway to the server, you need to reboot the gateway. Need to refresh the page and wait until the gateway status changes to connected (Figure 17).

Figure 17. Gateway Connected



7. Go to the main page of the server by clicking on the icon **LORIOT** (Figure 18).

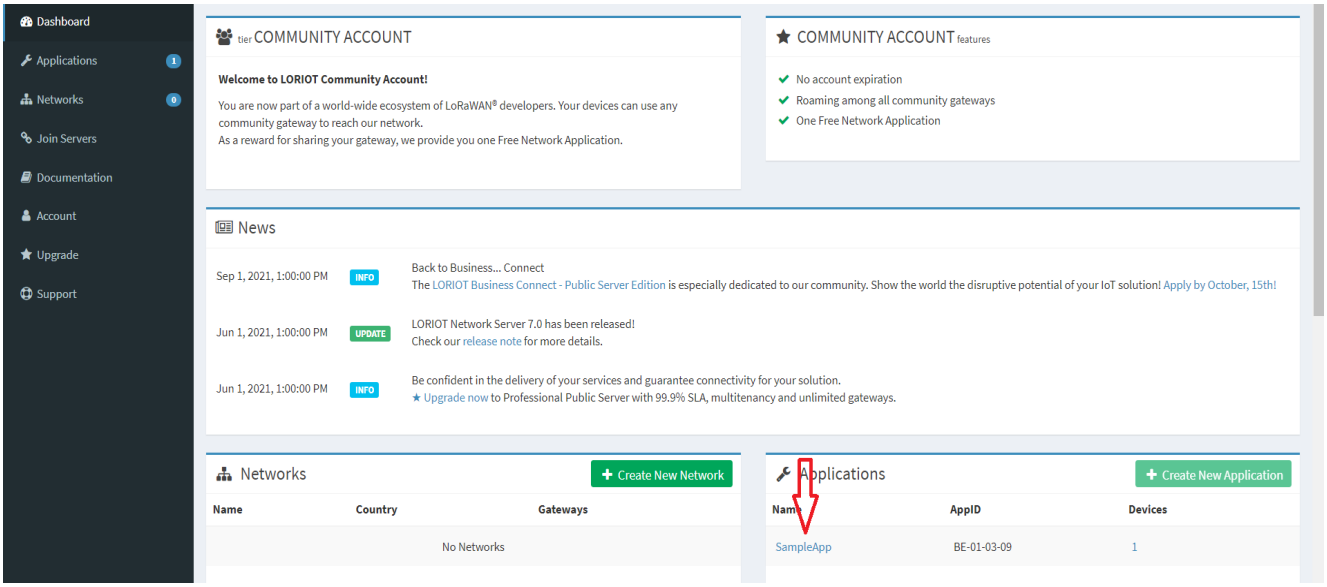
Figure 18. Go to the main page



2.3 Add a Device

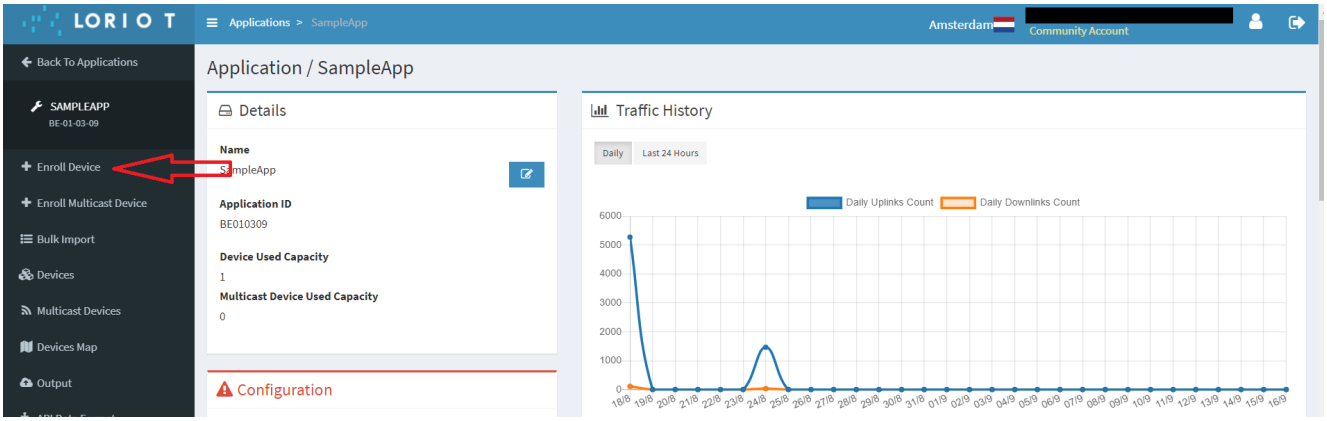
1. Add a Device. In the tab, Dashboard clicks on **SampleApp**.(Figure 19)

Figure 19. Go to SampleApp



2. Click on **Enroll Device** (Figure 20).

Figure 20. Enroll Device



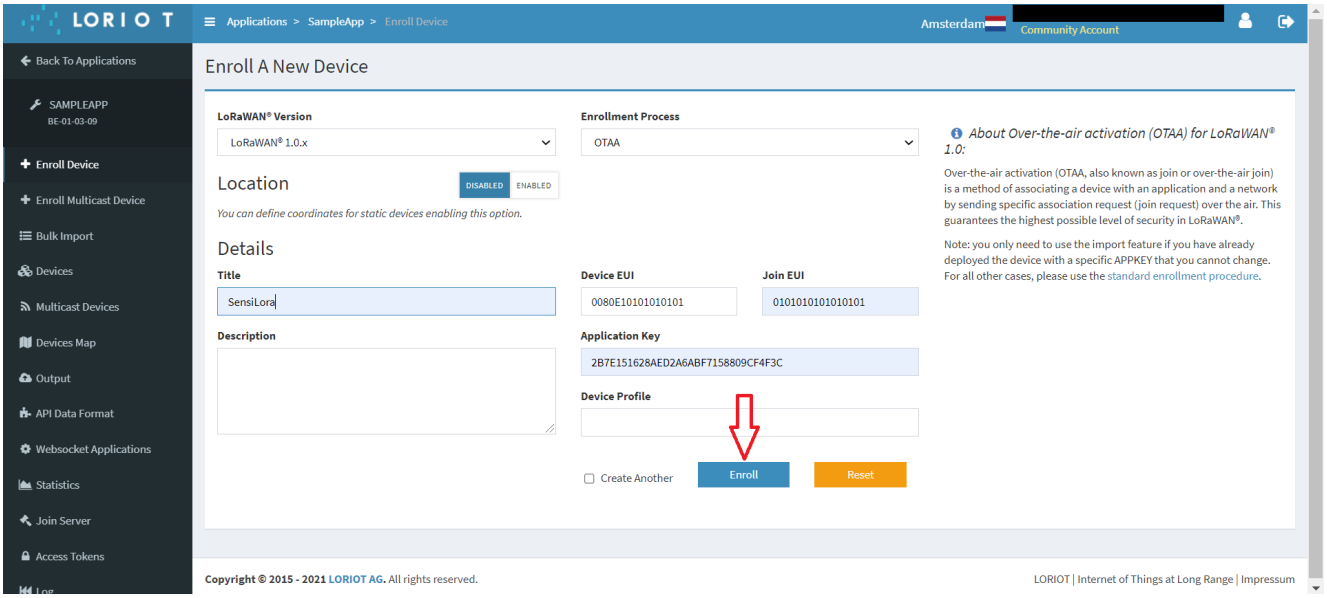
3. In the tab Enroll Device, fill in the indicated fields and click on **Enroll** (Figure 21).

- **LoRaWAN Version**: LoRaWAN 1.0.x;
- **Enrollment Process**: OTTA;
- **Title**: any (for example SensiLora);
- **Device EUI**: 0080E10101010101 (For example);

  * need to extract the SensiLoRa 2.0 unique Device Eui from SensiEDGE Sensor Configurator.

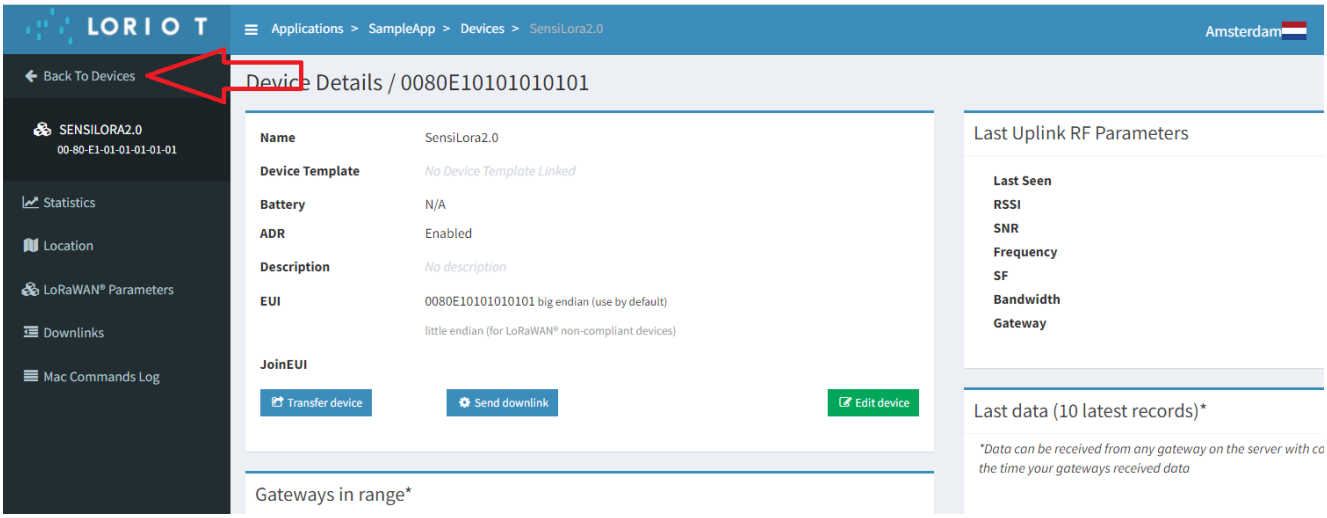
- **Join EUI**: 0101010101010101 (example);
- **Application Key**: 2B7E151628AED2A6ABF7158809CF4F3C (default);

Figure 21. Add device



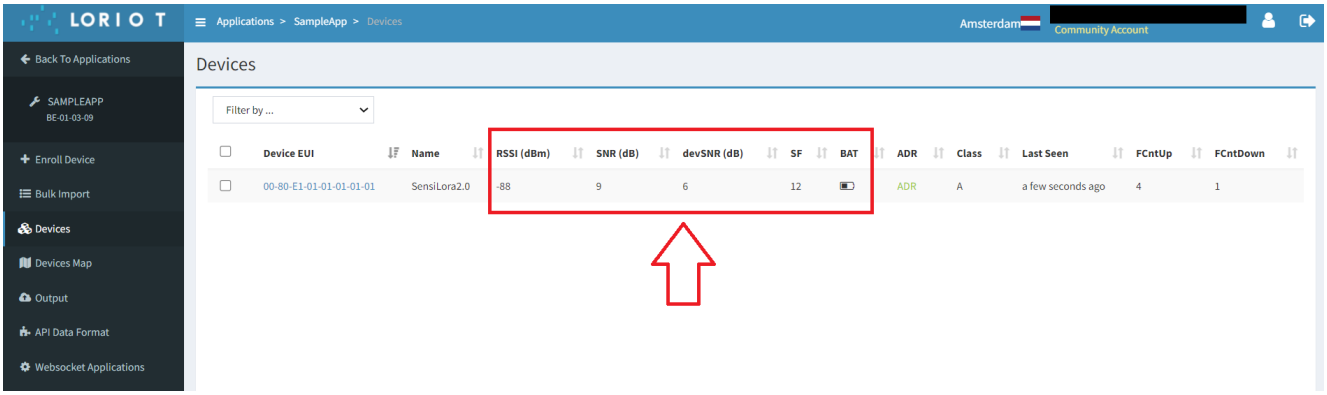
4. Go to the Devices page by clicking on the icon **Back To Devices** (Figure 22).

Figure 22. Back to Devices



5. In the **Devices** tab, you can view the addition of a device. When the added device connects to the server then we should see the value: **RSSI, SNR, devSNR, SF, BAT,** for example, Figure 23.

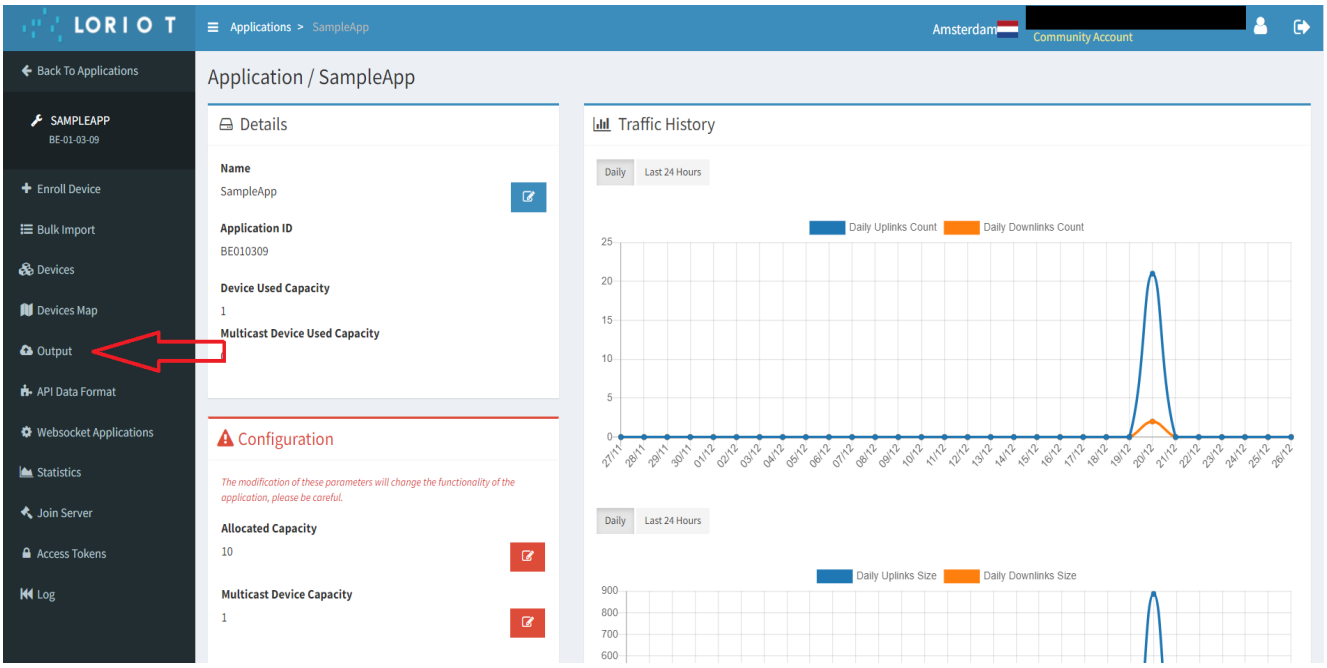
Figure 23. Status device



2.4 Loriot Uplink

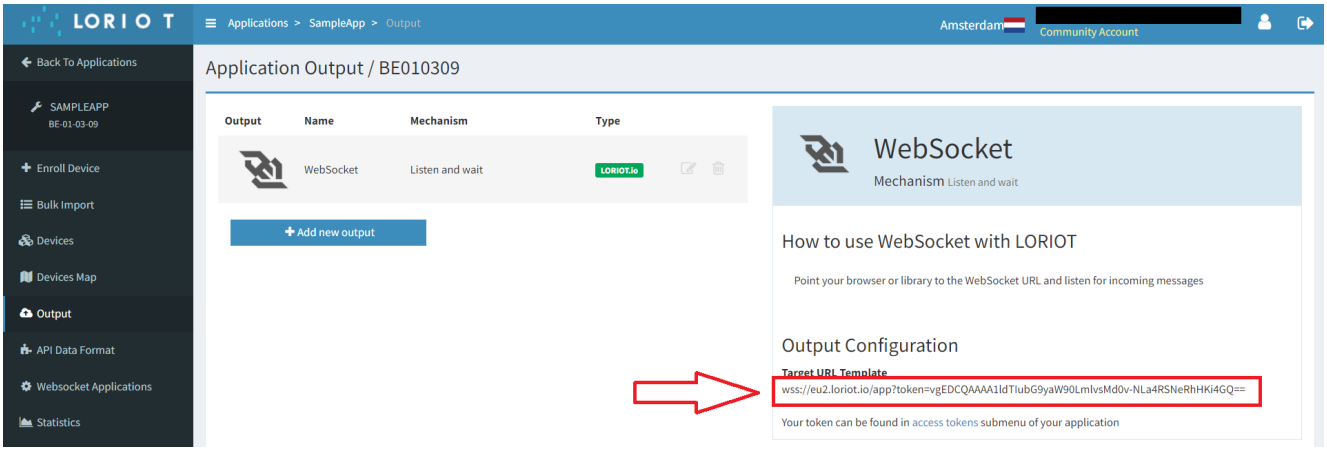
1. In the SampleApp, go to the **Output** (Figure 24).

Figure 24. Go to Output



2. Data output link. Example: Use the **Target URL Template,** for example, Stm32CubeMonitor (Figure 25).

Figure 25. Target URL link

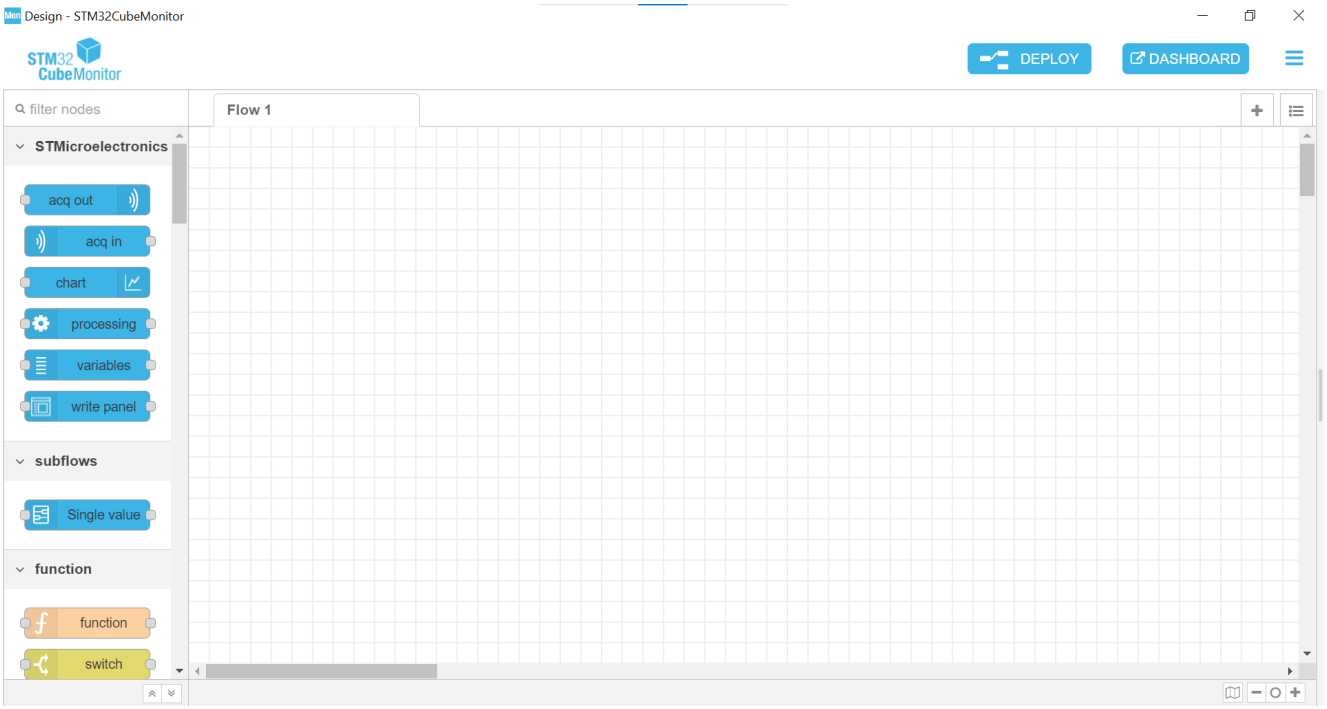

LORIOT
Applications > SampleApp > Output
Amsterdam
Community Account
Back To Applications
SAMPLEAPP
BE-01-03-09
Enroll Device
Bulk Import
Devices
Devices Map
Output
API Data Format
Websocket Applications
Statistics
Application Output / BE010309
Output
Name
Mechanism
Type
WebSocket
Listen and wait
LORIOT.io
Add new output
WebSocket
Mechanism Listen and wait
How to use WebSocket with LORIOT
Point your browser or library to the WebSocket URL and listen for incoming messages
Output Configuration
Target URL Template
wss://eu2.loriot.io/app?token=vgEDCQAAAA1ldTlubG9yaW90LmlvsMd0v-NLa4RSNeRhHKi4GQ==
Your token can be found in access tokens submenu of your application

3 STM32CubeMonitor

3.1 Install STM32CubeMonitor

1. Download and install a program from the ST site at this link STM32CubeMonitor and download an example project by this link SensiLoRaCubeMonitorV0.2.json. The main window STM32CubeMonitor is illustrated in Figure 26.

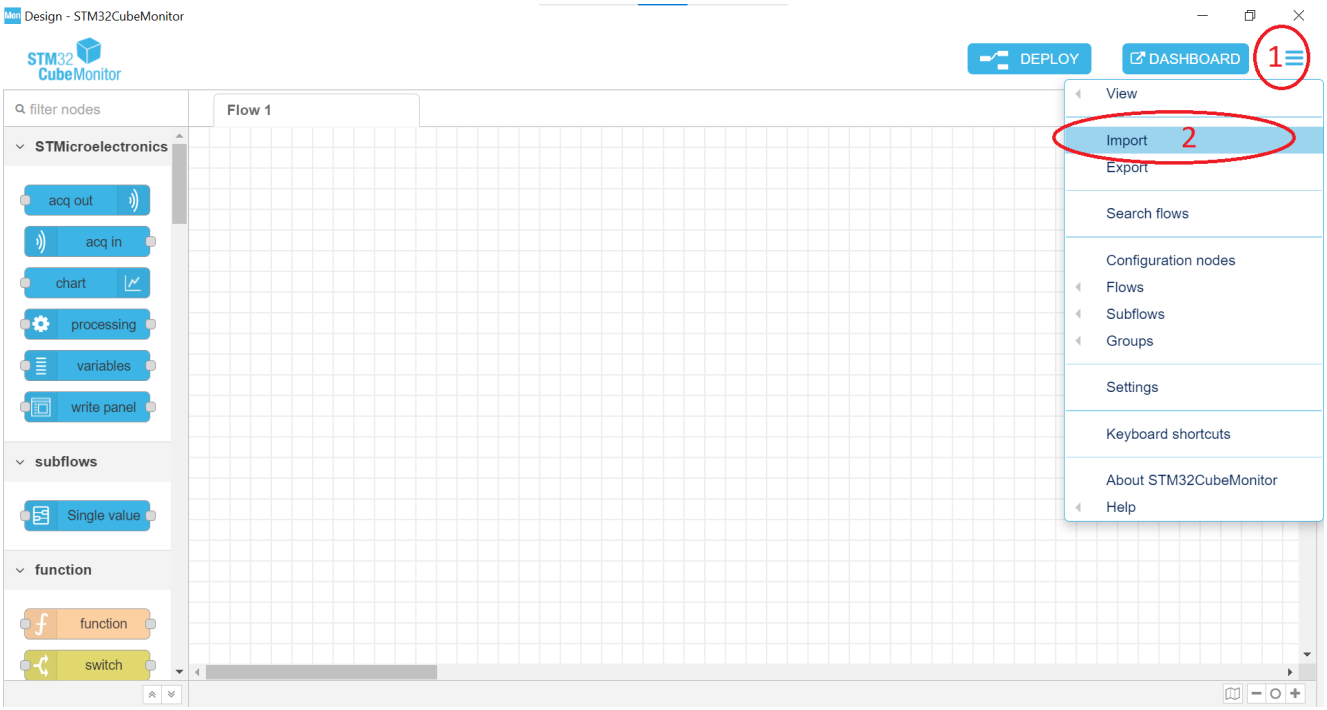
Figure 26. Main window STM32CubeMonitor



3.2 Import the project

1. Opening the program and clicking on the **selection tab** (step 1), a selection menu will open, and then select **Import** (step 2). This action is illustrated in Figure 27.

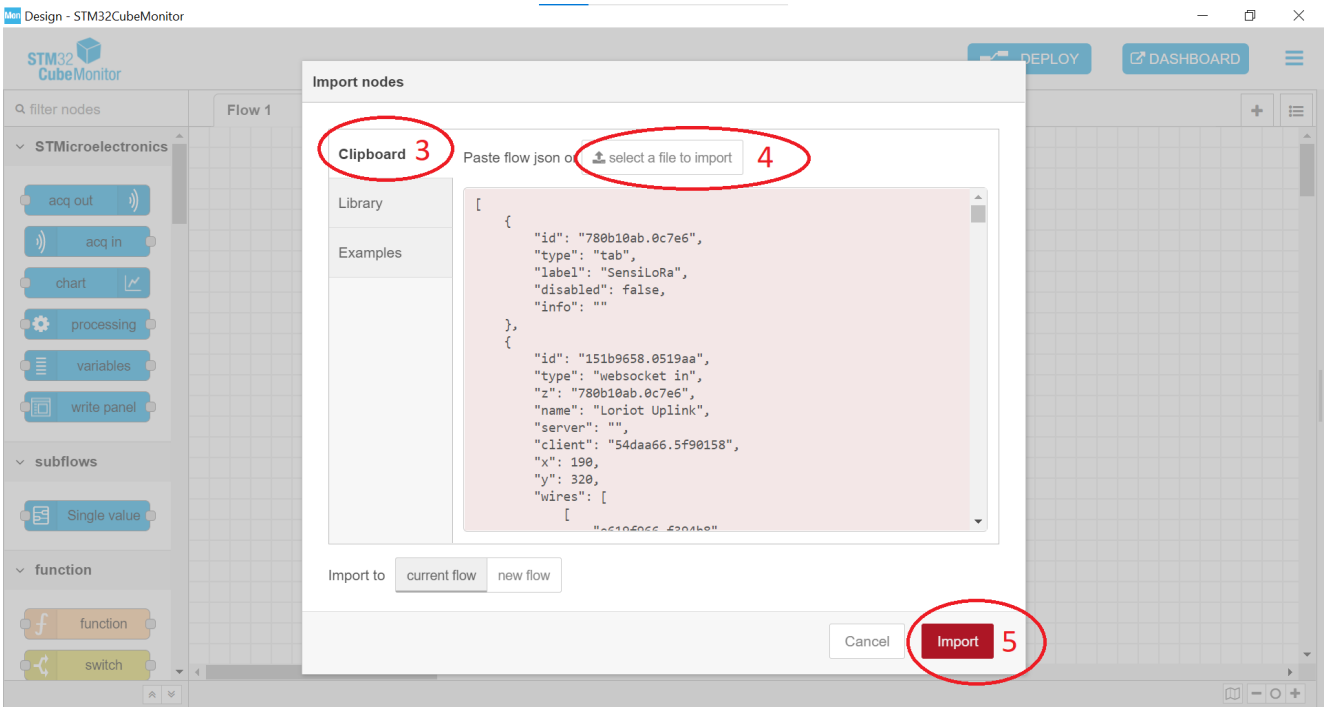
Figure 27. Selection Import menu



2. A window will open with the choice of a file to import. In the import window, select **Clipboard** (step 3), then click on **select a file to import**

(step 4) and select the file SensiLoRaCubeMonitorV0.2.json which we downloaded. After selecting the file click on **Import** (step 5). This action is illustrated in Figure 28.

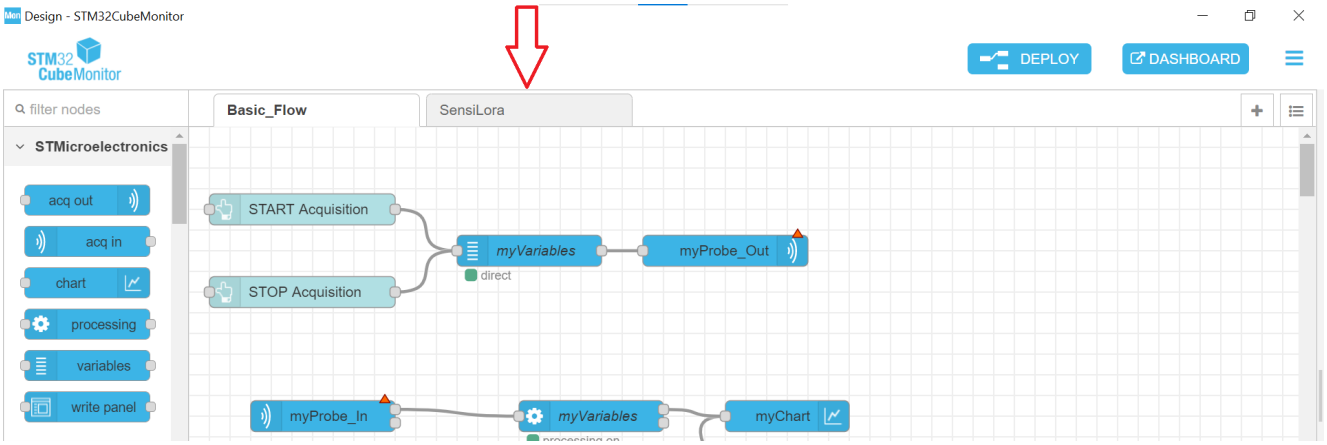
Figure 28. Import project



3.3 Configuration Loriot Uplink

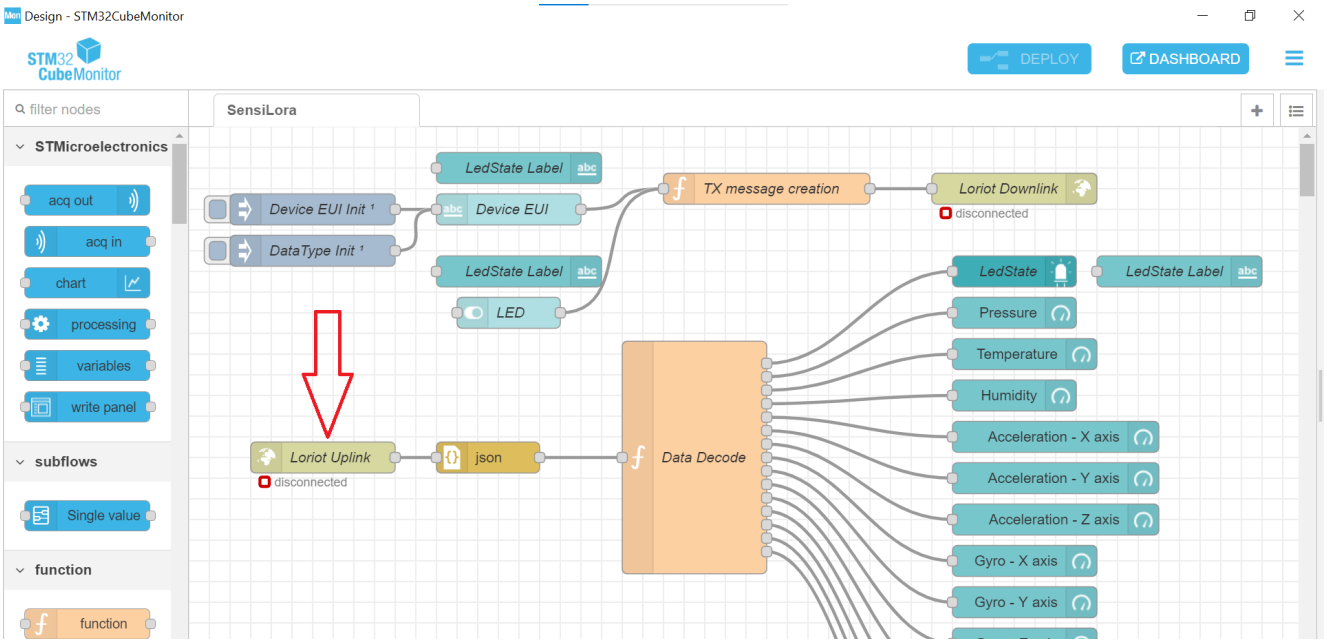
1. Go to the tab SensiLora (Figure 29).

Figure 29. Go to the SensiLora project



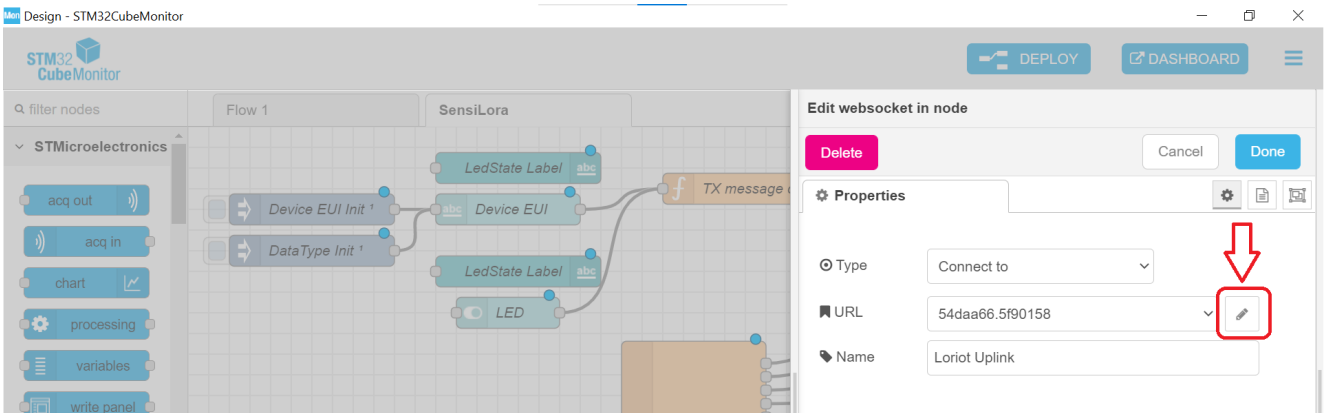
2. Configure the WebSocket **Loriot Uplink** and **Loriot Downlink**. Let's start with **Loriot Uplink** you need to double-click on it to open settings (Figure 4).

Figure 30. Open Loriot Uplink



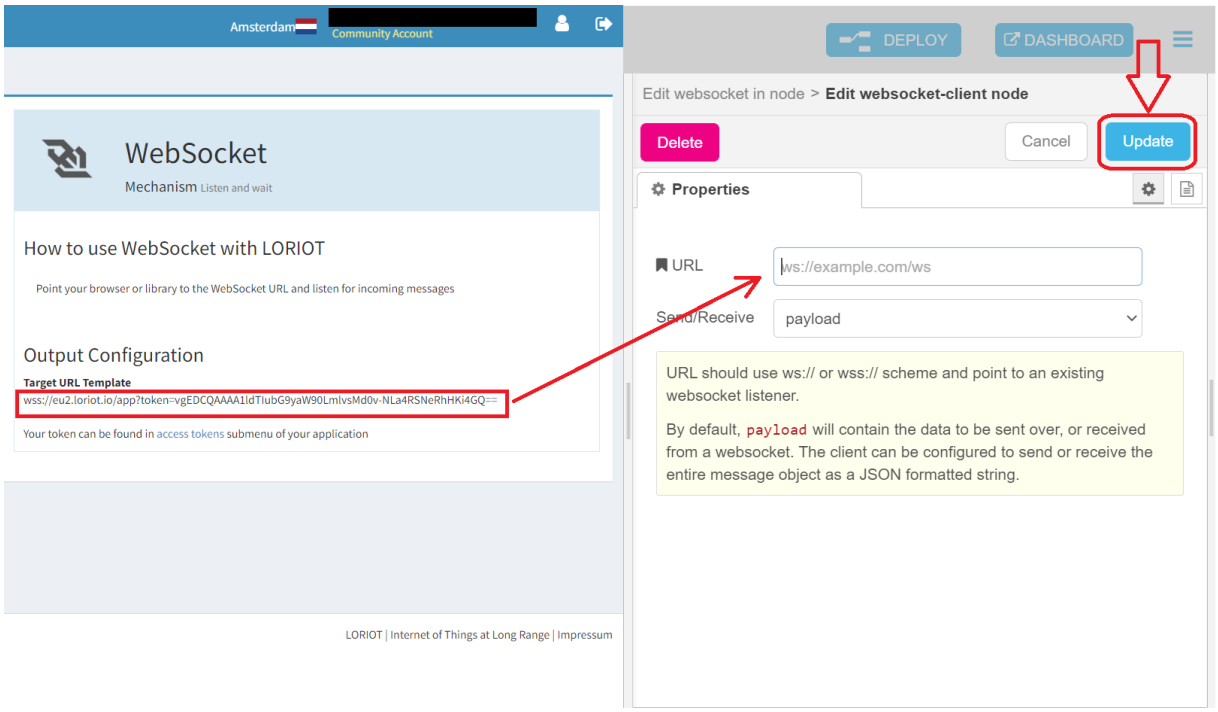
3. When opening the setting window, here we click on the **URL editing icon** (Figure 31).

Figure 31. Setting the Loriot Uplink



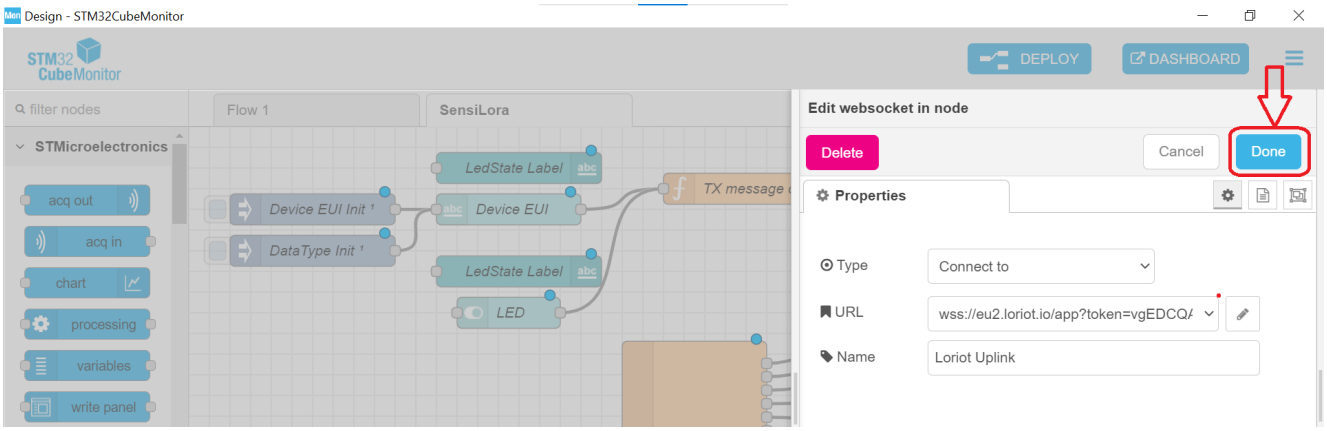
4. In this window we must insert the URL. If the Loriot server is used, then the link must be taken from 2.4 Loriot Uplink. After inserting the URL, click on **Update**. This action is illustrated in Figure 32.

Figure 32. URL



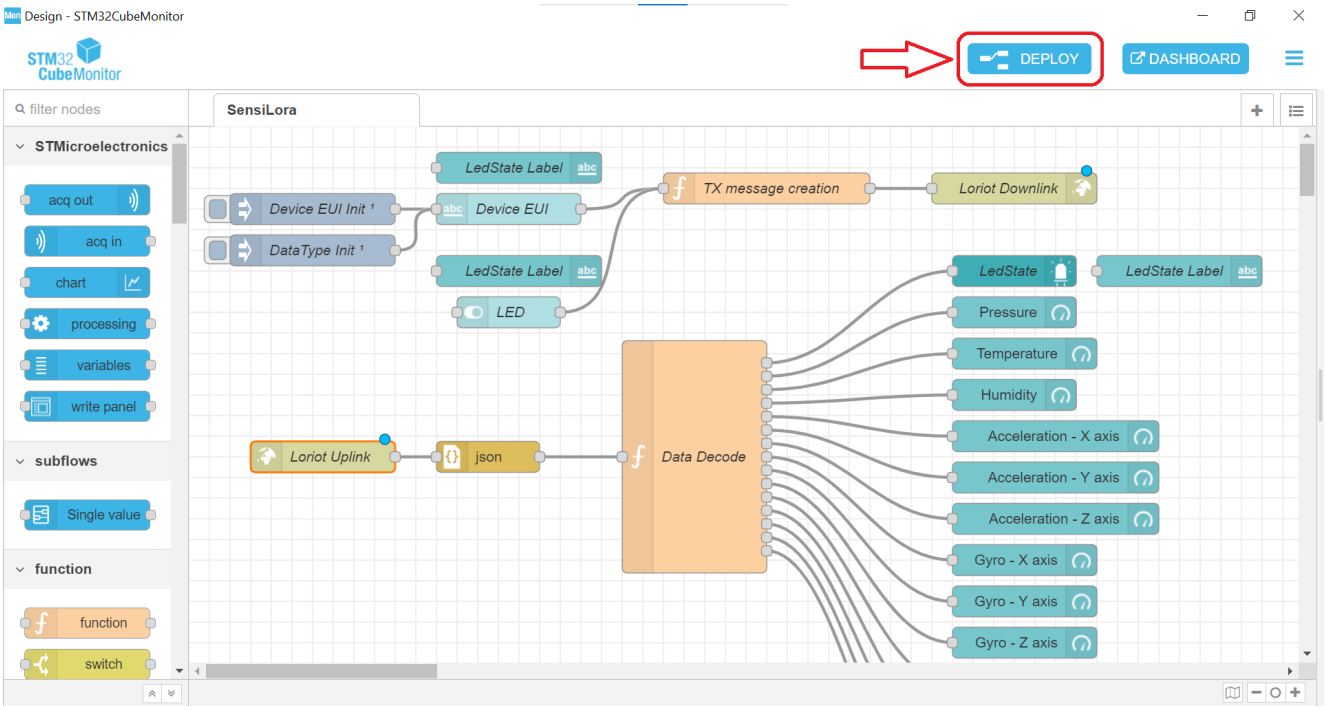
5. Click on **Done** (Figure 33) to save the URL.

Figure 33. Save the URL



6. Click on **Deploy** (Figure 34) so that our changes are saved and take effect.

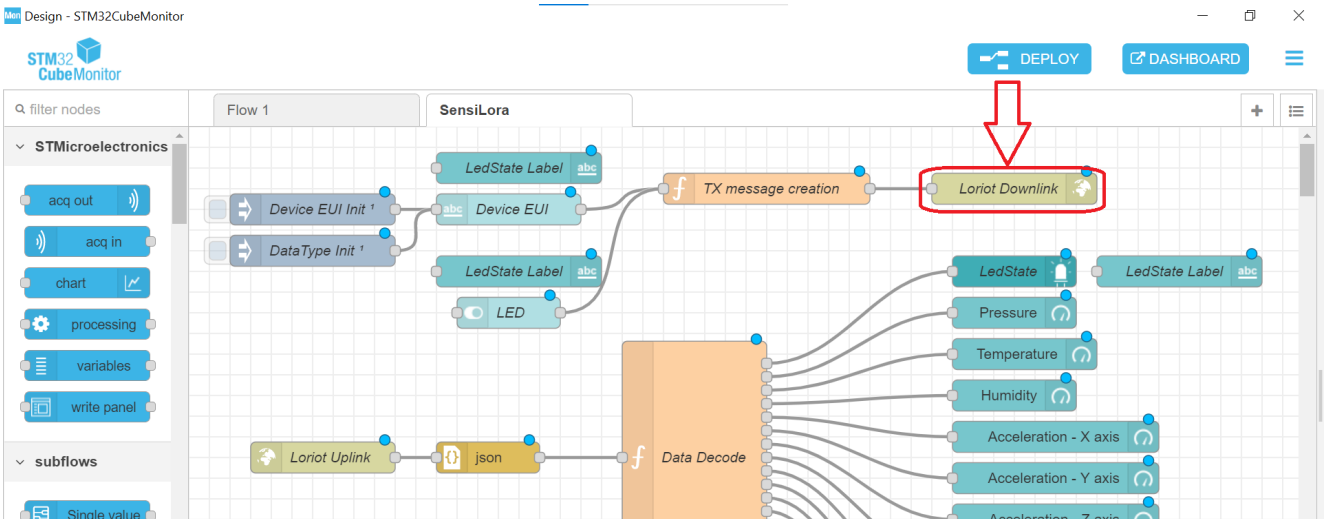
Figure 34. Deploy



3.4 Configuration Loriot Downlink

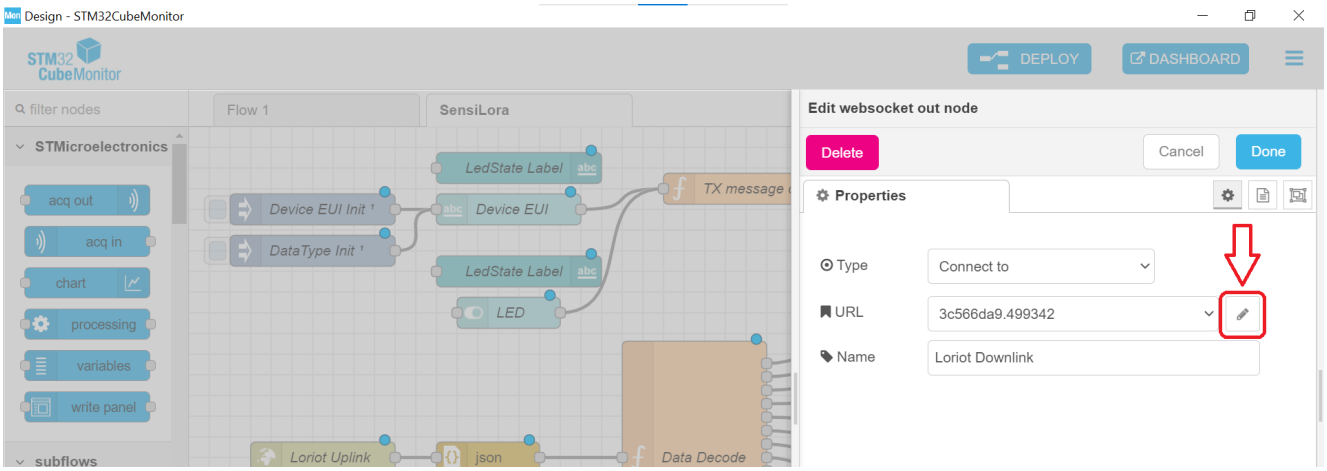
1. Configuration the Loriot Downlink. Click on the **Loriot Downlink** (Figure 35).

Figure 35. Loriot Downlink



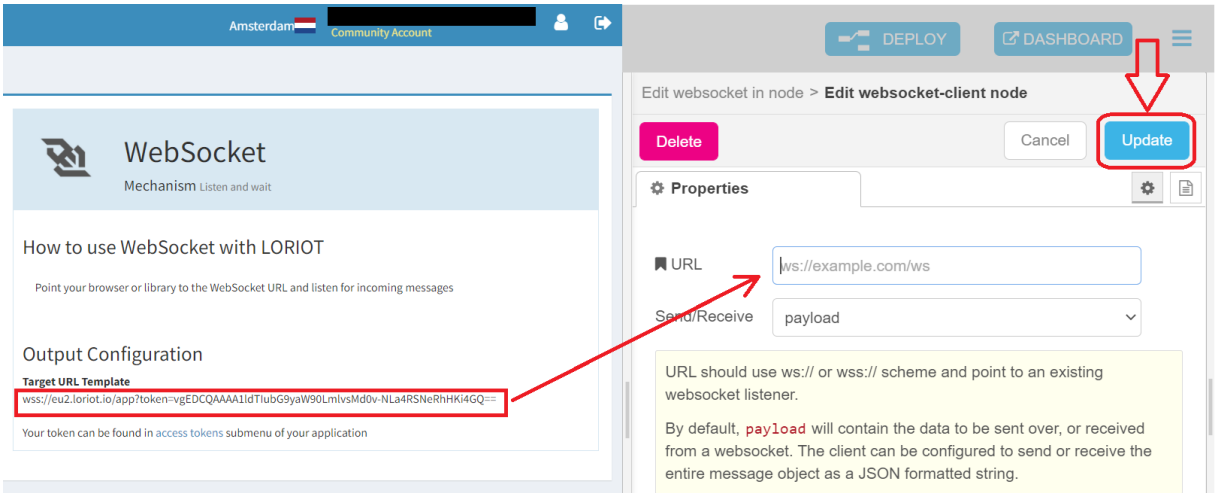
2. When opening the setting window, here we click on the **URL** editing icon (Figure 36).

Figure 36. Setting the Loriot Downlink



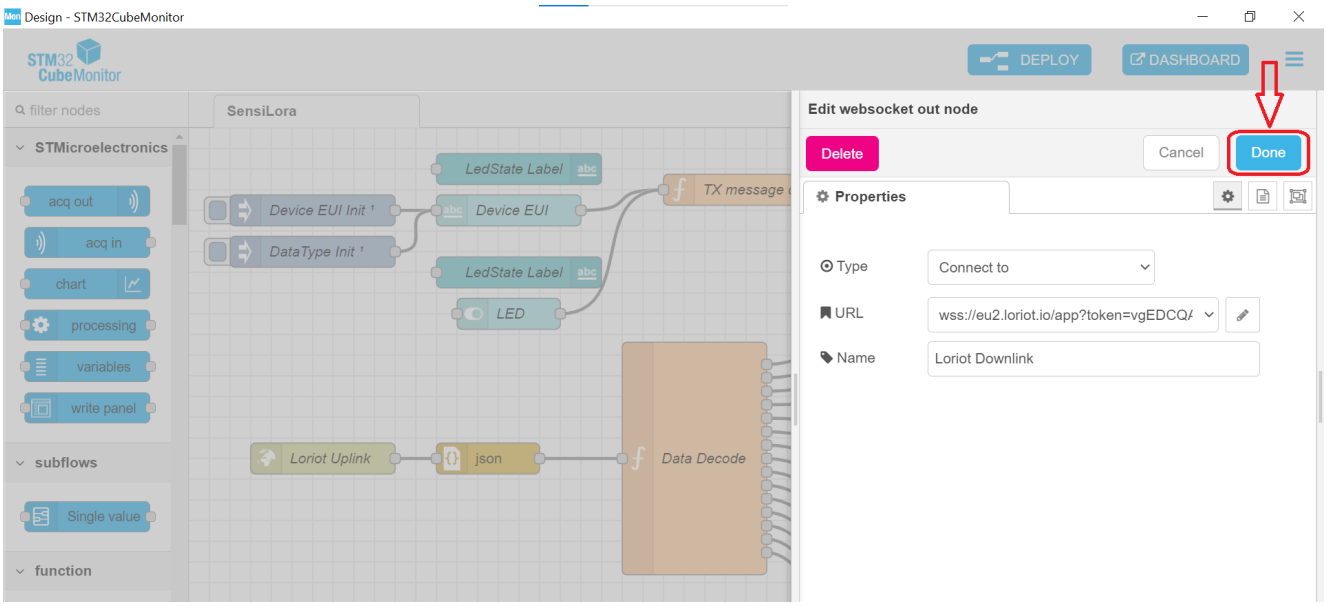
3. In this window we must insert the URL. If the Loriot server is used, then the link must be taken from 2.4 Loriot Uplink. After inserting the URL, click on **Update**. This action is illustrated in Figure 37.

Figure 37. URL



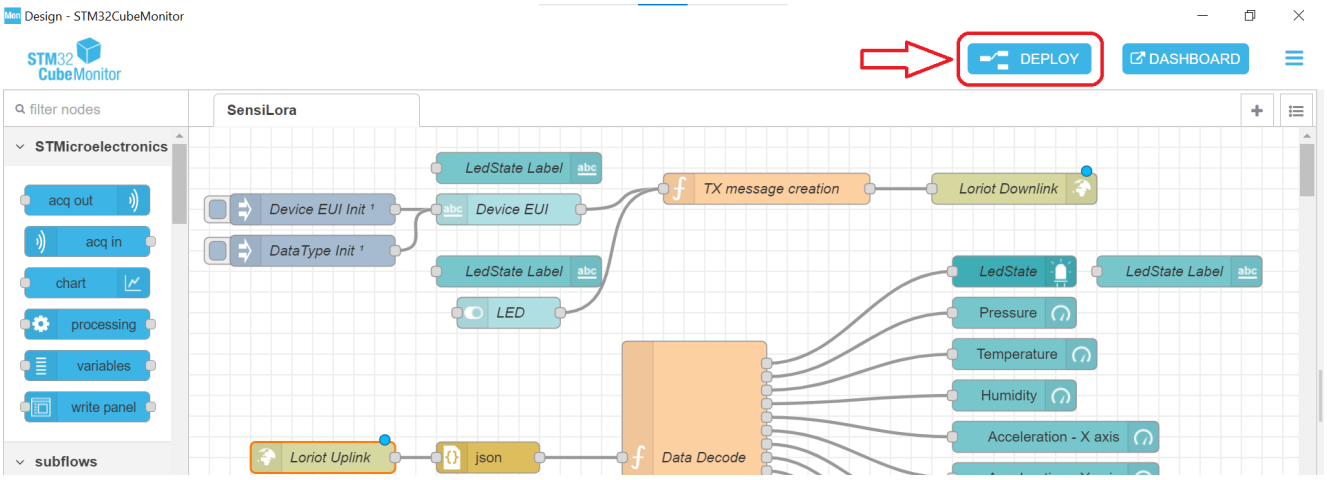
4. Click on **Done** (Figure 38) to save the URL.

Figure 38. Save the URL



5. Click on **Deploy** (Figure 39) so that our changes are saved and take effect.

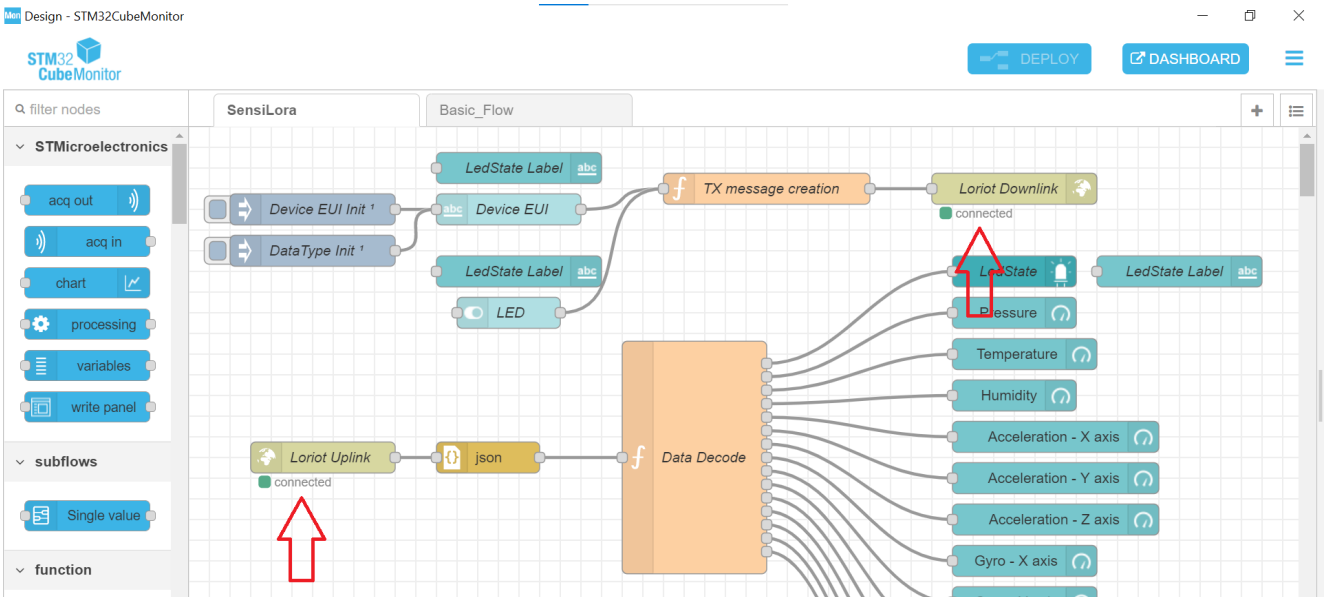
Figure 39. Deploy



3.5 Dashboard

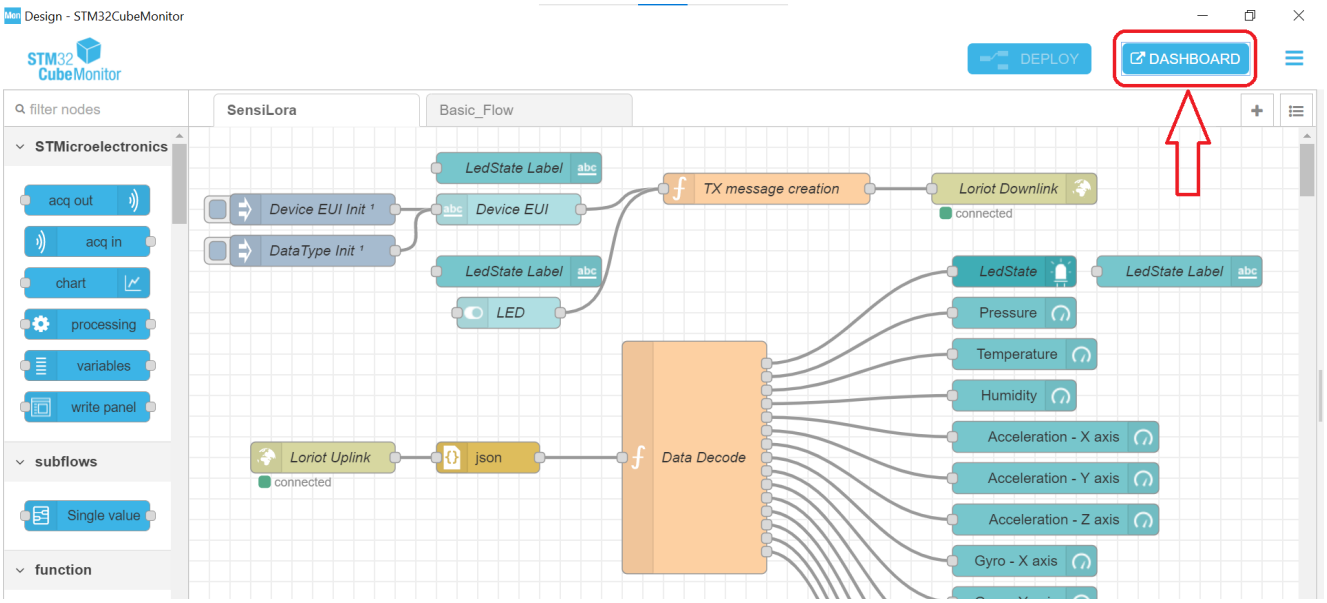
1. When we have changed the Server URL to the necessary and their status should be **connected** (Figure 40).

Figure 40. Status Loriot



2. Click the **DASHBOARD** (Figure 41).

Figure 41. Go to the Dashboard

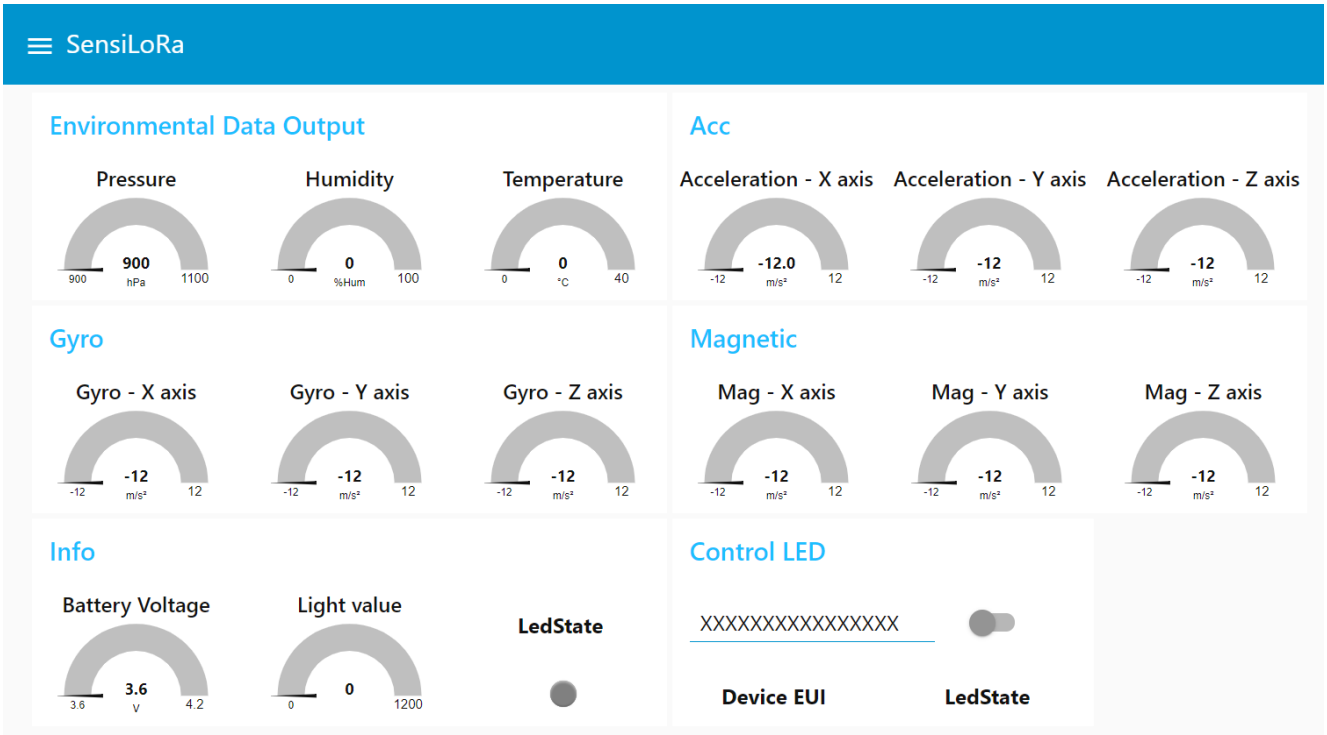


3. If several projects are open, then we need to go to the tab of our project, for this we click on the selection project (step 1) and then click on Sensilora (step 2). This action is illustrated in Figure 42.

Figure 42. Selection a project

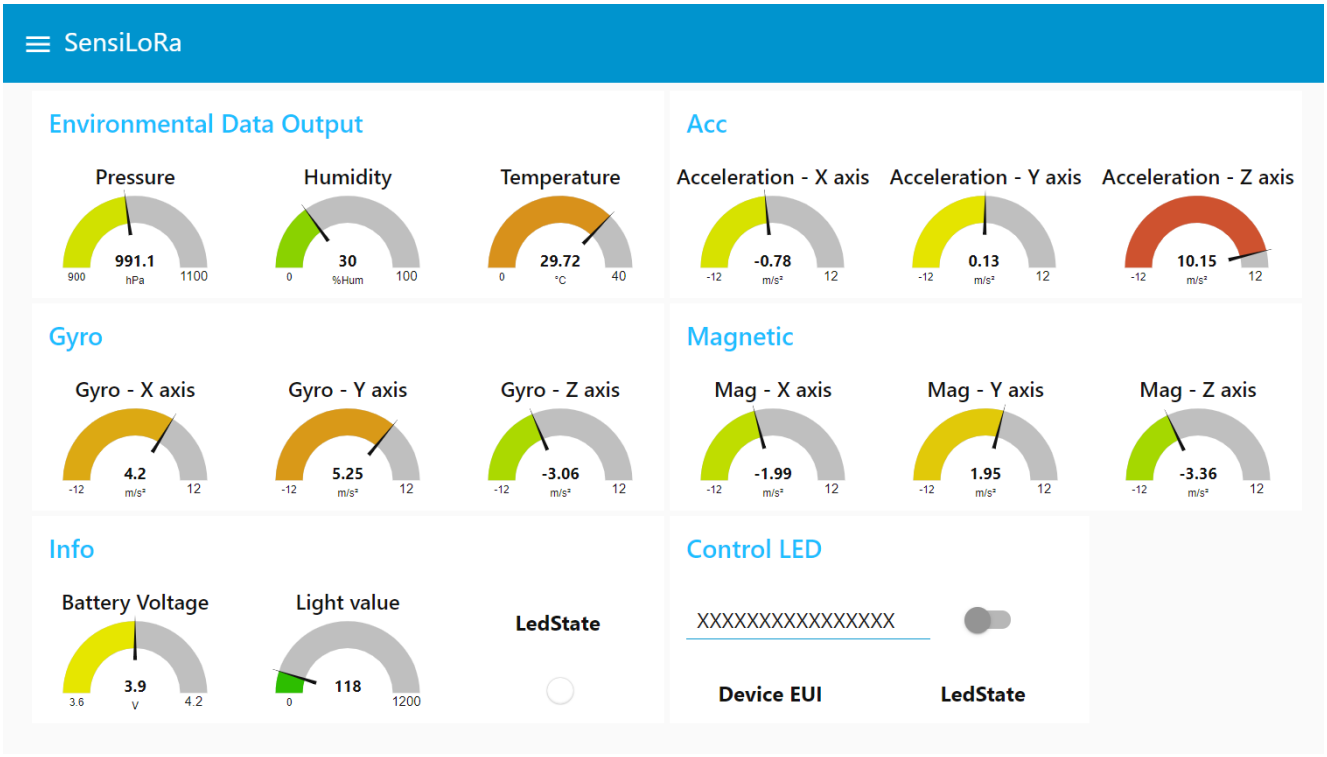
4. After selecting the project, we should see a window (Figure 43).

Figure 43. Dashboard SensiLora



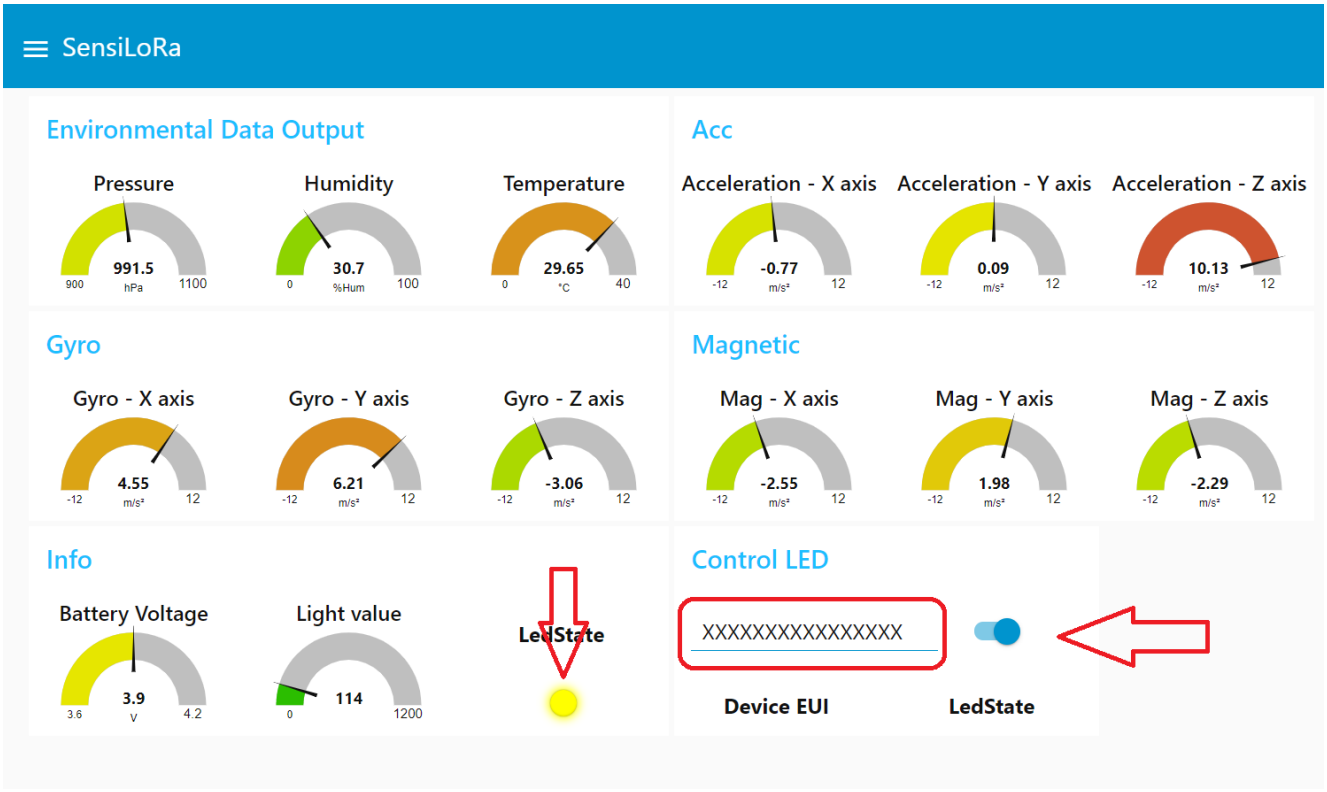
5. When the data is sent by the SensiLora to server Loriot, we will see the value of the sensors (Figure 44).

Figure 44. Data with sensors



6. To turn on the green LED1 on the board SensiLora, need to enter the EUI code in the line **Device EUI** (this code can be seen on a sticker that is glued to the board or in the program SensiEDGE Sensor Configurator). After entering the EUI code, click on the **switch LedState** and after the board receives a message with the LED on, the green LED1 will light up and the **LedState** will turn yellow. To turn off the LED, click on the switch again. This action is illustrated in Figure 45.

Figure 45. LED status

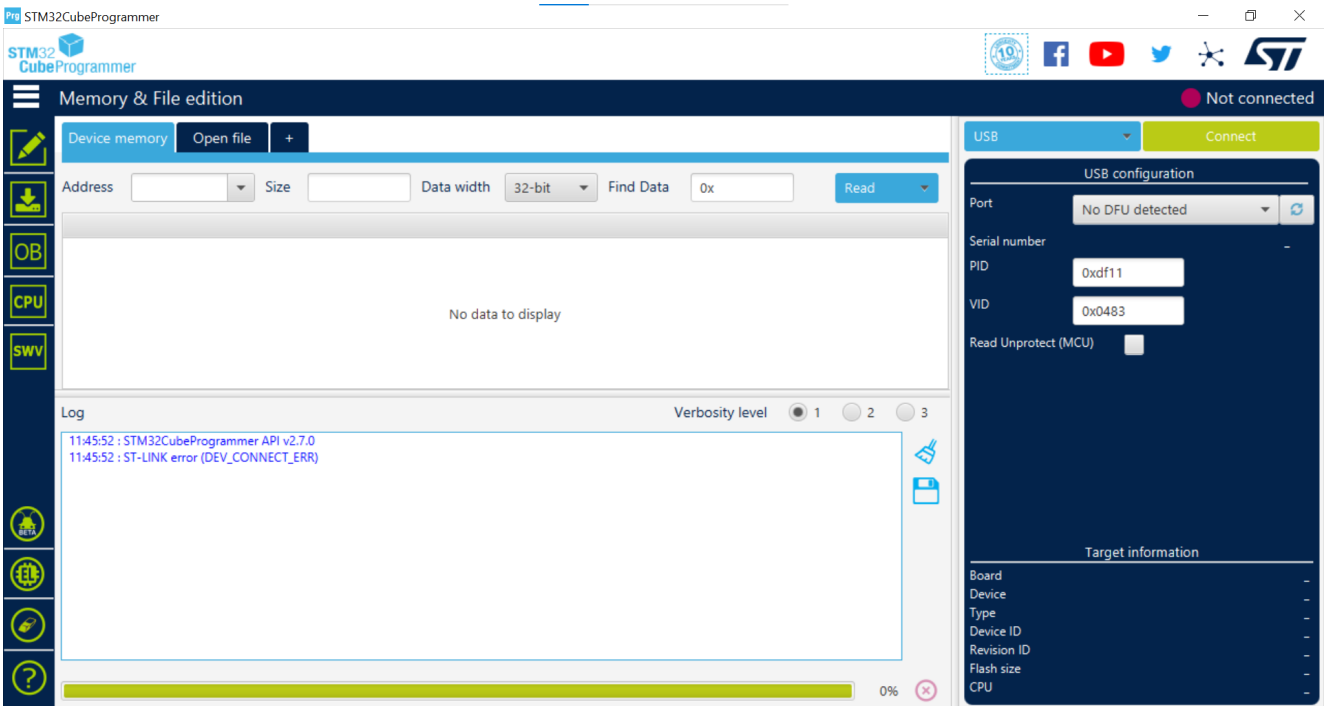


4 Flashing SensiLora 2.0

4.1 Install STM32CubeProgrammer

1. Download and install STM32CubeProgrammer from the ST site at this link: STM32CubeMonitor (Figure46). There are several versions of the firmware, which differ in the operating frequencies of the LoRa, so pay attention to the name of the firmware, the operating frequency is indicated there. Download the firmware: (Firmware SensiLora 2.0).

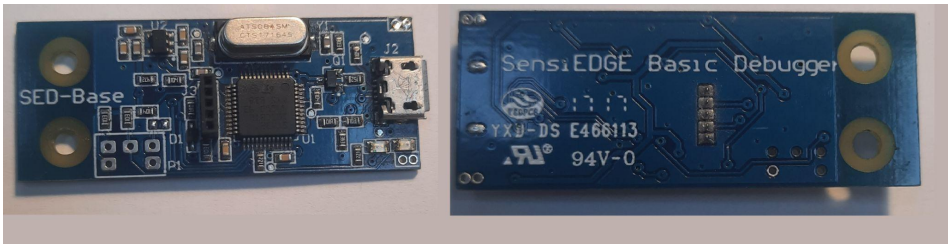
Figure 46. STM32CubeProgrammer



4.2 Flashing with SensiEdge Basic Debugger

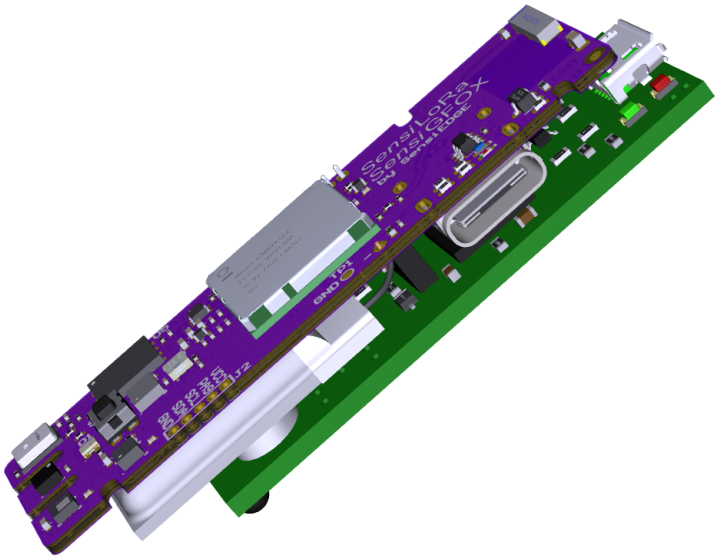
1. For the programming SensiLora 2.0 use the programmer SensiEdge Basic Debugger (Figure 47), if you don't have one, then go to 4.3 Flashing via USB Type-c.

Figure 47. SensiEdge Basic Debugger



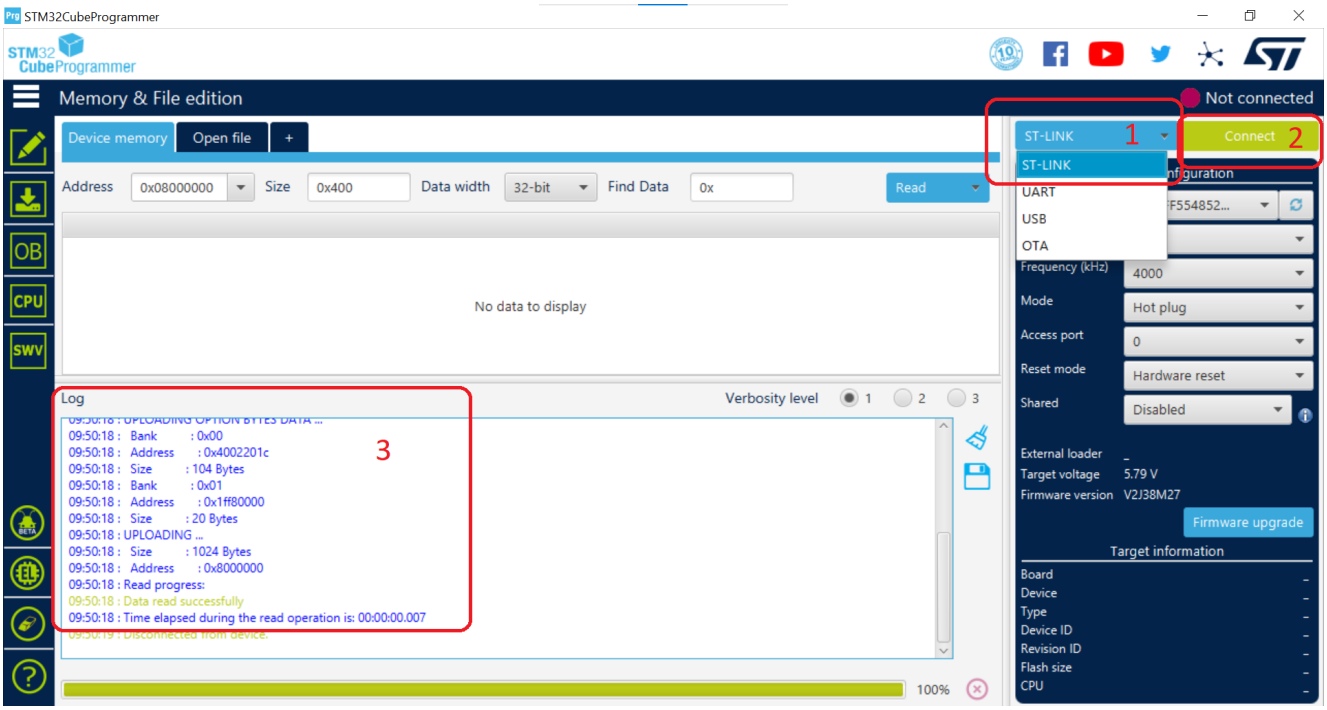
2. Connect the SensiLora 2.0 to the programmer SensiEdge Basic Debugger (Figure 48) and then connect the USB to the programmer.

Figure 48. Connect to programmer



3. Open the program STM32CubeProgrammer and select the **ST LINK** (step 1) and then click on **Connect** (step 2) and if the connection was successful, then we should see information about the controller (step 3). This action is illustrated in Figure 49.

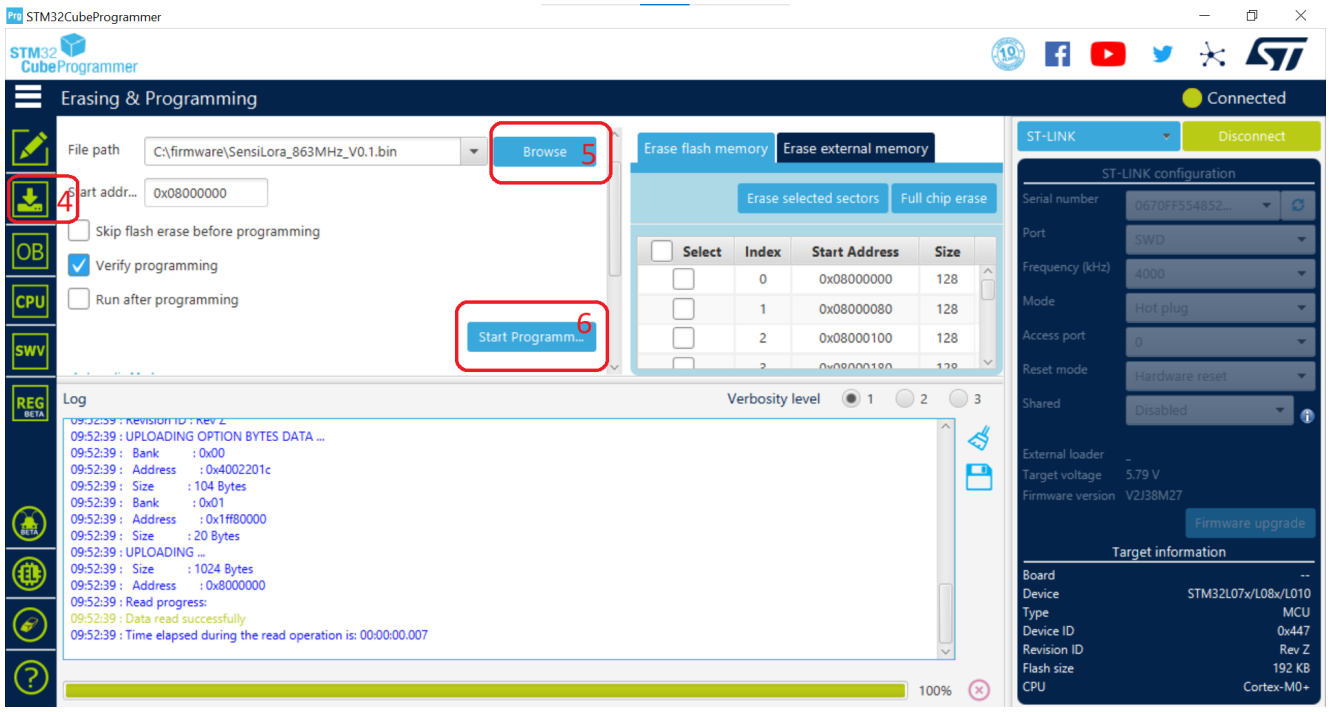
Figure 49. Connect to SensiLoRa 2.0



4. After successfully connecting to the controller, select the tab **Erasing & Programming** (step 4) then click on the button **Browse** (step 5) a window will open where we have to specify the firmware file. Where to get the firmware file is described in 4.1 Install STM32CubeProgrammer. After selecting the firmware file, press **Start Programm…**. This action is illustrated in Figure 50.

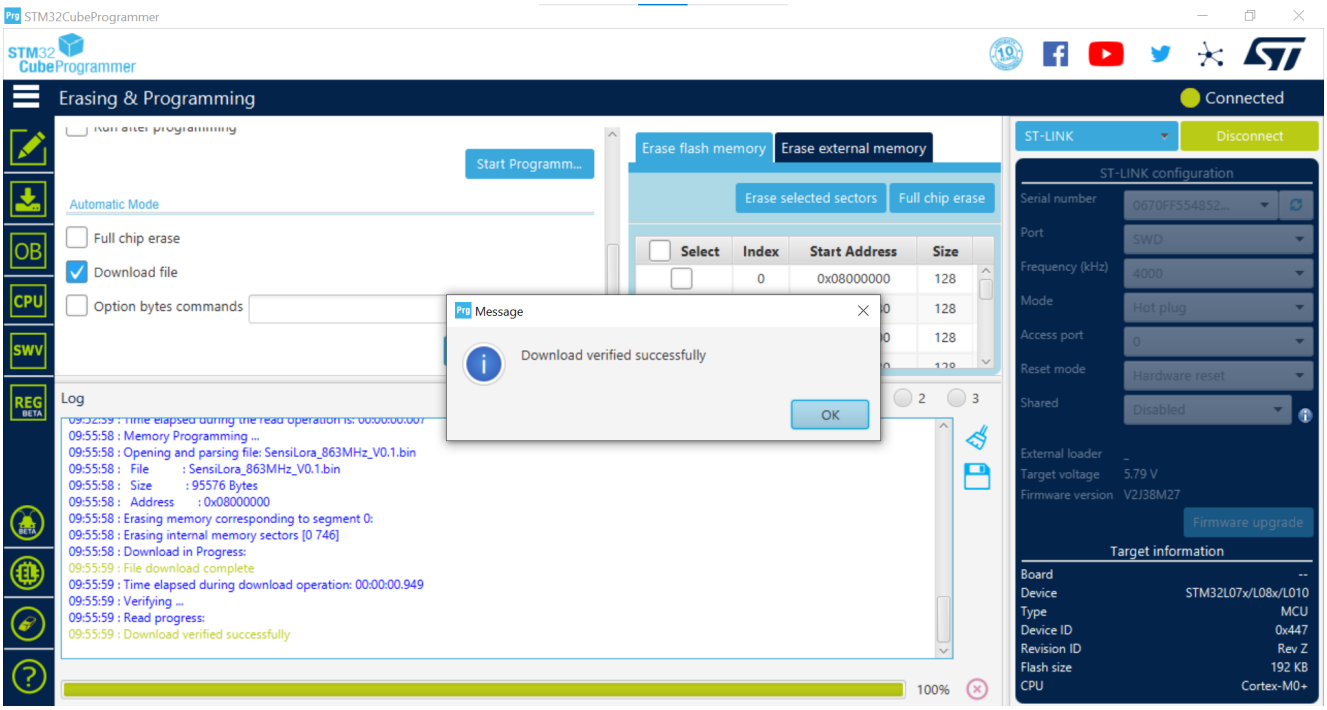
Warning: There are several versions of the firmware, which differ in the operating frequencies of the LoRa, so pay attention to the name of the firmware, the operating frequency is indicated there.

Figure 50. Connect to SensiLoRa 2.0



5. After successfully loading the firmware, we should see a message Download verified successfully (Figure51).

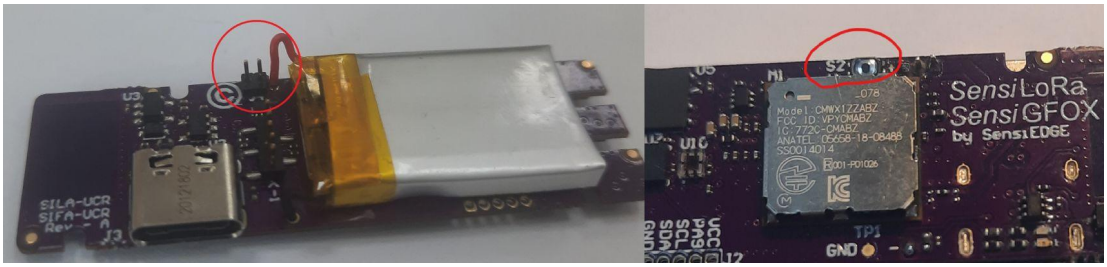
Figure 51. Successful programming



4.3 Flashing via USB Type-c

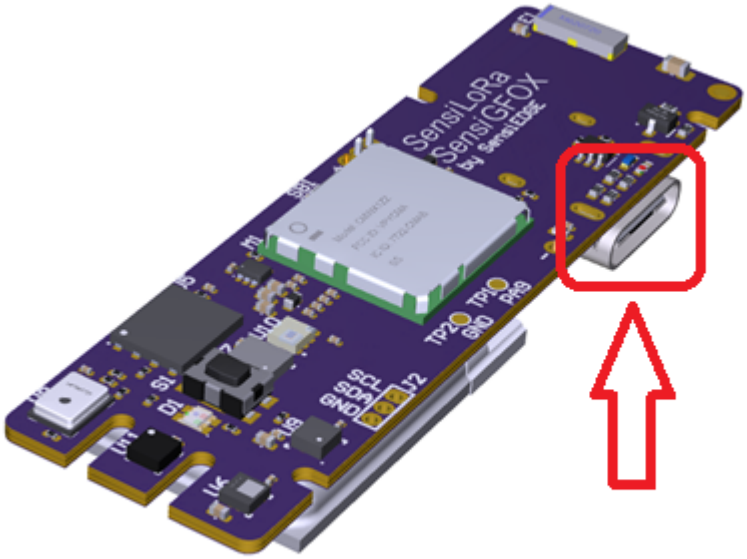
1. For flashing we will use such a program STM32CubeProgramming. First, we must disconnect the battery by disconnecting the jumper J4 (Figure 52), then we must hold down button S2 (Figure 52).

Figure 52. Jumper J4 and Button S2



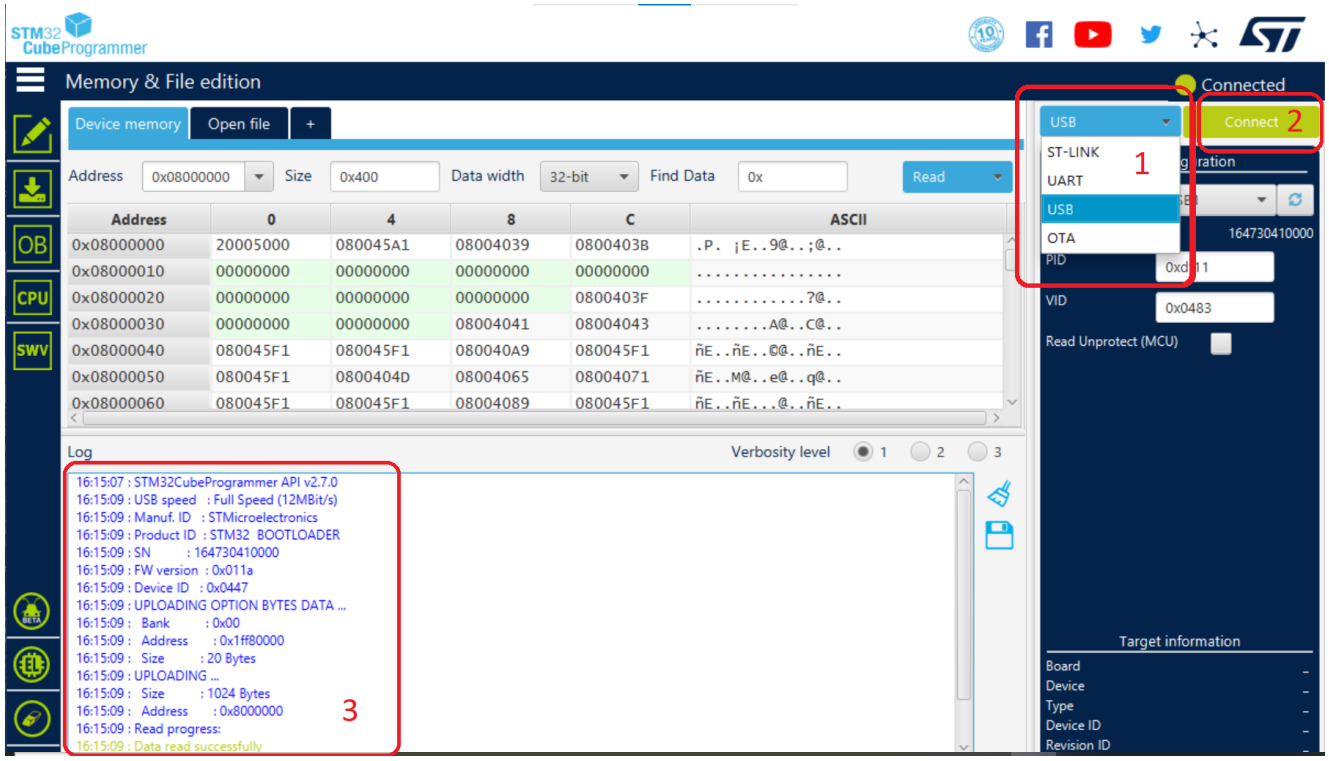
2. When holding down button S2 connect the cable USB Type-c (Figure 53) and after a couple of seconds we release the button with this combination, the board enters the programming mode.

Figure 53. Connect USB



3. Open the program STM32CubeProgrammer and select the **USB** (step 1) and then click on **Connect** (step 2) and if the connection was successful, then we should see information about the controller (step 3). This action is illustrated in Figure 54.

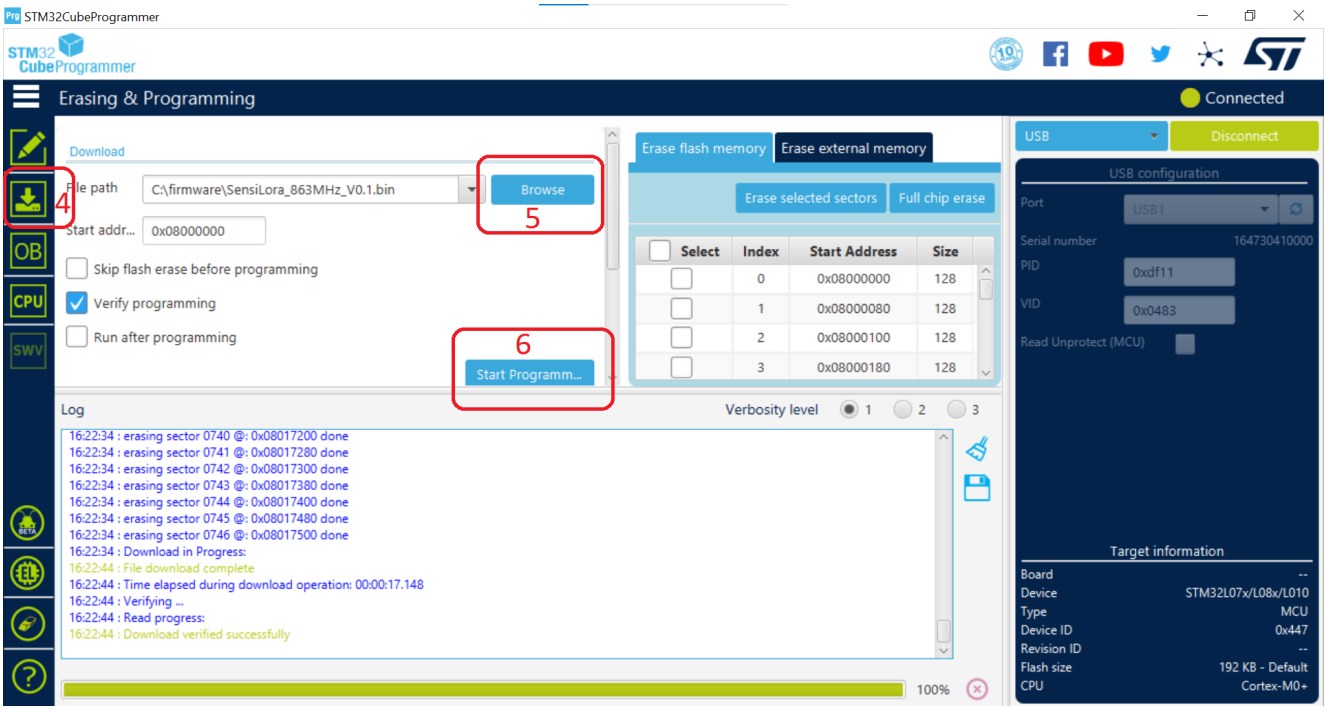
Figure 54. Connect via USB



4. After successfully connecting to the controller, select the tab **Erasing & Programming** (step 4) then click on the button **Browse** (step 5) a window will open where we have to specify the firmware file. Where to get the firmware file is described in 4.1 Install STM32CubeProgrammer. After selecting the firmware file, press **Start Programm…**. This action is illustrated in Figure 55.

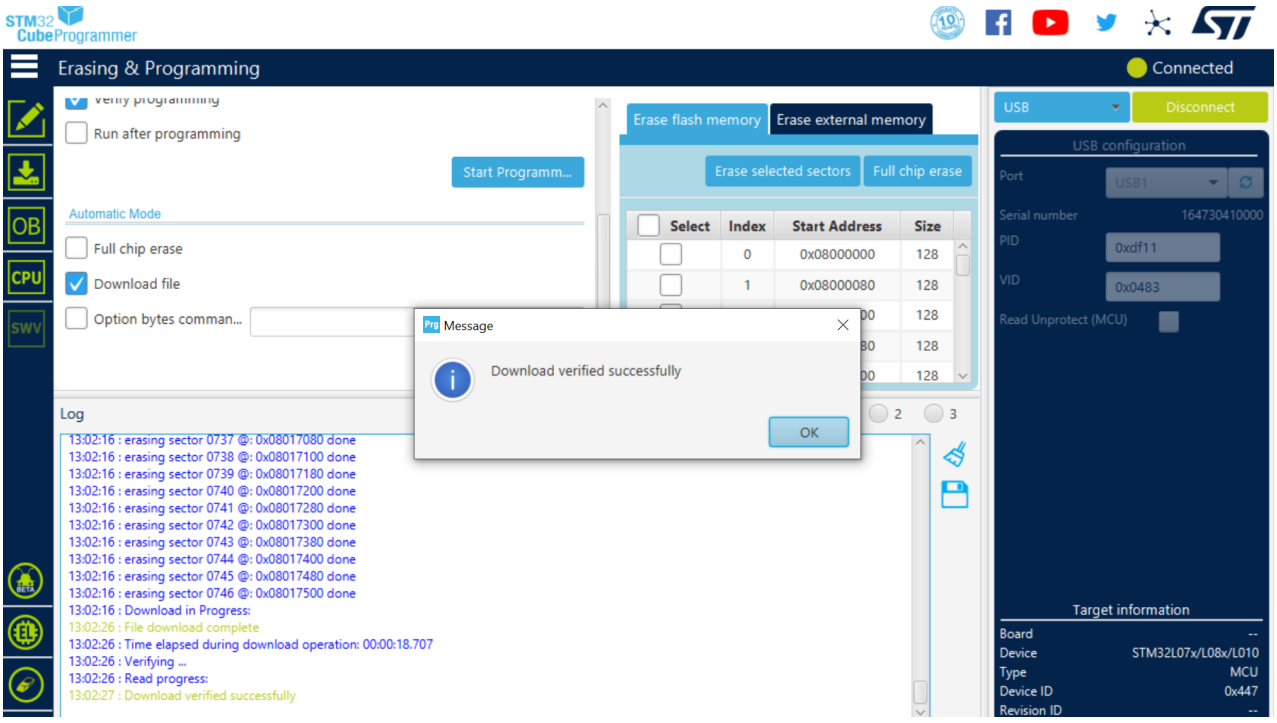
Warning: There are several versions of the firmware, which differ in the operating frequencies of the LoRa, so pay attention to the name of the firmware, the operating frequency is indicated there.

Figure 55. Programming via USB



5. After successfully loading the firmware, we should see a message Download verified successfully (Figure 56).

Figure 56. Successful programming



4.4 Battery power

1. SensiGFOX | LoRa 2.0 integrating **SILA-UCR** (LoRa) and **SIFA-UCR** (Sigfox). Same hardware but different Software Firmware. Every board comes with a Rechargeable battery of 140mA**.** The battery soldered

but disconnected until the user will close the jumper. Install a jumper in J4 to operate the device on battery power (Figure 57).

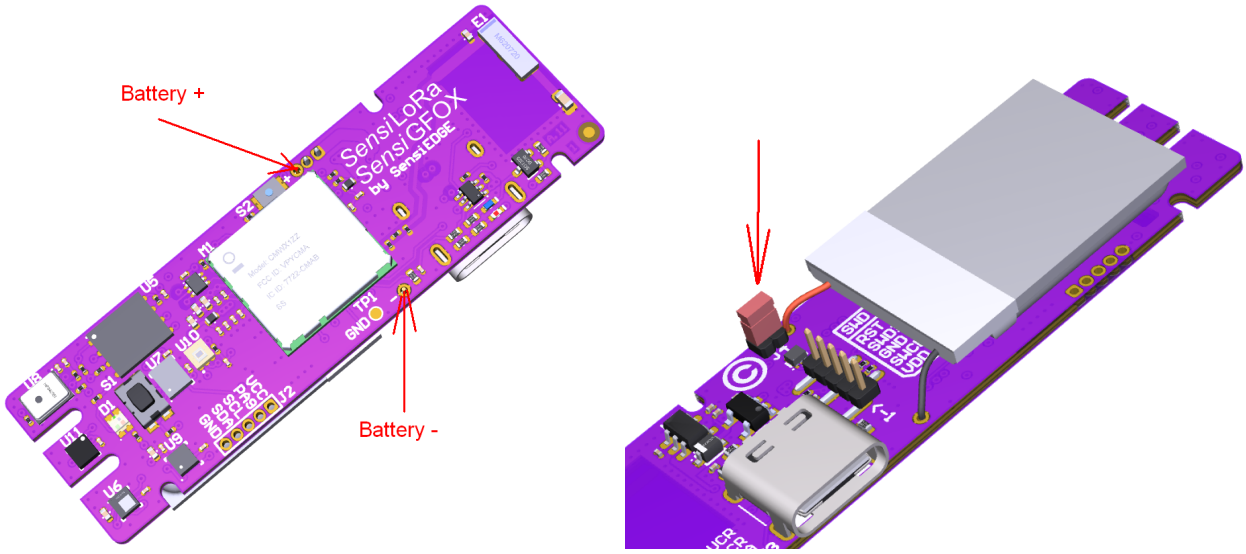



Figure 57. Battery power