

Workshop

Build-a-wireless-sensing-application

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Workshop

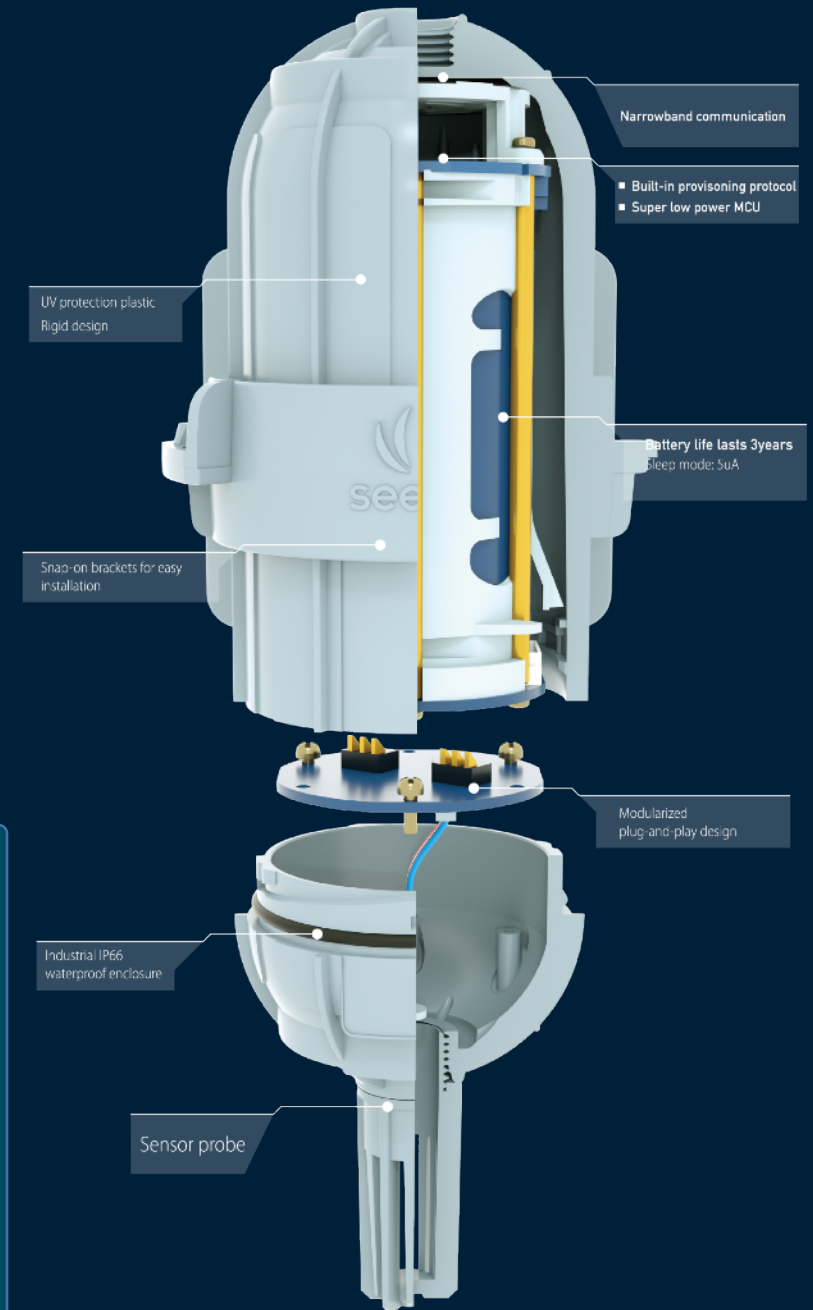
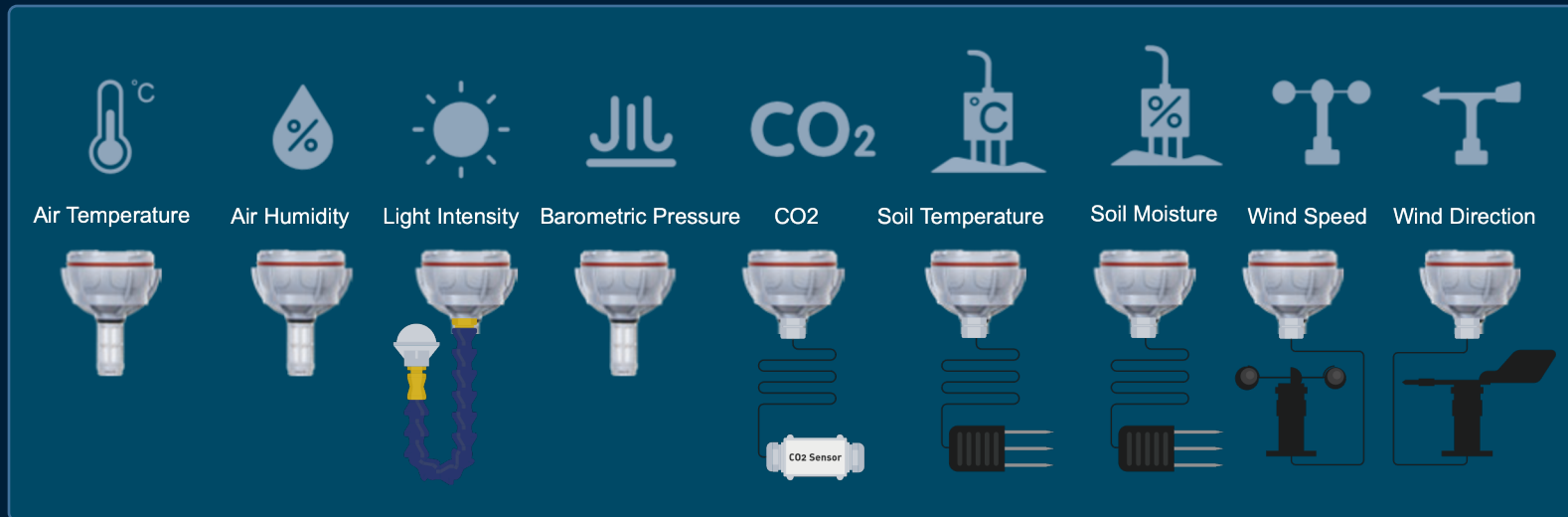
In today's workshop, we will go through three-part, by a few steps, we can connect the SenseCAP LoRaWAN sensor to the cloud and deploying an open-source dashboard.

1	SenseCAP brief introduce	<ul style="list-style-type: none">• What is SenseCAP?
2	Experience the SenseCAP Portal	<ul style="list-style-type: none">• How to get started?• Bind device and check sensor data• HTTP and MQTT API
3	Deploy open-source dashboard	<ul style="list-style-type: none">• Install Docker• Deploy the open-source dashboard



SenseCAP is an industrial wireless sensor network product series. Based on the LoRaWAN protocol with multiple ISM bands, SenseCAP can be deployed worldwide. It's encapsulated in an IP66 enclosure, making it applicable in outdoor remote sensing scenarios such as Smart Farming, Smart City and other IoT applications that need low-power, long-distance, long-term data collection.

Visit <https://solution.seeedstudio.com/> for detail product information



Applications



Agriculture



Livestock



Environment Monitoring

Why SenseCAP?



Industrial design with IP66 enclosure and supports extended operating temperature range



Provides a variety of cloud services with Open API for further development



Ultra-wide-distance transmission, up to 10km



Applicable to world - wide market with multiple ISM bands: US915, EU868, CN470



Based on LoRaWAN protocol and certified by FCC, CE, and RoHS



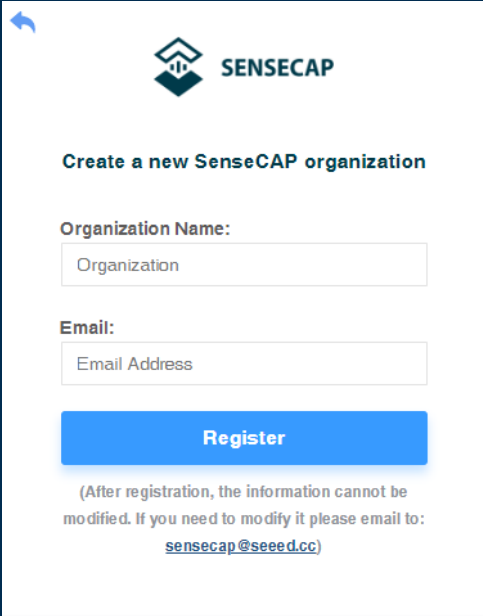
#1 Experience the SenseCAP Portal





#1 Experience the SenseCAP Portal

- 1 Sign up SenseCAP Account
- 2 Bind device and join network
- 3 Experience Portal
- 4 API

Hello, let's get started.

A screenshot of the SenseCAP registration form. It features the SENSECAP logo at the top, followed by the heading "Create a new SenseCAP organization". Below this are two input fields: "Organization Name:" with a placeholder "Organization" and "Email:" with a placeholder "Email Address". A blue "Register" button is positioned below the email field. At the bottom, a disclaimer states: "(After registration, the information cannot be modified. If you need to modify it please email to: [sensecap@seeed.cc](\"mailto:sensecap@seeed.cc\"))".

  SENSECAP

Create a new SenseCAP organization

Organization Name:

Email:

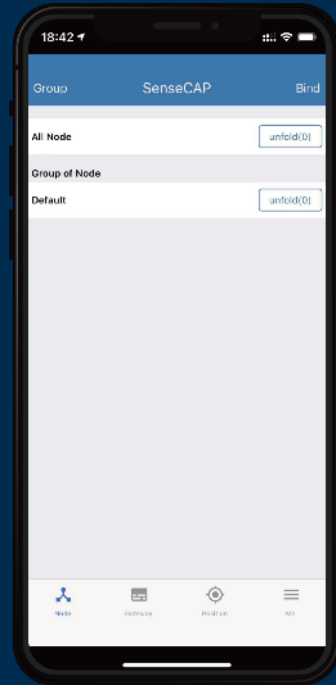
Register

(After registration, the information cannot be modified. If you need to modify it please email to:
sensecap@seeed.cc)

- Sign Up on sensecap.seeed.cc
- Name your organization
- Email address for future login
- Account profile
- Verify email
- Login

#1 Experience the SenseCAP Portal

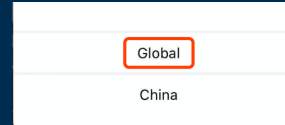
- 1 Sign up SenseCAP Account
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Install SenseCAP App

With this App, you can bind the devices with your account by simply scanning the QR code on the device.

- Open the App, and chose the **global** site
- Login with the account you registered in step 1.



Scan the QR code to install App



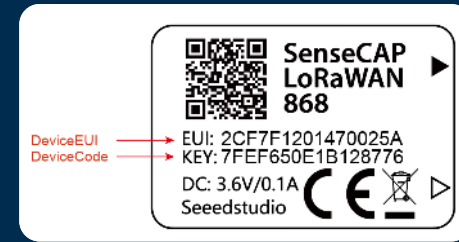
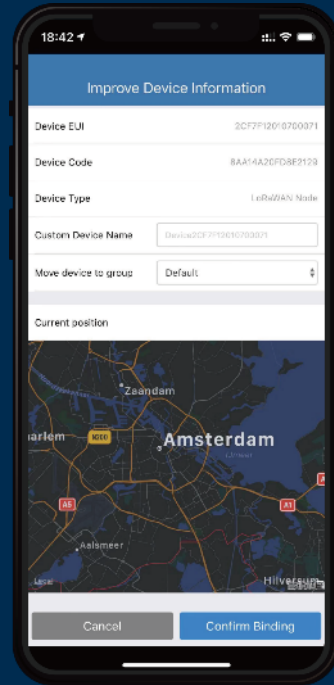
iOS



Android

#1 Experience the SenseCAP Portal

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- Scan the QR code on the sensor device
- Name your sensor or leave it as default
- Confirm binding

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1. Turn the sensor probe counterclockwise you will see the power switch and LED indicator.

2. Powering on the device by flipping the switch to "ON"

3. Watch the LED status

- Flashing once after powering on, then turn OFF
- Quick flashing for 2s about 5s later, means join the network successfully
- Push the RESET button again, if the LED never shows quick flashing.



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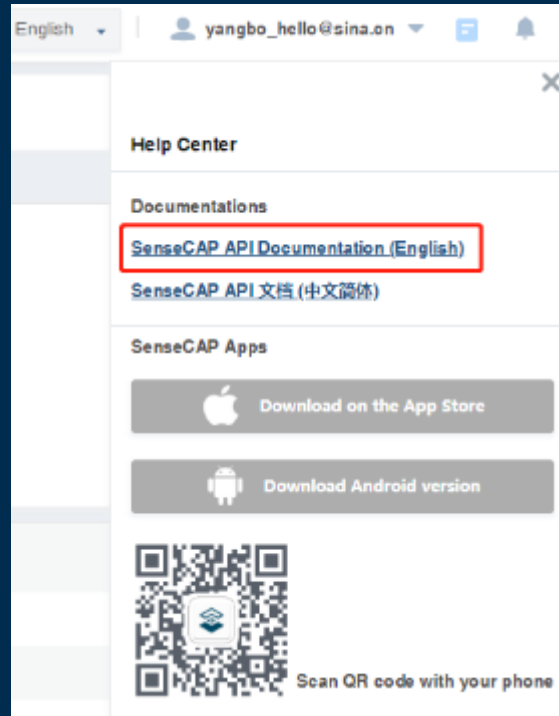
The screenshot displays the SenseCAP portal interface. On the left is a dark sidebar with navigation options: Gateway, Node Group, Sensor Node, Data (with a sub-menu showing Table and Graph), Security, and Access API keys. The 'Table' option under 'Data' is highlighted with a red box. The main content area shows a filter section with tabs for 'All', 'LoRa', and 'NB-IoT'. Below these are input fields for 'EUI' (containing 'Device EUI'), 'Device Group' (a dropdown), and 'Sensor Node' (a dropdown). There's also a 'Number of exports' field with a placeholder text. A 'Data Collection Time' section includes 'From' and 'To' date pickers, and buttons for '1Day' and '7Days'. Below the filters are 'Search', 'Clear', and 'Export Data' buttons. The main part of the screen is a table with the following data:

NO.	EUI	Device Name	Measurement	Value	Channel
1	2CF7F12010700071	Device2CF7F12010700071	Air Humidity	49.8%RH	1
2	2CF7F12010700071	Device2CF7F12010700071	Air Temperature	22.6°C	1
3	2CF7F12010700071	Device2CF7F12010700071	Air Humidity	49.9%RH	1
4	2CF7F12010700071	Device2CF7F12010700071	Air Temperature	22.2°C	1

In the table, the 'Value' column for the first two rows is highlighted with a red box.

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We provide SenseCAP **HTTP API** and **MQTT API** to simplify the implementation of your application.

- HTTP API: Manage your devices, retrieve historical data.
- MQTT API: Monitor the measurements in realtime.

<https://app.gitbook.com/@sensecap/s/doc/>



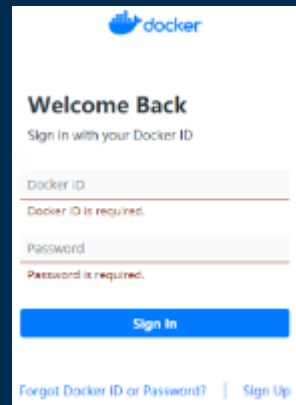
#2 Deploy open-source dashboard

#2 Deploy open-source dashboard

- 1 Install Docker desktop
- 2 Install Docker image
- 3 Config Dashboard
- 4 Check Data

<https://docs.docker.com/docker-for-windows/install/>

- We downloaded the docker installer for Windows and Mac in the flash drive.
- You need to sign up a docker account <https://hub.docker.com/signup>



Sign UP



Windows 10 64-bit:
Pro, Enterprise, or
Education (Build
15063 or later).



macOS must be
version 10.13(high
sierra) or newer.

Install Docker



Launch Docker and login

#2 Deploy open-source dashboard

- 1 Install Docker desktop
- 2 Install Docker image
- 3 Config Dashboard
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 Windows 10



windows-helper-load.bat

Go to “..\SenseCAP-DataVirt-SaaS-Docker-Compose” folder
Double click “windows-helper-load.bat” to install image



Mac

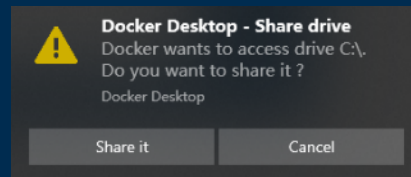


load.sh

Go to “..\SenseCAP-DataVirt-SaaS-Docker-Compose” folder
Open terminal and run `sudo ./load.sh`

#2 Deploy open-source dashboard

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Click "Share it" to allow docker access C:\

```
Loaded image: mysql/mysql-server:5.7
*****load images success *****
*****start build *****
Creating network "saasc_default" with the default driver
Creating mysql ... done
Creating webapi ... done
Creating webdemo ... done
mysql
webapi
webdemo
Server is running, please visit http://localhost:6060
```

Install succeeded and visit <http://localhost:6060>



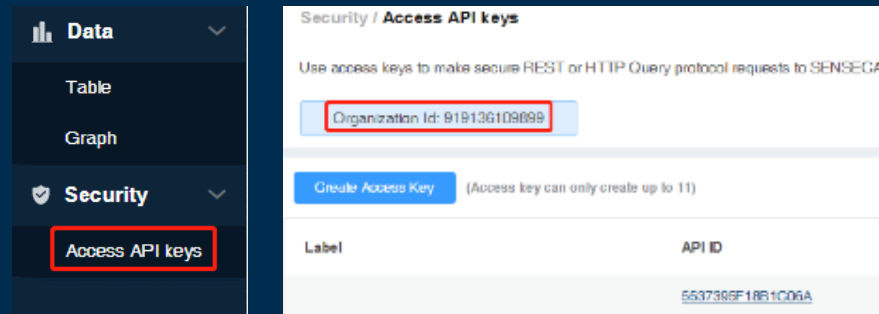
Mac

```
*****load images success *****
*****start build *****
mysql is up-to-date
webapi is up-to-date
webdemo is up-to-date
mysql
webapi
webdemo
Server is running, please visit http://localhost:6060
```

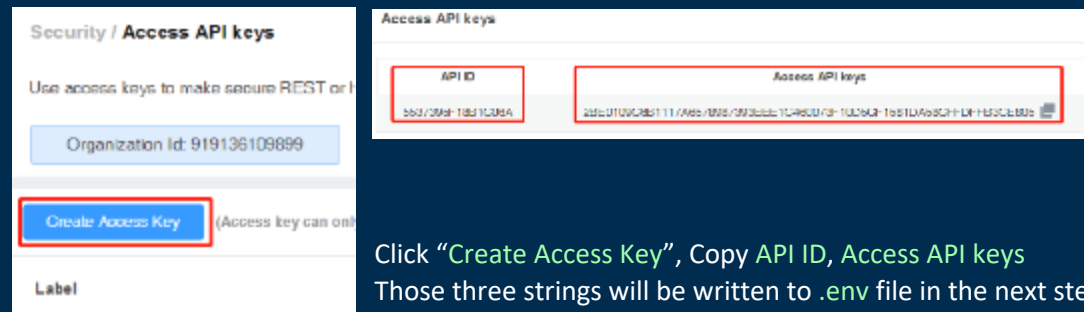
#2 Deploy open-source dashboard

- 1 Install Docker desktop
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Go to “SenseCAP Portal” sensecap.seeed.cc



Click “Access API keys”, then Copy Organization ID



Click “Create Access Key”, Copy API ID, Access API keys
Those three strings will be written to .env file in the next step

#2 Deploy open-source dashboard

- 1 Install Docker desktop
- 2 Install Docker image
- 3 Config Dashboard**
- 4 Check Data

Windows 10

Go to “..\SenseCAP-DataVirt-SaaS-Docker-Compose” folder
Open “.env” file in a text editor and add the following parameters and save it

```
.env x
#from your own account connection information on the SenseCAP platform
orgId=521853156991
apiId=52015BC0B062617B
apiKey=3B8E3FB2FEB1F7534B3ECC91F69E07085728D36164E71AB09004A9823D6096B7
```



Mac

Go to “..\SenseCAP-DataVirt-SaaS-Docker-Compose” folder
Open terminal and run “nano .env” command and add the following parameters
Run “control + o” save file and run “control + x” to exit

```
GNU nano 2.0.6 File: .env
#from your own account connection information on the SenseCAP platform
orgId=521853156991
apiId=52015BC0B062617B
apiKey=3B8E3FB2FEB1F7534B3ECC91F69E07085728D36164E71AB09004A9823D6096B7
```

#2 Deploy open-source dashboard

1

Install Docker desktop

2

Install Docker image

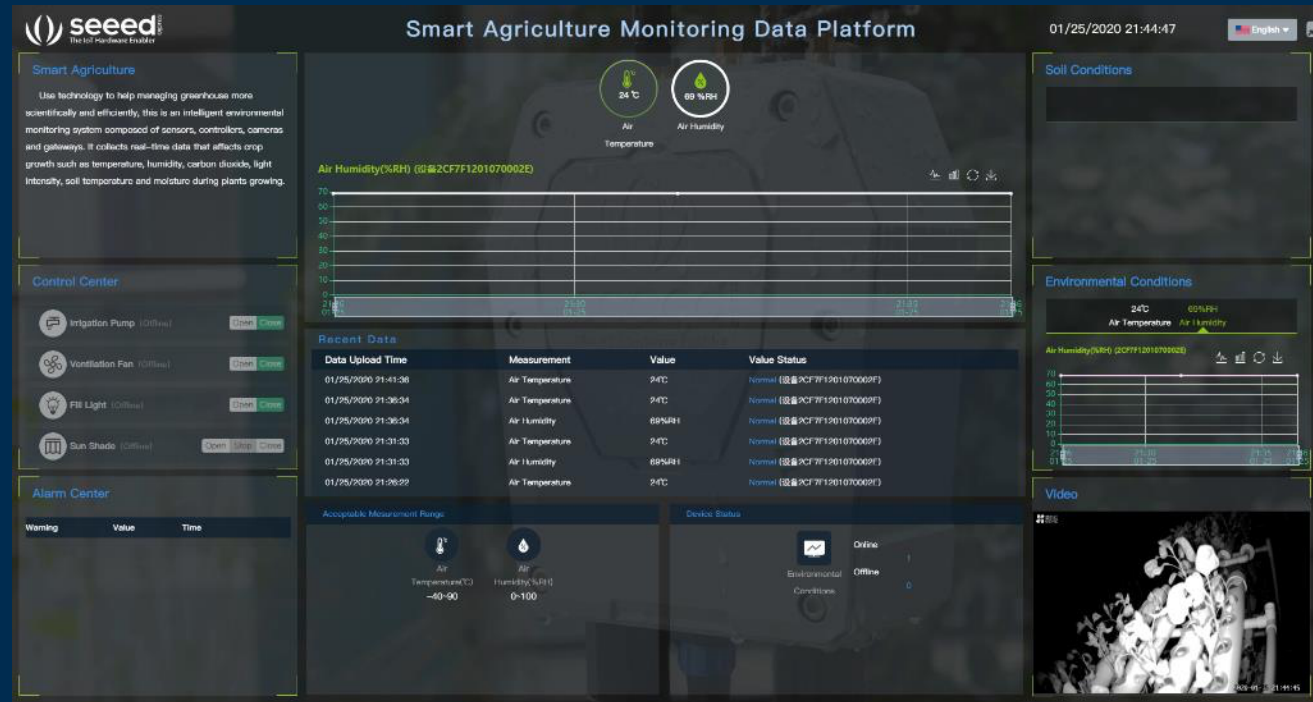
3

Config Dashboard

4

Check Data

Now, you could be able to get your sensor data on the dashboard.
This web dashboard is open-source.



Questions?

You can take away the Temperature and Humidity sensor

How do I get the device's EUI, App EUI, App Key?

SenseCAP sensor device's App EUI and App key have been flashed into device by Seeed. Use HTTP API to retrieve App EUI and App Key. You can use any HTTP tools or browser to issue an HTTP GET request.

<https://sensecap-makerapi.seeed.cc/v1/security/device/node/acquirePrivateLorawanDeviceinfo?nodeEui=2CF7F1201470025A&deviceCode=7FEF650E1B128776>

```
{
  "code": "0",
  "data": {
    "nodeEui": "2CF7F1201470025A",
    "deviceCode": "7FEF650E1B128776",
    "lorawanInformation": {
      "dev_eui": "2CF7F1201470025A",
      "app_eui": "8000000000000000",
      "app_key": "8B6E4F5DA7DB9A485C9A60D36CD2EA39"
    }
  },
  "time": 0.01
}
```

DeviceEUI and DeviceCode is on the SenseCAP product label.

