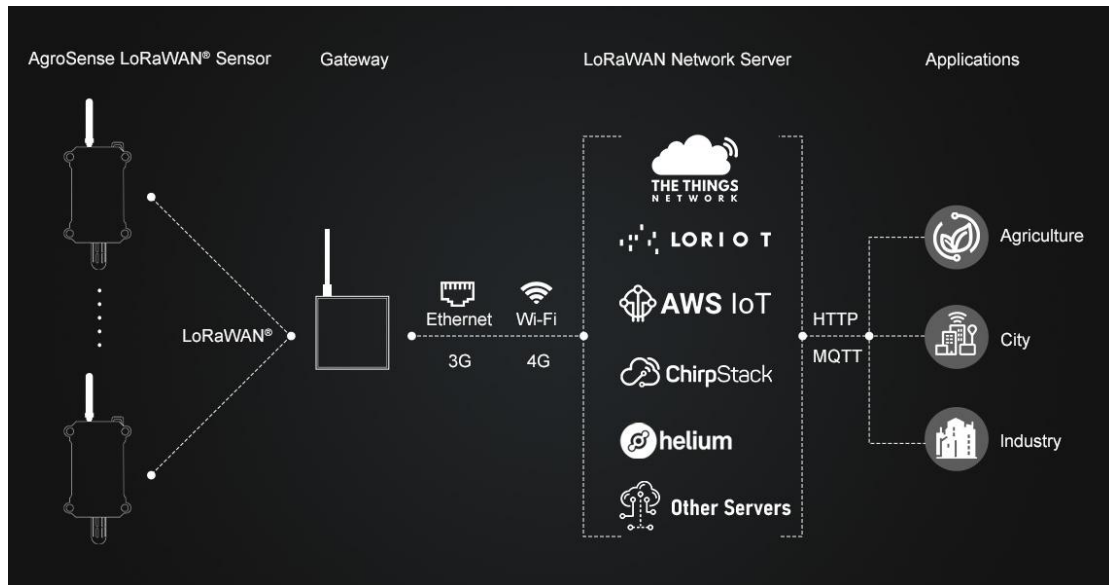
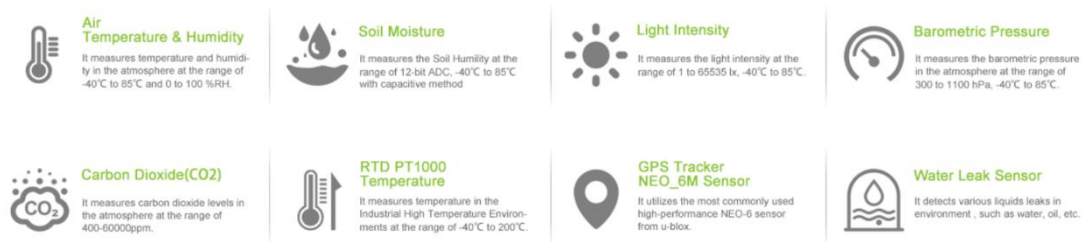


# Quick Guidance for AgroSense & Gateway Setting for Cloud Service

This tutorial guides you to connect the AgroSense LoRaWAN® Sensors and M2 Multi Platform Gateways to Cloud Server.

- AgroSense: <https://www.agrosense.cc/>
- M2 Multi Platform Gateway: <https://www.makerfabs.com/sensecap-m2-multi-platform-lorawan-indoor-gateway-sx1302.html>



Version: V1.0

Data: 2024-11-11

Author: Peter

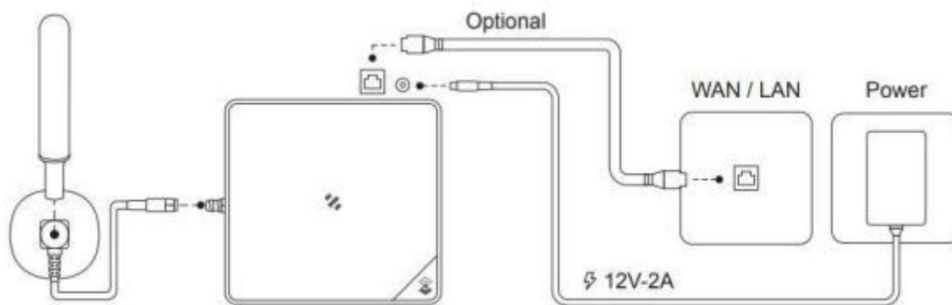
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# 1. Gateway Network Configuration

Connect the antenna and power adaptor to the gateway.

The power LED will show in red, and in about 15s, the indicator on the top will flash green, indicating that the gateway is booting.



There are two ways to connect to the Internet. Choose the one that works for you.

## 1.1 Connect with Ethernet

Connect the Ethernet cable to the Ethernet port, and the indicator on the top will show solid green if the gateway is successfully connected to the internet.

## 1.2 Connect with WIFI via Luci

- **Step 1:** Turn on the device AP hotspot

Press the button for 5s until the blue indicator flashes slowly to enter the configuration mode.

- **Step 2:** Connect to the AP hotspot

AP hotspot name is SenseCAP\_XXXXXX (6-figure MAC address), default password is 12345678; connect your computer to this AP hotspot.

- **Step 3:** Get your device Username and Password

You can find the Username and Password on your device label.

- **Step 4:** Log in to the Local Console

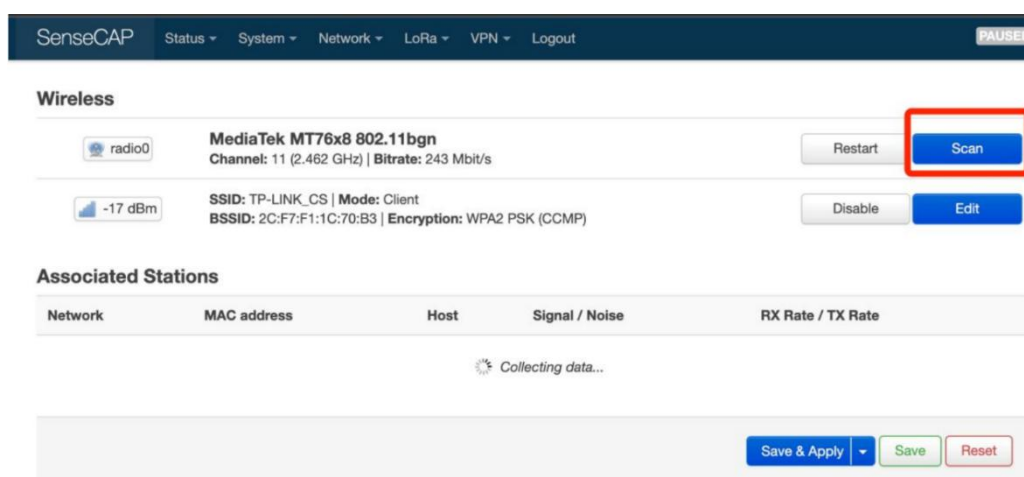
Input the IP Address (192.168.168.1) in your browser to enter the Local Console. Then input your

device username and password, and click the Login button.

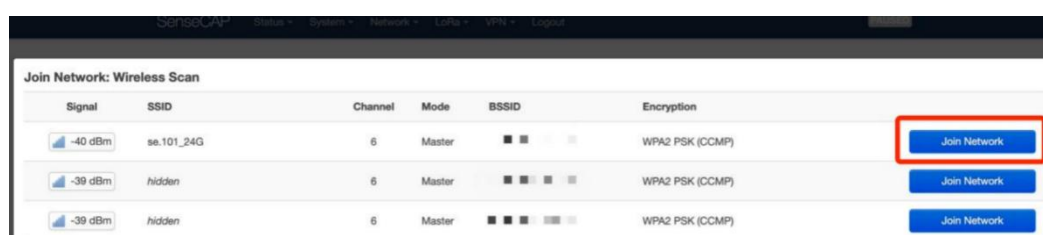
- **Step 5: Click on Network - Wireless.**



Click on the **Scan** button to scan the WIFI.



Select your WIFI to **join the network**.



Submit the WIFI password, and then click **Submit and Save**.



Then click **Save and Apply** to apply your settings. The indicator on the top will show solid green if the gateway is successfully connected to the WIFI.

After powering on the gateway, check the gateway working status:

### LED Indicator:

Mode		Description
Green	Solid	Gateway is healthy and the internet is well connected.
	Slow blinking	Gateway is booting, please wait.
Blue	Solid	The gateway is ready for internet connection. Further configuration is needed.
	Slow blinking	Configuration mode, and will auto exit after 5 mins if no activity.
	Fast blinking	Press the button for 30s until the indicator show fast flash will trigger the factory reset.
Orange	Slow blinking	Firmware is updating, and please do not power off the gateway or disconnect the internet.
White	Solid	Gateway is only with a factory firmware, and will be updated to the latest firmware automatically when it is connected to the internet.
Red	Solid	Hardware issue or internet connection failure.
	Slow blinking	Gateway not connected to the LNS.

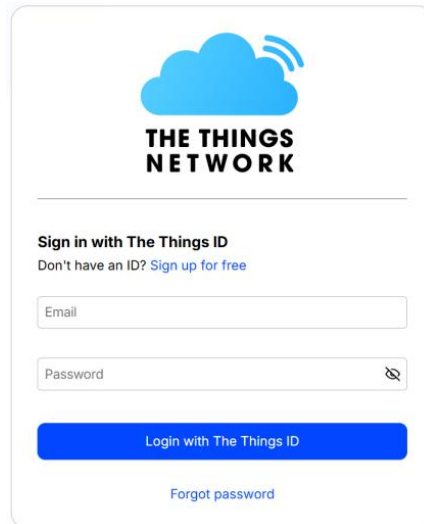
## 1.3 Connect Gateway to The Things Network(TTN)

TTN (The Things Network) forms a global, decentralized IoT network dedicated to providing extensive wireless communication coverage for IoT devices through community-supported LoRaWAN gateways. Next, we will guide you on how to successfully connect your gateway to the TTN network.

## 1.3.1 TTN Configuration

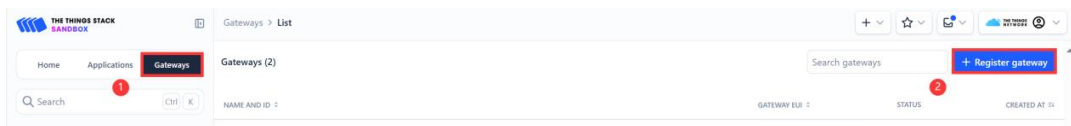
- **Step 1:** Log into The Things Stack.

If you don't have a TTN account, please register first.



The Things Network login form. It features the TTN logo at the top, followed by the text "Sign in with The Things ID" and a link "Don't have an ID? Sign up for free". Below this are input fields for "Email" and "Password" (with a toggle for visibility). A blue "Login with The Things ID" button is centered, with a "Forgot password" link below it.

- **Step 2:** Register the gateway.



Enter your Gateway EUI and click "confirm".

**Gateway EUI:** Gateway EUI can be found on the device label or Local Console.


### Register gateway

Register your gateway to enable data traffic between nearby end devices and the network.

Learn more in our guide on [Adding Gateways](#).

Does your gateway have a LoRaWAN® Gateway Identification QR Code? Scan it to speed up onboarding.

 Scan gateway QR code

Gateway EUI  \*

Gateway EUI

Continue without EUI

To continue, please confirm the Gateway EUI so we can determine onboarding options

Enter your Gateway ID, Gateway ID, Frequency plan and click "Register gateway".

**Gateway ID:** A unique identifier for your gateway (the ID must contain only lowercase letters, numbers, and dashes).

**Gateway name:** A name of your gateway.

**Frequency plan:** Select the corresponding frequency according to your gateway version.



Gateway EUI ⓘ

2C F7 F1 11 54 60 00 36 Reset

Gateway ID ⓘ \*

my-new-gateway

Gateway name ⓘ

My new gateway

Frequency plan ⓘ \*

Select a frequency plan... | v

+ Add frequency plan

Note: most gateways use a single frequency plan. Some 16 and 64 channel g

☐ Require authenticated connection ⓘ

Choose this option eg. if your gateway is powered by [LoRa Basic Station](#)

Share gateway information

Select which information can be seen by other network participants, including

☒ Share status within network ⓘ

☒ Share location within network ⓘ

Register gateway

You can check the Gateway in the overview after successful registration.

## 1.3.2 Gateway Configuration

Configure the gateway via the Web UI, please to log into Luci page first.

### ● Step 1: LoRa Network Settings

Navigate to LoRa --> LoRa Network.



### ● Step 2: Set Mode to Packet Forward.

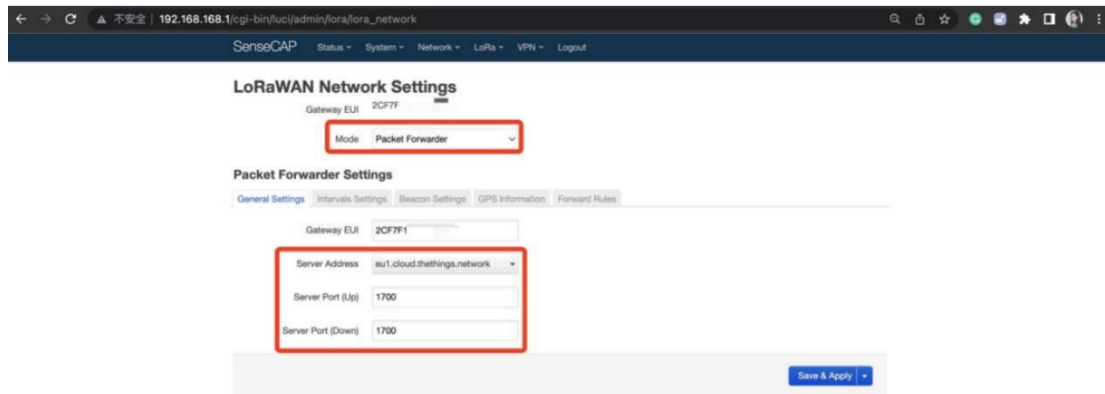
**Gateway EUI:** It will automatically get the EUI of the connected gateway.

**Server Address:** For Semtech UDP Packet Forwarder use. The is the address of your The Things Stack deployment. See Server Addresses for more info.

**Server Port(Up/Down):** The Up Port and Down Port are typically 1700. Other settings can be left

as default, or can be changed to suit your requirements.

Click "**Save&Apply**" to apply your settings.



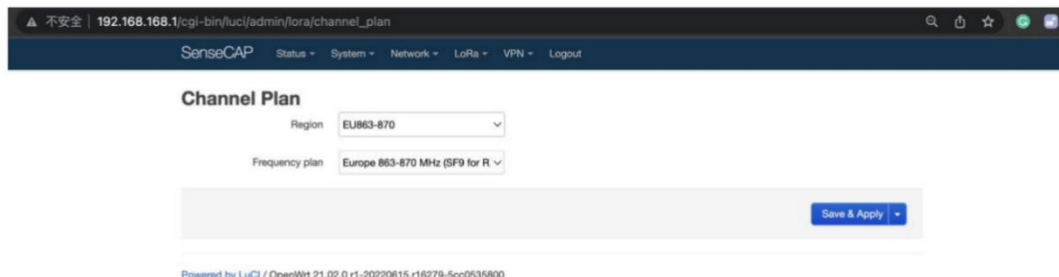
- **Step 3: Channel Plan Settings**

Navigate to LoRa --> Channel Plan.



Select the Region and Frequency plan according to the actual choice.

After setting, click Save& Apply.



By Now, the Gateway setting been completed.

## 2. Connect AgroSense to TTN Via Gateway

Our gateway has successfully connected to The Things Network, and we are now initiating the process of uploading AgroSense data to the TTN servers via the gateway.

- **Step1: Battery Installation**

Open the product case, and insert two AAA batteries into the battery compartment. Press button User or RST, if the LED does not light up, please check if the battery is dead and needs to



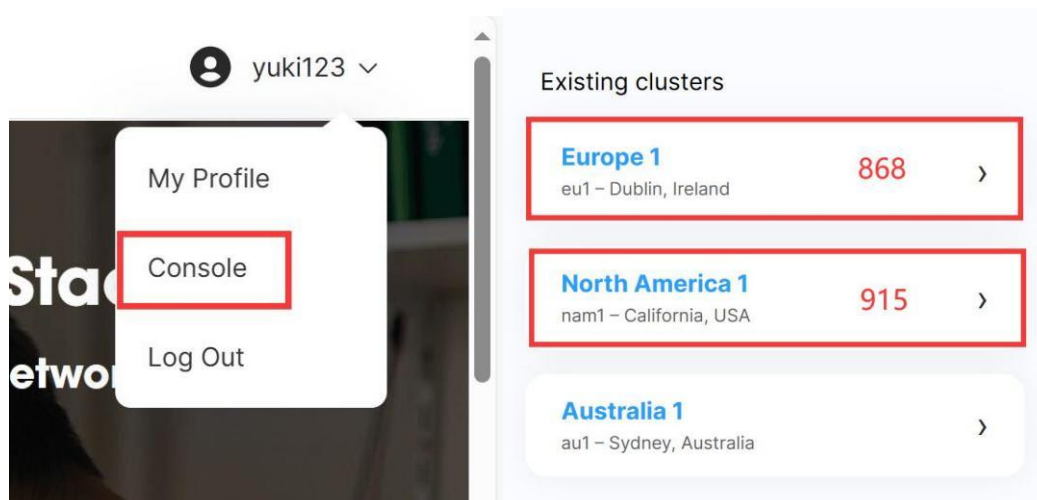
be replaced or if the battery is installed backward. If LED flashes then the device is successfully powered up.



### ● Step2: TTN Configuration

Open [The Things Network](https://www.thingsnetwork.io/) and login your account(that created in 1.3.1)

Select the correct region.



Create new application.



Enter your Application ID, and click "Create application".

Application ID\*  
agrosense-test

Application name  
My new application

Description  
Description for my new application

Optional application description; can also be used to save notes about t

Create application

Click "+ Register end device".

agrosense-test  
ID: agrosense-test

End devices

Top end devices Recently active All

No top devices yet  
Your most visited and bookmarked end devices will be listed here

+ Register end device

Choose "Enter end device specifics manually".

Select the three options as shown in the image below.(Take 868 for example)

Enter you **joinEUI**, **DevEUI**, **Appkey**.

**\*1. NOTE:** On the AgroSense LoRaWAN® Sensor label, you can get DVE EUI, APP EUI, APP KEY data.



Enter them in "Provisioning information" correctly.

AgroSense LoRaWAN® Sensor label	Provisioning information
APP EUI	JoinEUI
DEV EUI	DevEUI
APP KEY	AppKEY

End device type

Input method

☐ Select the end device in the LoRaWAN Device Repository

☒ Enter end device specifics manually **1**

Frequency plan **2**

Europe 863-870 MHz (SF9 for RX2 - recommended)

LoRaWAN version **2**

LoRaWAN Specification 1.0.3

Regional Parameters version **2**

RP001 Regional Parameters 1.0.3 revision A

[Show advanced activation, LoRaWAN class and cluster settings](#)

Provisioning information

JoinEUI **3**

48 FF 00 00 00 01 65 **4** Reset

This end device can be registered on the network

DevEUI **2**

48 E6 63 FF FE 30 01 65 Generate 1/50 used

AppKey **2**

4A 35 62 6B 95 AB 5B 4D 3F 3B DE 12 71 B1 6F 2A

End device ID **2**

eui-48e663ffe300165

This value is automatically prefilled using the DevEUI

After registration

☒ View registered end device

☐ Register another end device of this type

Register end device

3 continue, please enter the JoinEUI **4** and device so we can determine onboarding options

Press AgroSense LoRaWAN® Sensor's User button and wait a few seconds after LED flashes, if you find that LED flashes a second time, it proves that the network connects successfully.

### ● Step3: wall-mounted installation

Tighten the screws on the four corners of the case after putting the cover on, Wall mounting the product for use.



### 3. Data Visualization with Thingspeak

The Things Network is the largest LoRaWAN data server, but it do not support data storage& visualization, to achieve this, we utilize ThingSpeak(<https://thingspeak.mathworks.com/>) for data presentation and analysis.

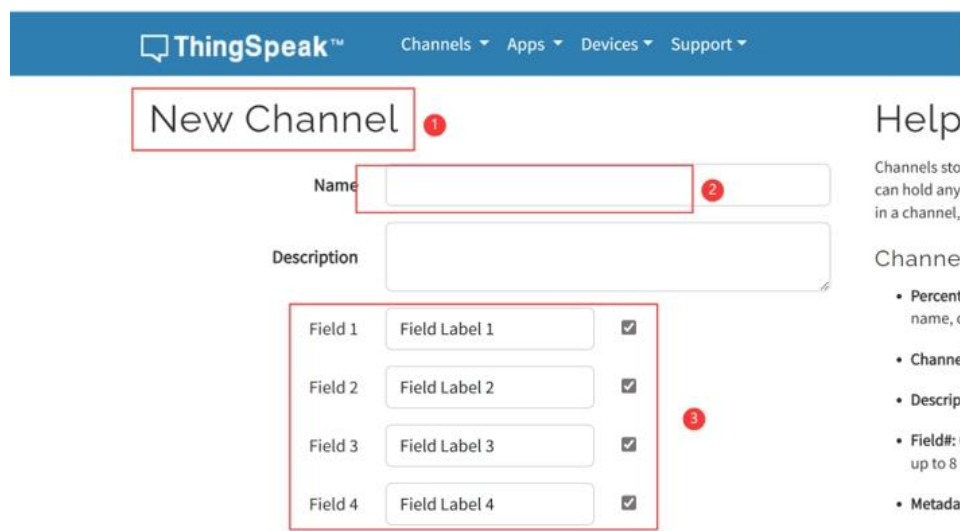
- **Step1:** Create a Channel: - Log in to ThingSpeak.

Click on “My Channels”.

Click on “+ New Channel”.

Fill in the Channel name and field names (e.g., Field1: Temperature, Field2: Humidity).

Click on “Save Channel”.

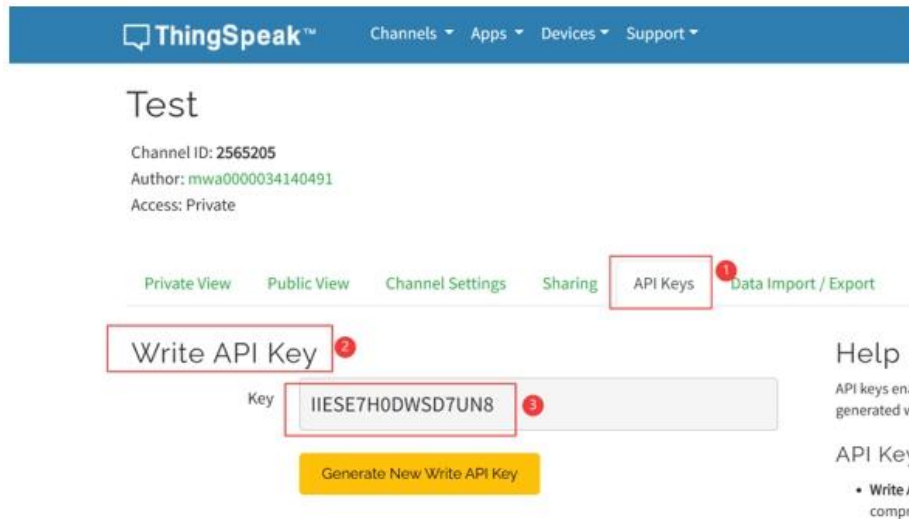


- **Step2:** Obtain the Write API Key:

Open the newly created Channel.

Click on the “API Keys” tab.

Copy the “Write API Key”.



● **Step3: Configure Payload Formatter:**

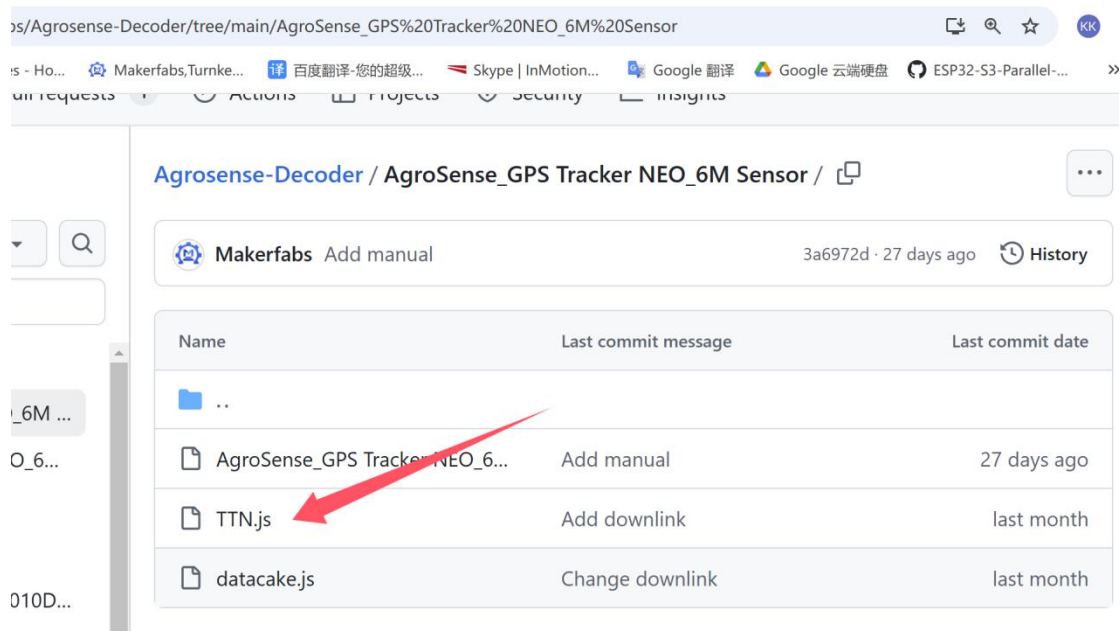
In the device details page, click on the “Payload Formatters” tab.

Click on the “Uplink” tab.

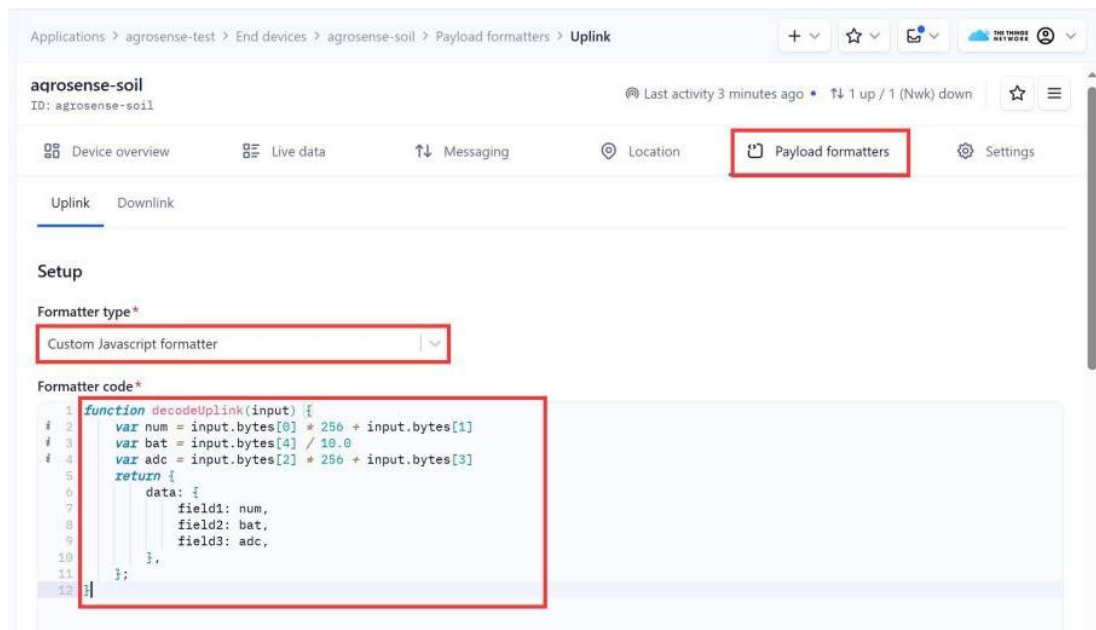
Select “Custom JavaScript Formatters”.

Here JavaScript code to parse the binary data sent from the device. You can download & Copy all

AgroSense JavaScript at: <https://github.com/Makerfabs/Agrosense-Decoder>



Finally click "Save changes".

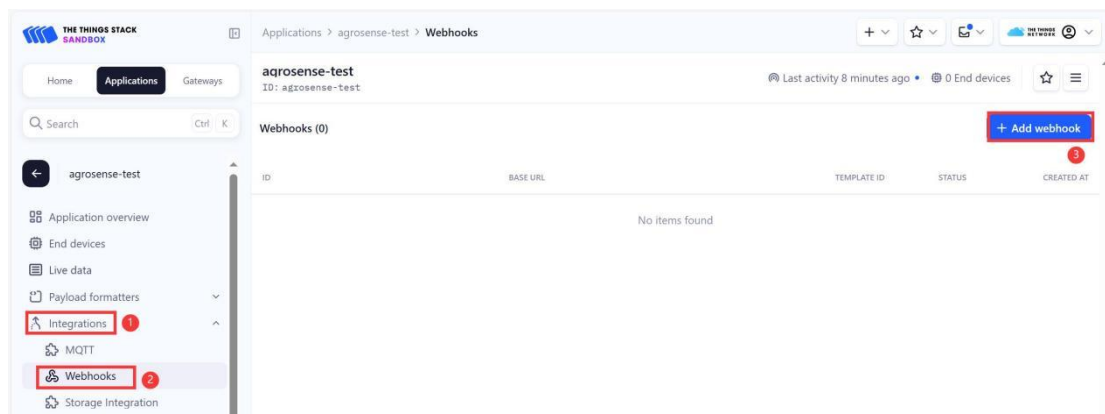


#### ● Step4: Configure Webhook at TTN

In the application page, click on the "Integrations" tab.

Select "Webhooks".

Click on "+ Add webhook".

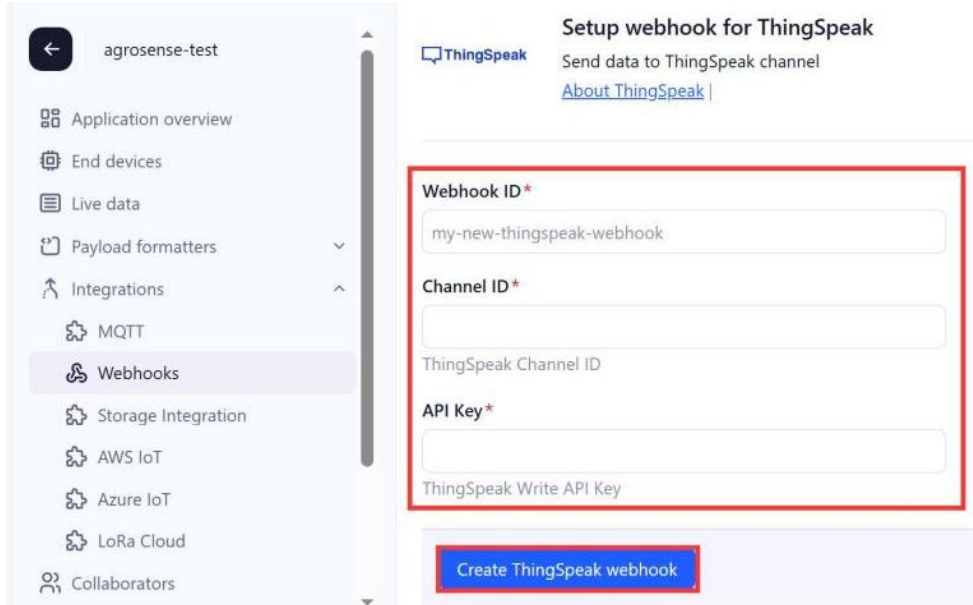


Choose the "ThingSpeak" template.

Fill in the following information and click on "Create ThingSpeak webhook".

Webhook ID	Any unique ID
Channel ID	Your ThingSpeak Channel ID
API Key	Your ThingSpeak Write API Key





With the above setting, TTN forward the AgroSense data to thingspeak for visualization analysis.

Now Press AgroSense LoRaWAN® Sensor's User Button, you will successfully see the data in Thingspeak.

*\*1. NOTE Agrosense sensor send data every1 hours by default, but you can press the user button in your implement of the project, to help you quickly check if the whole project works as intended.*

*\*2. Agrosense support Data Downlink to change the time interval of reporting, check Downlink*

*([https://wiki.makerfabs.com/AgroSense\\_LoRaWAN%C2%AE\\_Sensor\\_Instruction\\_Manual.html#6-downlink](https://wiki.makerfabs.com/AgroSense_LoRaWAN%C2%AE_Sensor_Instruction_Manual.html#6-downlink))*

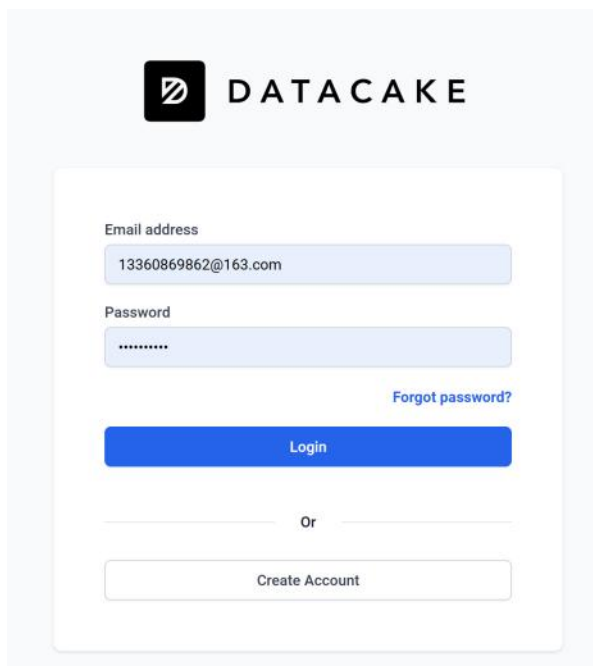
*for the details.*



## 4. Using with DataCake

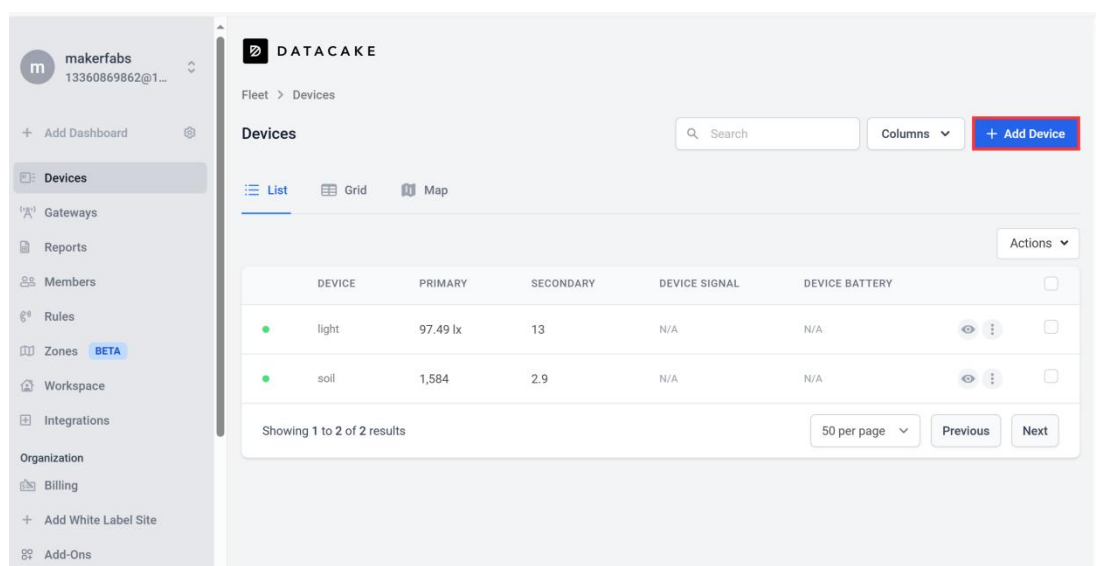
DataCake is a leading provider of IoT device management solutions, specializing in efficient data collection, in-depth analysis, and remote monitoring. The platform seamlessly integrates Agrosense's LoRaWAN data, enabling reliable data storage and precise visualization.

- **Step1:** Login DataCake or Create Account.



The image shows the DataCake login and registration interface. At the top is the DataCake logo. Below it is a form with two input fields: 'Email address' containing '13360869862@163.com' and 'Password' with masked characters. A 'Forgot password?' link is next to the password field. Below the fields is a blue 'Login' button. Underneath is an 'Or' separator, followed by a 'Create Account' button.

- **Step2:** Add Device.

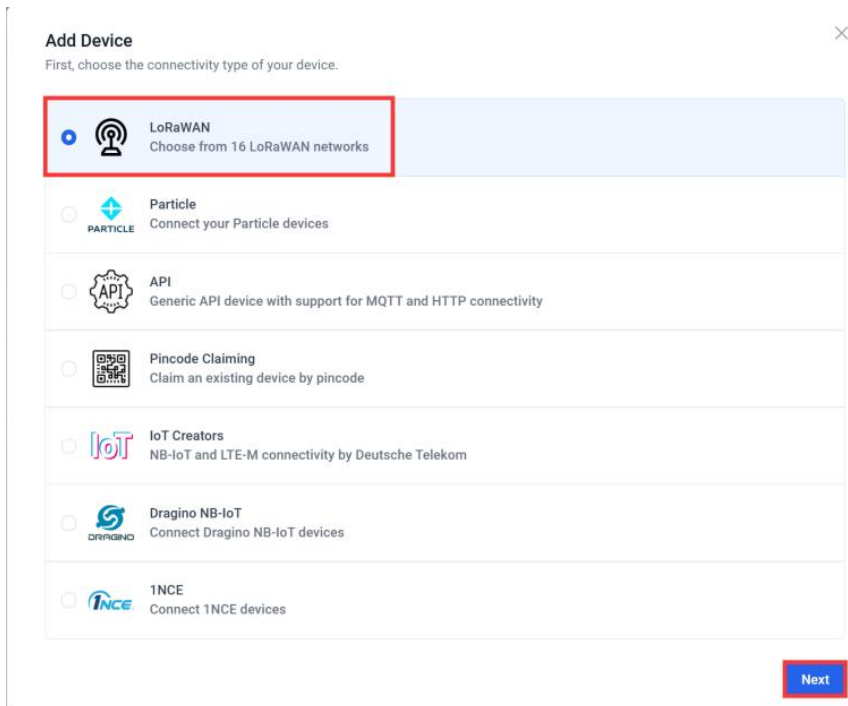


The image shows the DataCake dashboard. On the left is a sidebar with a user profile 'makerfabs' and a list of navigation items: Add Dashboard, Devices (selected), Gateways, Reports, Members, Rules, Zones (marked BETA), Workspace, Integrations, Organization, Billing, Add White Label Site, and Add-Ons. The main area is titled 'Fleet > Devices'. It includes a search bar, a 'Columns' dropdown, and a red '+ Add Device' button. Below is a table with columns: DEVICE, PRIMARY, SECONDARY, DEVICE SIGNAL, and DEVICE BATTERY. The table lists two devices: 'light' and 'soil'. At the bottom, it says 'Showing 1 to 2 of 2 results' with a '50 per page' dropdown and 'Previous' and 'Next' buttons.

DEVICE	PRIMARY	SECONDARY	DEVICE SIGNAL	DEVICE BATTERY
light	97.49 lx	13	N/A	N/A
soil	1,584	2.9	N/A	N/A



Select LoRaWAN and click "Next".



**Add Device**

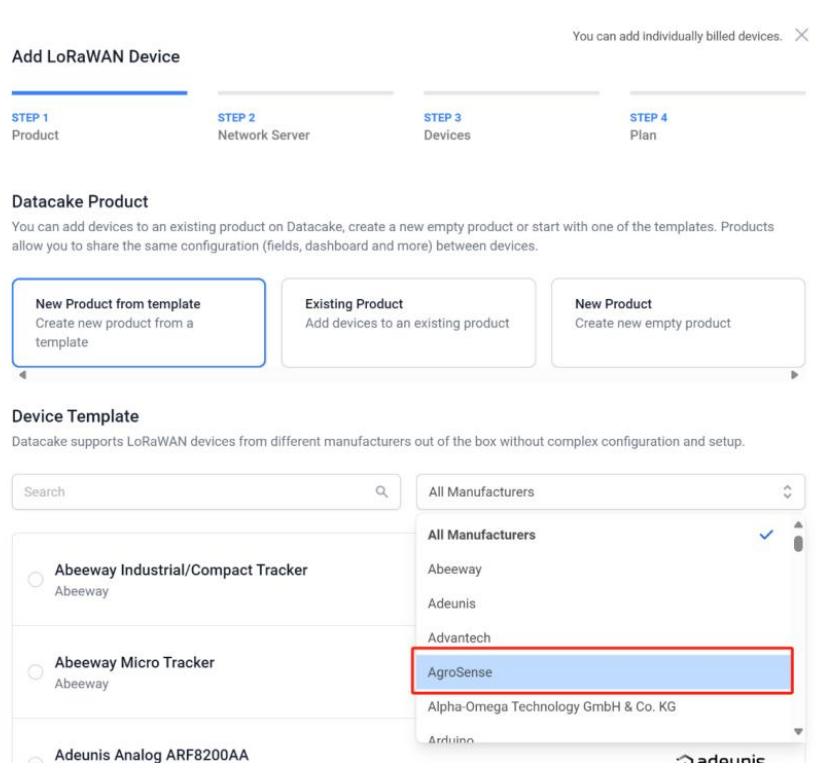
First, choose the connectivity type of your device.

- ☒ **LoRaWAN**  
Choose from 16 LoRaWAN networks
- ☐ **Particle**  
Connect your Particle devices
- ☐ **API**  
Generic API device with support for MQTT and HTTP connectivity
- ☐ **Pincode Claiming**  
Claim an existing device by pincode
- ☐ **IoT Creators**  
NB-IoT and LTE-M connectivity by Deutsche Telekom
- ☐ **Dragino NB-IoT**  
Connect Dragino NB-IoT devices
- ☐ **1NCE**  
Connect 1NCE devices

**Next**

- **Step3:** Select a Product based on your needs, you can create a new template yourself or use one of our supplied templates.

Take "New Product from template" as an example.



**Add LoRaWAN Device**

You can add individually billed devices.

**STEP 1** Product

**STEP 2** Network Server

**STEP 3** Devices

**STEP 4** Plan

**Datacake Product**

You can add devices to an existing product on Datacake, create a new empty product or start with one of the templates. Products allow you to share the same configuration (fields, dashboard and more) between devices.

- New Product from template**  
Create new product from a template
- Existing Product**  
Add devices to an existing product
- New Product**  
Create new empty product

**Device Template**






Datacake supports LoRaWAN devices from different manufacturers out of the box without complex configuration and setup.

Search

- ☐ **Abeeway Industrial/Compact Tracker**  
Abeeway
- ☐ **Abeeway Micro Tracker**  
Abeeway
- ☐ **Adeunis Analog ARF8200AA**

All Manufacturers

- All Manufacturers
- Abeeway
- Adeunis
- Advantech
- AgroSense**
- Alpha-Omega Technology GmbH & Co. KG
- Arduino

<input type="radio"/> AgroSense Air Temperature and Humidity Sensor AgroSense Air Temperature and Humidity Sensor	
<input type="radio"/> AgroSense Barometric Pressure Sensor AgroSense Barometric Pressure Sensor	
<input type="radio"/> AgroSense CO2 sensor AgroSense CO2 Sensor	
<input type="radio"/> AgroSense Light Intensity Sensor AgroSense Light Sensor	
<input type="radio"/> AgroSense RTD PT1000 Temperature Sensor AgroSense Temperature sensor	

Showing 1 to 5 of 6 results

Previous Next








Back **Next**

- **Step4: Select "Datacake LNS".**

### Add LoRaWAN Device

STEP 1 Product    **STEP 2 Network Server**    STEP 3 Devices    STEP 4 Plan

**Network Server**  
Please choose the LoRaWAN Network Server that your devices are connected to.

<input checked="" type="radio"/>  <b>Datacake LNS</b> <span>AUTOMATIC SETUP</span> Start and scale easily with a managed LNS	Uplinks    Downlinks
<input type="radio"/>  <b>The Things Stack V3</b> TTN V3 / Things Industries	Uplinks    Downlinks
<input type="radio"/>  <b>Helium</b> Use your own console	Uplinks    Downlinks
<input type="radio"/>  <b>LORIoT</b>	Uplinks    Downlinks
<input type="radio"/>  <b>ChirpStack</b>	Uplinks    Downlinks
<input type="radio"/>  <b>Actility</b>	Uplinks    Downlinks
<input type="radio"/>  <b>KPN</b>	Uplinks    Downlinks

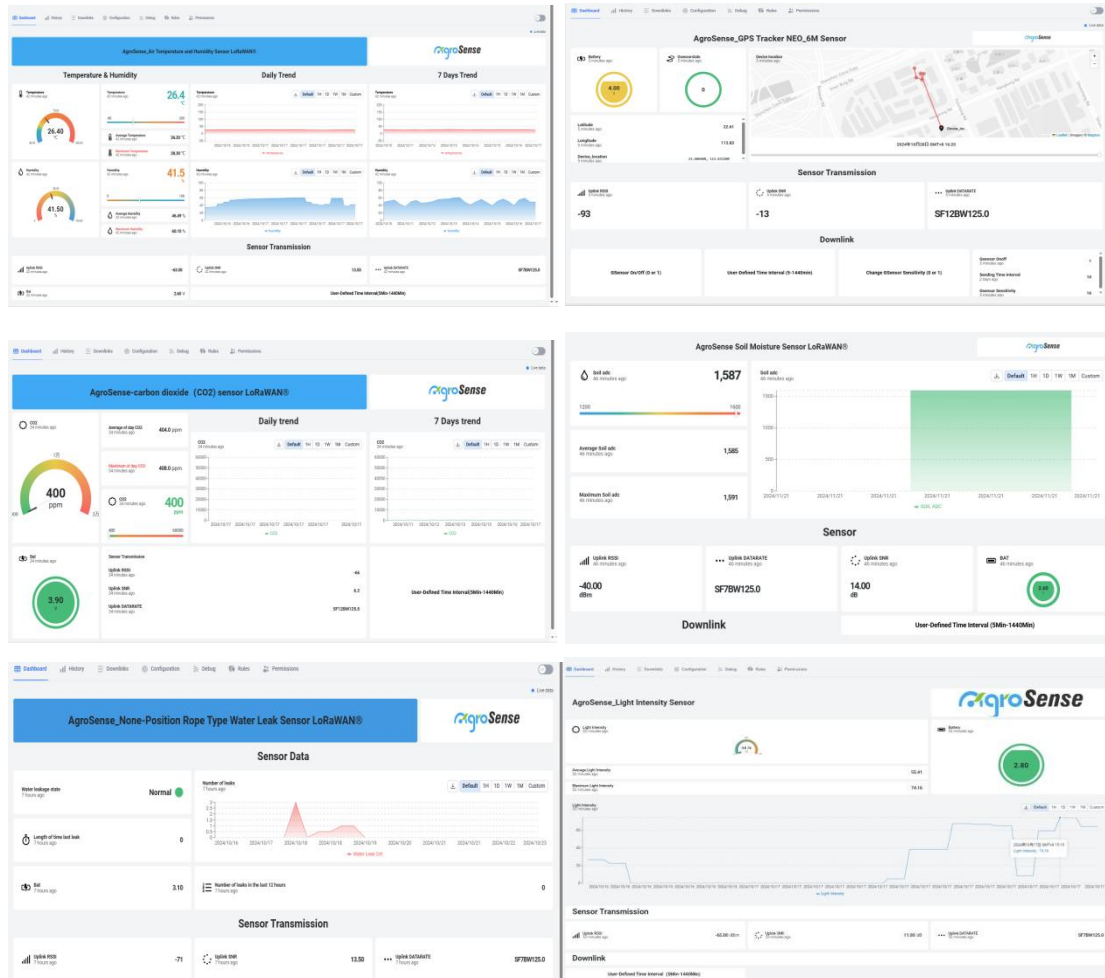
Showing 1 to 6 of 15 results

Previous Next

Back **Next**



- **Step5:** Press AgroSense LoRaWAN® Sensor User button, you will successfully see the data in DataCake.



Agrosense offers ODM/OEM service, for users'designated sensors.

For additional features, please contact [sales@agrosense.cc](mailto:sales@agrosense.cc)