



# AM100 Series User Guide

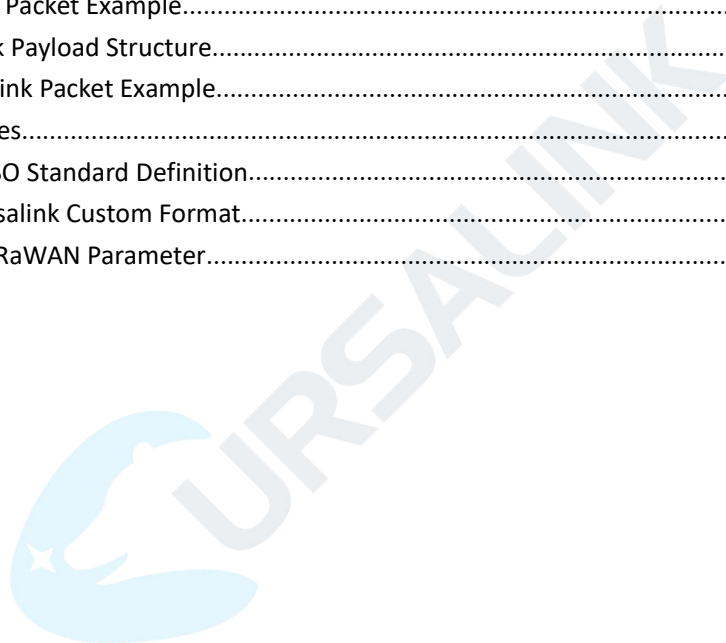


# AM100/AM102 Payload Structure

## V1.1

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## 1. Uplink Payload Structure

An uplink message can be sent from AM100/AM102 to gateway. Also, the AM100/AM102 sends different sensor data in different frames. In order to do that, all sensor data must be prefixed with two bytes:

**Data Channel:** Uniquely identifies each sensor in the AM100/AM102 across frames, e.g. "Temperature Sensor".

**Data Type:** Identifies the data type in the frame, e.g. "Battery Level".

The device can send multiple sensor data at a time by using the following payload structure:

1 Byte	1 Byte	N Bytes	1 Byte	1 Byte	M Bytes	1 Byte	...
Channel1	Type1	Data1	Channel2	Type2	Data2	Channel 3	...

Channel ID	Description
1	Battery
2	Reserved
3	Temperature Sensor
4	Humidity Sensor
5	PIR Sensor
6	Light Sensor
7	CO <sub>2</sub> Sensor
8	TVOC Sensor
9	Barometric Pressure Sensor

For message decoder please refer to <https://github.com/Ursalink-CN/ursalink-decoder>, where you find code examples.

### Uplink Packet Example

Frame N: Regular uplink (temperature, humidity, activity level (PIR), illumination, CO<sub>2</sub>, TVOC, barometric pressure)

03 67 fc 00		
Channel	Type	Value
03 (Temperature Sensor)	67 (Temperature)	fc 00 => 00 fc = 252 means 25.2°C

<b>04 68 49</b>		
Channel	Type	Value
04 (Humidity Sensor)	68 (Humidity)	49=>73 means 36.5%

<b>05 6a 36 00</b>		
Channel	Type	Value
05 (PIR Sensor)	6a (Activity Level)	36 00 => 00 36 = 54

<b>06 65 1c 00 79 00 14 00</b>		
Channel	Type	Value
06 (Light Sensor)	65 (Illumination)	Illumination:1c 00 => 00 1c = 28 lux Visible+Infrared: 79 00 => 00 79 = 121 Infrared: 14 00=> 00 14 => 20

<b>07 7d 19 02</b>		
Channel	Type	Value
07 (CO <sub>2</sub> Sensor)	7d (Concentration)	19 02 => 02 19 = 537 ppm

<b>08 7d 00 00</b>		
Channel	Type	Value
08 (TVOC Sensor)	7d (Concentration)	00 00 => 00 00 = 0 ppb

<b>09 73 3f 27</b>		
Channel	Type	Value
09 (Barometric Pressure Sensor)	73 (Barometric Pressure)	3f 27 => 27 3f = 10038 means 1003.8hPa

Frame N+1: Battery level changes uplink.

<b>01 75 5a</b>		
Channel	Type	Value
01 (Battery)	75 (Battery Level)	5a = 90 means 90%

Frame N+2:

Contents reported after reboot each time: Ursalink Custom Format Version + SN + Hardware Version + Software Version + Class Type

<b>ff 0b ff ff 01 01</b>					
Channel	Type	Value	Channel	Type	Value
ff=255	0b (Device Restart Notification)	ff (Reserved)	ff=255	01	01 (Version =1)

<b>ff 08 61 28 a1 03 57 95</b>		
Channel	Type	Value
ff=255	08 (Device SN)	61 28 a1 03 57 95

<b>ff 09 01 40 ff 0a 01 01</b>					
Channel	Type	value	Channel	Type	Value
ff = 255	09 (Hardware Version)	0140 (V1.4)	ff = 255	0a (Software Version)	0101 (V1.1)

<b>ff 0f 00</b>		
Channel	Type	value
ff = 255	0f (Class Type)	00 (Class A)

## 2. Downlink Payload Structure

A downlink message can be sent from gateway to sensor in order to perform some actions on that device.

**Note:** the application port of AM100/AM102 is 85.

1 Byte	2 Bytes	1 Byte1	1 Byte	2 Bytes	1 Byte
Channel1	Data1	0xff (Reserved)	Channel2	Data2	0xff (Reserved)

### Downlink Packet Example

Frame N: Set the data reporting interval as 20 mins (1200s).

ff 03 b0 04		
Channel	Type	Value
ff = 255	03 (Set Reporting Interval)	b0 04 => 04 b0 = 1200 (second)

## 3. Data Types

### 3.1 IPSO Standard Definition

Data Types conform to the IPSO Alliance Smart Objects Guidelines, which identifies each data type with an "Object ID" . However, as shown below, a conversion is made to fit the Object ID into a single byte.

DATA\_TYPE = IPSO\_OBJECT\_ID - 3200

Type	IPSO	Hex	Data Size	Data Resolution per Bit
Temperature Sensor	3303	67	2	0.1°C Signed MSB
Humidity Sensor	3304	68	1	0.5% Unsigned
PIR Sensor	3306	6a	2	1
Illumination Sensor	3301	65	2	1 Lux Unsigned MSB
Concentration	3325	7d	2	1
Barometer	3315	73	2	0.1 hPa
Battery	3317	75	1	1%

### 3.2 Ursalink Custom Format

Type	Type ID	Data Size/Byte	Data Resolution
Ursalink Custom Format Version	01	1	0x01
Data Collection Interval	02	2	1s
Data Reporting Interval	03	2	1s
LoRa Channel Mask	05	3	ID (1B) + Value (2B) ID: 1~6
Debug Level	07	1	Bit0:info Bit1:debug bit2:warn Bit3:err
Device SN	08	6	641090824375 => 0x641090824375
Hardware Version	09	2	0110 => 0x01 0x10
Software Version	0a	2	0110 => 0x01 0x10
Device Restart Notification	0b	1	0xff reserved
Device Power Off Notification	0c	1	0xff reserved
Class Type	0f	1	00: Class A

### 3.3 LoRaWAN Parameter

<b>DevEUI</b>	24E124 + 2 <sup>nd</sup> to 11 <sup>th</sup> digits of SN e.g. SN = 61 26 a1 01 84 96 Then Device EUI = 24E124126a101849
<b>AppEUI</b>	24e124+c0002a0001
<b>Appport</b>	0x55
<b>NetID</b>	0x010203
<b>DevAddr</b>	The 5 <sup>th</sup> to 12 <sup>th</sup> digits of SN e.g. SN = 61 26 a1 01 84 96 Then DevAddr = a1018496
<b>AppKey</b>	5572404c696e6b4c6f52613230313823
<b>NwkSKey</b>	5572404c696e6b4c6f52613230313823
<b>AppSKey</b>	5572404c696e6b4c6f52613230313823

---End---

## Safety Precautions

Ursalink will not shoulder responsibility for any loss or damage resulting from not following the instructions of this operating guide.

- ❖ The device must not be disassembled or remodeled in any way.
- ❖ Do not place the device outdoors where the temperature is below/above operating range. Do not place the device close to objects with naked flames, heat source (oven or sunlight), cold source, liquid and extreme temperature changes.
- ❖ The device is not intended to be used as a reference sensor, and Ursalink will not should responsibility for any damage which may result from inaccurate readings.
- ❖ The battery should be removed from the device if it is not to be used for an extended period. Otherwise, the battery might leak and damage the device. Never leave a discharged battery in the battery compartment.
- ❖ The device must never be subjected to shocks or impacts.
- ❖ Do not clean the device with detergents or solvents such as benzene or alcohol. To clean the device, wipe with a soft moistened cloth. Use another soft, dry cloth to wipe dry.

## Declaration of Conformity

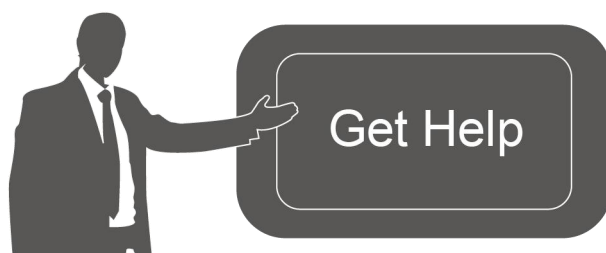
Ursalink AM100 series is in conformity with the essential requirements and other relevant provisions of the CE, FCC, and RoHS.



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## Revision History

Date	Doc Version	Description
April 7, 2020	V 1.0	Initial version
May 19, 2020	V 1.1	APP pictures replacement
August 26, 2020	V 1.2	Add screen display mode and configuration examples



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## 1. Overview

### 1.1 Description

AM100 series is a compact indoor ambience monitoring sensor including motion, humidity, temperature, light, TVOC, CO<sub>2</sub>, barometric pressure for wireless LoRa network. AM100 series is a battery powered device and is designed to be wall-mounted. It is equipped with NFC (Near Field Communication) and can easily be configured via a smartphone or a PC software.

Sensor data are transmitted in real-time using standard LoRaWAN protocol. LoRaWAN enables encrypted radio transmissions over long distance while consuming very little power. The user can obtain sensor data and view the trend of data change through Uursalink Cloud or through the user's own Network Server.

### 1.2 Features

- Robust LoRa connectivity for indoor or HVAC environments
- Integrated multiple sensors like temperature, humidity, light, air quality, etc.
- Easy configuration via NFC
- Visual display via E-Ink screen
- Standard LoRaWAN support
- Uursalink Cloud compliant
- Low power consumption (about 1 year battery life)
- Standard AA alkaline battery

### 1.3 Specifications

Model	AM102	AM100
<b>LoRaWAN</b>		
Frequency	EU433/CN470/IN865/RU864/EU868/US915/AU915/KR920/AS923	
Tx Power	20dBm	
Sensitivity	-147dBm @300bps	
Mode	OTAA/ABP Class A	
<b>Sensors</b>		
<b>Temperature</b>		
Range	-20°C to + 70°C	
Accuracy	0°C to + 70°C (+/- 0.3°C), -20°C to 0°C (+/- 0.6°C)	
<b>Humidity</b>		
Range	0% to 100% RH	
Accuracy	10% to 90% RH (+/- 3%), below 10% and above 90% RH (+/- 5%)	
<b>PIR</b>		

Detection Area	94 ° Horizontal, 82 ° Vertical	
Detection Distance	5 m	
Output Range	0-65535	
<b>Light</b>		
Range	60000 lux (Visible + IR, IR)	
Accuracy	±30%	
<b>CO<sub>2</sub></b>		
Range	400 - 5000 ppm	
Accuracy	±30 ppm or ±3 % of reading	
<b>TVOC</b>		
Range	0 - 60000 ppb	
Accuracy	±15 %	
Long-term Stability	1.3 % accuracy drift per year	
<b>Barometric Pressure</b>		
Range	300 - 1100 hPa (-40°C - 85°C)	
Accuracy	±1 hPa	
N/A		
<b>Display &amp; Configuration</b>		
Display	2.13-inch Black&White E-Ink Screen	
Configuration	<ol style="list-style-type: none"> <li>1. Mobile APP via NFC</li> <li>2. PC software via NFC or USB type-C port</li> </ol>	
<b>Physical Characteristics</b>		
Power Supply	<ol style="list-style-type: none"> <li>1. 2 × AA Alkaline battery</li> <li>2. 5VDC USB type-C power supply</li> </ol>	
Battery Life <sup>1</sup>	0.9-0.7 year	1.5-1.2 year
(10 min interval, SF7-SF10)	0.8-0.6 year (Smart Mode Disabled <sup>2</sup> )	1.3-1 year(Smart Mode Disabled)
VOC Disabled	1.1-0.9 year	
	1-0.8 year(Smart Mode Disabled)	
Operating Temperature	0°C to +45°C	
Relative Humidity	0% to 100% (non-condensing)	
Dimension	105 × 70.4 × 21.2 mm (4.1 × 2.8 × 0.8 in)	
Mounting	Wall	

1. Tested under laboratory conditions and for guideline purposes only.

2. Smart Mode: When Activity Level (PIR) =0 and lasts for 20 minutes, screen will go to sleep mode to save power.

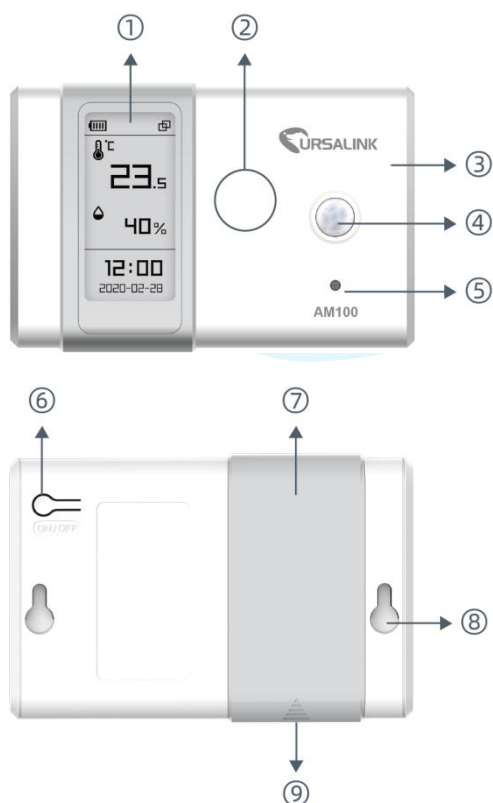
## 2. Hardware Introduction

### 2.1 Packing List

1 ×	2 ×	1 ×	2 ×	1 ×	1 ×	1 ×
AM100/AM102	AA Batteries (LR6)	Mounting Sticker	Mounting Screws	Warranty Card	Quick Guide	NFC Reader (Optional)

**!** If any of the above items is missing or damaged, please contact your Ursalink sales representative.

### 2.2 Product Overview



#### Front Panel:

- ① E-ink screen
- ② NFC Area
- ③ LoRa Antenna (Internal)
- ④ PIR Sensor
- ⑤ Light Sensor

#### Back Panel:

- ⑥ Power button
- ⑦ Battery Cover
- ⑧ Mounting Holes
- ⑨ Type-C Port

## 2.3 E-link Screen









### 2.3.1 Screen Icons

AM100 series provide 3 types of display modes:

AM100		
Mode 1	Mode 2	Mode 3
AM102		
Mode 1	Mode 2	Mode 3

To learn what an icon means, find it below.

Icon	Description	Screen Update
	Battery level	Once per day
22:22	Sync time with software or mobile APP	1 min
	The device joins the network.	According to join status
	The device fails to join the network.	

	Temperature	1 min
	Humidity	1 min
	Luminance Level 0: 0-5 lux Level 1: 6-50 lux Level 2: 51-100 lux Level 3: 101-400 lux Level 4: 401-700 lux Level 5: $\geq 701$ lux	1 min
	Total volatile organic compounds Level 0: 0-100 ppb Level 1: 101-200 ppb Level 2: 201-250 ppb Level 3: 251-300 ppb Level 4: 301-350 ppb Level 5: 351-400 ppb	1 min
	Alarm: $\geq 401$ ppb.	
	Shows CO <sub>2</sub> history tendency from 0 to 1200ppm.	
	Alarm 1: $\geq 1000$ ppm	2 min
	Alarm 2: $\geq 1200$ ppm	

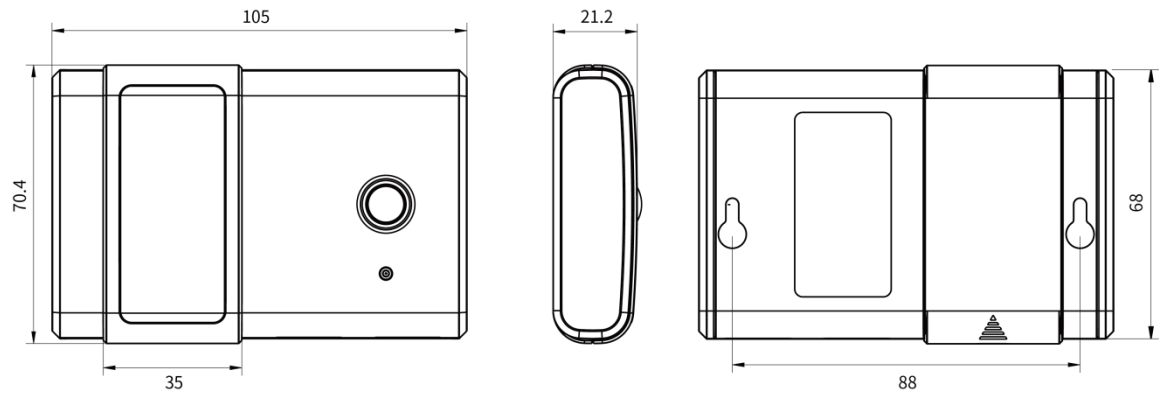
**Note:** AM100 series will do a full-screen refresh every 30 minutes in order to remove ghosting.

### 2.3.2 Screen Mode Switch

Here are 3 methods to switch between the three modes:

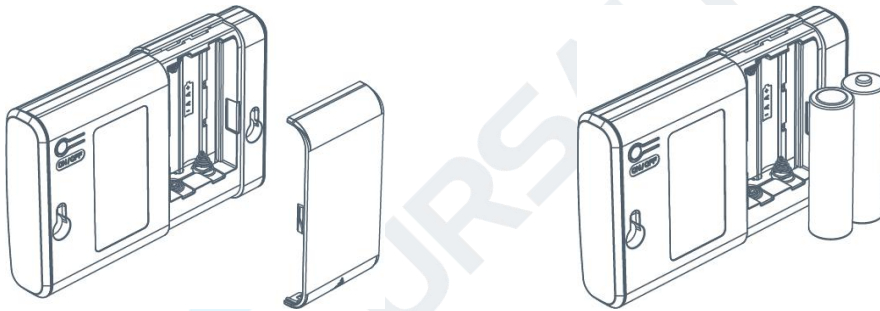
- Power button: Quick press on the power button to switch the mode.
- Mobile APP: Go to APP menu “Device > Settings > Basic Settings” to select screen display mode.
- Software: Go to Toolbox menu “Device Settings > Basic” to select screen display mode.

## 2.4 Dimensions(mm)



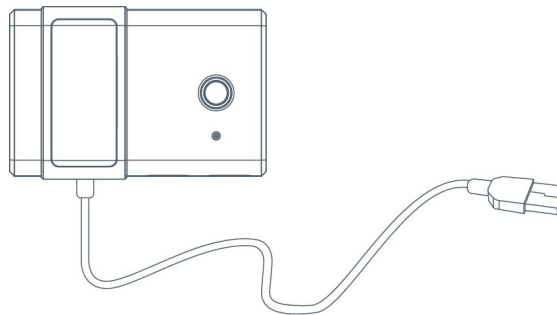
## 3. Power Supply

Remove the battery cover and install two new AA/LR6 batteries. Batteries can be replaced on the fly.



### Note:

- AM100 series can also be powered by type-C USB port (5V, 100mA). When batteries and external power are both connected, external power will power the device first.
- USB port can't be used to charge battery.



## 4. Turn On/Off via Power Button

AM100 series can be turned on/off or reset by power button on the rear panel.

Function	Action
Turn On	Press and hold the power button for more than 3 seconds until the screen changes state.
Turn Off	Press and hold the power button for more than 3 seconds until the screen changes state.
Reset	Press and hold the power button for more than 10 seconds. <b>Note:</b> AM100 will be automatically power on after reset.
Change Screen Mode	Quick press on the power button.

## 5. Sensor Configuration

AM100 series sensor can be monitored and configured through one of the following methods:

- Mobile APP (NFC);
- Windows software (NFC or Type-C port).

In order to protect the security of sensor, password validation is required when turning on/off the sensor or changing configuration. Default password is **123456**.

### 5.1 Configuration via Smartphone APP

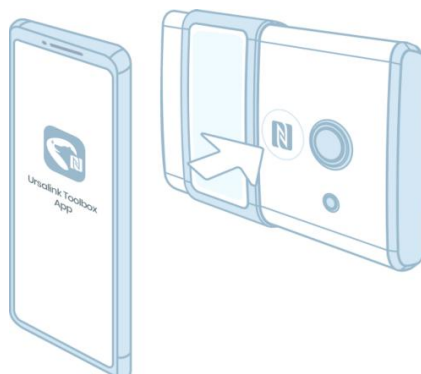
#### Preparation:

- Smartphone (NFC supported)
- Toolbox APP: APP can be download on Google Play or Apple Store.

#### 5.1.1 Read/Write Configuration via NFC

1. Enable NFC on the smartphone and open "Toolbox" APP.
2. Attach the smartphone with NFC area to the device to read basic information.

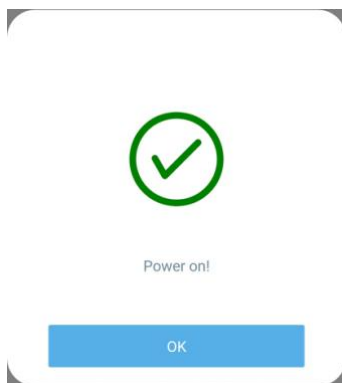
**Note:** Ensure your smartphone NFC area and it is recommended to take off phone case before using NFC.



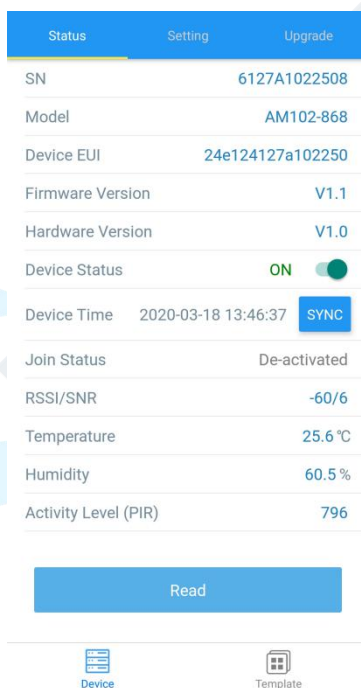


3. When you perform one of the following operations, enter the password and attach the smartphone with NFC area to the device until the APP shows a successful prompt.

- Turn on/off the sensor
- Reset the sensor
- Sync the time
- Tap “Write” to change settings in “Device > Settings”.



4. Click “Read” to fetch the current data of sensor.

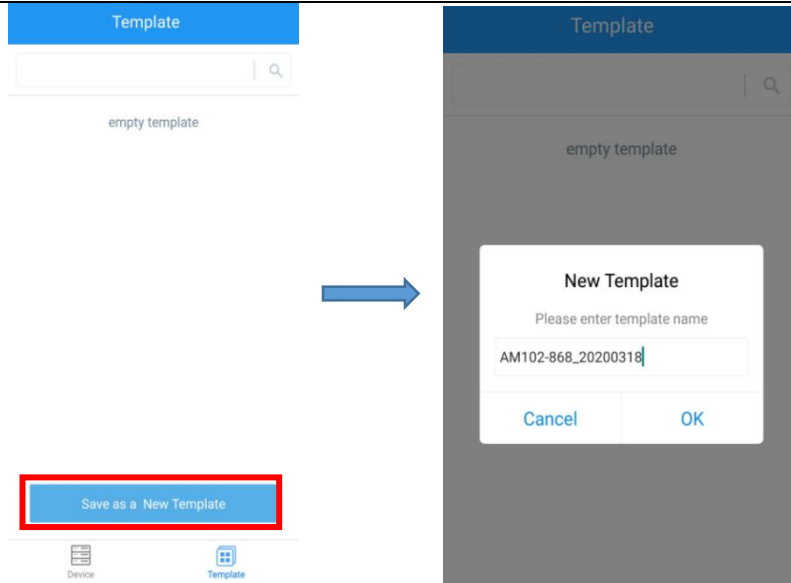


### 5.1.2 Template Settings

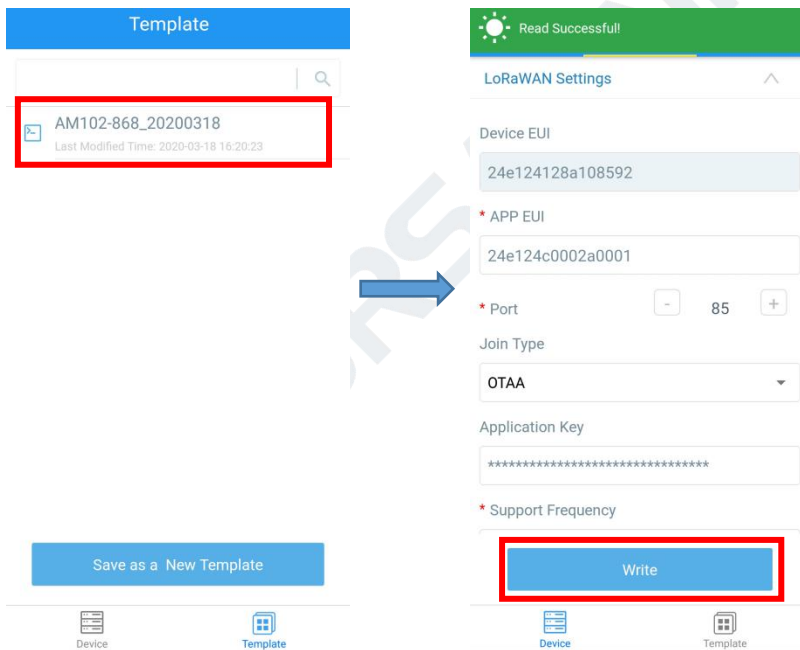
Template settings are used for easy and quick device configuration in bulk.

**Note:** Template function works only for sensors with the same model and LoRa frequency band.

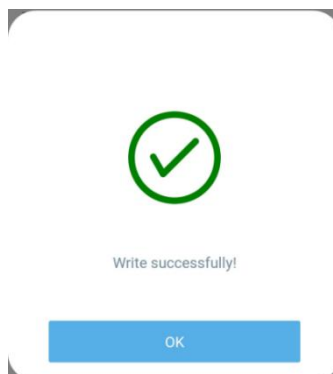
1. Go to “Template” page of APP and save current settings as a template.



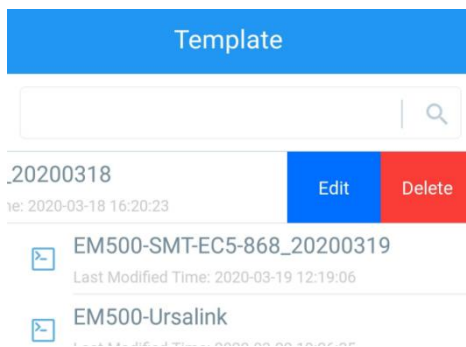
2. Attach the smartphone with NFC area to another device.
3. Select the template file from Toolbox and click "Write".



4. Enter password of this device and keep the two devices close until the APP shows a successful prompt.



5. Slide the template item left to edit or delete the template.



## 5.2 Configuration via PC

### Preparation:

- Dedicated NFC Reader or Type-C USB cable
- PC (Windows 10 is recommended)
- Toolbox: <https://www.ursalink.com/en/software-download/>

### 5.2.1 Log in the Toolbox

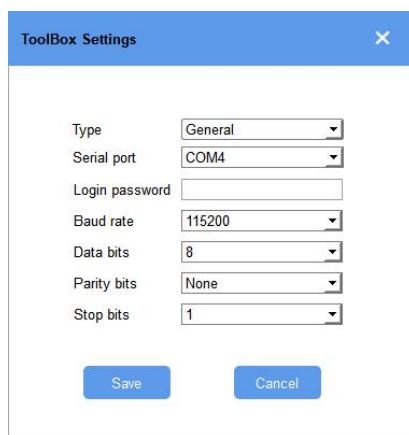
Make sure “Toolbox” is downloaded on your computer. Select one of the following methods to log in Toolbox.

#### Type-C Connection

1. Connect the AM100/AM102 sensor to computer via type-C port.

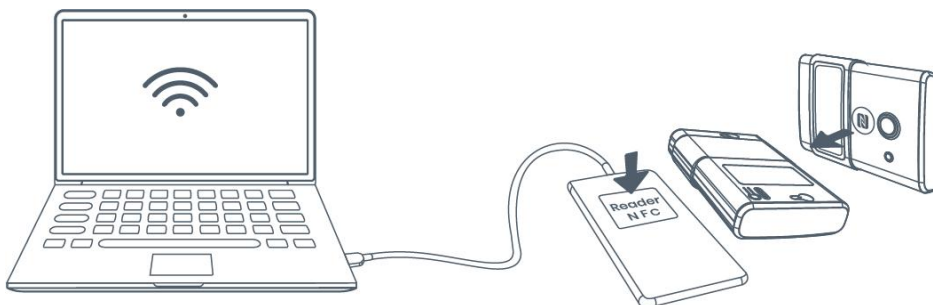


2. Select type as “General” and click password to log in Toolbox. (Default password: 123456)

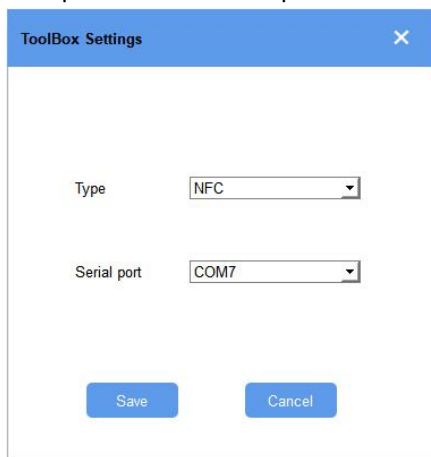


### NFC Connection

1. Connect the NFC reader to computer, then attach the sensor to NFC area of the reader.



2. Select type as “NFC” and serial port as NFC reader port on Toolbox.



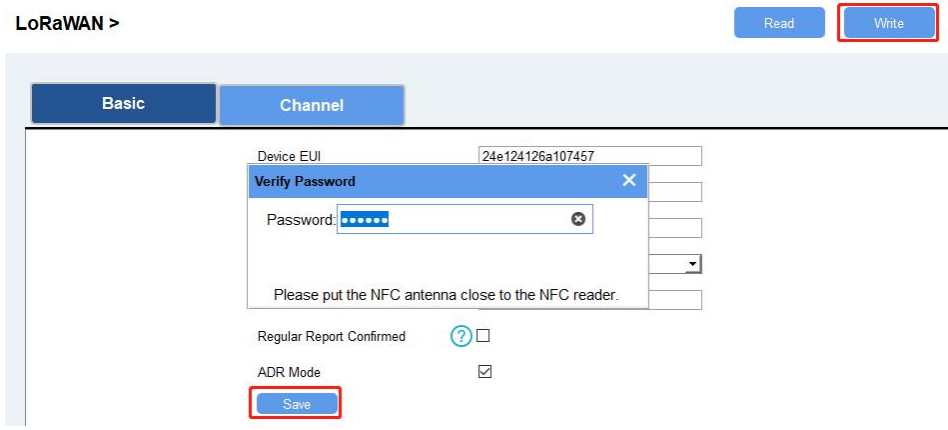
### 5.2.2 Basic Configuration

1. Click “Read” to read current data of the sensor.



2. When you perform one of the following operations, type the password and click “Enter”, then wait a few seconds until toolbox shows a successful prompt. (Password is not needed if you connect it via type-C port)

- Turn on/off the sensor
- Reset the sensor
- Sync the time
- Click “Write” to change settings
- Upgrade

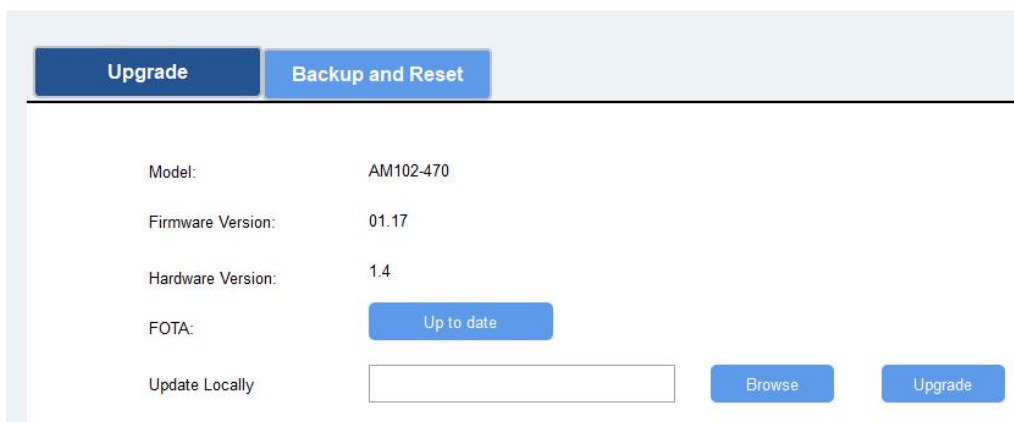


### 5.2.3 Upgrade

1. Download AM firmware to your computer.
2. Go to “Maintenance -> Upgrade” page of Toolbox.
3. Click “Browse” and select the firmware from computer.
4. Click “Upgrade” to upgrade the device.

**Note:** If NFC connection is selected, please keep the two devices close and don't move them in order to get the best connectivity as possible when upgrading.

#### Upgrade >

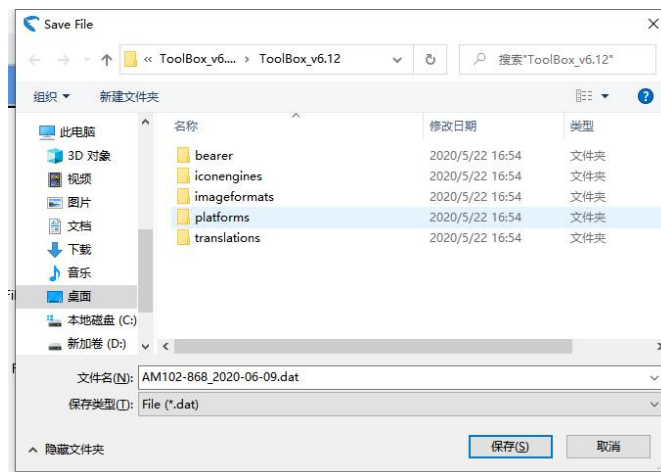
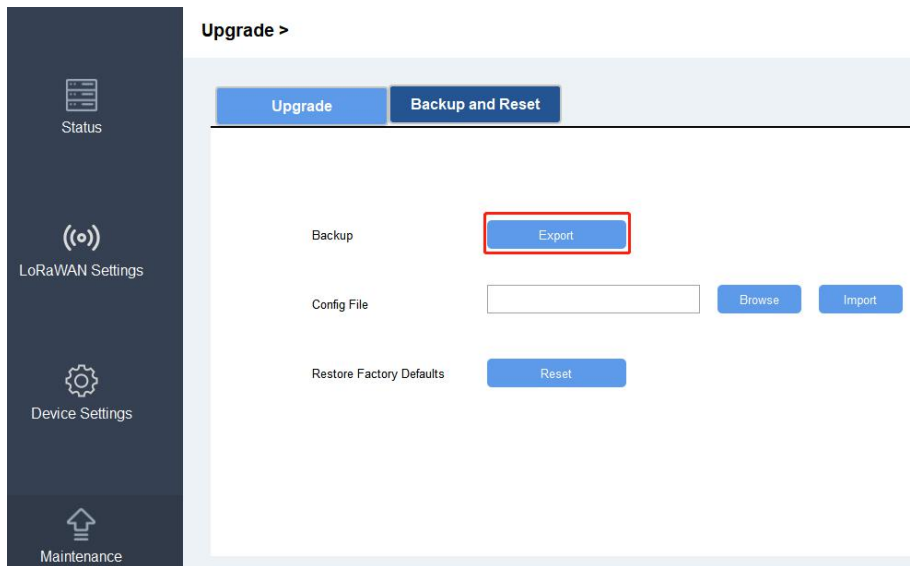


### 5.2.4 Template and Reset

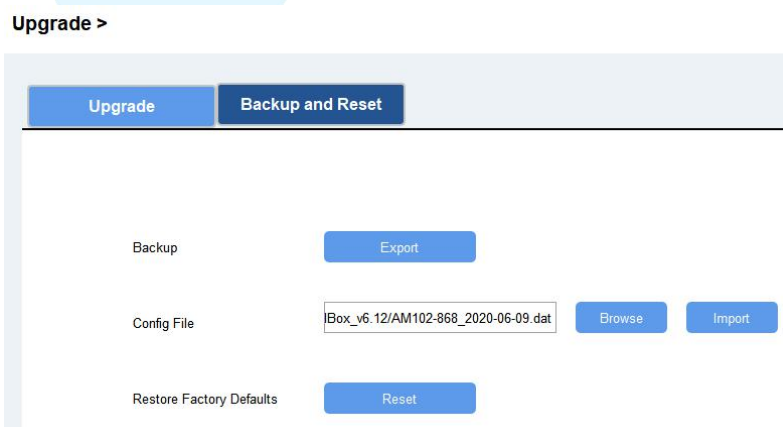
#### 5.2.4.1 Template Configuration

**Note:** Template function works only for sensors with the same model and LoRa frequency band.

1. Go to “Maintenance -> Template and Reset” page of Toolbox.
2. Click “Export” to save the current settings as a template.

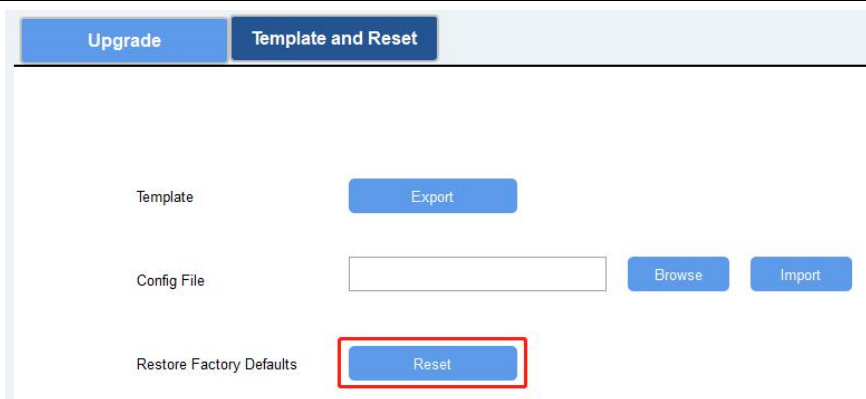


3. Click "Browse" to select the correct template from computer.
4. Click "Import" to import the template to the device.



### 5.2.4.2 Reset

Click the "Reset" to reset the setting to factory default.



## 5.3 Configuration Examples

### 5.3.1 LoRaWAN Channel Settings

The configuration of LoRaWAN channel of AM100/AM102 must match the LoRaWAN gateway's. Refer to [Appendix](#) to check default channel settings of AM100/AM102.

**Mobile APP Configuration:**

Open Toolbox APP and go to "Device ->Setting -> LoRaWAN Settings" to change the frequency and channels.

**Software Configuration:**

Log in Toolbox and go to "LoRaWAN Settings -> Channel" to change frequency and channels.

**Note:** If frequency is one of CN470/AU915/US915, you can enter the index of the channel that you want to enable in the input box, making them separated by commas.

**Examples:**

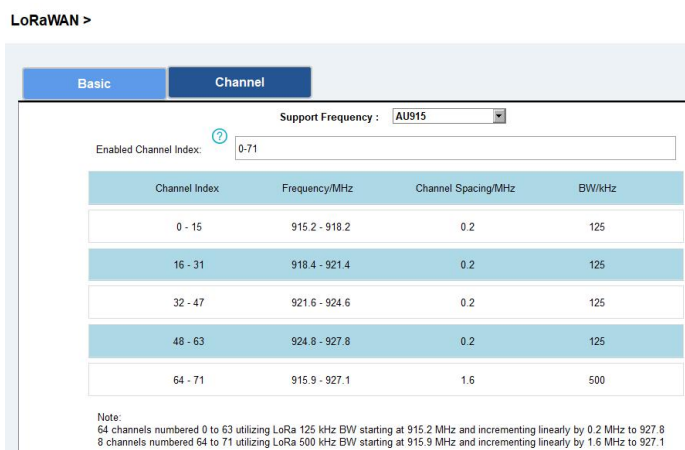
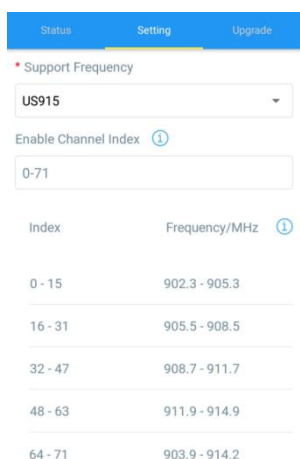
1, 40: Enabling Channel 1 and Channel 40

1-40: Enabling Channel 1 to Channel 40

1-40, 60: Enabling Channel 1 to Channel 40 and Channel 60

All: Enabling all channels

Null: Indicates that all channels are disabled



### 5.3.2 Time Synchronization

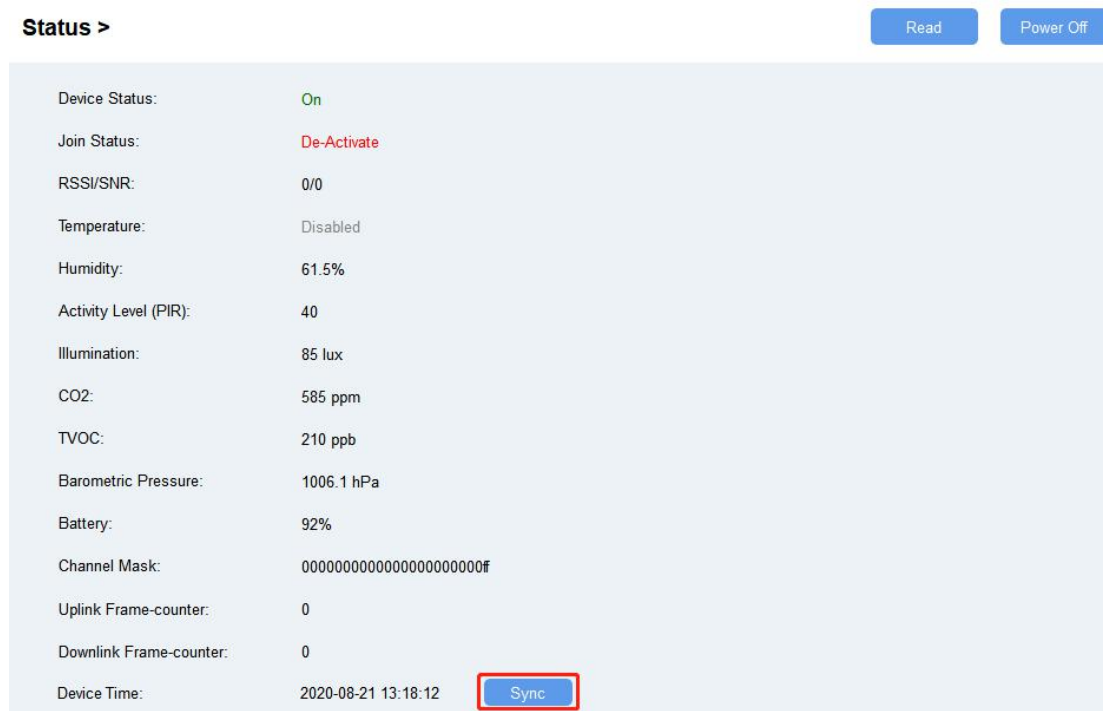
**Mobile APP Configuration:**

Open Toolbox APP and go to “Device ->Status”to click “sync” to sync the time on the screen.



**Software Configuration:**

Log in Toolbox and go to “Status” page to sync the time on the screen.



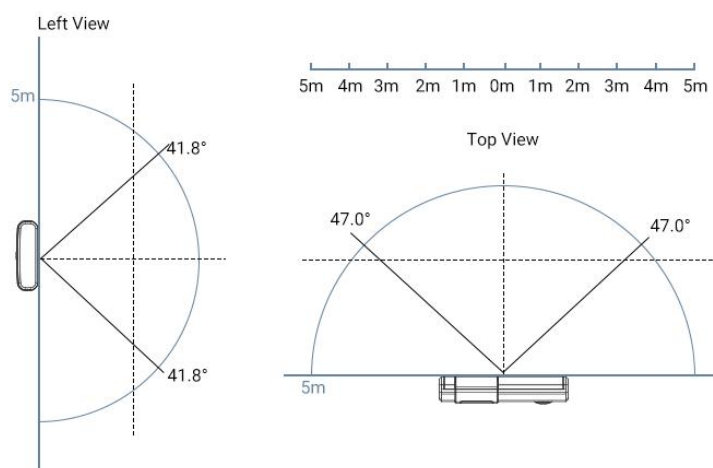


## 6. Sensor Installation

### 6.1 Installation Note

In order to ensure the best detection and LoRaWAN communication effect, it is recommended to install AM100 series as follows:

- There should not be any isolates or barriers in PIR and light detection range.
- Do not mount the device where the temperature is below/above operating range and temperature varies greatly.
- Stay far away from any heat source or cold source like oven, refrigerator.
- Do not mount the device close to where airflow varies greatly like windows, vent, fan and air conditioner.
- Do not mount the device upside down.
- Do not place the device right to the window or door. If you have to, you'd better pull the curtain.
- It is recommended to install at least 1.5m high from floor.

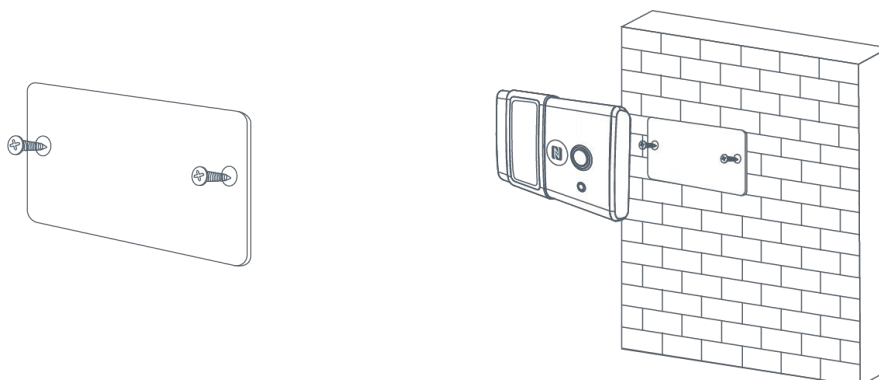


### 6.2 Wall Mounting

1. Attach the mounting sticker to the wall.
2. Mark the wall where the two mounting holes are according to the sticker's mark (around 88mm).

**Note:** The connecting line of two holes must be a horizontal line.

3. Drive two screws into wall at the marks using screw driver.
4. Mount the device on the wall.



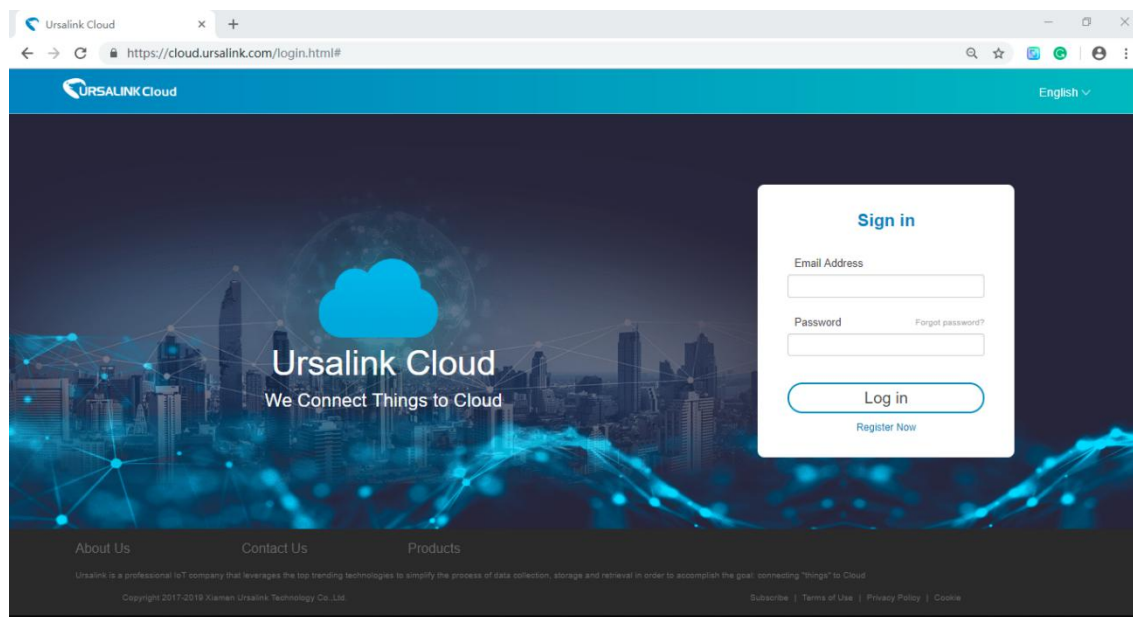
## 7.Sensor Management via Ursalink Cloud

Ursalink cloud is a comprehensive platform that provides multiple services including device remote management and data visualization with the easiest operation procedures.

### 7.1 Ursalink Cloud Registration

Register and log in Ursalink Cloud.

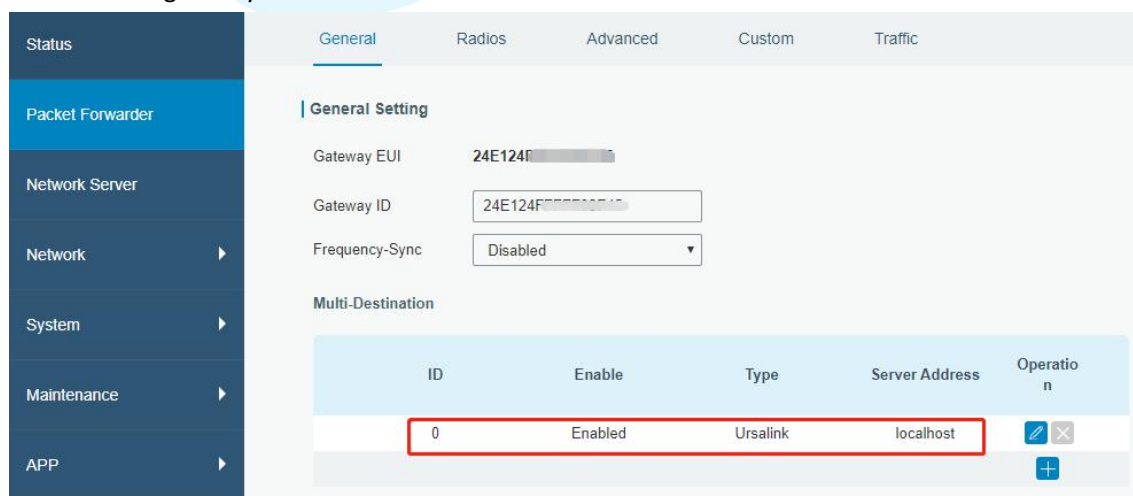
Ursalink Cloud URL: <https://cloud.ursalink.com/login.html>

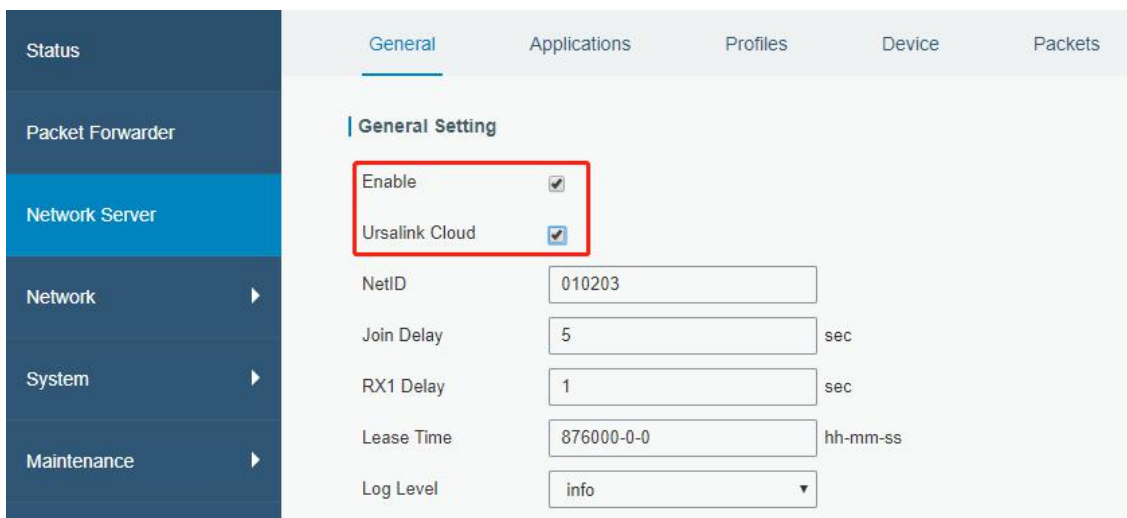


### 7.2 Add a Ursalink LoRaWAN Gateway

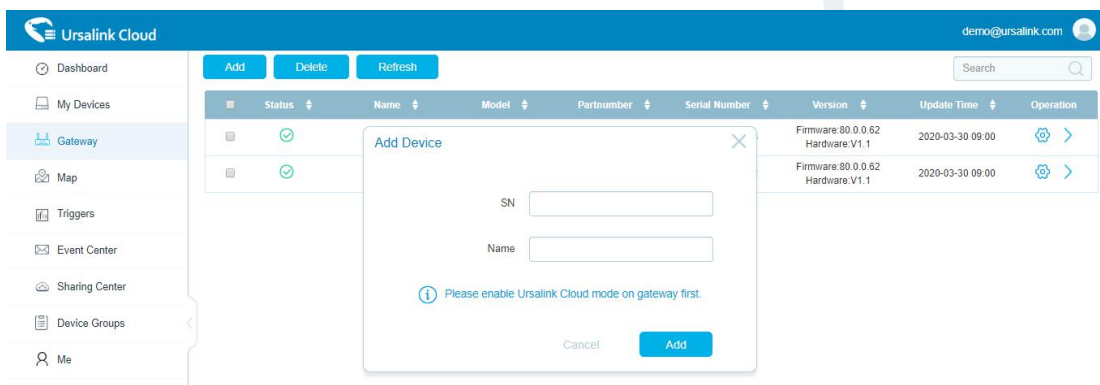
1. Enable “Ursalink” type network server and “Ursalink Cloud” mode in gateway web GUI.

**Note:** Ensure gateway has accessed the Internet.





2. Go to “My Devices->Gateway” of Ursalink Cloud and click “Add” to add gateway to Ursalink Cloud via SN.



3. Check if gateway is online in Ursalink Cloud.



### 7.3 Add AM100/AM102 to Cloud

1. Go to “Device->My Devices” and click “Add Device”. Fill in the SN of AM100/AM102 and select associated gateway.

Add Device
✕

SN

Name

Associated Gateway

Device EUI

Application Key

Cancel
Add

2. After AM100/AM102 is connected to Ursalink Cloud, Click [>](#) or “History Data” to check the data on Ursalink cloud.

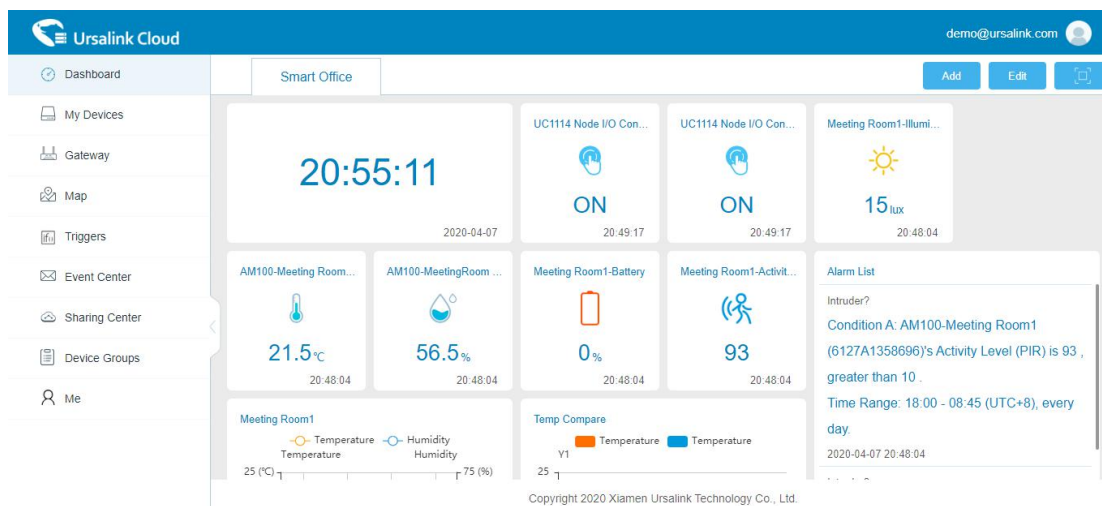
The screenshot shows the Ursalink Cloud interface. On the left is a navigation menu with options: Dashboard, My Devices, Gateway, Map, Triggers, Event Center, Sharing Center, Device Groups, and Me. The main area displays a table of devices:

Status	Name	Interface Status	Update Time	Operation
Online	UC1114 Node I/O C...	DI 1: <input type="checkbox"/> Fan: <input checked="" type="checkbox"/> DI 2: <input type="checkbox"/> Light: <input checked="" type="checkbox"/>	2020-04-07 20:49	<a href="#">Settings</a> <a href="#">&gt;</a>
Online	1152	DL_1: <input type="checkbox"/> DO_1: <input checked="" type="checkbox"/>	2020-04-07 20:27	<a href="#">Settings</a> <a href="#">&gt;</a>
Online	AM100-Meeting Ro...	Temper...: 21.5 °C Humidity: 56.5 % Activity ...: 93 Illuminat...: 15 lux	2020-04-07 20:48	<a href="#">Settings</a> <a href="#">&gt;</a>
<p>RSSI: -71dBm SNR: 8.5dB Battery: 0%</p> <p>Group Name: -</p> <p>Associated Gateway: 621793121298 Device EUI: 24e124127A135869 Firmware: v1.1 Hardware: v1.0</p> <p style="text-align: right;"><a href="#">History Data</a></p>				
Offline	AM102	Temper...: 28.5 °C Humidity: 62.5 % Activity ...: 0 Illuminat...: 24 lux CO2: 624 ppm TVOC: 0 ppb Barome...: 101.0 kPa	2020-04-07 16:38	<a href="#">Settings</a> <a href="#">&gt;</a>

Below the AM100 device entry, there is a line graph titled "History Data" showing Temperature (blue), Humidity (orange), Activity Level (PIR) (green), and Illumination (red) over time from 03:57 to 20:48 on 04-07. The Y-axis ranges from 0 to 500. The Activity Level (PIR) shows significant fluctuations, peaking around 400.

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3. Go to “Dashboard” page to add widgets to the dashboard.



## Appendix

### Default LoRaWAN Parameters

<b>DevEUI</b>	24E124 + 2 <sup>nd</sup> to 11 <sup>th</sup> digits of SN e.g. SN = 61 26 A1 01 84 96 Then Device EUI = 24E124126A101849
<b>AppEUI</b>	24E124C0002A0001
<b>Appport</b>	0x55
<b>NetID</b>	0x010203
<b>DevAddr</b>	The 5 <sup>th</sup> to 12 <sup>th</sup> digits of SN e.g. SN = 61 26 A1 01 84 96 00 41 Then DevAddr = A1018496
<b>AppKey</b>	5572404C696E6B4C6F52613230313823
<b>NwkSKey</b>	5572404C696E6B4C6F52613230313823
<b>AppSKey</b>	5572404C696E6B4C6F52613230313823

### Default Uplink Channels

Model	Channel Plan	Channel Settings/MHz
AM10x-433	EU433	433.175, 433.375, 433.575
AM10x-470	CN470	470.3~489.3 (All 95 channels)
AM10x-868	EU868	868.1, 868.3, 868.5
AM10x-915	AU915	915.2~927.1 (All 72 channels)

-END-