



Smart AC Controller

UC701

User Guide

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Chapter 1. Preface

Copyright Statement

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Milesight reserves the right to change this guide and the specifications without prior notice. The latest specifications and user documentation for all Milesight products are available on our official website <http://www.milesight.com>

Safety Instruction

These instructions are intended to ensure that users can use the product correctly to avoid danger or property loss. Milesight will not take responsibility for any loss or damage resulting from failure to follow the instructions in this operating guide.

**Warning:**

Serious injury or death may be caused if any of these warnings is neglected.

- The installation must be conducted by a qualified person and should strictly comply with the electrical regulations of the local region.
- Before installation or maintenance, make sure to keep the power off. Failure to follow these steps may result in personal injury and/or death from electric shock.
- Please contact the after-sales service for equipment failure, do not try to repair it yourself.

**CAUTION:**

Injury or equipment damage may be caused if any of these cautions are neglected.

- The device is intended only for indoor use.
- The device must not be disassembled or remodeled in any way.
- Do not place the device close to objects with naked flames.
- Do not place the device where the temperature is below/above the operating range.



- The device must never be subjected to shocks or impacts.
- To protect the security of the device, please change the device password when first configuring.

Revision History

Release Date	Version	Revision Content
Sept. 24, 2026	V1.0	Initial version.

Chapter 2. Product Introduction

This chapter describes basic product information.

Overview

UC701 is a LoRaWAN[®] smart AC controller that supports wireless IR control of mainstream air conditioning and PTAC systems via BMS systems or the paired Milesight WT401 thermostat. It allows automatic control through local schedules or remote cloud systems. UC701 provides built-in sensors and multiple interfaces to integrate with external sensors, enabling operational data collection, accurate control, and energy savings for air conditioning systems.

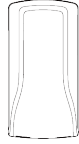
Compliant with Milesight LoRaWAN[®] gateway and Milesight Development Platform solution, users can control the air conditioner systems via webpage remotely.

The device has the following features:

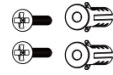
- Provide wireless IR control without any cable connections
- Built-in IR code library compatible with mainstream air conditioner systems, with IR code learning capability
- Built-in sensor and rich external sensor inputs for accurate AC monitoring and control
- Built-in Bluetooth for easy configuration
- Support 5V DC power supply via Type-C, with an optional external battery compartment for flexible deployment
- Work with Milesight WT401 wireless thermostat via Bluetooth
- Support local rules for AC time on/off and temperature adjustment
- Enable real-time monitoring to ensure timely alerts for sudden temperature changes
- Store historical records locally and supports retransmission to prevent data loss
- Work well with standard LoRaWAN[®] gateways and network servers
- Compatible with Milesight Development Platform
- Support Firmware Update Over the Air (FUOTA) feature

Packing List

This section describes the packing list. After unboxing, please check that the following items are included in the package. If any of the below items are missing or damaged, please contact your sales representative.



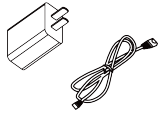
1 × Smart AC Controller



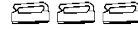
2 × Wall Mounting Screw Sets



1 × 3M Tape



1 × Type-C Cable (1.2m)
& Power Adapter



3 × 3M Adhesive Cable Clips



1 × Warranty Card

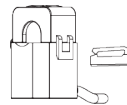


1 × Quick Guide Card

Optional Accessories



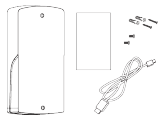
1 × NTC Sensor Kit



1 × Current Transformer Kit



1 × IR Emitter Kit

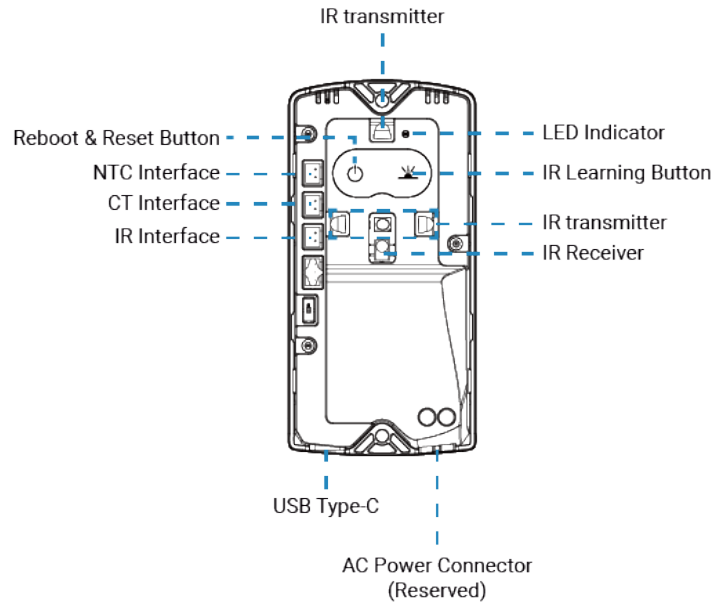


1 × Battery Compartment Kit

Hardware Introduction

Hardware Overview

Open the front case to check the hardware.



No	Part Name	Description
1	Reboot & Reset Button	Refer to Button and LED Descriptions .
2	IR Learning Button	Refer to Button and LED Descriptions .
3	NTC Interface	Connect to an external NTC sensor to detect the temperature to monitor air conditioner operating status.
4	CT Interface	Connect to an external current transformer to monitor air conditioner's operating status.
5	IR Interface	Connect to an external IR emitter when the controller cannot be installed within the effective IR control range.
6	IR transmitter	Transmit infrared signals to control the air conditioner.
7	IR Receiver	Receive infrared signals from the AC remote control.
8	LED Indicator	Refer to Button and LED Descriptions .
9	USB Type-C	Used for power supply (DC or battery compartment) or console access.
10	AC Power Connector (Reserved)	Used for AC power supply. It requires hardware customization before purchase.

Button and LED Descriptions



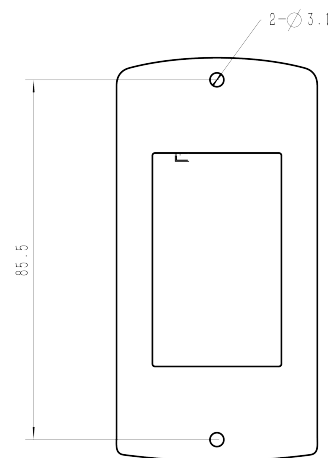
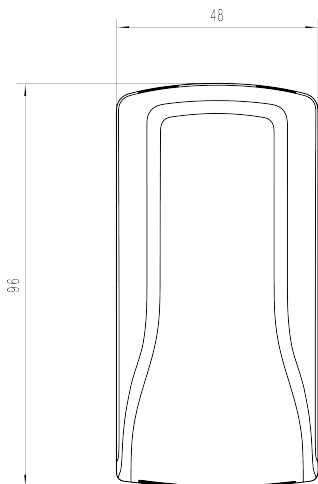
Tip:

By default, the LED indicator turns off automatically after 10 minutes of inactivity. This configuration can be changed via ToolBox or downlink.

Function	Operation	LED Status
Network Status	The network is not activated.	Green Slowly Blinks
	The network is activated.	Green Steady On
IR Learning	Press and hold the IR Learning button for more than 3s.	Learning Failed: Red Slowly Blinks → Off
		Learning Successful: Red Slowly Blinks → Red Steady On 5s
Reboot	Press and hold the Reboot & Reset button for more than 3s.	Green Slowly Blinks
Factory Reset	Press and hold the Reboot & Reset button for more than 10s.	Green Quickly Blinks

Dimensions

The following figures show the device dimensions (unit: mm).

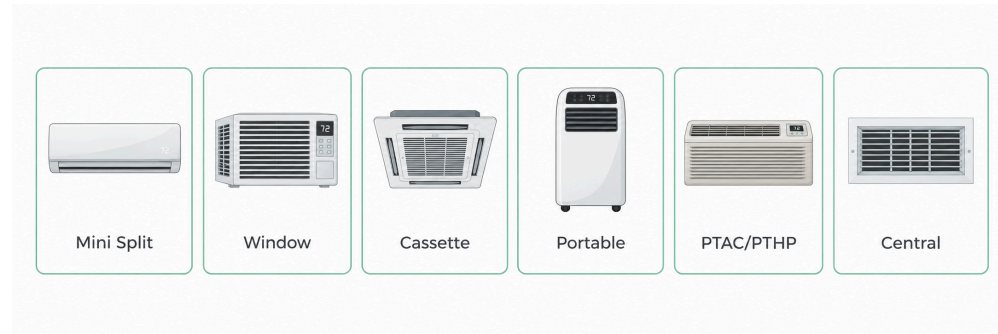


Chapter 3. Compatibility

This chapter introduces the device compatibility and describes the steps to check the compatible systems.

Compatible AC Systems

The controller is almost compatible with any air conditioner that comes with an infrared remote control, including different types of AC units:



- Mini Split
- Window
- Cassette
- Portable
- PTAC/PTHP
- Central

How to Check Air Conditioner Compatibility

UC701 smart AC controllers achieve compatibility with different air conditioners by learning and replicating the infrared codes from the remote control. To check compatibility of an AC:

1. Ensure the AC has an infrared remote control.
2. Use compatibility checker to find if your AC is in the list.
3. If not found, contact Milesight about it.

Chapter 4. Hardware Installation

This chapter describes the preparation and installation procedures for mounting the controller and its accessories at the deployment site.



Warning:

Before installation, ensure the controller and the air conditioner are powered off!

Installation Requirement

Installation Locations

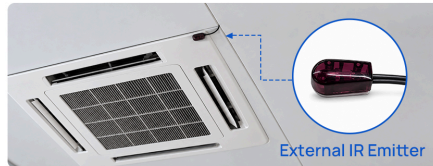
The controller supports multiple installation locations to suit different on-site environment:

1 Wall Mount



Smooth wall surface next to AC, easy for wiring.

2 Ceiling Mount



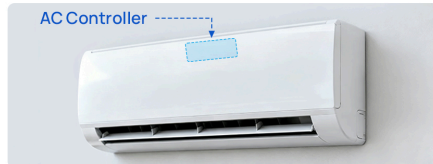
For cassette or ceiling AC units.

3 Back of AC Unit



Concealed installation for aesthetic purposes.

4 Inside AC Unit



Recessed concealed installation, energy-saving retrofits.



Tip:

- For wall mount, the controller's installation height should not exceed AC unit height, and preferably not less than 2 meters.
- Make sure the controller is within the transmission range of the LoRaWAN gateway and with no metal objects nearby.



- It is recommended that the controller be placed within 5 meters of the air conditioner (up to a maximum of 10 meters) and pointed toward the air conditioner.
- It requires both external NTC sensor and external IR emitter when installing inside or at the back of the air conditioner.

Installation Method

The controller offers two categories of installation methods:

Surface Installation

Method	Suitable Surface	Description
Screw Mount	Non-smooth surfaces (wood, concrete, etc.)	For long-term installation. Before installation, check for concealed wiring and pipes
3M Tape Mount	Dry, smooth, solid, clean surface (painted walls, glass, etc.)	For fast and easy installation. Recommended application temperature: 20-40°C. In low temperatures, pre-warm the tape to approximately 30°C.

Concealed Installation

AC Type	Installation Position
Wall-mounted Split	Embedded in the unused drain pipe position of the indoor unit
Cassette/Ceiling AC	Concealed inside the cassette decorative panel or within the gypsum ceiling
Floor-standing Cabinet AC	Concealed at the back of the indoor unit

Environmental Conditions

- Do not cover the controller surface, as this will disable the built-in IR and temperature sensors.
- Avoid installation in direct sunlight or spotlight to reduce interference with IR signals.
- When using battery compartment, operating ambient temperature should be 0 - 40°C.

External Accessories Selection

The controller supports various external accessories to extend functionality and adapt to different installation scenarios. All accessories below are sold separately.

Accessory	When to Use
NTC Sensor	• When the controller is concealed (back/inside AC unit) and built-in sensor cannot accurately detect room temperature. • When measuring AC outlet air temperature for operational status verification.
Current Transformer	• When accurate AC on/off status detection is needed. • When estimating AC operating power and energy consumption. • Not recommended to use it when the controller is powered by batteries as it reduces battery life.  Note: It is primarily for checking AC on/off status and rough current measurement; it cannot perform precise power consumption testing.
IR Emitter	• When the controller cannot be positioned to directly face the AC IR receiver. • When direct sunlight or spotlight interferes with IR signals. • In concealed installation scenarios, to ensure IR commands effectively reach the AC.
Battery Compartment	• When no suitable DC power supply is available on-site. • Reduce wiring and installation costs.

Prerequisites

Check AC Compatibility

Confirm the AC brand is in the compatibility list and IR code learning verification is completed.

Check the Installation Conditions

Select the required mounting method and prepare the corresponding mounting accessories.

Check the External Sensors

Make sure the external sensors are connected to the controller and functioning properly.

Check the Power Supply

The controller can be powered by a DC power supply (3.6 to 7 V) or an optional battery compartment using the USB port. For battery power, make sure the battery compartment, its accessories, and three new AA 1.5V batteries (Recommended Brands: Duracell, Energizer, Panasonic) are ready.



CAUTION:

Do not overload the device, otherwise it may cause the permanent damage.

Complete the Initial Test

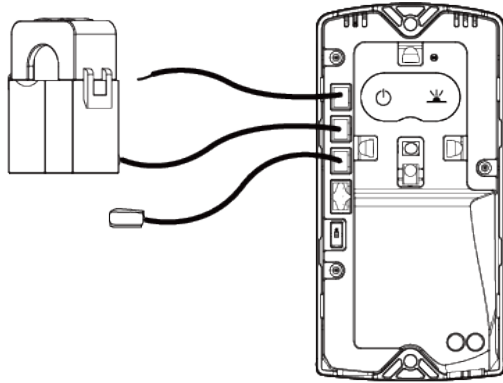
Ensure the controller is tested well with the air conditioner and other necessary devices:

- [Access the Device Using Bluetooth](#)
- [IR Code Learning](#)
- [Pair the Controller with WT401 Thermostat](#)

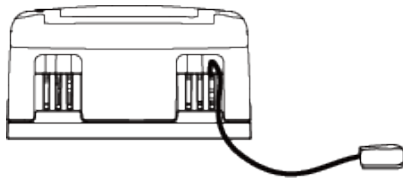
Install the External Sensors (Optional)

Insert the External sensors

1. Remove the controller front cover.
2. Connect the external sensors to the corresponding interfaces of the controller.



3. Restore the front cover and pass the sensor cables through the holes at the top of the controller cover.



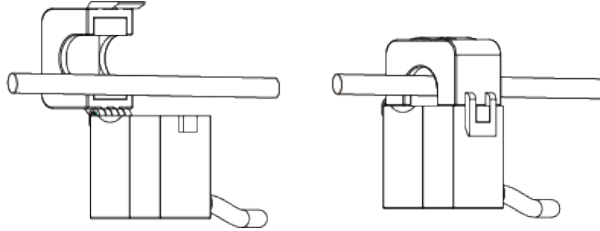
Install the IR Emitter

Typically, the IR emitter can be mounted within the IR-available range of air conditioner with cable clips. The installation method depends on your requirement:

- **Parallel Installation:** Stick the IR emitter head near the AC IR receiver. This will not affect normal use of the original remote control.
- **Interventional Installation:** Use the included IR-blocking tape to secure the IR emitter head onto the AC IR receiver, so the emitter sits between the tape and the receiver. In this way, original remote control becomes largely unusable and it is suitable for scenarios requiring centralized control.

Install the Current Transformer

1. Open the current transformer to clip it around a single **Live wire**. Make sure the direction of the current matches the arrow on the current transformer, which flows from the outlet to the air conditioner.
2. Close the clip with a slight “click” sound to make sure the clip firmly grips the wire.



Install the NTC Sensor

Mount the NTC sensor with cable clips. The installation position depends on your measuring requirement:

- **Ambient Temperature Detection:** Place the sensor in a well-ventilated indoor area.
- **Outlet Temperature Detection:** Fix the sensor near the AC air outlet to check air conditioner on/off status.

Prepare and Install the Battery Compartment (Optional)

If the controller requires battery power, follow the steps to install the batteries into the compartment, and deploy the battery compartment.

Install Batteries into the Battery Compartment

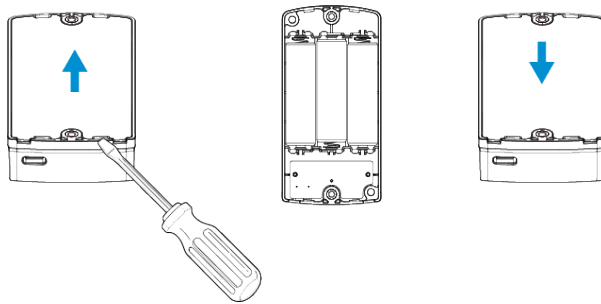
1. Remove the battery compartment cover using a screwdriver.
2. Install the batteries into the battery compartment.



Note:

Ensure all batteries are new and of the same brand. Using old or mixed batteries may shorten battery life or cause inaccurate battery level calculation.

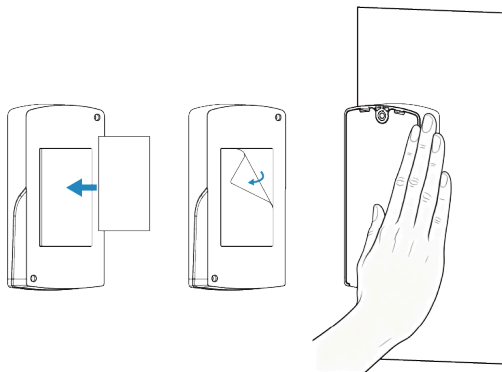
3. Reinstall the battery compartment cover.



The battery compartment is typically mounted beside the controller. Select one of the following mounting methods.

Mount with 3M Tape

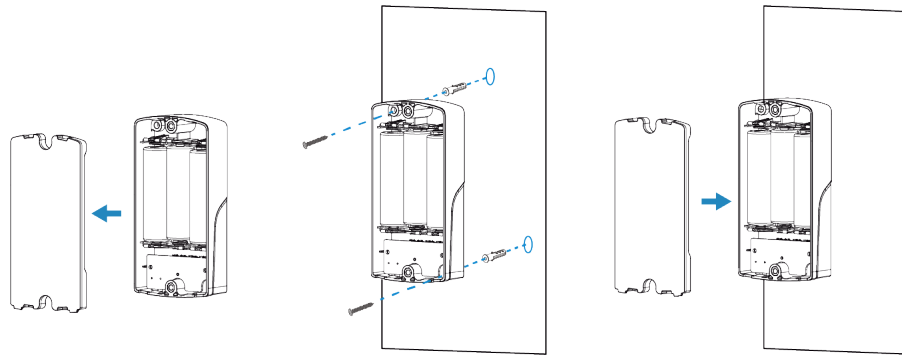
1. Apply 3M tape to the back of the battery compartment, avoiding touching the adhesive side with your fingers.
2. Remove the liner and position the device to the target surface.
3. Press firmly for at least 30 seconds to ensure full adhesion.



Mount with Screws

1. Remove the battery compartment cover.
2. Drill two holes in the wall aligned with the wall-mount holes of the battery compartment.
3. Insert the wall plugs into the drilled holes.
4. Fasten the battery compartment to the wall plugs with the supplied wall mounting screws.

5. Reinstall the battery compartment cover.

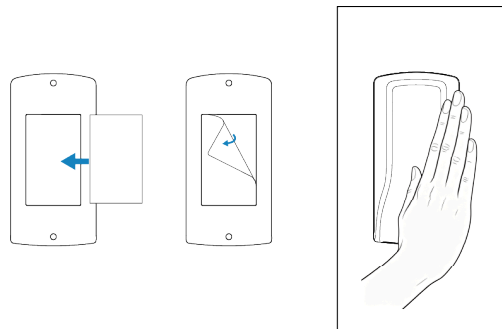


Install the Controller

Select one of the following mounting methods.

Mount with 3M Tape

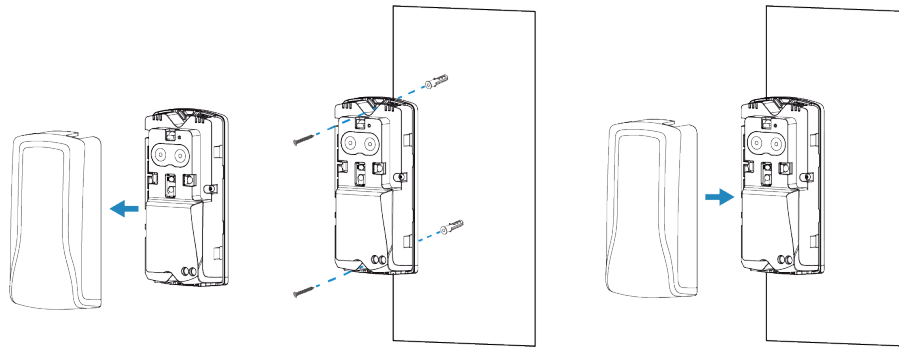
1. Apply 3M tape to the back of the controller, avoiding touching the adhesive side with your fingers.
2. Remove the liner and position the device to the target surface.
3. Press firmly for at least 30 seconds to ensure full adhesion.



Mount with Screws

1. Remove the controller cover.
2. Drill two holes in the wall aligned with the wall-mount holes of the controller.
3. Insert the wall plugs into the drilled holes.
4. Fasten the controller to the wall plugs with the supplied wall mounting screws.

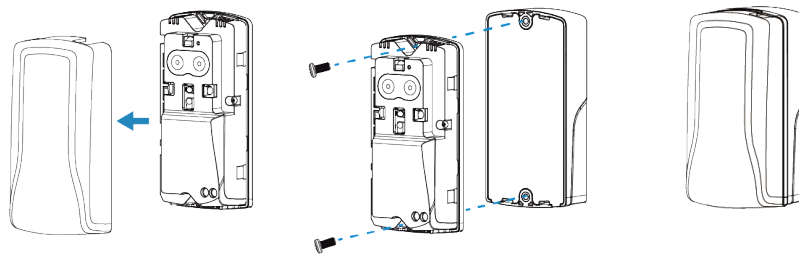
5. Reinstall the controller cover.



Fixed onto the Battery Compartment

For aesthetic reasons, the controller can be mounted on top of the battery compartment.

1. Remove the controller cover.
2. Fasten the controller onto the battery compartment with the supplied screws.
3. Reinstall the controller cover.



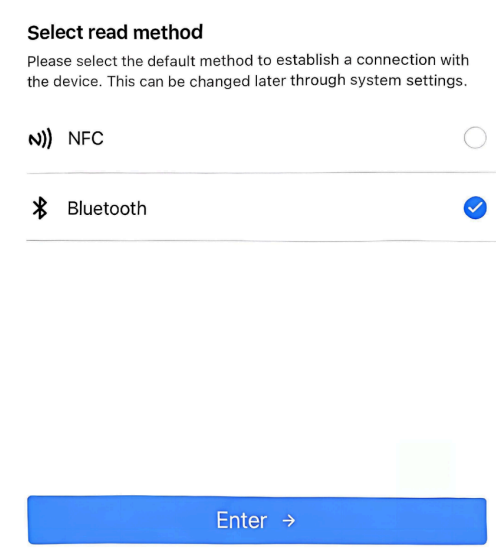
Chapter 5. Operation Guide

Access the Device Using Bluetooth

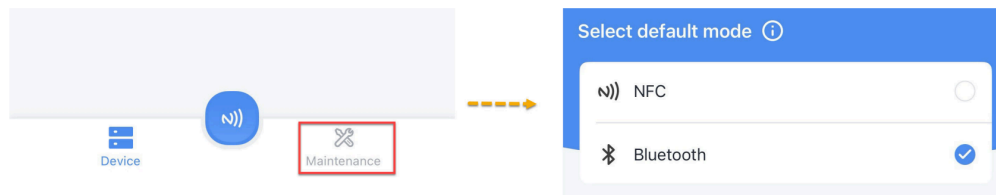
This section describes how to access the device using Bluetooth. Bluetooth is enabled by default on this device.

Access the Device using Bluetooth

1. Download Milesight ToolBox app from Google Play or Apple Store.
2. Enable the Bluetooth and location functions on the smart phone.
3. Launch ToolBox.
 - a. Upon initial launch, the following page will appear. Select **Bluetooth** and click **Enter**.

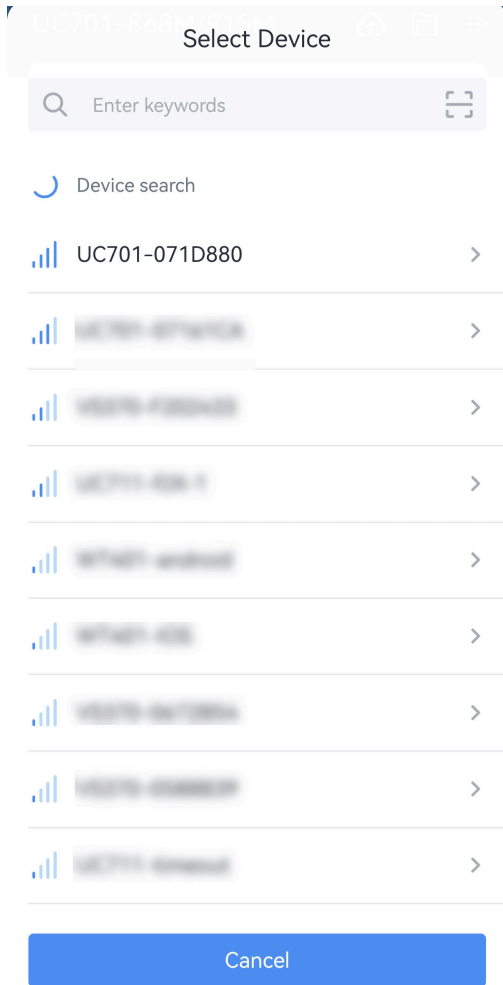


- b. Upon subsequent launches, Click **Maintenance** on the home page, and then select **Bluetooth**.

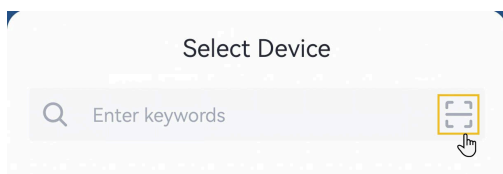


4. Click  to connect the target device by selecting one of the following methods.

Manually Add: Tap the target device in the searching list. The default device Bluetooth name is `uc701-xxxxxxx`, where `xxxxxxx` represents digits 5 through 11 of the device serial number.



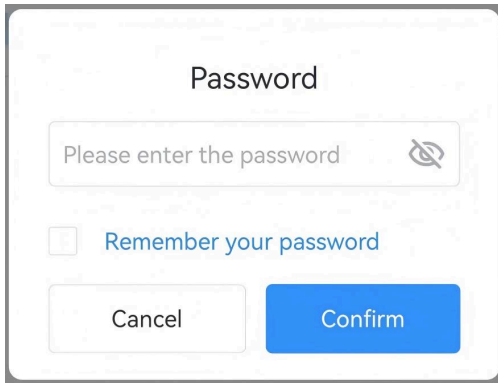
Scan Add: Tap the scan icon to scan the QR code on the device.



Note:

One device can only connect to one smartphone via Bluetooth. If you select a device already connected to another phone, it will disconnect the current connection and connect to your phone.

5. Enter the device password, then click **Confirm**. The default password is 123456.



A screenshot of a 'Password' dialog box. At the top, the title 'Password' is centered. Below it is a text input field with the placeholder text 'Please enter the password' and a small eye icon to its right. Under the input field is a checkbox labeled 'Remember your password'. At the bottom are two buttons: 'Cancel' on the left and 'Confirm' on the right.

6. After the connection is established, the ToolBox homepage is displayed.



Tip:

The Bluetooth connection is terminated if no data is exchanged for three minutes.

ToolBox Homepage

The following table describes the common homepage options.

Item	Description
Basic Information	Shows basic device information and synchronizes the device time.
Setting	Configures device and network parameters.
Send to Gateway	Add the device to Milesight gateway. For details, refer to Milesight Toolbox App User Guide.
	Imports, adds, exports, or deletes configuration templates.
	Selects the app language, displays NFC positions, and shows the ToolBox version and other app information.

Configure the Devices in ToolBox

After accessing the device through Bluetooth, use the following common procedure to view and configure the device parameters.



Note:

Unless otherwise specified, the configuration procedures in the following sections assume that the device has already been accessed through ToolBox.

1. On the ToolBox home page, tap **Setting**.
2. Follow the ToolBox path shown in the relevant feature section.
3. Configure the required parameters.
4. Tap **Write** in the lower-right corner to apply the configuration. Then keep the Bluetooth connection active until the write operation is completed.
5. Confirm that the write-success page is displayed.



Write successfully!

6. Read the device again to check if the parameters are written well.



Important:

For security purposes,

- Change the default device password after first access, see [Change the Device Password](#).
- Disable Keep Bluetooth Advertising, see [Configure Bluetooth Advertising Mode](#).

Change the Device Password

It is recommended to change the device password upon initial configuration for security purposes. This section describes how to change the device password.



Note:

Before configuring the device through ToolBox, access it through Bluetooth. For the navigation path and write operation conventions used in this guide, see [Configure the Devices in ToolBox](#).

Configure by ToolBox

1. Navigate to **Device > General**.
2. In the **General** page, enable **Change Password** and enter the new password.

Change Password 

* New Password

..... 

* Confirm Password

..... 

Parameter	Description
New Password	Enter a new password of 6 characters. Only letters, digits, and underscores are allowed.
Confirm Password	Enter the password again.

3. Tap **Write** to apply the configuration.
4. Use the new password for subsequent authenticated access and configuration through ToolBox.

Air Conditioner Control Settings

This chapter describes the critical features about air conditioner control.

IR Code Learning

This section describes how to learn the IR code to be compatible with the target air conditioner.

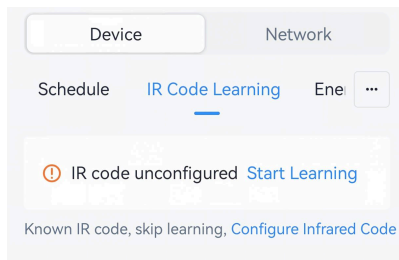
Configure by ToolBox



Note:

Before configuring the device through ToolBox, access it through Bluetooth. For the navigation path and write operation conventions used in this guide, see [Configure the Devices in ToolBox](#).

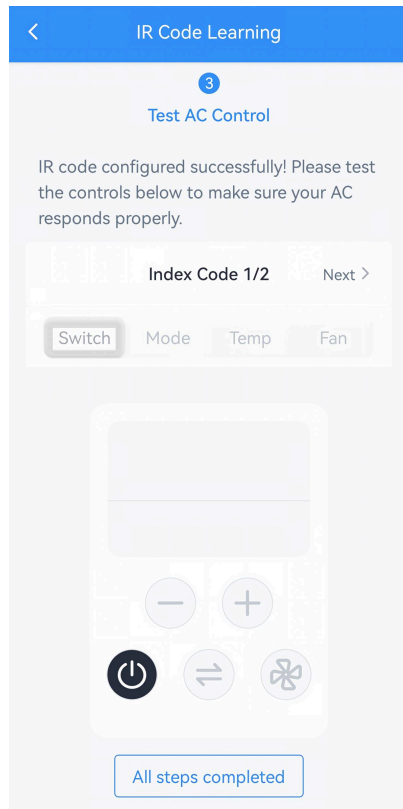
1. Navigate to **Device > IR Code Learning**. Click **Start Learning**.



2. Click **Activate IR learning mode**, or press and hold the IR learning button for 3s until the LED flashes red slowly.



3. Use AC remote control to set to Cool 25 °C (78°F), then aim at the UC701 controller and press Fan Speed button.
 - If pairing is successful, the controller LED will stay red for 5s, and the ToolBox will switch to the test page. Tap the buttons on the page that shows the image of a remote control and aim at the air conditioner to verify that the air conditioner responds correctly. If there are multiple index codes, it is necessary to test every code. If yes, click **All steps Completed**.

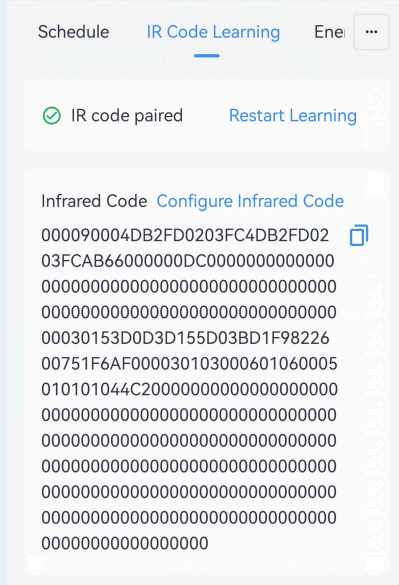


- If pairing fails, click **Preset Mode** to select the air conditioner brand and its preset IR code.



**Tip:**

For batch deployment of identical AC units, the learned IR code can be copied to other UC701 controllers via ToolBox or downlink.

**Remote Configuration Reference**

- BACnet: See *UC701 BACnet Object List*, IR Code Learning.
- JSON Command: See *UC701 Payload Protocol (JSON)*, IR Code Learning.
- LoRaWAN Hex Command: See *UC701 Payload Protocol (HEX)*, IR Code Learning.

Configure Air Conditioner Control Parameters

This section describes the settings related to the air conditioner direct control.

**Note:**

Before configuring the device through ToolBox, access it through Bluetooth. For the navigation path and write operation conventions used in this guide, see [Configure the Devices in ToolBox](#).

Prerequisites

- IR code learning is completed.

Configure Air Conditioner Parameters

The controller supports controlling the air conditioner directly.

Configure by ToolBox

1. Navigate to **Device > General**.
2. Select the **Temperature Control Mode Enable** options according to the air conditioner's capacity.
After selected, the controller can only switch the modes among these options.
3. Configure the related parameters to control the air conditioner.

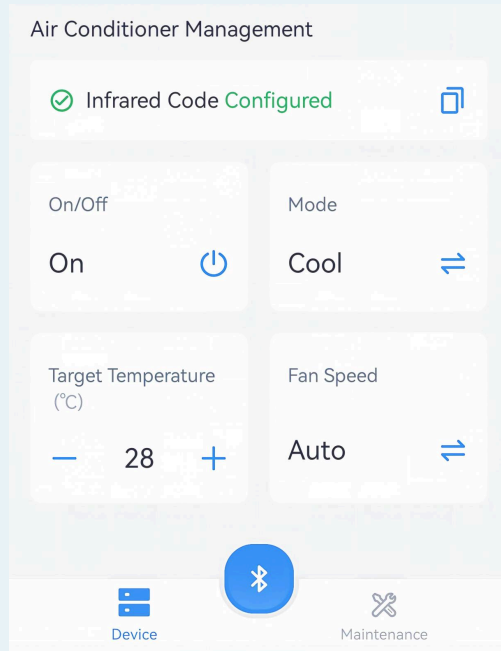
The screenshot shows the 'Device' tab selected, with 'General' as the active sub-tab. The settings are as follows:

- Temperature Control Mode Enable:** A dropdown menu showing 'Heat, Cool, Auto, Dehumidificati...'.
- Temperature Control Mode:** A dropdown menu showing 'Cool'.
- Target Temperature (°C):** A text input field containing '28'.
- Target Temperature Resolution:** A dropdown menu showing '1'.
- Target Temp. Tolerance (°C):** A text input field containing '1'.

Parameter	Description
Temperature Control Mode	Select from: Cool, Heat, Auto, Dehumidification, Ventilation.
Target Temperature	Set the target temperature of Cool, Heat or Auto. Range: 16 - 30 °C.
Target Temperature Resolution	Select the adjustment step of target temperature. It's fixed as 1 . 1: Increase or decrease target temperature by 1 each step.
Target Temperature Tolerance	Defines the temperature difference allowed for temperature threshold alarm. Range: 0.1-5°C.

**Tip:**

Users can also control the air conditioner's on/off status, temperature, mode and fan speeds under **Device** page.



4. Tap **Write** to apply the configuration.

Remote Configuration Reference

- BACnet: See *UC701 BACnet Object List*, Air Conditioner System Control.
- JSON Command: See *UC701 Payload Protocol (JSON)*, Configure Air Conditioner System Parameters.
- LoRaWAN Hex Command: 6f, 6000, 75, 61, 62, 7000. See *UC701 Payload Protocol (HEX)*, Configure Air Conditioner System Parameters.

Configure Open Window Detection

The controller supports detecting the window open status to turn off the air conditioner, thus saving energy.

Prerequisites: Temperature data source is selected.

Configure by ToolBox

1. Navigate to **Device > General**.
2. Enable **Open Window Detection** and configure the related parameters.

The screenshot shows a mobile application interface for configuring a device. At the top, there are two tabs: 'Device' (selected) and 'Network'. Below the tabs, there are four sub-tabs: 'General' (selected), 'Sensor', 'Threshold', and 'Set'. The 'General' sub-tab contains the following settings:

- Open Window Detection:** A toggle switch that is currently turned on (blue).
- Temperature Collection:** A dropdown menu showing 'Temperature Collection'.
- Temperature Change (°C/min):** A numeric input field with the value '3'.
- Stop temperature control for (min):** A numeric input field with the value '30'.

Parameter	Description
Temperature Change	Set the changing ambient temperature per minute. When the rate reaches the preset value, it is considered a window-open status. Range: 1 - 10 °C.
Stop temperature control for	The interval to stop air conditioner after detecting a window-open status. If the temperature change rate stays below the preset threshold for 10 consecutive minutes, the device will release the window-open status. Range: 1 - 1440 min, Default: 30 min.

3. Tap **Write** to apply the configuration.

Remote Configuration Reference

- BACnet: See *UC701 BACnet Object List*, Open Window Detection.
- JSON Command: See *UC701 Payload Protocol (JSON)*, Configure Open Window Detection.
- LoRaWAN Hex Command: 6800, 6802, 6803, 5a. See *UC701 Payload Protocol (HEX)*, Configure Open Window Detection.

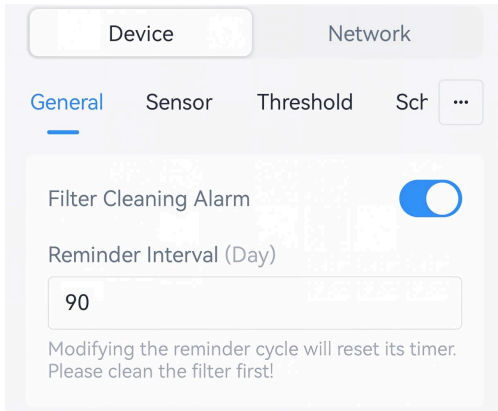
Configure Filter Cleaning Alarm

The controller supports enabling filter cleaning alarm to send alarms after a specific time range.

Prerequisites: Ensure the device time is synchronized.

Configure by ToolBox

1. Navigate to **Device > General**.
2. Enable **Filter Cleaning Alarm** and set the reminder day to send the alarm.



3. Tap **Write** to apply the configuration.

Remote Configuration Reference

- BACnet: See *UC701 BACnet Object List*, Open Window Detection & Filter Clean Alarm.
- JSON Command: See *UC701 Payload Protocol (JSON)*, Configure Filter Cleaning Alarm.
- LoRaWAN Hex Command: 8b00, 8b01, 5b. See *UC701 Payload Protocol (HEX)*, Configure Filter Cleaning Alarm.

Configure Schedule Parameters

This section describes how to add and manage control schedule plans.

Prerequisites: Ensure the device time is synchronized.

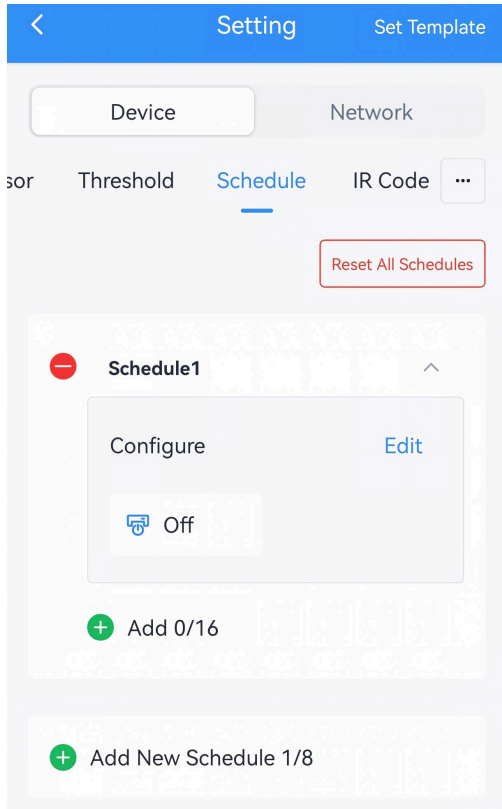
Configure by ToolBox



Note:

Before configuring the device through ToolBox, access it through Bluetooth. For the navigation path and write operation conventions used in this guide, see [Configure the Devices in ToolBox](#).

1. Navigate to **Device > Schedule**.
2. Tap **Add New Schedule** to create a schedule plan. Each device can add up to 8 schedule plans.



3. Configure the rule parameters of this plan.

Parameter	Description
Schedule Name	The schedule name can only include letters(a-z, A-Z), numbers, and spaces, with a maximum length of 10 characters.
Air Conditioner On/Off	Select the air conditioner on/off status.

4. Add a time period to execute a schedule event. Each plan can add up to 16 time periods.



Tip:

If the time period is not added, the schedule event can be switched via direct command, D2D agent setting, etc.

- Click **Add New** to add a time period.
- Configure the time and repeat days. If the repeat day is not selected, it means the time period is only executed once.

- c. Click **Confirm** to save this time period setting.
- d. Enable or disable the time period as required.

5. (Optional) Click  to delete the selected plan, or tap **Reset All Schedules** to restore all plans to their factory settings.
6. Tap **Write** to apply the configuration.

Remote Configuration Reference

- JSON Command: See *UC701 Payload Protocol (JSON)*, Configure Schedule Parameters.
- LoRaWAN Hex Command: See *UC701 Payload Protocol (HEX)*, Configure Schedule Parameters.

Configure Saving Energy Parameters

This section describes the task settings to send IR control commands to save the energy of air conditioners.



Note:

Before configuring the device through ToolBox, access it through Bluetooth. For the navigation path and write operation conventions used in this guide, see [Configure the Devices in ToolBox](#).

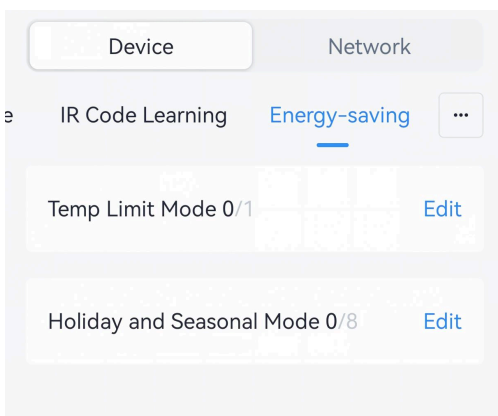
Configure Temp Limit Mode

Prerequisites

- Temperature data source is selected.

Configure by ToolBox

1. Navigate to **Device > Saving Energy**.
2. Click **Edit** of Temp Limit Mode.



3. Click **Add** to a temp limit task, and configure the temperature range and the valid time range.

4. Enable the task as required.
5. Click **Save**.
6. Tap **Write** to apply the configuration.

Remote Configuration Reference

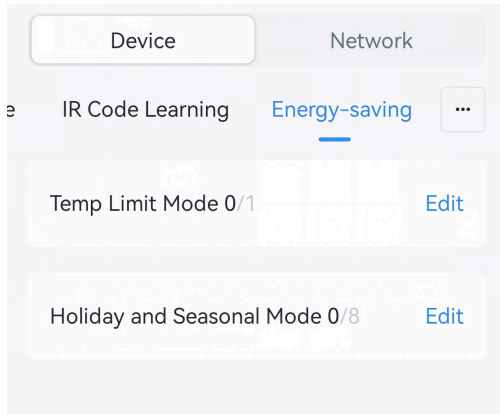
- BACnet: See *UC701 BACnet Object List*, Energy-saving Parameters.
- JSON Command: See *UC701 Payload Protocol (JSON)*, Configure Energy-saving Parameters.
- LoRaWAN Hex Command: 58, 830000 - 830005. See *UC701 Payload Protocol (HEX)*, Configure Energy Saving Parameters.

Result: When the controller receives a remote target temperature command of Cool, Heat, or Auto mode, or detects the ambient temperature under Cool or Heat mode outside the temperature range within the preset time range, the controller will report an alarm packet and send an IR command to the air conditioner to limit the temperature to the highest or lowest value of the temperature range.

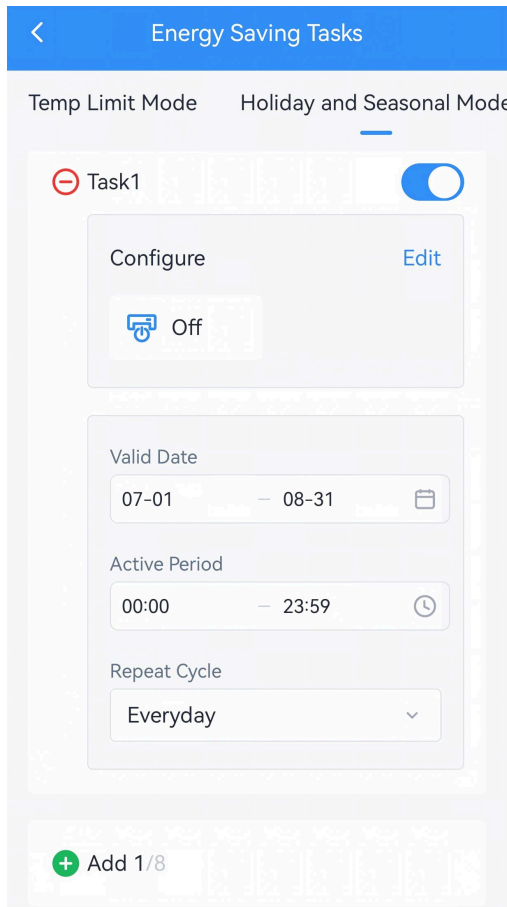
Configure Holiday and Seasonal Mode

Configure by ToolBox

1. Navigate to **Device > Saving Energy**.
2. Click **Edit** of Holiday and Seasonal Mode.



3. Click **Add** to a holiday and seasonal task, and configure the settings and the valid range. Each device can add up to 8 tasks.



4. Enable the task as required.
5. Click **Save**.
6. Tap **Write** to apply the configuration.

Remote Configuration Reference

- JSON Command: See *UC701 Payload Protocol (JSON)*, Configur Energy-saving Parameters.
- LoRaWAN Hex Command: 56, 850x00 - 850x07. See *UC701 Payload Protocol (HEX)*, Configure Energy Saving Parameters.

Result: The controller will send an IR command to control the air conditioner when reaching the start day of the valid date range.

Configure Network Parameters

This section describes how to configure the device network parameters.

Configure Communication Parameters

This section describes how to configure the communication mode and change the Bluetooth name.



Note:

Before configuring the device through ToolBox, access it through Bluetooth. For the navigation path and write operation conventions used in this guide, see [Configure the Devices in ToolBox](#).

Configure Communication Mode

Select how the controller communicates with other devices.

Configure by ToolBox

1. Navigate to **Network > Communication**.
2. On the **Communication** page, select the communication mode and configure the related parameters.

Communication Mode	Description
BLE + LoRa	Communicates with a Milesight thermostat via Bluetooth while also communicating with LoRaWAN[®] gateways and network servers. Reporting Interval: The interval to report data to the LoRaWAN[®] gateway. Range: 1-1440 min, Default: 10 min.

3. Tap **Write** to apply the configuration.

Remote Configuration Reference

- BACnet: See *UC701 BACnet Object List*, Reporting Interval.
- JSON Command: See *UC701 Payload Protocol (JSON)*, Reporting Interval.
- LoRaWAN Hex Command: 66. See *UC701 Payload Protocol (HEX)*, Reporting Interval.

Change or Reset Bluetooth Name

It is suggested to change the Bluetooth name as the target air conditioner name or space name.

Change by ToolBox

1. Navigate to **Network > Communication**.
2. In the **Bluetooth Name** field, enter the new name.
3. Tap **Write** to apply the configuration.

Remote Configuration Reference

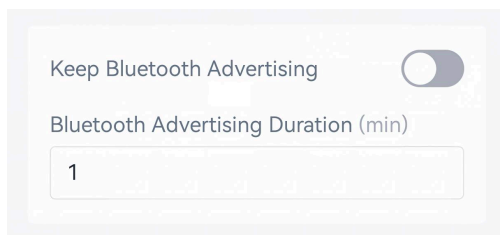
- BACnet: See *UC701 BACnet Object List*, Bluetooth Name.
- JSON Command: See *UC701 Payload Protocol (JSON)*, Reset Bluetooth Name.
- LoRaWAN Hex Command: B400. See *UC701 Payload Protocol (HEX)*, Reset Bluetooth Name.

Configure Bluetooth Advertising Mode

By default, Bluetooth continues to advertise. It is suggested to disable it if using battery power or for security purpose.

Configure by ToolBox

1. Navigate to **Network > Communication**.
2. On the **Communication** page, disable **Keep Bluetooth Advertising** and configure the advertising duration as required.



3. Tap **Write** to apply the configuration.

Remote Configuration Reference

- BACnet: See *UC701 BACnet Object List*, Bluetooth Advertising Time Settings.
- JSON Command: See *UC701 Payload Protocol (JSON)*, Bluetooth Advertising Time Settings.
- LoRaWAN Hex Command: See *UC701 Payload Protocol (HEX)*, Configure Communication Parameters.

Result: The Bluetooth will turn off after the preset duration, and it need to be activated by pressing and holding the Reboot & Reset button for 3s to reboot.

Pair the Controller with WT401 Thermostat

The UC701 controller can pair with WT401 wireless thermostat for local AC control.



Note:

If the controller is powered by batteries, it is not suggested to pair it with WT401.

WT401:

1. Navigate to **Network > Communication**.
2. Select the communication mode as **BLE + LoRa** or **BLE**.

3. Select the UC701 controller to pair with. There are two methods:

Pairing via ToolBox: Tap  to scan for nearby devices, and select the target device to pair with.

Pairing via Button: Press any button to scan the UC701 controllers around, and pair the device with the best signal.



Note:

Bluetooth advertising is enabled by default on the UC701. If **Keep Bluetooth Advertising** is disabled and the Bluetooth advertising is off, press and hold the Reboot & Reset button 3s to reboot the controller.

4. If pairing is successful, the WT401 screen will display  statically when system status is on. Press the thermostat buttons to test if the air conditioner responds accordingly.

Configure LoRaWAN® Parameters

This section describes how to configure the device transmission parameters for the LoRaWAN® network. LoRaWAN® is enabled by default on this device.



Note:

Before configuring the device through ToolBox, access it through Bluetooth. For the navigation path and write operation conventions used in this guide, see [Configure the Devices in ToolBox](#).

Configure the required network settings first, and then configure the optional parameters as needed:

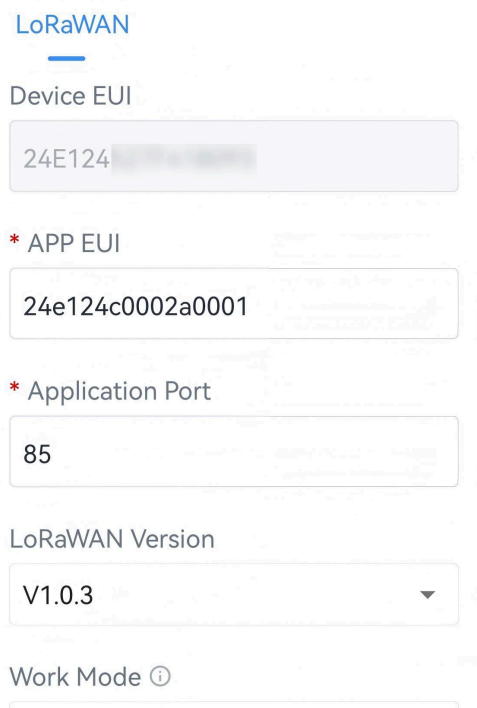
1. [Configure Join Type and Supported Frequency \(required\)](#)
2. [Configure Other LoRaWAN® Parameters \(optional\)](#)
3. [Configure Multicast Group \(optional\)](#)

Configure Join Type and Frequency

It is necessary to configure the join type and the frequency to establish communication with LoRaWAN® gateways.

Configure by ToolBox

1. Navigate to **Network > LoRaWAN**.



The screenshot shows the 'LoRaWAN' configuration page. It includes the following fields:

- Device EUI**: A text input field containing '24E124'.
- * APP EUI**: A text input field containing '24e124c0002a0001'.
- * Application Port**: A text input field containing '85'.
- LoRaWAN Version**: A dropdown menu currently set to 'V1.0.3'.
- Work Mode**: A section header with a help icon (i) below it.

2. From the **Join Type** selection box, select **OTAA** or **ABP** as needed.



Note:

OTAA is required if you connect the device to the [Milesight Development Platform](#).

3. Configure **Join Type** related parameters as needed. You can use default values unless otherwise specified.

- If **OTAA** is selected, configure **Application Key** and **Rejoin Mode** as needed. For details, refer to the following table.

Parameter	Description
Applic ation Key	Appkey for OTAA mode. Default: Device EUI + Device EUI. Example: 24e124123456789024e1241234567890.  Tip: For device security, it is recommended to modify the default value or contact sales before purchase to use random keys.
Rejoin Mode	Rejoin mode for OTAA mode. Reporting interval ≤ 35 minutes: The device sends a specific number of LinkCheckReq MAC packets at each reporting interval or every other reporting interval to verify connectivity. Reporting interval > 35 minutes: The device sends a specific number of LinkCheckReq MAC packets at each reporting interval to validate connectivity. If there is no response, the device will re-join the network. When Rejoin Mode is enabled, enter a number in the Set the number of detection signals sent text box. The actual sending number is the configured number +1.

- If **ABP** is selected, configure **Network Session Key**, **Application Session Key** and **Device Address** as needed. For details, refer to the following table.

**Tip:**

For device security, it is recommended to modify the default values.

Parameter	Description
Network Session Key	Nwkskey for ABP mode. Default: 5572404C696E6B4C6F52613230313823 .
Application Session Key	Appskey for ABP mode. Default: 5572404C696E6B4C6F52613230313823 .
Device Address	DevAddr for ABP mode. Default: 5 th to 12 th digits of SN.

4. Select a frequency from the **Support Frequency** selection box as needed. This must be the same as the frequency configured on the gateway's web GUI.

- If the **Supported Frequency** is **US915** or **AU915**, enter the channel index(es) 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: All channels are disabled



Tip:

Set the **Channel Index** to **8-15** when connecting to a Milesight LoRaWAN[®] gateway with default settings.

- If the **Supported Frequency** is **AS923**, select a channel plan and enable the frequencies as needed.
- If the **Supported Frequency** is any option other than those listed above, enable the frequencies as needed.

5. Tap **Write** to apply the configuration.

Configure Other LoRaWAN[®] Parameters

Configure the remaining LoRaWAN[®] parameters as required.

Configure by ToolBox

1. Navigate to **Network > LoRaWAN**.

LoRaWAN

Device EUI

24E124

* APP EUI

24e124c0002a0001

* Application Port

85

LoRaWAN Version

V1.0.3

Work Mode ⓘ

2. Configure the following parameter as needed. You can use default values unless otherwise specified. For a description of the parameters, refer to the following table.

Parameter	Description
Device EUI	Unique ID of the device labelled on the device housing.  Tip: For bulk deployments, contact sales to request the device EUI list.
App EUI	The default App EUI (join EUI) is 24E124C0002A0001.
Application Port	Port used for sending and receiving data. Default: 85 .
LoRaWAN [®] Version	Options: V1.0.2 , V1.0.3 .
Work Mode	Select Class C (default) or Class B. Class C: Recommended when the device is powered by an external power supply and low-latency control is required.

Parameter	Description
	Class B: Recommended when the device is powered by batteries to reduces power consumption.
Confirmed Mode	If the device does not receive ACK packet from network server, it will resend data once.
Join Type	Refer to Configure Join Type and Supported Frequency .
Supported Frequency	Refer to Configure Join Type and Supported Frequency .
ADR Mode	Enables the network server to adjust the spreading factor, the bandwidth and the transmission power to optimize data rates, airtime and energy consumption in the network.
Spreading Factor	If ADR mode is disabled, the device sends uplink data using this spreading factor. A higher spreading factor increases transmission range but reduces data rate and increases power consumption. This parameter varies with Supported Frequency .
Tx Power	Defined by the LoRa Alliance. Specifies the strength of the radio signal transmitted by the device.
RX2 Data Rate	RX2 data rate to receive downlinks.
RX2 Frequency	RX2 frequency to receive downlinks. Unit: Hz
Ping Slot Periodicity	The period to open the ping slot to receive downlink commands for class B.
Multicast Group	Enable or disable multicast groups. For more details, see Configure Multicast Group .

3. Tap **Write** to apply the configuration.

Configure Multicast Group

The device supports setting up multiple multicast groups to receive multicast commands from the network server, allowing users to control devices in bulk.

Step 1. Enable Multicast Group on the Device

Configure by ToolBox

1. Navigate to **Network > LoRaWAN**.

LoRaWAN

Device EUI

24E124

* APP EUI

24e124c0002a0001

* Application Port

85

LoRaWAN Version

V1.0.3

Work Mode ⓘ

- On the **LoRaWAN** page, ensure the **Application Port** of each device is the same.
- Enable a **Multicast Group**, and configure the following parameter as needed. You can use default values unless otherwise specified. For a description of the parameters, refer to the following table.

Parameter	Description
Multicast Address	Unique 8-digit address to distinguish multicast groups.
McNetSKey	32-digit key. Default values: - Multicast Group 1: 5572404C696E6B4C6F52613230313823 - Multicast Group 2: 5572404C696E6B4C6F52613230313824 - Multicast Group 3: 5572404C696E6B4C6F52613230313825 - Multicast Group 4: 5572404C696E6B4C6F52613230313826
McAppSKey	32-digit key. Default values: - Multicast Group 1: 5572404C696E6B4C6F52613230313823 - Multicast Group 2: 5572404C696E6B4C6F52613230313824 - Multicast Group 3: 5572404C696E6B4C6F52613230313825 - Multicast Group 4: 5572404C696E6B4C6F52613230313826

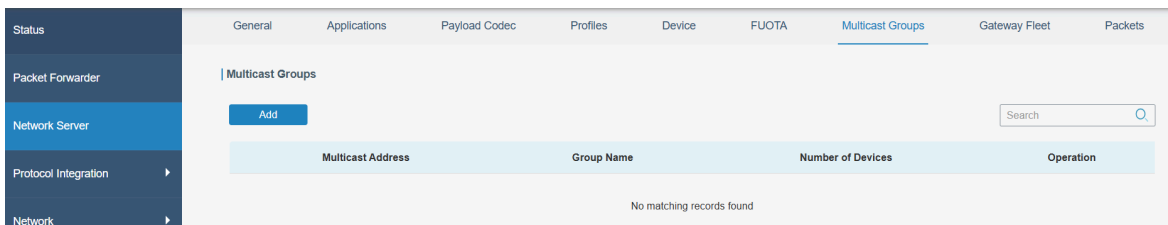
Parameter	Description
Multicast Ping Slot Periodicity/s	The period to open the ping slot to receive multicast commands.
Multicast Data Rate	The data rate to receive multicast commands.
Multicast Frequency	The frequency to receive multicast commands. Unit: Hz

- (Optional) To enable another multicast group, follow the above step to configure the corresponding group.
- Tap **Write** to apply the configuration.

Step 2. Add a Multicast Group on the Network Server

The following steps use a Milesight gateway as an example. For other network servers, please refer to corresponding guides.

- Ensure the target devices are added to this gateway and have joined to the network.
- On the gateway web GUI, navigate to **Network Server > Multicast Groups** page.



- Click **Add** to add a multicast group.
- Configure the multicast group parameters to match those configured on ToolBox and select the devices that you need to control.

Group Name	Device Control
Multicast Address	11111111
Multicast Network Session Key	5572404C696E6B4C6F526132
Multicast Application Session Key	5572404C696E6B4C6F526132
Class Type	Class C ▼
Datarate	DR0 (SF12, 125kHz) ▼
Frequency	869525000 Hz
Frame-counter	0
Selected Devices	
device1 x device2 x	

5. Click **Save** to save this multicast group.
6. Click **Packets** tab in the upper right corner.
7. In the **Send Data to Multicast Group** section, select the multicast group from the **Multicast Groups** drop-down list and configure the downlink command parameters.
8. Click **Send**. The network server broadcasts the command to all devices in this multicast group.

Packets

Send Data To Device

Device EUI	Type	Payload	Port	Confirmed	
0000000000000000	ASCII ▼		85	☐	Send

Send Data to Multicast Group

Multicast Group	Type	Payload	Port	
Device Control ▼	hex ▼	ff10ff	85	Send

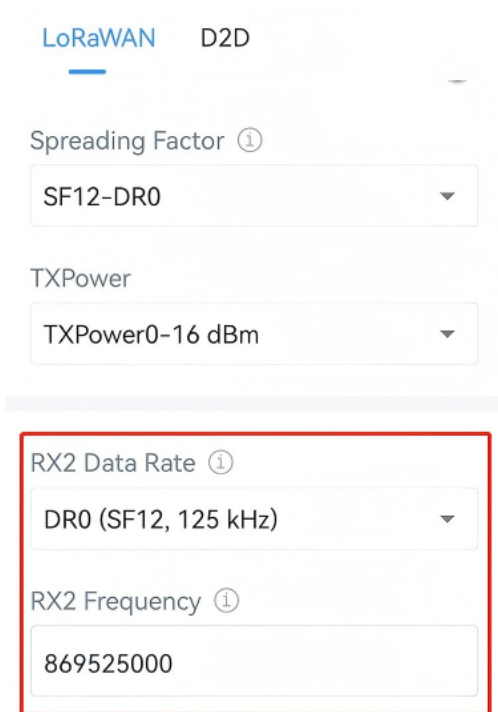
Configure Milesight D2D Parameters

Milesight D2D protocol is developed by Milesight and used for setting up transmission among Milesight devices without a gateway, which reduces the latency and enables quick control.

The controller can work as a D2D agent device to receive commands from D2D controller devices to trigger the system on/off or switch the schedules.

Configure by ToolBox

1. Navigate to **Network > LoRaWAN**.
2. In the **LoRaWAN** page, ensure the RX2 datarate and RX2 frequency are the same as the D2D controller devices.



LoRaWAN D2D

Spreading Factor ⓘ

SF12-DR0

TXPower

TXPower0-16 dBm

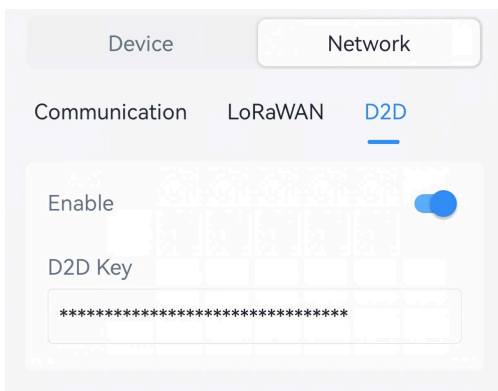
RX2 Data Rate ⓘ

DR0 (SF12, 125 kHz)

RX2 Frequency ⓘ

869525000

3. Navigate to **Network > D2D**.
4. Enable D2D function.
5. Set the D2D key to be the same as the D2D controller devices. (Default D2D Key: 5572404C696E6B4C6F52613230313823)



Device Network

Communication LoRaWAN D2D

Enable

D2D Key

5572404C696E6B4C6F52613230313823

6. Click **Add New** to add a rule and configure the related parameters. The device can add up to 8 rules.

Parameter	Description
Control Command	Configure a 2-byte hexadecimal command to receive from D2D controller devices.
Action Object	Select the triggering action after receiving the control command. Insert an Event: Select the schedule to execute. System Status: Switch air conditioner system on/off status.
Action Status	Select the status to execute.

Example: When receiving a command 0001, the device will switch the air conditioner system on.

The screenshot shows a configuration window with three main sections: 'Control command' with a text input field containing '0001', 'Action Object' with a dropdown menu showing 'System Status', and 'Action Status' with a dropdown menu showing 'Off'. At the bottom, there is a green plus icon and the text 'Add New 1/8'.

7. Tap **Write** to apply the configuration.

Remote Configuration Reference

- JSON Command: See *UC701 Payload Protocol (JSON)*, Configure D2D Parameters.
- LoRaWAN Hex Command: See *UC701 Payload Protocol (HEX)*, Configure D2D Parameters.

Auxiliary Features

This chapter describes the auxiliary features of this device.

Configure General Parameters

This section describes the general device parameters and provides links to the detailed configuration procedures for related features.

Configure by ToolBox



Note:

Before configuring the device through ToolBox, access it through Bluetooth. For the navigation path and write operation conventions used in this guide, see [Configure the Devices in ToolBox](#).

1. Navigate to **Device > General**.
2. Configure the related parameters.

The screenshot shows the 'Device' configuration screen in the ToolBox application. At the top, there are two tabs: 'Device' and 'Network'. Below them, there are four sub-tabs: 'General', 'Sensor', 'Threshold', and 'Sch'. The 'General' sub-tab is selected. The settings are as follows:

- Temperature Unit:** A dropdown menu showing '°C'.
- Temperature Data Source:** A dropdown menu showing 'Built-in Temp Sensor'.
- Temperature Control Mode Enable:** A dropdown menu showing 'Heat, Cool, Auto, Dehumidificati...'.
- Temperature Control Mode:** A dropdown menu showing 'Cool'.
- Target Temperature (°C):** A text input field containing '28'.
- Target Temperature Resolution:** A dropdown menu showing '1'.

Parameter	Description
Temperature Unit	Select the temperature unit displayed in ToolBox. It is suggested to select the unit the same as the air conditioner settings. Default: °C.  Note: After changing the unit, it is necessary to modify the temperature-related settings.

Parameter	Description
Temperature Data Source	Select the data source for auto control features.
Temperature Control Mode Enable	For details, see Configure Air Conditioner Control Parameters .
Temperature Control Mode	
Target Temperature	
Target Temperature Resolution	
Target Temperature Tolerance	
Enhance IR Emission	Enable if the controller or external IR emitter is more than 5 meters away from the air conditioner.
Enable Battery Compartment	When the battery compartment is connected to the controller, this option will be enabled automatically. When enabled, the work mode will switch to Class B, and Keep Bluetooth Advertising will be disabled.  Note: Only when using the battery compartment with the default cable can this option be enabled automatically. If using non-standard accessories, it's necessary to enable this option manually. Sleep Duration: Configure and enable a date range to save battery power. During this range, the device only reports a periodic packet per day, and does not respond any commands.
Open Window Detection	Enable or disable open window detection. For more details, see Configure Open Window Detection .
Filter Cleaning Alarm	Enable or disable filter cleaning alarm. For more details, see Configure Filter Cleaning Alarm .
Time Zone	For details, see Configure Time Parameters .

Parameter	Description
Daylight Saving Time	
AC Cooling Power	Enter the AC cooling rated power for power consumption calculation.
AC Heating Power	Enter the AC heating rated power for power consumption calculation.
Indicator Auto-Off	When enabled, the LED indicator turns off automatically after 10 minutes of inactivity.
Change Password	Change the password used for authenticated access and configuration through ToolBox. For details, see Change the Device Password .

3. Tap **Write** to apply the configuration.

Remote Configuration Reference

- BACnet: See *UC701 BACnet Object List*, General Parameters.
- JSON Command: See *UC701 Payload Protocol (JSON)*, Configure General Parameters.
- LoRaWAN Hex Command: See *UC701 Payload Protocol (HEX)*, Configure General Parameters.

Configure Time Parameters

This section describes how to configure the time parameters to ensure the correct time.



Note:

Before configuring the device through ToolBox, access it through Bluetooth. For the navigation path and write operation conventions used in this guide, see [Configure the Devices in ToolBox](#).

Synchronize the Device Time

Synchronize by ToolBox

1. Tap  to synchronize the time and the time zone with the smartphone.



If the time is synchronized successfully, the following page is displayed.



Sync successfully!

Synchronize through a LoRaWAN[®] Network Server

Prerequisites:

- The device has joined a LoRaWAN[®] network.
- The LoRaWAN[®] network server supports device time synchronization.

Limitation: Network-server synchronization retrieves UTC time only. It does not configure the device time zone.

1. Set the [LoRaWAN[®] version](#) of the device to **V1.0.3**.
2. Connect the device to the network server. Once the device successfully joins the network, it sends a MAC command to query the time from the network server.



Note:

The device sends a DeviceTimeReq command every five days after the last successful synchronization. To request synchronization immediately, you can also send the downlink command.

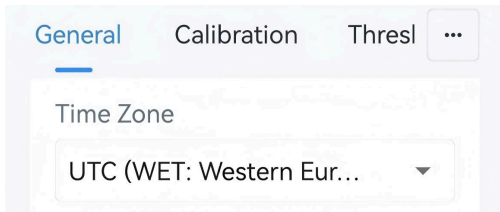
Remote Configuration Reference

- BACnet: See *UC701 BACnet Object List*, Synchronize Time.
- JSON Command: See *UC701 Payload Protocol (JSON)*, Synchronize Time.
- LoRaWAN Hex Command: [B8](#). See *UC701 Payload Protocol (HEX)*, Sync Time from LNS.

Configure the Time Zone

Configure by ToolBox

1. Navigate to **Device > General**.
2. Select **Time Zone** as required.



3. Tap **Write** to apply the configuration.

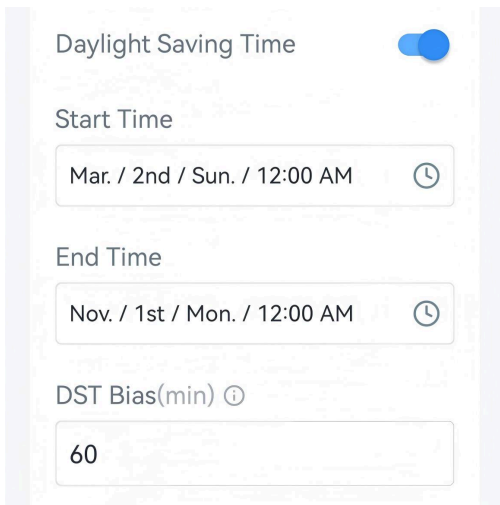
Remote Configuration Reference

- BACnet: See *UC701 BACnet Object List*, Time Zone.
- JSON Command: See *UC701 Payload Protocol (JSON)*, Configure Time Zone.
- LoRaWAN Hex Command: **c7**. See *UC701 Payload Protocol (HEX)*, UTC Time Zone.

Configure Daylight Saving Time

Configure by ToolBox

1. Navigate to **Device > General**.
2. Enable **Daylight Saving Time** and configure the related parameters.



Parameter	Description
Start Time	The start time of DST time range.
End Time	The end time of DST time range.

Parameter	Description
DST Bias	The DST time will be faster according to this bias.

3. Tap **Write** to apply the configuration.

Remote Configuration Reference

- BACnet: See *UC701 BACnet Object List*, Daylight Saving Time.
- JSON Command: See *UC701 Payload Protocol (JSON)*, Configure Daylight Saving Time.
- LoRaWAN Hex Command: c6. See *UC701 Payload Protocol (HEX)*, Daylight Saving Time.

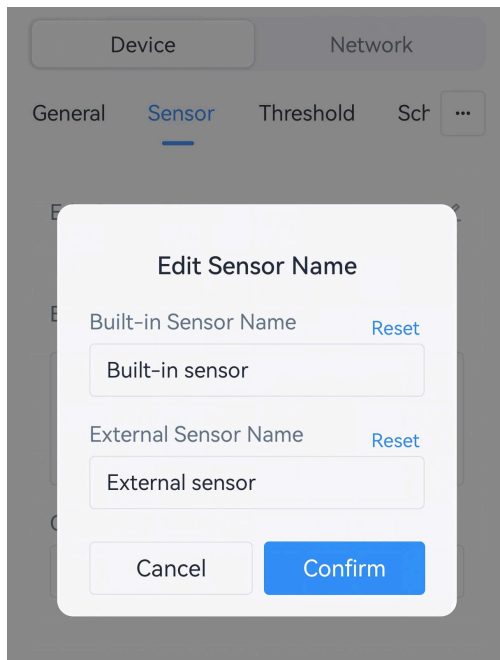
Configure Sensor Parameters

This section describes how to configure the temperature & humidity sensor and current transformer parameters.

Configure Temperature Sensor Parameters

Configure by ToolBox

1. Navigate to **Device > Sensor**.
2. Edit the sensor names to indicate the measuring target.



3. Enter the applicable **Calibration Value** if the built-in sensors are used.

The screenshot shows a configuration interface with two tabs: 'Device' and 'Network'. Below these are four sub-tabs: 'General', 'Sensor' (which is selected and underlined), 'Threshold', and 'Scr'. A menu icon (three dots) is to the right of the sub-tabs. The 'Sensor' section contains two main blocks. The first block is titled 'Built-in sensor Temperature' and includes two input fields: 'Current Value(°C)' with the value '26.8' and 'Final Value(°C)' with the value '26.7'. Below these is a 'Calibration Value (°C)' field with the value '-0.1'. The second block is titled 'Built-in sensor Humidity' and includes two input fields: 'Current Value(%)' with the value '53.3' and 'Final Value(%)' with the value '54.3'. Below these is a 'Calibration Value (%)' field with the value '1'.

4. Enable **External Sensor Temperature** if the NTC sensor is connected to the controller, and enter the applicable **Calibration Value**.

The screenshot shows a configuration section titled 'External sensor Temperature' with a toggle switch that is currently turned off. Below the title are two input fields: 'Current Value(°C)' and 'Final Value(°C)', both containing a hyphen '-' as a placeholder. Below these is a 'Calibration Value (°C)' field containing the value '0'.

5. Configure the sampling interval to collect temperature and humidity data as required.
6. Tap **Write** to apply the configuration.

Remote Configuration Reference

- BACnet: See *UC701 BACnet Object List*, Sensor Parameters.
- JSON Command: See *UC701 Payload Protocol (JSON)*, Configure Sensor Parameters.
- LoRaWAN Hex Command: See *UC701 Payload Protocol (HEX)*, Configure Sensor Parameters.

Configure Current Transformer Parameters

Prerequisites: The current transformer is connected to the controller.

Configure by ToolBox

1. Navigate to **Device > Sensor**.
2. Enable **External CT** and configure the related parameters.

Parameter	Description
External CT	When enabled, the controller can report the CT status in the periodic report.
External CT - On/Off Threshold	Select the air conditioner type and configure the on/off threshold. If the detected current is below this threshold, the air conditioner is considered as Off.
External CT - Sampling Interval	The interval to collect the current data.

3. Tap **Write** to apply the configuration.

Remote Configuration Reference

- BACnet: See *UC701 BACnet Object List*, Sensor Parameters.
- JSON Command: See *UC701 Payload Protocol (JSON)*, Configure Sensor Parameters.
- LoRaWAN Hex Command: See *UC701 Payload Protocol (HEX)*, Configure Sensor Parameters.

Configure Temperature Threshold Parameters

This section describes how to configure temperature threshold parameters.

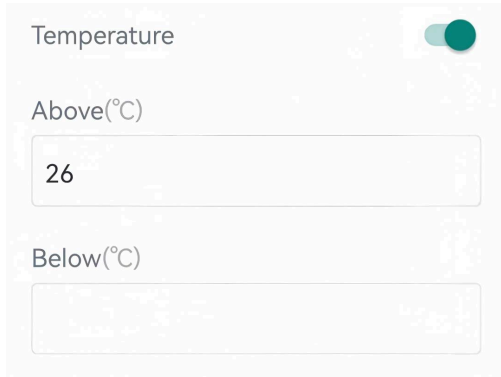
Configure by ToolBox

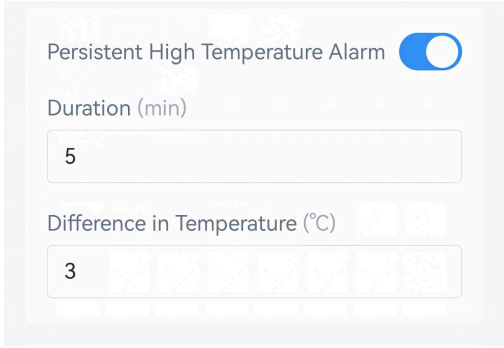
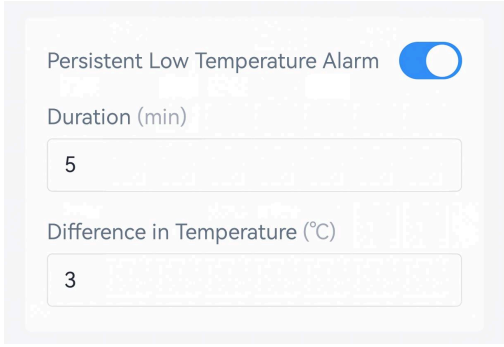


Note:

Before configuring the device through ToolBox, access it through Bluetooth. For the navigation path and write operation conventions used in this guide, see [Configure the Devices in ToolBox](#).

1. Navigate to **Device > Threshold**.
2. Select the threshold alarm type to enable and configure the threshold parameters.

Alarm Type	Description
Temperature	When the ambient temperature is above or below the threshold value, report a threshold alarm packet instantly. Only when the threshold is released and re-triggered, will the device report the alarm again. 
Persistent High Temperature	When the ambient temperature is above the target temperature + target temperature tolerance by a difference value and lasts for a duration, report a threshold alarm packet instantly. When the threshold is released, report an alarm release packet.

Alarm Type	Description
	
Persistent Low Temperature	When the ambient temperature is below the target temperature - target temperature tolerance by a difference value and lasts for a duration, report a threshold alarm packet instantly. When the threshold is released, report an alarm release packet. 

3. Tap **Write** to apply the configuration.

Remote Configuration Reference

- JSON Command: See *UC701 Payload Protocol (JSON)*, Configure Threshold Parameters.
- LoRaWAN Hex Command: See *UC701 Payload Protocol (HEX)*, Configure Threshold Parameters.

Configure Data Storage & Retransmission

The device supports data storage and data retransmission to ensure data integrity. This section describes how to configure data storage and data retransmission.

Export the Local Data

The device supports storing historical data records locally, which operates normally even when the network is deactivated.

Each device can store up to 1,200 data records.

Prerequisites: [Sync the time](#) to ensure the data is stored in correct time.

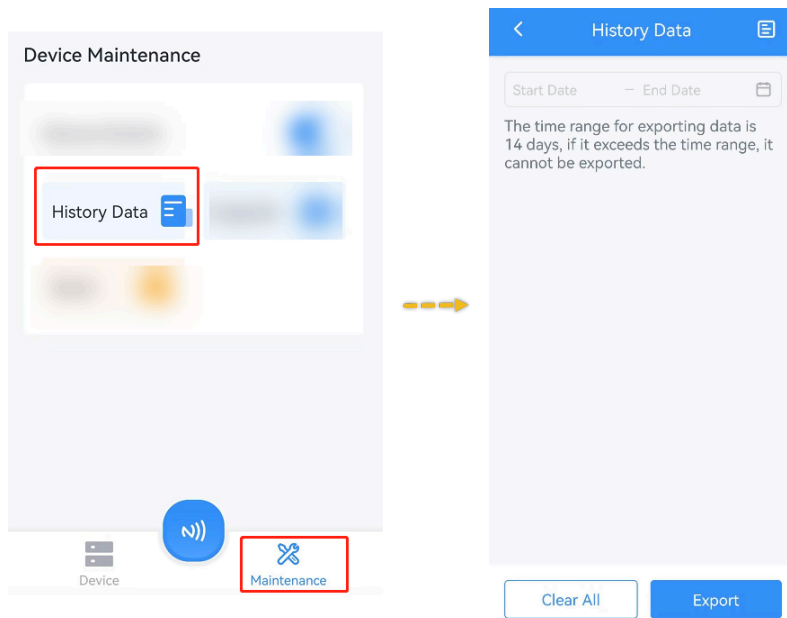
Configure by ToolBox

1. Enable **Data Storage**.
2. Tap **Write** to apply the configuration.
3. Return to the homepage and click **Maintenance** in the lower right corner.
4. Click **History Data**, select the data time range and click **Export** to read data.



Tip:

Since the ToolBox App's data export time range is limited to 14 days, you can export the complete data in segments if the required time range exceeds this limit.



5. Click **Export** to customize a file name, then click **OK** to save the historical data as a CSV file (including data source, AC operating status and environmental data) to your smartphone.

Data Type	Start Time	End Time	Data Source	Data Content	Data Value	Unit	Total Duration (min)
IR Command	2026/9/18 10:59	-	-	Off-Heat-Auto-Command Trigger-Inactive	-	-	-
Temperature	2026/9/18 10:59	-	Built-in Sensor	-	27.52	°C	9.85
Humidity	2026/9/18 10:59	-	Built-in Sensor	-	52.7	%RH	9.85
IR Command	2026/9/18 11:09	-	-	Off-Heat-Auto-Command Trigger-Inactive	-	-	-
Temperature	2026/9/18 11:09	-	Built-in Sensor	-	26.77	°C	10
Humidity	2026/9/18 11:09	-	Built-in Sensor	-	53.6	%RH	10
IR Command	2026/9/18 11:19	-	-	Off-Heat-Auto-Command Trigger-Inactive	-	-	-
Temperature	2026/9/18 11:19	-	Built-in Sensor	-	26.82	°C	10
Humidity	2026/9/18 11:19	-	Built-in Sensor	-	53.5	%RH	10
IR Command	2026/9/18 11:29	-	-	Off-Heat-Auto-Command Trigger-Inactive	-	-	-
Temperature	2026/9/18 11:29	-	Built-in Sensor	-	26.7	°C	10
Humidity	2026/9/18 11:29	-	Built-in Sensor	-	53.3	%RH	10

6. (Optional) To check the exported record, click in the top right corner.

Remote Configuration Reference

- JSON Command: See *UC701 Payload Protocol (JSON)*, Data Storage Settings.
- LoRaWAN Hex Command: c5. See *UC701 Payload Protocol (HEX)*, Data Storage.

Enable Data Retransmission

Data retransmission allows the network server to receive data, even after temporary network outages.

Prerequisites: The device join type is **OTAA**.

Configure by ToolBox

1. Navigate to **Network > LoRaWAN**.

LoRaWAN

Device EUI

24E124...

* APP EUI

24e124c0002a0001

* Application Port

85

LoRaWAN Version

V1.0.3

Work Mode ⓘ

2. On the **LoRaWAN** page, enable **Rejoin Mode** and set the number of packets sent.

LoRaWAN

Rejoin Mode ☒

Set the number of detection signals sent ⓘ

32

3. Enable **Data Storage** and **Data Retransmission**.
4. Tap **Write** to apply the configuration.

Result:

- When the device detects that the network status is deactivated via the rejoin mode mechanism, it records a data loss time point. Upon reconnection, the device retransmits the lost data according to the data retransmission interval. Retransmission data is reported with timestamps and uses a different format from periodic report data.
- If the device reboots or is repowered during data retransmission, it will resend the entire retransmission dataset once it reconnects to the network.
- If a new network disconnection occurs during an ongoing retransmission, only the data logged during this latest outage will be sent upon reconnection.

**Note:**

- Data retransmission increases the uplink traffic and consumes device energy quickly.
- The default report data retransmission interval is 600s, this can be changed via downlink command.

Remote Configuration Reference

- JSON Command: See *UC701 Payload Protocol (JSON)*, Data Storage Settings.
- LoRaWAN Hex Command: c5. See *UC701 Payload Protocol (HEX)*, Data Retransmission Interval.

Query Historical Data

The device supports data retrievability feature to query historical data for a specific time range via downlink command. The retransmission data format includes timestamps and differs from the periodic report format. For details, refer to the Payload Protocol document.

Maintain the Device

This section describes how to maintain the device.

Upgrade the Device

This section describes how to upgrade this device.

Upgrade through ToolBox

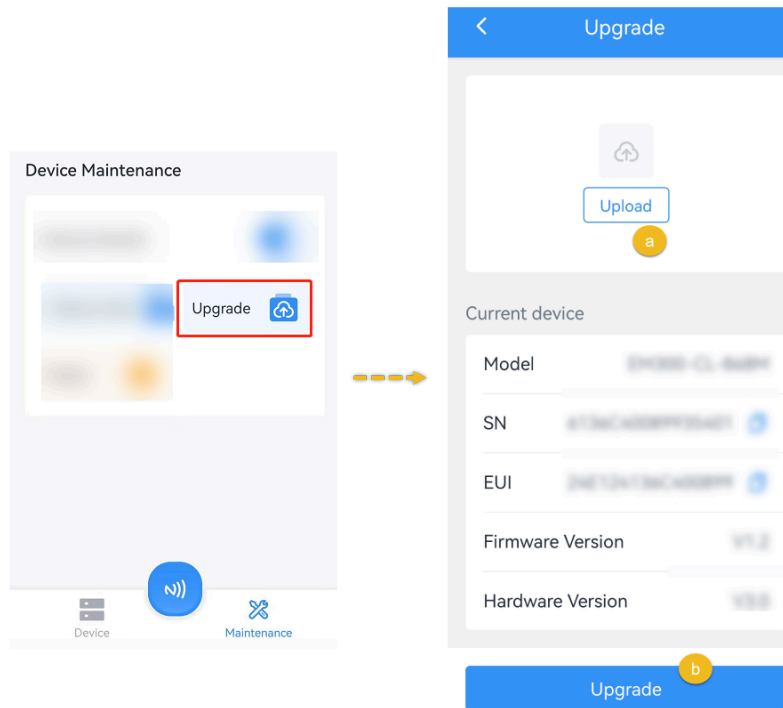


Tip:

Before upgrading the device through ToolBox, access it through Bluetooth. For ToolBox access instructions, see [Access the Device](#).

Prerequisites: Download firmware from [Milesight official website](#) and save it to the smart phone. It is recommended to consult technical support before upgrading to ensure a safe and successful upgrade.

1. Navigate to **Maintenance > Upgrade**.
2. Click **Upload** to select the firmware from the local path of the smartphone.
3. Click **Upgrade** to upgrade the device.



4. Wait until a success message is displayed.



CAUTION:

Do not perform any operations in ToolBox during upgrade, otherwise, the upgrade will be interrupted or the device may malfunction.

Upgrade through FUOTA

The device also supports Firmware Update Over the Air (FUOTA) through a compatible LoRaWAN[®] network server.

Prerequisites:

- The device has joined a LoRaWAN[®] network.
- The network server supports FUOTA.

For the upgrade procedure, refer to the FUOTA documentation for the corresponding LoRaWAN[®] network server.

Configure a Template for Configuration Backup

This device supports configuration backup, which enables quick and easy batch configuration. This section describes how to back up the device configuration and write it to other devices.



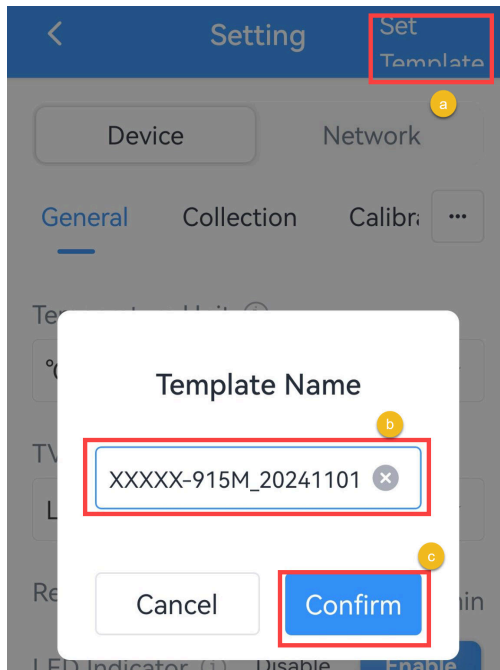
Note:

This feature is available only through ToolBox. Before configuring a template, access the device through Bluetooth. For the navigation path and write operation conventions used in this guide, see [Configure the Device in ToolBox](#).

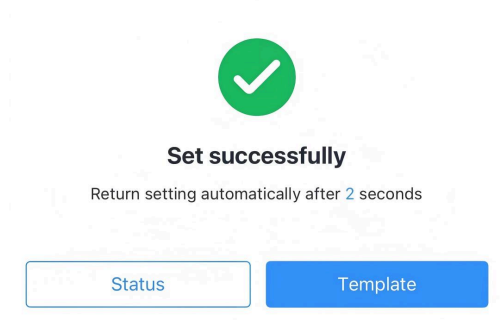
Prerequisites: The backup device and the device importing the backup are exactly the same model.

Step 1. Set a Template

1. Access the device via ToolBox App.
2. On the homepage of ToolBox, click **Setting** to enter the **Setting** page.
3. Edit the device parameters as required, click **Set Template** in the top right corner.
4. Customize a template name, click **Confirm** to save the current configuration as a template.



5. If the template is saved successfully, the following page is displayed. The template will be saved to the ToolBox App.

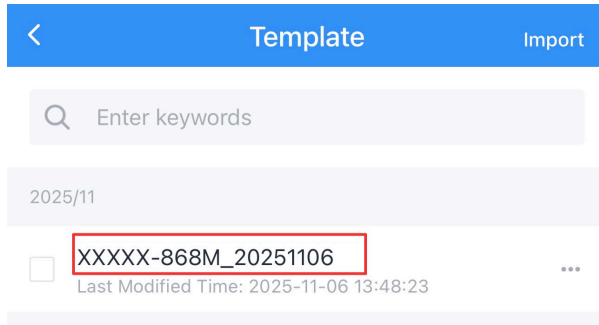


Step 2. Write Template Configuration to the Target Device

1. Click Template icon in the top right corner to go to **Template** page.



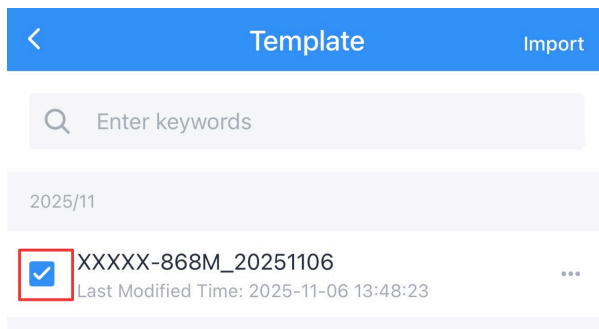
2. Click the saved template. Do not select the template.



3. Tap **Write** to apply the template configuration to the target device.

Step 3. Export or Delete a Template (Optional)

1. Select the checkbox of the target template as shown in the following figure.



2. Click **Export** in the lower left corner to export this template as a JSON format file and save it to the smart phone.
3. Click **Delete** in the lower right corner, then click **Confirm** to delete this template from ToolBox.

Reset the Device

This section describes how to reset the device.

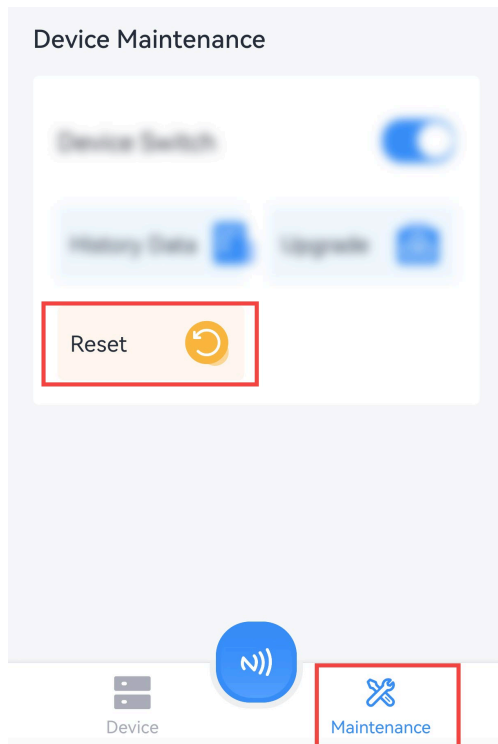
Reset through ToolBox



Note:

Before resetting the device through ToolBox, access it through Bluetooth. For ToolBox access instructions, see [Access the Device](#).

1. On the homepage of ToolBox, click **Maintenance** in the lower right corner. The **Maintenance** page is displayed, see the following figure.



2. Click **Reset**.
3. In the displayed dialog box, click **Confirm**.
4. If the device is successfully reset, the following page is displayed.



Reset successfully!

Perform a Hardware Reset

If the device cannot be read from or written to normally through ToolBox, perform a [hardware reset](#).

Chapter 6. Frequently Asked Questions

This topic addresses commonly asked questions about UC701 configuration, operation, and troubleshooting.

What do the LED indicator states mean during abnormal conditions?

The UC701 uses LED indicators to signal its operational status:

- **Green LED blinking:** LoRa connection is not configured.
- **Red LED blinking:** Infrared (IR) code is not configured.

What should I do if IR code learning fails?

If IR code learning does not work, you can configure the IR code manually using one of the following methods:

- **Preset mode:** In the Milesight Toolbox app, navigate to the IR configuration page and select the air conditioner brand from the predefined list to apply the corresponding IR code.
- **Direct write mode:** If you already know the IR code for your air conditioner, you can directly write the code to the device to complete configuration.

If still failed, you can send the AC remote control to Milesight for compatibility test.

The UC701 appears to send commands, but the air conditioner does not respond. What could be wrong?

Check the following IR transmission conditions:

- Ensure the UC701 is pointed directly at the air conditioner's IR receiver window.
- Remove any obstructions between the UC701 and the air conditioner.
- Move the UC701 closer to the air conditioner to improve signal strength.

How do I reconfigure the remote control IR code?

To relearn or change the IR code:

1. Open the Milesight Toolbox app and connect to the UC701 via Bluetooth.
2. Go to **IR Code Learning**.
3. Tap **Restart Learning** and follow the on-screen instructions.

For more details, see [IR Code Learning](#).

What are the recommended CT settings for detecting air conditioner on/off status?

The default detection thresholds are optimized for wall-mounted air conditioners. Adjust the thresholds according to your AC type:

AC Type	Current Threshold
Wall-mounted unit	100 mA
Floor-standing cabinet unit	400 mA
Cassette / ceiling-mounted unit	480 mA

Can I change the device name of the UC701?

Yes. To change the Bluetooth device name, refer to [Change or Reset Bluetooth Name](#).

How does the UC701 calculate air conditioner energy consumption?

Energy consumption is calculated in the cloud using the formula $W = P \times T = U \times I$. The calculation method differs depending on whether an external CT (current transformer) sensor is connected:

- **Without external CT** ($W = P \times T$):
 - **Power (P)**: When installing the UC701, enter the rated cooling/heating power of the air conditioner in Toolbox under **Settings > General > AC Cooling/Heating Power**. The UC701 uses this rated power value.
 - **Time (T)**: Calculated from the device's periodic status reports.
- **With external CT** ($W = U \times I$):
 - **Voltage (U)**: Enter the local supply voltage in the cloud platform configuration.
 - **Current (I)**: Measured by the CT sensor and reported periodically by the UC701.

Accuracy: When using an external CT sensor, the energy measurement accuracy is approximately 3% under steady-state AC operation.

What are the limitations when modifying the target temperature of the air conditioner?

The UC701 can only set temperatures within the range supported by the connected air conditioner:

- Most air conditioners support a range of 16°C to 30°C.
- Some air conditioners only support 18°C to 30°C.

If you send a command to set 16°C to an air conditioner that only supports a minimum of 18°C, the air conditioner will likely interpret the out-of-range value and set the temperature to its minimum supported value (18°C).

What is the difference between "Holiday" mode and "Schedule", and what are the limitations of Holiday mode?

Difference: Schedule allows you to set recurring time-based scenarios. Holiday mode addresses a gap in Schedule by allowing you to apply a specific preset scenario on designated dates.

Limitation: Holiday mode is an exclusionary feature. Ideally, it should block all non-manual commands (including scheduled and trigger-based commands from the cloud) during their active period. However, the current implementation triggers Holiday only at the activation moment and does not continuously block other commands during the active period.

Recommended workaround: Since automatic scenarios are triggered based on time schedules, when setting a Holiday period, set the Holiday start time a few minutes later than your normal scheduled schedule. This helps avoid conflicts where scheduled commands override the Holiday settings.

How long does it take for different commands to take effect?

The response time varies depending on the control method:

Control Method	Typical Response Time
BLE discovery and connection to UC701	10–15 seconds
Control via Milesight Toolbox app	2 seconds
Control via WT401 thermostat	5–6 seconds
Control via cloud platform commands	2–3 seconds
Cloud downlink command, then BLE sync to WT401	20–60 seconds (maximum 120 seconds)

Why is the temperature adjusted in 1°C steps, and why are some Fahrenheit values missing?

To ensure broad infrared compatibility with various air conditioner brands, the UC701 uses a standardized 1°C temperature adjustment step (range: 16–30°C) that matches common IR code sets.

When switched to Fahrenheit mode, the temperature values are converted from the Celsius-based IR control set. Since 1°C corresponds to approximately 1.8°F, some intermediate Fahrenheit values are not directly available in the IR code library. This is expected behavior for reliable cross-brand control.

Chapter 7. Services

Milesight provides customers with timely and comprehensive technical support services. End-users can contact their local dealer to obtain technical support. Distributors and resellers can contact Milesight directly for technical support.

Technical Support Mailbox: iot.support@milesight.com

Online Support Portal: <https://support.milesight-iot.com>

Resource Download Center: <https://www.milesight.com/iot/resources/download-center/>

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