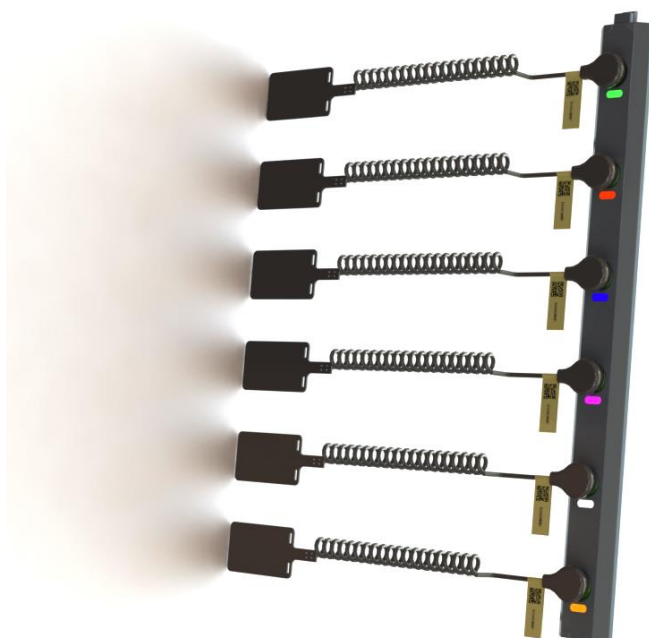


ETrakin Asset Tracking System for Cabinet

User Manual V1.8



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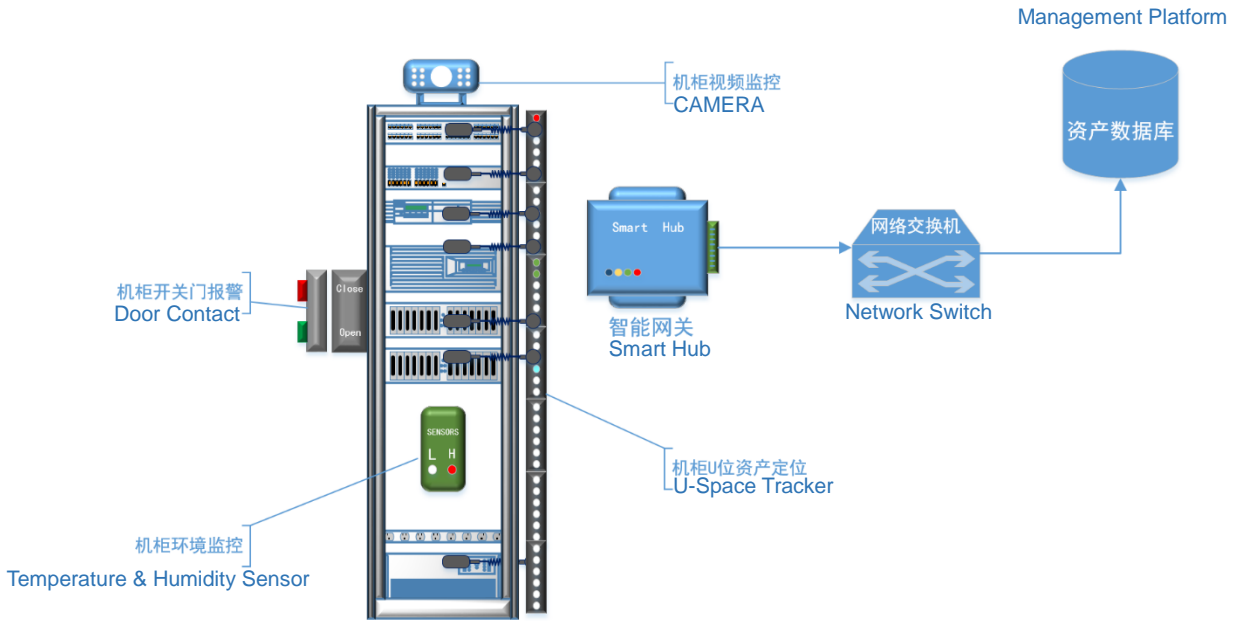
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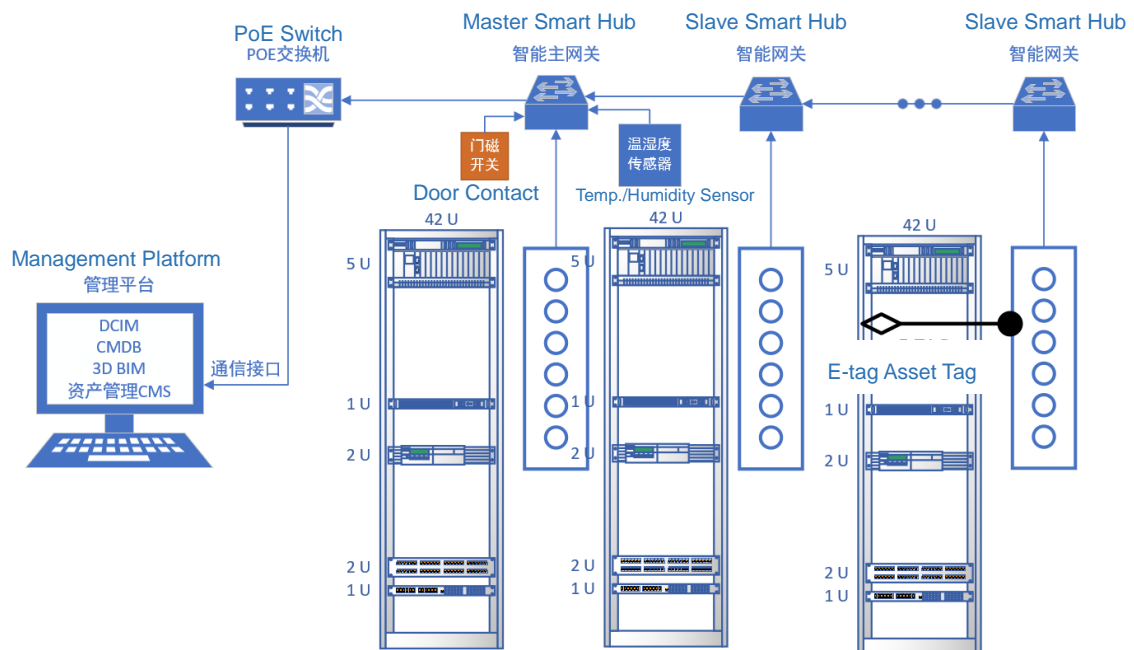
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1. All in One Solution



All-in-One Monitoring Solution for Rack

2. System Diagram



Asset Tracking System Diagram

Etrakin Asset Tracking System consists of U-space asset tracker, smart hub, ETAG asset tag, temperature and humidity monitoring sensor, door contact sensor and management platform.

Smart hub adopts POE or 12VDC power supply to save PDU and network port resources, and each smart hub can manage 5 racks at same time.

3. Introduction

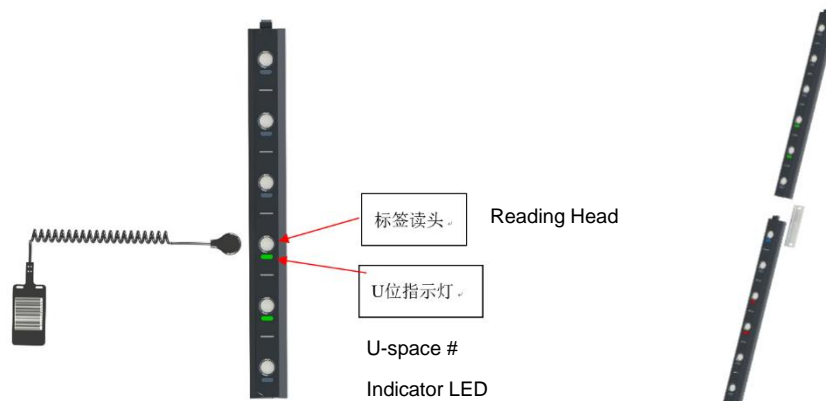
3.1 Smart Hub



Features:

- The smart hub adopts all-metal structure, compact body, easy to install
- Network detection and tracker working status indication, easy to troubleshoot on-**site operation and maintenance**
- Support POE network cable power supply, easier for wiring; a backup power adapter power supply interface to achieve power dual backup management
- U-space level asset management, micro-environment temperature and humidity monitoring, and rack door opening and closing detection, all in one solution

3.2 U-space Asset Tracker



- Based on the unique new generation of rack asset IOT technology, anti-interference, 100% accurate and reliable, maintenance-free
- The tracker is connected and fixed in sections for flexible installation, and suitable for different height racks
- Each reading head is embedded with a magnetic connector for easier attaching
- Seven-color indicator lights flexibly display various working states of assets

3.3 E-Tag Asset Tag

E-TAG is an intelligent electronic tag with anti-cutting and anti-data tampering functions designed to meet the security management needs.

E-TAG with self-adhesive backing can be easily attached to IT assets, and used in conjunction with the U-space asset tracker, it can automatically identify the asset status in real time, the asset in a specific rack, the specific U-space number of the asset in the rack, the capacity data of the asset occupying the rack U-space, and the status of whether the asset is in position; then upload to the management platform in real time through the network, which can locate the asset in real time through the platform. Rely on that, the platform will get the accurate and timely data for data center and operation by automatically counting the lively capacity and utilization rate of the racks, thus quickly and automatically inventorying the assets.



3.4 Specification

Smart Hub	Input Voltage	12V DC or 44-57V PoE Power Supply
	Output Voltage	12V@3A or 48V PoE
	Max. Output Power	25W
	Max Output for Peripheral Sensors	6W (12V@500mA)
	Communication Interface	RJ45
	Comm. Protocol to Platform	MQTT, MODBUS-RTU
	Dimension	90*66*26mm (L*W*H)
	No. of Connected Trackers	Max. 5 sets 42U Rack Trackers for one Master Smart Hub (a slave smart hub is needed for each rack tracker)
	Other Interfaces	RS485*1, IO Input*2
Other Sensors Type	Temperature, Humidity, Door Contact, Smoke Detection, etc.	
Asset Tracker	Power Consumption	< 2.5W ((7 pcs bars for Standard 42U set)
	Input Current (single tracker bar)	< 200mA (7 pcs bars for Standard 42U set <1.4A in total)
	Supported Cabinet Type	6~55U Standard IDC Cabinet

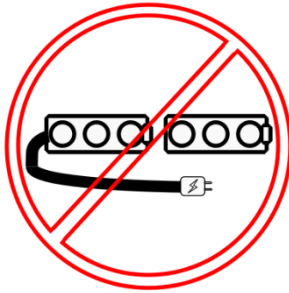
	Connection between Tags	Tags are magnetically adhere to tag reader of tracker
	Indicator LED	LED indicators are closed to its tag reader with 7 colors, which is used to show different working status
	Installation	Mounted on the sidewall of the rack, or on the inner side of the door
	Working Temperature	-20°C ~ 70°C
	Working Humidity	5% ~ 95%
	Dimension	267*26*14mm(L*W*T, for a single bar)
E-Tag	Working Technology	Patented Self-power Technology
	Connection to Tracker Reader	Magnetically adhere
	Tag Functions	Cut-off alarm
	Storage	Unique ID # & 1K storage ROM
	Tag Extension Cable	20cm~100cm Extendable Spring Cable
	Tag Material	Flame retardant PP
	Fire-proof Standard	UL94V-1
	Certification	UL, CSA, IEC,ROSH
	Sticker Brand (fix tag on assets surface)	Self-adhesive Sticker

4. Installation Guide

4.1 Attention Before Installation

1. Smart hub using 12V DC (PoE/RJ45 switch) power supply, please first connect U-space tracker before connect its power
2. Prohibit powered operation and powered unplugging of device when installing device, and wait until it's installed before powering up to prevent burnout.
3. When installing the devices, the electrostatic environment should be considered, it is best to wear anti-static gloves to install.

4. If use PoE power supply please ensure that the PoE power supply voltage is 48V, the power of a single PoE socket is not less than 20W (5 smart hub in one connection), and maximum cable length between each smart hub is not longer than 20 Meter.
5. Find a flat and clean operating table slightly longer than the 42U length.
6. when assembling and moving the U-space tracker, avoid bending between the module interfaces (keep them in same horizontal plane), please protect the module from bumping, strong vibration and other non-stationary conditions.



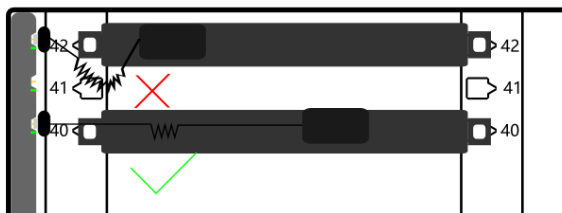
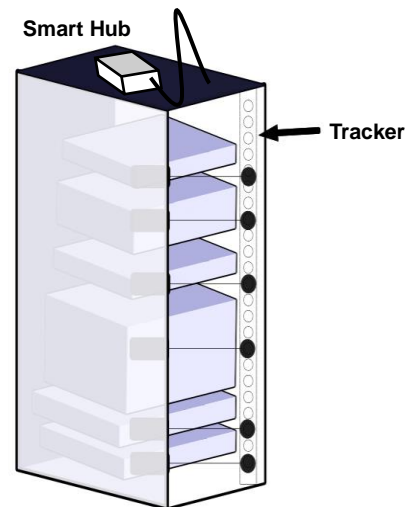
NON-HOTSWAPABLE DEVICE



ELECTROSTATIC SENSITIVE

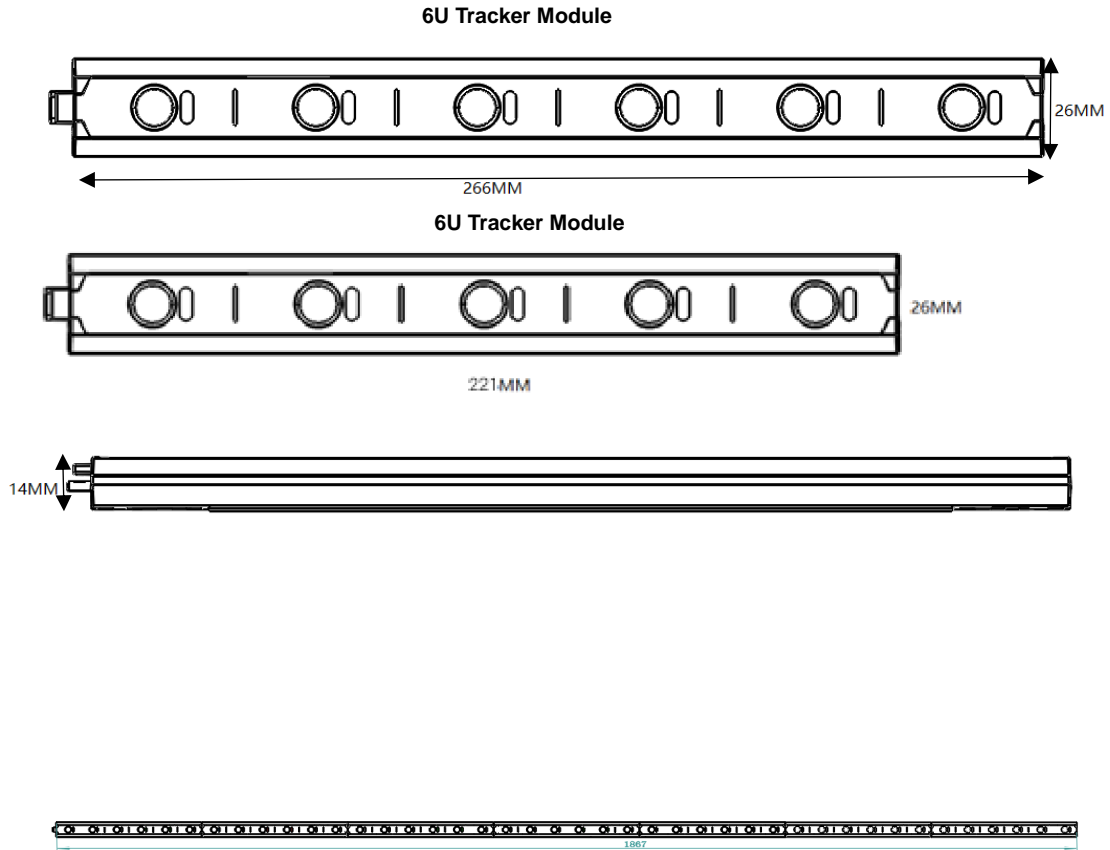
4.2 Installation Position

1. Select a flat and un-projected plane of installation within the cabinet, such as the location inside the doorway of the rack on both sides, on the door panel, etc., if there is a raised position in the case of last resort should consider removing that.
2. The chosen installation location should be in a position that does not affect the up and down of the server in the rack.
3. Reserved space in the top of the cabinet is required for the wiring.
4. For better wiring looking, make sure no drop wire in E-tag after stick it.



4.3 Installation Steps

42U standard cabinet consists of 7 sections of 6U tracker modules; 47U standard cabinet consists of 8 sections (including 7 sections of 6U modules and one section of 5U modules); the following is an example of 42U installation.

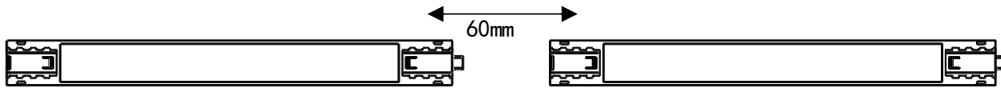


After splicing 42U total length 1867MM, 47U total length 2008MM

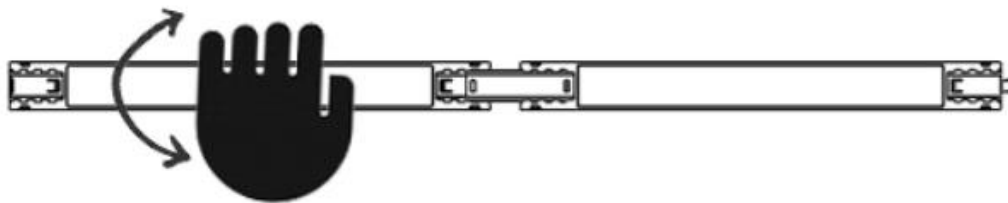
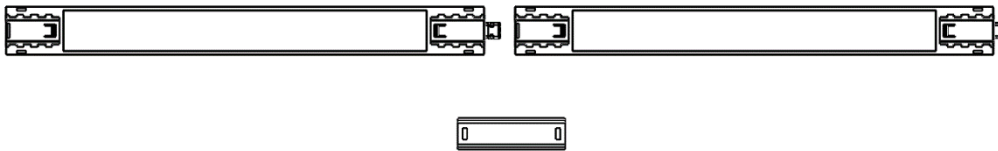
4.4 Asset Tracker Connection

1) Installation direction: the first and last ends of the two positioners are spliced together, requiring the use of the linking iron pieces delivered with the goods.

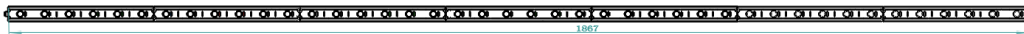




First insert the linking iron piece into the rail slot of the previous section of tracker, in the other side slowly inserted into the rail slot of the other section of the tracker (when inserted, please be sure to align the upper and lower USB slot and docking point slot, do not use brute force when not aligned, so as not to damage the plug: can be fixed after a section of the patch, slowly inserted into the next section of the module rail slot, and then hold the next tracker, left and right slowly inserted.)



3) Dock all the trackers in a similar way and finish the assembly.

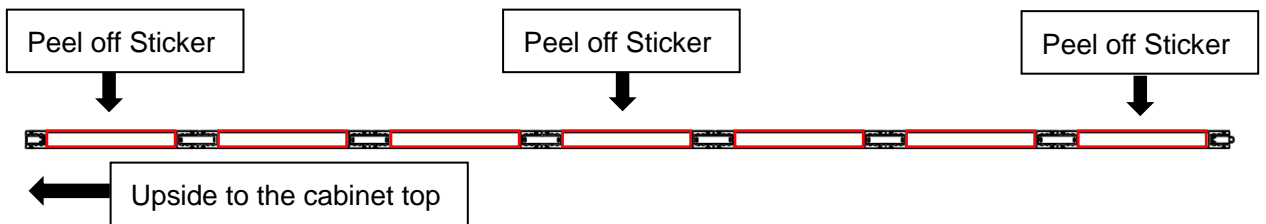


4.5 Mount Trackers

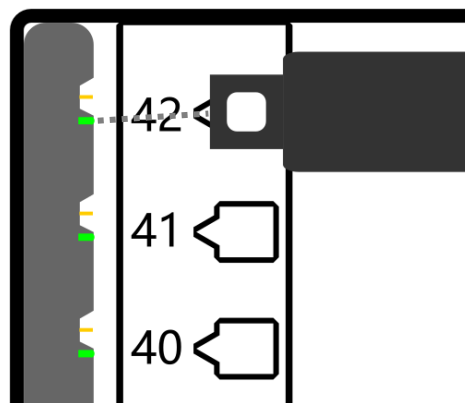
First, the TYPE C connection cable (length: 1M) delivered with the goods will be fixed in the top of the cabinet alignment slot.



Then peel off the back of the asset tracker adhesive sticker (paste the surface as needed, note: no need to peel off the back of each section for backup if there is misalignment for re-assembly.)



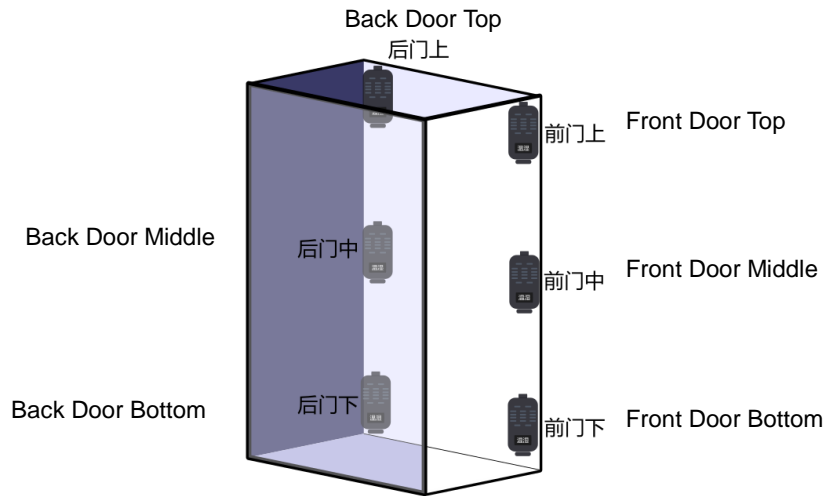
Then gently pick up the tracker module with the back side facing upward and paste it on the side blank near the cabinet door frame to complete the installation.



Make sure the cabinet U-space # and the corresponding light on the tracker are aligned parallel

(Note: keep the surface clean, such as dust need to be wiped clean first, to ensure sticker can paste firmly.)

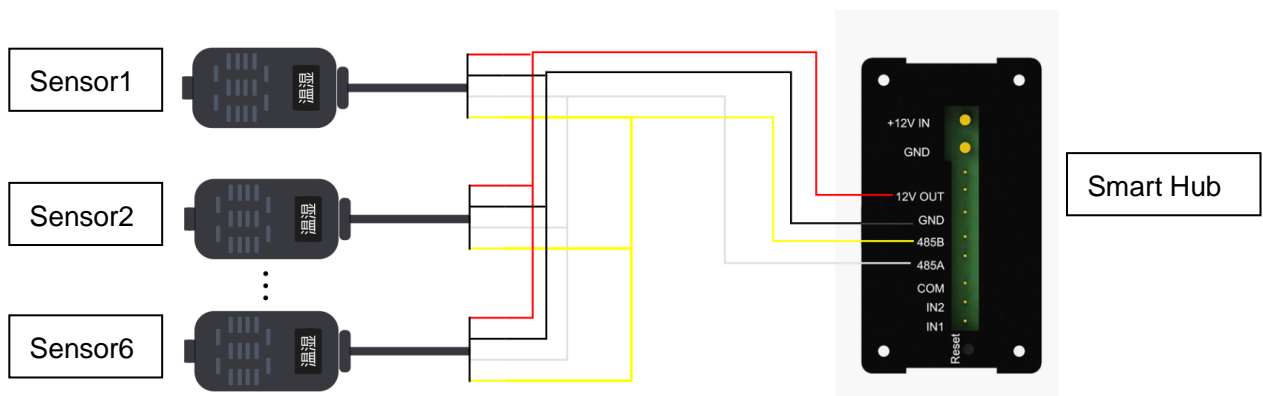
installation layout is shown in the figure



The wiring definition to connect the smart hub is as follows,



Temperature and humidity sensor connection wiring method: cascade wiring method

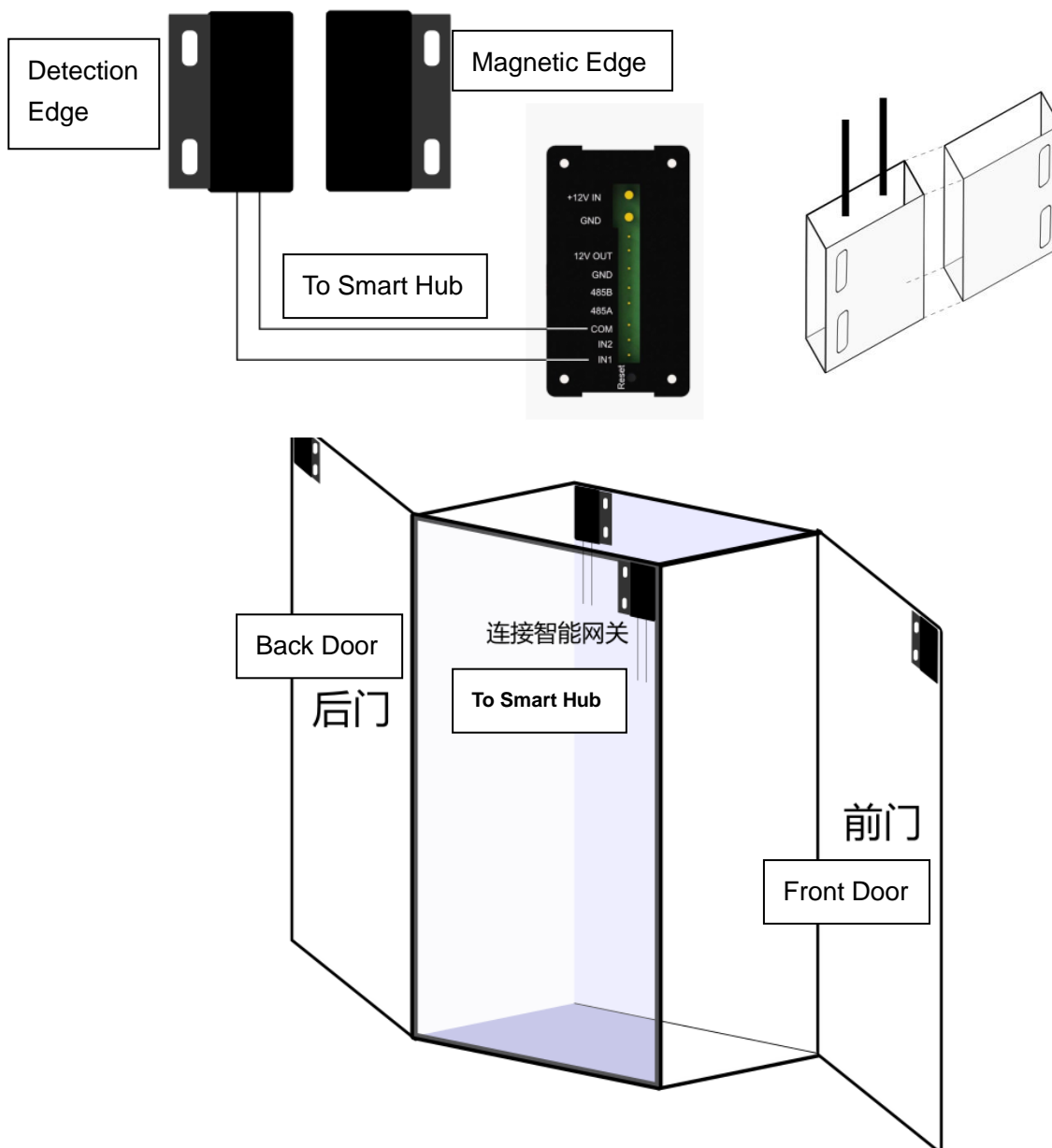


Temperature and humidity sensors are labeled with 485 addresses (from 0a-0f), recording the installation location of each address in the cabinet, and subsequent software configuration needs to do one-to-one correspondence.

4.8 Door Contact Installation

Each system supports two door contact sensors, one for the front and one for the back door, for detecting the door opening and closing status.

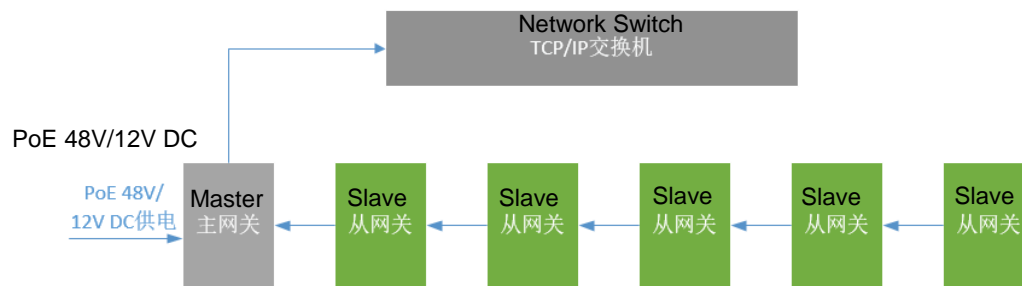
The door contact is divided into two parts: the detection edge and the magnetic edge. The detection edge is installed inside the cabinet and connected to the gateway IN1/2 and COM port, and the magnetic edge is installed on the door and ensures parallel alignment with the detection edge.



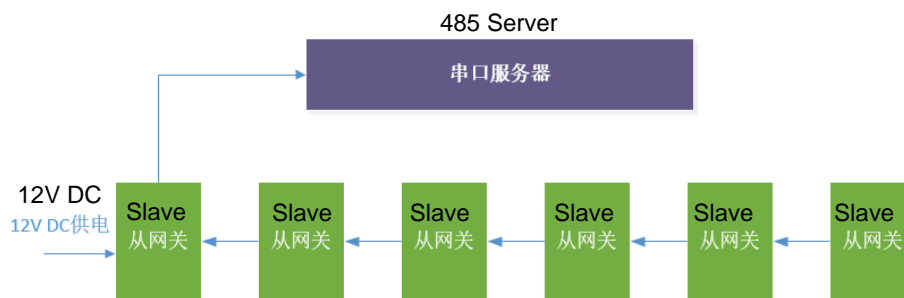
4.9 Smart Hub Installation and Wiring

Smart hub is divided into master hub and slave hub, the installation method is different according to TCP and 485 communication methods.

1. MQTT/MODBUS-TCP communication: power supply and communication between smart hubs through 485 cascade, the master hub is connected to the upper switch for power supply (PoE) and communication (TCP/IP), up to 1 master hub cascade 5 slave hubs.

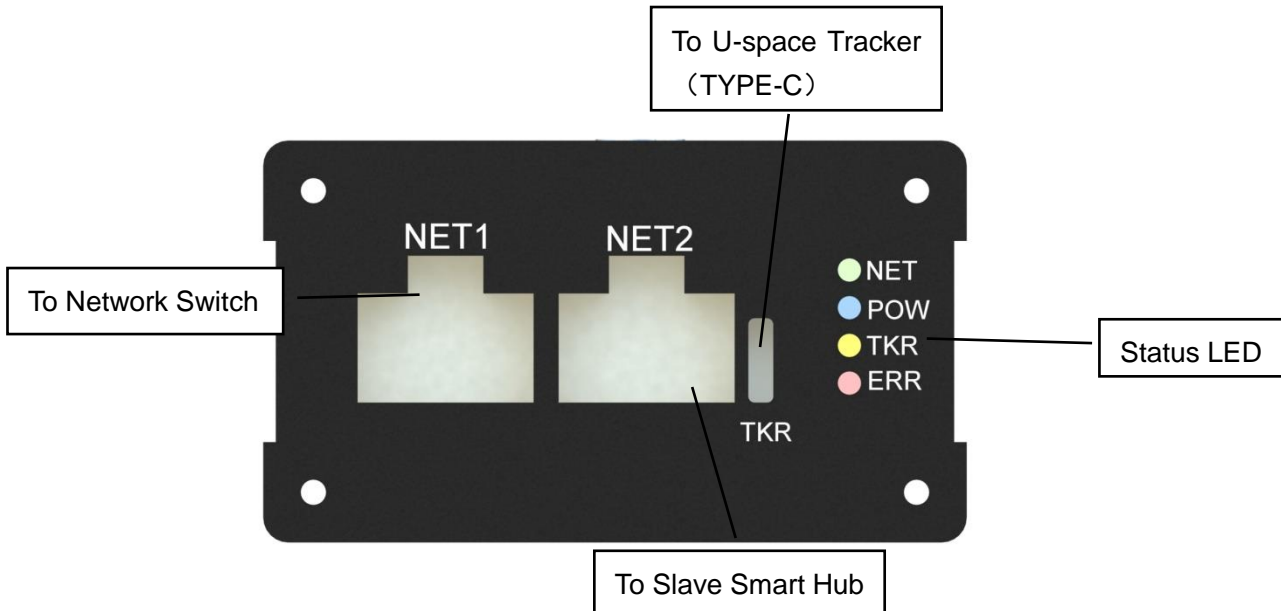


2. MODBUS-RTU (RS485) communication: all smart hubs are slaves of the upper computer (485 server), the hubs are powered and communicated through 485 cascade, the last gateway is connected to the upper 485 server, up to 6 slave hubs can be cascaded and powered separately through the last smart hub.

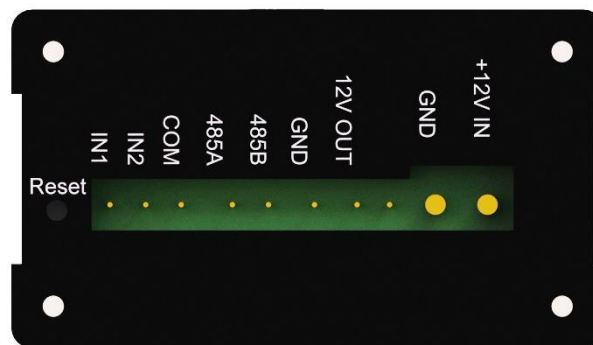


4.10 Connection for Smart Hubs

4.10.1 Master Smart Hub



Connection Diagram Front



Connection Diagram Rear

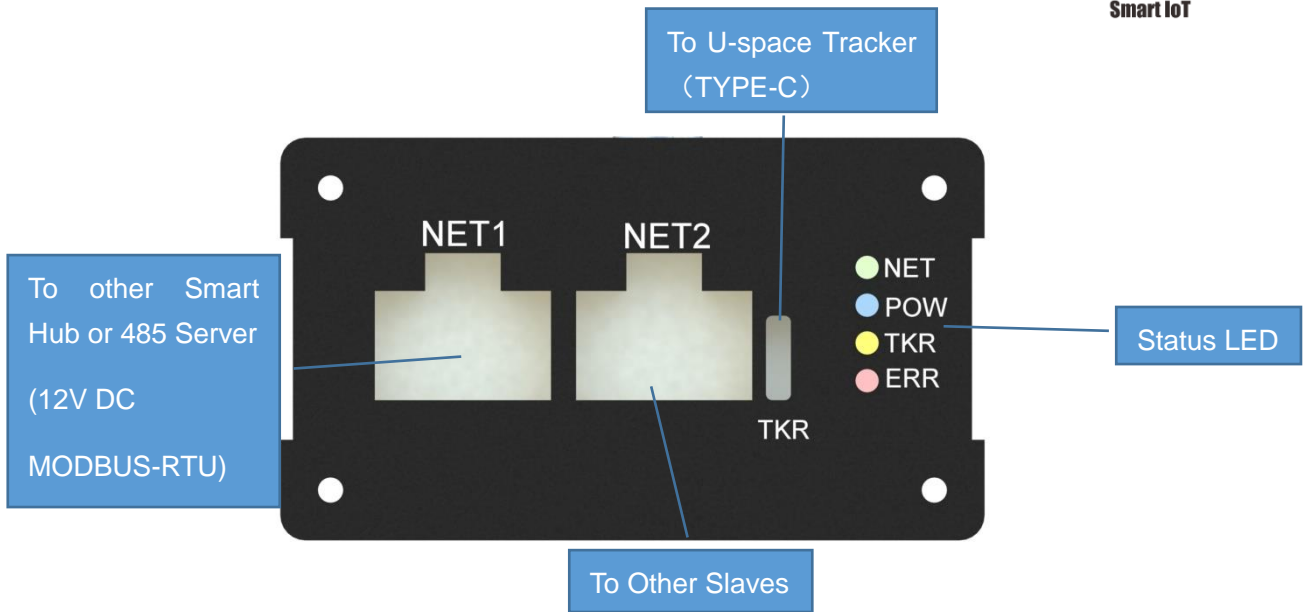
- NET1 with RJ45 network cable connected to the upper switch (PoE or direct power supply via DC12V adapter), the interface is suitable for communication methods MQTT and MODBUS-TCP.
- NET2 cascades to the lower slave smart hub (RJ45 network port)
- TKR connected to the cabinet U-space tracker (connection to the tracker TYPE-C connector)

- +12V IN/GND connected to 12V DC power adapter, input current not less than 3A (1 master 6 slave connection configuration)
- Expansion Interface: connected to temperature and humidity sensors, door contacts, and alarm output peripherals
 - 485A/B + GND: connected to 485 external expansion devices (temperature and humidity sensors, motion detector, etc.)
 - IN1/IN2 + COM: connected to 2 door contacts
 - 12V OUT + GND: can be connected to the alarm output device, the maximum load 12V @ 500mA
- RESET button: when power on, continuously press and hold for 5 seconds to reset factory settings, quickly press 3 times to hard reboot the smart hub

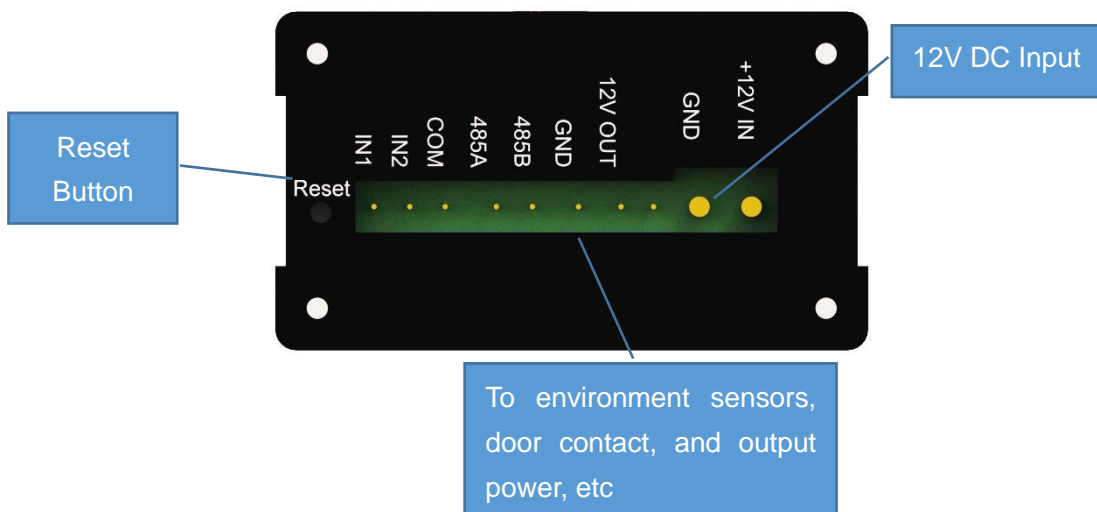
Note: After reset, the master smart hub IP is reset to 10.0.0.11, the server address is reset to 10.0.0.110, the login user name and password are reset to admin/admin, and the user needs to reconnect to modify it to their own network settings.

4.10.2 Slave Smart Hub

Slave Smart Hub can be used in cascade to connect to the upper 485 server, can also be connected to master smart hub in MQTT/TCP protocol.



Slave Smart Hub Connection Front

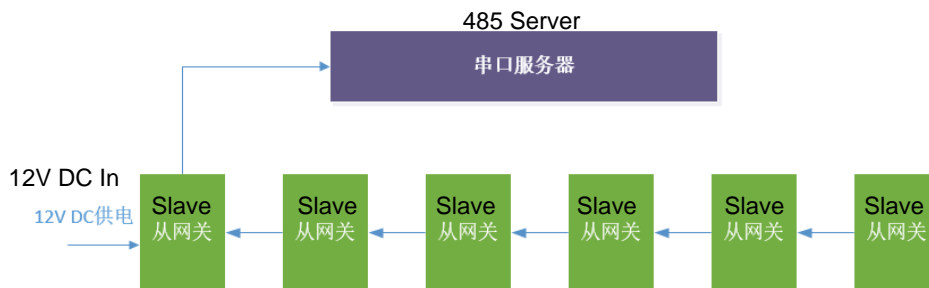


Slave Smart Hub Connection Back

- NET1 with RJ45 network cable to the upper serial server (can be 12V powered, refer to the following slave smart hub power/comm. interface definition, MODBUS-RTU)
- NET2 cascade to lower slave gateway (RJ45 network port)
- TKR connects to the cabinet asset locator (connects to the locator TYPE-C male connector)
- +12V IN/GND connection 12V DC power adapter, input current not less than 3A (1 master 6 slave connection configuration)

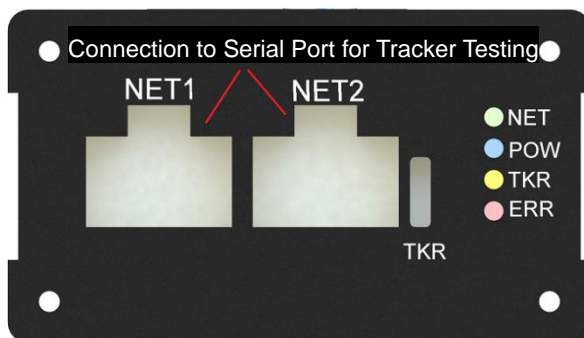
- Expansion Interface: Connects to Kotor cloud private temperature and humidity sensors, door magnets and alarm output peripherals
 - 485A/B + GND: connect to 485 external expansion device
 - IN1/IN2 + COM: connect to 2-way switchable door magnet
 - 12V OUT + GND: can be connected to the alarm output device, the maximum load 12V@500mA
- RESET button: when power on, keep pressing and holding for 5 seconds to reset factory settings, press 3 times quickly to hard reboot the smart hub

Note: After reset the 485 address for slave smart hub is reset to 1, a change for 485 address is required if the Modbus-RTU protocol is using.



Cascade Connection of Slave Smart Hub

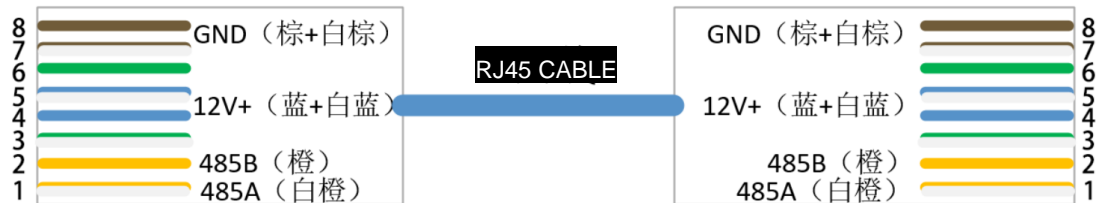
- 1) You need to prepare an 8-core network cable (one end with a crystal head can be) and a USB to 485 serial port adapter.
- 2) A section of the network cable into the NET1 or NET2 port from the smart hub, another section not connected to the water today into the USB to 485 adapter (Note: 485 debugging without using the 485 expansion head on the back of the smart hub, this connector is used for external sensor expansion.)



Slave Smart Hub 485 Connection for U-SpaceTracker

The device connection follows the RS485 MODBUS connection standard, and the connection through the RJ45 network port is defined as follows.

Note: for debugging purposes only, there is no need to connect 12V+ power supply and GND.



Slave Smart Hub Comm. Port Definition

4.11 Power-on Testing

Make sure all connections are correct before powering on the smart hub.

Note: Cascade other cabinets from the smart hub, please ensure that all the network cables and tracker connection is fixed, and then power on the first section of the smart hub, otherwise there will be other cabinets smart hub work abnormally; if the connection is abnormal, try to quickly press the master smart hub RESET button three times to hard reboot the master smart hub.

If the power supply is normal, the LED indicators of both the smart hub and the tracker will be on, and the smart hub indicators are defined as follows.

Blue: power light, light on behalf of normal communication.

Green: the upper communication light, the light is always on, representing normal communication with the upper, the light blinks on behalf of communication disconnection.

Yellow: U-position locator connection light, always on means the tracker connection is normal, not on means the tracker is not detected, need to recheck the tracker connection, and then restart smart hub after the connection is normal.

Red: Fault light, it will be on when the smart hub is upgraded and powered on, off means the smart hub is working normally.

U-space tracker will turn on the self-test, all LEDs will light up and display 7 colors in turn; after all LEDs go off, the tracer will enter the working state; E-TAG will be placed in any reading head position of the tracker, the LEDs will light up blue flashing light, indicating

normal reading of the tag.

4.12 MQTT Tool Setup

- **TCP (MQTT/MODBUS-TCP) Communication: Only Available for Master Smart Hub**

The device hardware is installed and the settings within the Smart Hub need to be configured separately before normal power-up, as follows.

- Firstly, power the Smart Hub through the UP LINK interface directly by the network cable. (Network cable connected to POE switch or 12V DC direct power supply)
- Configure the computer to set the IP, IP segment should be located in the same network segment with the Smart Hub, the default information of the Smart Hub is as follows.


Local IP:10.0.0.11

Subnet mask: 255.255.255.0

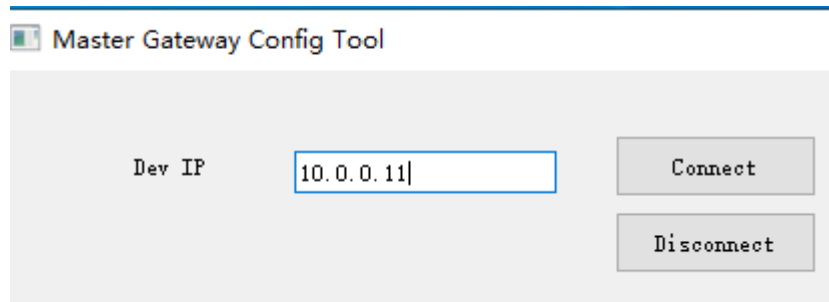
Default gateway: 10.0.0.1

- Configure the computer to open the MQTT configuration tool

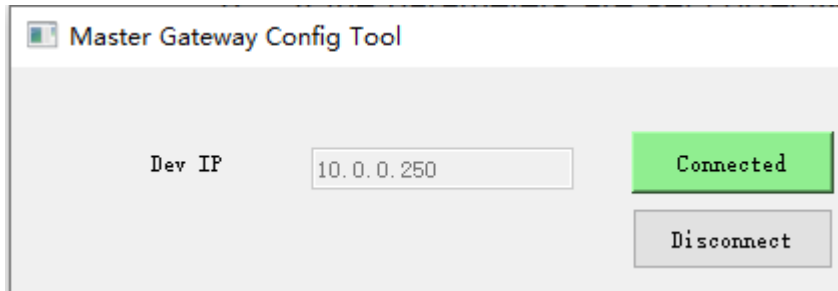
Name

 MQTT_Tool.exe

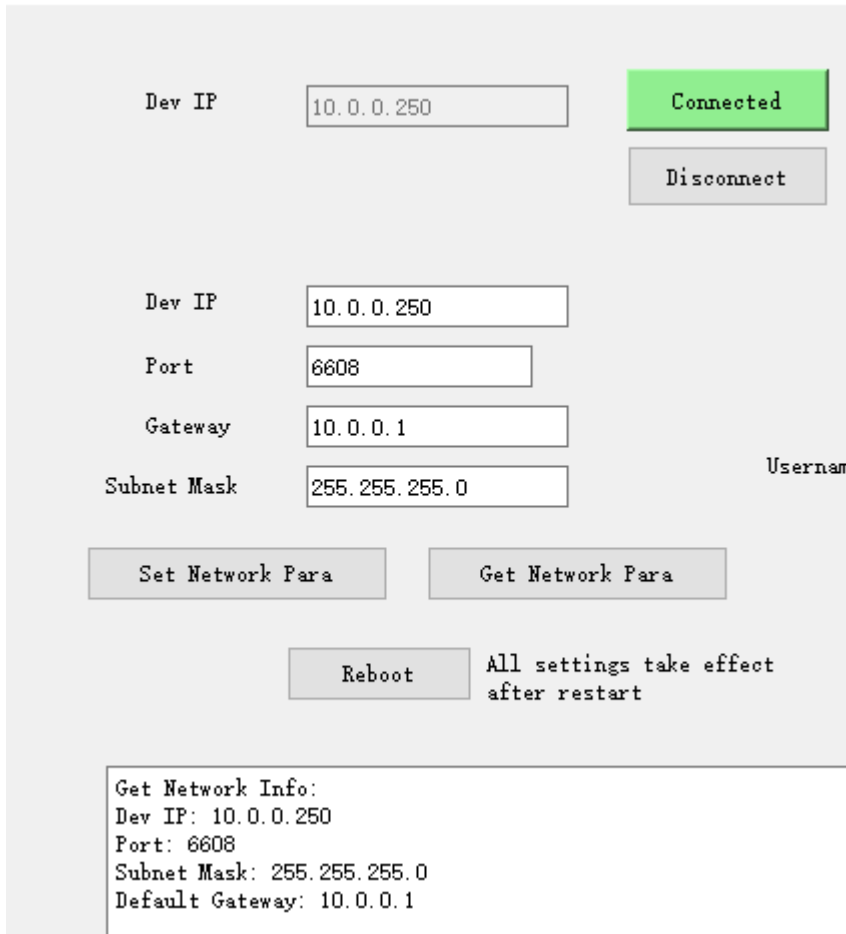
Input the default IP10.0.0.11, and click connect:



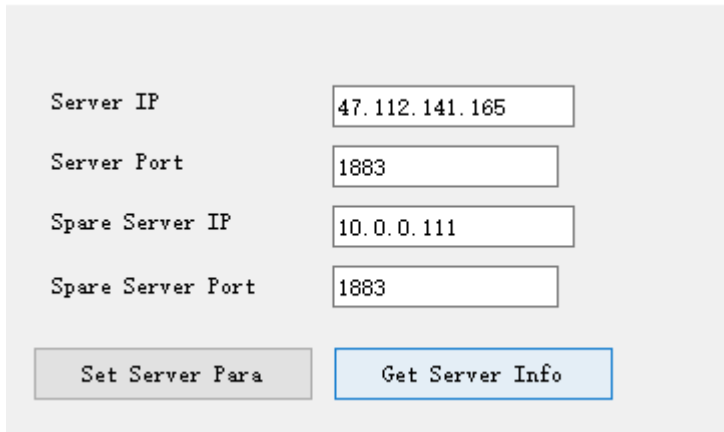
- If the parameters are set correctly and connected, the 'Connect' button turns green and shows connected, otherwise it turns red and needs to recheck the settings.



e. After connected click 'Get Network Para' to get the current IP setting.

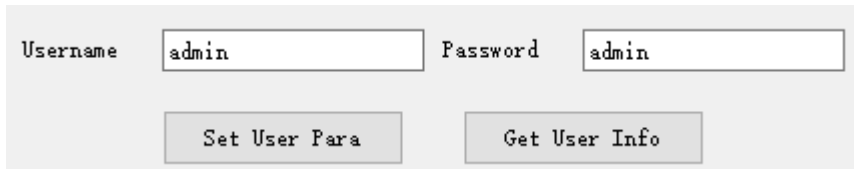


Modify the default IP, gateway and subnet mask parameters of the device (leave the port as default), and then click 'Set Network Para'.



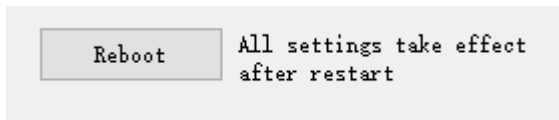
Server IP: 47.112.141.165
Server Port: 1883
Spare Server IP: 10.0.0.111
Spare Server Port: 1883
Buttons: Set Server Para, Get Server Info

Get the default server information, then modify the default server IP and port (MQTT default 1883), note that the standby server IP and port also need to fill in, can keep the same as the main server configuration; then click 'Set Server Para'.



Username: admin Password: admin
Buttons: Set User Para, Get User Info

Change the default authentication user name and password, then click "Set User Para" to take effect. Finally, click "Reboot" to let all settings take effect.



Reboot All settings take effect after restart

RS485 (MODBUS-RTU) comm. mode configuration (Slave Smart Hub)

RS485 slave smart hub mode does not need to configure IP and other settings, only 485 address (labeled on the body), and make sure in the same cascade network no same 485 address which will have conflict to each other. (Refer to MODBUS-RTU communication protocol document)



CONTACT

The manual will change without notice, if you have any questions please contact us our support as follow:

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