



Product Name	GAOTEK Scan Gateway Smart Home
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Contents

1 Brief Introduction.....	3
1.1 Features	3
1.2 Technical Specification	3
1.3 Network Access.....	4
1.4 Structure	4
1.4.1 Power supply.....	4
1.4.2 LAN port.....	5
1.4.3 Reset Button	5
1.4.4 Indicate lights	5
2 Steps for usage.....	5
2.1 Acquire gateway IP	6
2.2 Configure TCP server	6
2.3 Change network mode	7
3 Basic communication formats	7
3.1 TCP transparent communication	8
3.2 MQTT format.....	9
3.3 HTTP format	10

GAOTEK Scan Gateway Smart Home

1 Brief Introduction

With years of development, the IOT (Internet of Things) technology is widely used. IOT is the general term of a system consisting of objects (sensors, chips, and gateways), Internet connection, cloud/data center. Among these, the part of objects can be very fragmental. Gateway can integrate information collected from different objects. Internet can transmit information among each part and cloud/data center can analyze and provide solutions. Combining these 4 parts, it will become a big platform that can achieve deployment, analysis and application. This is the core structure of IOT.

1.1 Features

➤ Automatic scanning

After powered the gateway and built TCP connection with server, the gateway will automatically scan surrounding BLE device. And upload MAC address device name, broadcasting type, broadcasting content and in time signal power to server.

➤ Support various devices

It can monitor the device conforms to the BLE standard.

➤ Low operating cost

Bluetooth applied to the worldwide open 2.4G band, so its operating cost is almost to zero.

1.2 Technical Specification

➤ Introduction

- 1) Automatically assign IP address
- 2) 10M/100M adaptive network
- 3) 360MIPS High-performance processor
- 4) Average power consumption: 120mA@5V, peak value 500mA when use WIFI
- 5) Size: 106mm x 106mm x 30mm

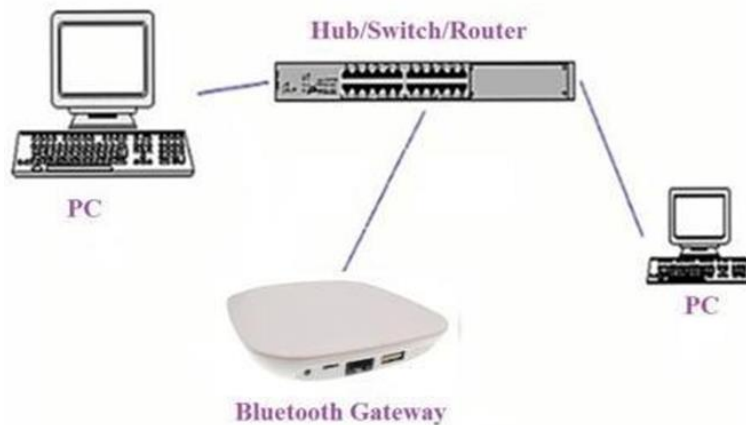
➤ Bluetooth specification

- 6) Bluetooth V5.0 standard
- 7) Frequency range: 2.402G - 2.480GHz
- 8) Class2 Bluetooth module
- 9) Bluetooth protocols: LC, LM, L2CAP, ATT, GATT

- **Internet protocols:** TCP/IP, DHCP
- **Authentication:** Support Wi-Fi security authentication
- **Internet**
 - 1) RJ45 port
 - 2) 10M/100M adaptive
- Maximum scan range 30M in open air
- Maximum scan number 300pcs/s
- Working temperature -20 to 65°C (-4° to 149°F)

1.3 Network Access

By DHCP router connection (Cable/WIFI optional)



1.4 Structure



1.4.1 Power supply

The gateway is powered by 5V Micro USB.

1.4.2 LAN port

Follow the picture of network accesses, plug cable into BLE gateway LAN port. So, the gateway is connected to a local area network.

1.4.3 Reset Button

Reset button can set gateway parameter to default value. After powered the gateway, press reset button for 6s, the red light will flash quickly. Now release the button. When the red light stop flashing, it means the gateway reset successfully.

1.4.4 Indicate lights

There are 3 indicate lights in gateway surface. Red, green and blue.

(1) Red light is system indicating light.

After powered the gateway, the red light will hold on. After initialization, the red light will flash every second.

Note: if use DHCP to distribute IP address to gateway, the gateway must wait until it gets IP address. If the red light always holds on, probably the gateway didn't get IP address.

(2) Green light is network connection indicating light.

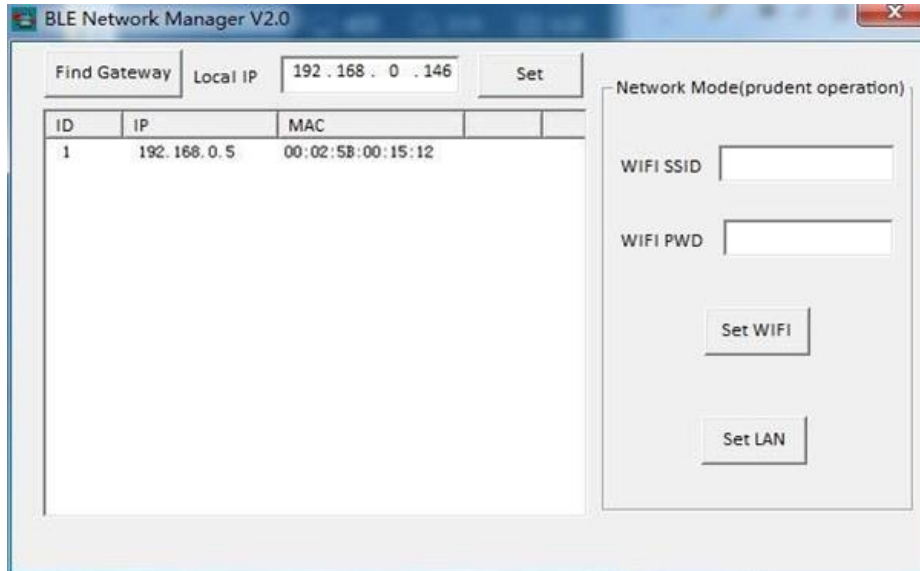
The green light will extinguish after gateway-built TCP connection with server. If the green light holds on, that means the gateway didn't connect with server. Then please check server parameter and check cable.

(3) Blue light is Bluetooth working status indicate light. When the Bluetooth is not scanning surrounding device, the blue light will extinguish. When it starts scanning, the scanned device number will decide flash speed. The more the Bluetooth scanned the fast the blue light will flash.

2 Steps for usage

2.1 Acquire gateway IP

User can use BLE scan gateway management software (BLE Network Manager) to scan gateway. Enter PC IP in local IP, click “Set” to scan gateway.

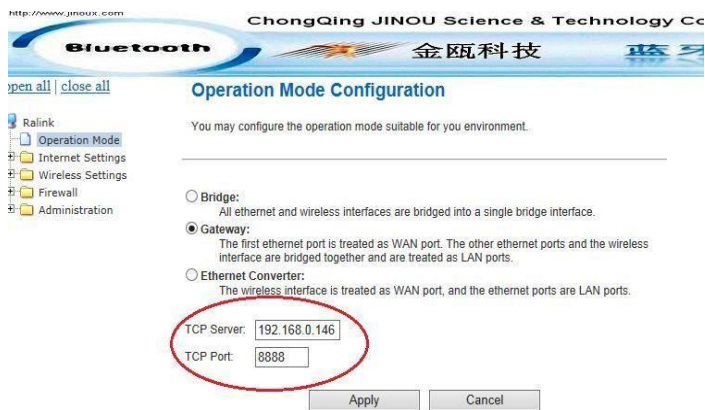


2.2 Configure TCP server

When first time use gateway or usage environment changed, user need to configure the parameter and re-power it. After acquire gateway IP address, for example: 192.168.0.5, enter <http://192.168.0.5> in browser, it will show a login interface. Both user name and password are “admin”.



Click OK to enter, choose “Operation Mode”, and then enter following page:



Enter TCP server IP address and TCP port number. Click “Apply” and wait for a few seconds until the page refreshes. Then re-power the gateway and the gateway will automatically connect to designated server.

2.3 Change network mode

The gateway can connect to network via cable or Wi-Fi. Factory default is via cable. IP address is assigned by DHCP. User can use BLE scan gateway management software (BLE Network Manager) to set network mode. Please keep prudent when set, especially Wi-Fi mode.

If set Wi-Fi mode, please first ensure that the gateway is currently in cable mode and can be searched through the gateway management tool. Then enter the Wi-Fi name and password in the network mode, click "set Wi-Fi", and then power on the gateway again. It will take about tens of seconds or one minute to connect to Wi-Fi for the first time. If Wi-Fi connection is failed within two minutes, power on the gateway again. If still failed, Wi-Fi name and password entered in the Wi-Fi configuration may be incorrect.

Please ensure Wi-Fi SSID and password is correct, otherwise Wi-Fi connection will be failed, user needs to press Reset button to restore gateway to factory default setting.

3 Basic communication formats

The gateway supports 3 methods of upload data: TCP transparent communication, MQTT format and HTTP format. User can choose and set in web page.

3.1 TCP transparent communication

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Upload Mode Configuration

You can Upload Scan result use TCP Direct Mode, MQTT Mode, or Http JSON Mode

A screenshot of the 'Upload Mode Set' configuration window. At the top, there is a dropdown menu set to 'TCP Direct Data'. Below it, there are two sections: 'TCP Direct Mode' and 'Active time Set'. Under 'Active time Set', there is a 'HeartBeat Interval' field with the value '10' and the unit 'seconds'. At the bottom, there are 'Apply' and 'Cancel' buttons.

Default data upload format is TCP. For TCP upload, user only need to set heartbeat package interval. Default setting is 10s.

There are 2 kinds of data packet. One is scanning data packet; another is heartbeat packet.

Scan data packet

```
\r\n +INQRESULT:<gwaddr>, <addr>, <addrtype>, <name>, <bctype>, <bcdata>, <rsi>\r\n
```

Parameter description:

gwaddr: The gateway's MAC address adds: scanned BLE device's MAC address

addrtype: scanned BLE device's address type. 0: public 1: random name:

scanned BLE device's name, the value can be blank

bctype: scanned BLE device's broadcast type. Details type refers to Bluetooth

specification Core_V4.2 [Vol 2] PartE, 7.7.65.2.

- ADV_IND
- ADV_DIRECT_IND
- ADV_SCAN_IND
- ADV_NONCONN_IND
- SCAN_RSP

Bc data: scanned BLE device's broadcasting data. Detail format refer to Bluetooth specification Core_V4.2 中 [Vol 3] Part C 11.

rsi: signal strength between BLE device and Bluetooth gateway

Example:


```
+INQRESULT:001B35142024, C233F291838,0,"",3,0201060303E1FF1216E1FFA10
8643818293F23AC566563696D61, -75
+INQRESULT:001B35142024, D9783C812794,0,"",0,0201060303E1FF1216E1FFA
1083E9427813C78D9566563696D61, -81
+INQRESULT:001B35142024, D9783C812794,0,"iBeacon",4,080969426561636F6E
, -78
```

After gateway and server-built TCP connection, if there is no scan data packet send in 10s, gateway will send a heartbeat packet, so sever can judge if the gateway is working normally.

3.2 MQTT format

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- JINOU
- Operation Mode
- Upload Set
- Internet Settings
- Wireless Settings
- Firewall
- Administration

Upload Mode Configuration

You can Upload Scan result use TCP Direct Mode, MQTT Mode, or Http JSON Mode

Upload Mode Set MQTT

MQTT Mode	
Username	<input style="width: 90%;" type="text" value="test"/>
Password	<input style="width: 90%;" type="text" value="test"/>
Upload Topic	<input style="width: 90%;" type="text" value="/mqtt/uploadresult"/>
Active time Set	
HeartBeat Interval	<input style="width: 50%;" type="text" value="10"/> seconds

Apply
Cancel

Need to set 3 main parameters: User name, password and upload topic.

In this format, heartbeat interval will work as Keep Alive time parameter in MQTT connection.

Scan data packet is same as TCP format.

3.3 HTTP format

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- JINOU
 - Operation Mode
 - Upload Set
 - Internet Settings
 - Wireless Settings
 - Firewall
 - Administration

Upload Mode Configuration

You can Upload Scan result use TCP Direct Mode, MQTT Mode, or Http JSON Mode

Upload Mode Set	
HTTP(JSON) ▼	
Http Mode	
Scan Result Upload URL	<input type="text" value="property/putScanResult"/>
HeartBeat URL	<input type="text" value="property/putHeartbeat"/>
Upload Interval	<input type="text" value="5"/> seconds
Active time Set	
HeartBeat Interval	<input type="text" value="10"/> seconds
<input type="button" value="Apply"/> <input type="button" value="Cancel"/>	



