RD05 Bluetooth Gateway

--User Manual V1.0

1 Product Overview

The RD05 Bluetooth gateway is a beacon that integrates two wireless communication methods of WiFi and Bluetooth 5.0 BLE.The communication between WiFi and Bluetooth is through serial port.It can be used in various scenarios flexibly. For example, the remote control BLE device, receives the data sent by the BLE device and sends it to servers. The WiFi data rate of the Bluetooth gateway an be up to 150Mbps and BLE data rate can be up to 2Mbps. the Bluetooth gateway is also supports the POE switch power supply and 5V adapter power supply.

2 Product Feature

- Support the POE switch power supply and 5V adapter power supply;
- Support IEEE 802.3 standard-compliant solution, including pre-standard POE support;
- Support IEEE 802.11n, IEEE 802.11g, IEEE 802.11b Protocol;
- Support BLE 5.0;
- One WAN/LAN variable network port;

3 Technical Parameters

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Dimension	Diameter: 110mm; Height: 35mm
Power Supply	DC 5V、POE Switch up to 57V
Currents	200mA@5V
Operating Temperature	-20℃~70℃
Interface	WAN Port and Power Supply Port
WiFi	
WiFi Protocol	IEEE 802.11n, IEEE 802.11g, IEEE 802.11b
Data Rate	IEEE 802.11 b Standard Mode: 1,2,5.5,11Mbps
	IEEE 802.11g Standard Mode: 6,9,12,18,24,36,48,54Mbps
	IEEE 802.11n : 72Mbps @ HT20 150Mbps @ HT40
Sensitivity	HT40 MCS7 : -67dBm@10% PER(MCS7)
	HT20 MCS7 : -73dBm@10% PER(MCS7)
	54M: -76dBm@10% PER
	11M: -91dBm@ 8% PER
Transmit Power	EEE 802.11n: 15dBm @HT40 MCS7 15dBm@HT20 MCS7
	IEEE 802.11g: 16dBm
	IEEE 802.11b: 18dBm
Wireless Security	WPA/WPA2, WEP, TKIP, and AES
Working Mode	Bridge、Gateway、AP Client

Bluetooth	
Bluetooth Protocol	BLE 5.0
Data Rate	1Mbps
Wireless Security	AES HW Encryption
Connection Distance	150m
Transmit Power	-20~+8dBm

4   Internal Modules Introduction
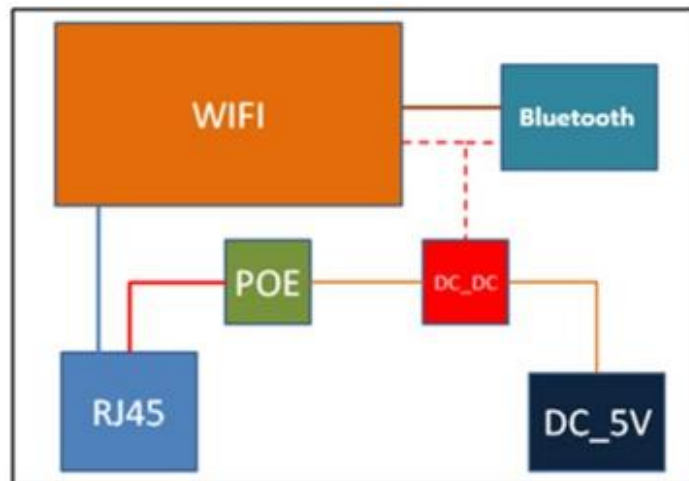
1. Built-in WiFi and Bluetooth two wireless communication modes;
2. WiFi communicates with Bluetooth through a serial port;
3. Support POE power supply and 5V power supply.

5 Definition of Interfaces
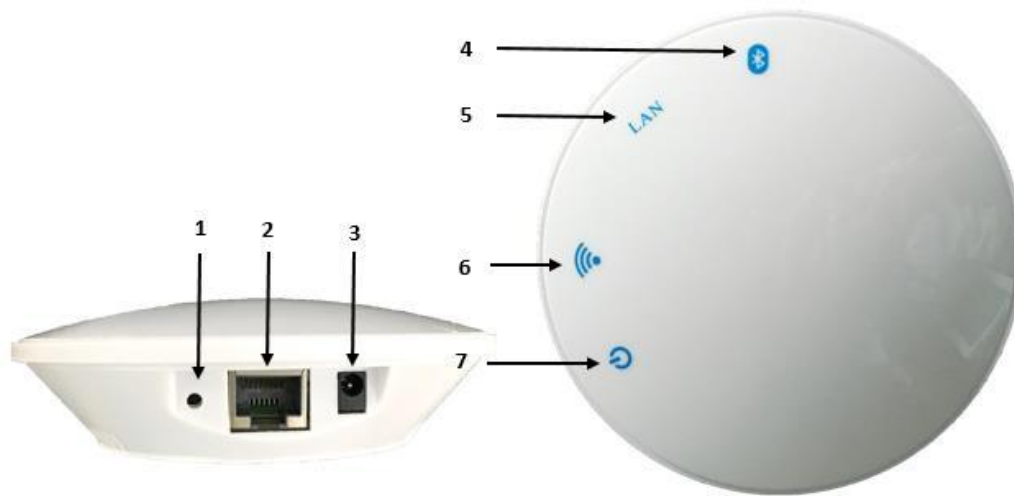
Interfaces	Functions
1. WiFi module reset button	Long press the reset button for more than 5 seconds, and the WiFi module will restore to factory settings
2. Network port	WAN/LAN Variable network port（APP Client is LAN, Gateway is WAN）
3. Charge interface	Connect power plug
4. BLE LED	The LED blinks after the power-on
5. LAN LED	The LED always bright after the power-on and insert the network cable
6. WiFi LED	The LED always bright after the power-on 1~2 seconds
7. Power LED	The LED always bright after the power-on

6 Application Scenario

1. The device's Bluetooth module collects information about Bluetooth logger nearby, including RSSI, MAC, etc., once per second.

2. Bluetooth module send the Bluetooth logger information to WiFi module through UART serial port, once per second.

3. WiFi module transfers the Bluetooth logger information to the specified TCP/UDP server, and accepts the information returned by the server.

4. Bluetooth logger temperature(humidity) information can be displayed on the front page after the TCP/UDP server analyze and calculate the Bluetooth logger information.

5. In the configuration interface of WIFI module on the web side, commands can be sent to the WIFI module, which can be transmitted to the Bluetooth module transparently.
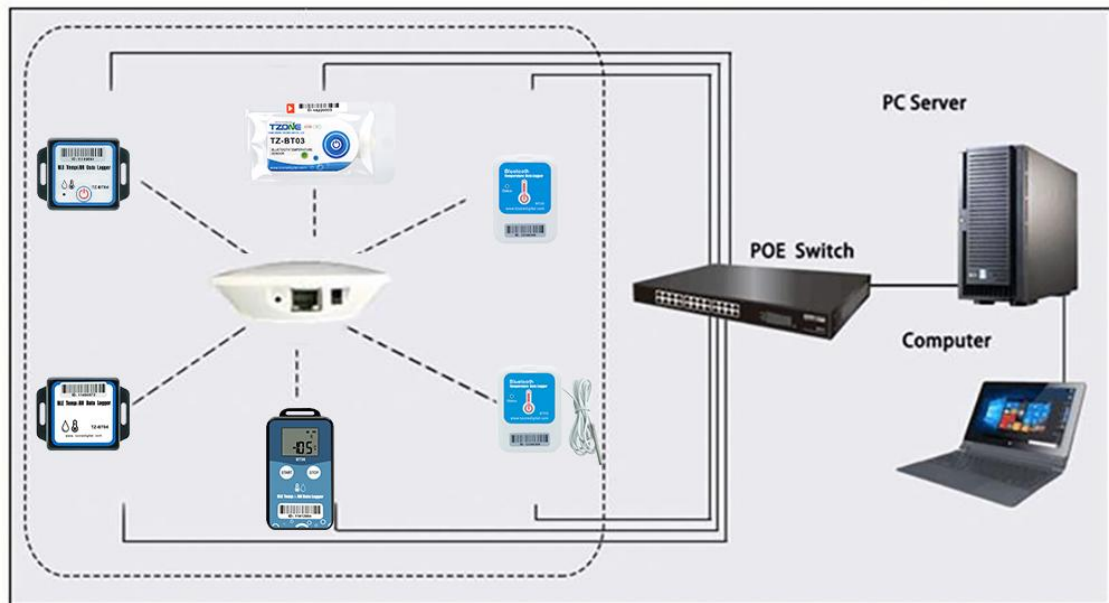
Remark:can be connected to the Internet via the POE switch or the wireless router.

7   Parameter Configuration

7.1 Webpage Configuration

(1) Search and access to the wireless network after the power on (WiFi name: SKYLAB_XXXXXXX, No password required) .

(2)Once the wireless network SKYLAB_XXXXXXX is connected successfully, please start the browser and search the 10.10.10.254 (please use this IP address to login). There is a login Window interface pop-up on the browser. The default username and password of the administrator are admin (lowercase). Please input the username "admin" and password "admin", click the "ok".

If the username and password are correct, you are able to access to login successfully. And the webpage management interface will be shown automatically.

Note:The WiFi module obtains IP addresses for DHCP,unable to set static IP addresses.

The computer logging in WiFi module configuration interface must also obtain IP dynamically.

(2) Select language

(3) If you'd like to use the LAN mode for the device, please set the configurations as below:
Click the "Operation Mode" and choose Gateway (Gateway is LAN,AP Client is WAN),then click "Save" or "Apply":
Note: "Save" only saves the new configuration, and the new configuration is used only after the power failure and restart. "Apply" indicates that the new configuration is used immediately, and the new configuration is still used after the power failure and restart(Clicking "Apply" will exit the WiFi module setting).

In "Administration", select "Setting Management", select Set TCP/UDP server IP address and port, and then click "Apply" :

(4) If you'd like to use the WiFi mode for the device, please set the configurations as below:

Click the Operation Mode and choose AP Client (Gateway is LAN, AP Client is WAN), then click "Save" or "Apply":

Note: "Save" only saves the new configuration, and the new configuration is used only after the power failure and restart. "Apply" indicates that the new configuration is used immediately, and the new configuration is still used after the power failure and restart(Clicking "Apply" will exit the WiFi module setting).

Select AP Client from Wireless Settings (Refresh page if not found), input SSID and pass phrase, and then click "Save" or "Apply" :

Note: "Save" only saves the new configuration, and the new configuration is used only after the power failure and restart. "Apply" indicates that the new configuration is used immediately, and the new configuration is still used after the power failure and restart(Clicking "Apply" will exit the WiFi module setting).

In "Administration", select "Setting Management", select Set TCP/UDP server IP address and port, and then click "Apply" :

(5)   Support to view the "Status" in "Administration":

← ⟳ ▲ 不安全 | 10.10.10.254

95POWER

open all | close all

- 95POWER
  - Operation Mode
  - ⊞ Internet Settings
  - ⊞ Wireless Settings
  - ⊞ Firewall
  - ⊞ NAS
  - ⊟ Administration
    - Management
    - Upload Firmware
    - Settings Manageme
    - Status
    - Statistics
  - ⊞ Bluetooth

Access Point Status

Let's take a look at the status of Ralink SoC Platform.

System Info	
SDK Version	W0271.1.7
System Up Time	2 hours, 3 mins, 48 secs
System Platform	RT2880 embedded switch
Operation Mode	AP Client Mode

Internet Configurations	
Connected Type	DHCP
WAN IP Address	192.168.1.101
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
Primary Domain Name Server	192.168.1.1
Secondary Domain Name Server	192.168.1.1
MAC Address	32:EB:1F:0F:55:C2

Local Network	
Local IP Address	10.10.10.254
Local Netmask	255.255.255.0
MAC Address	30:EB:1F:3F:55:C2

4G Status	
SIM Status	
Signal Value[range(10,31)]	
4G Network	

Ethernet Port Status

(6) Support to set "FilterConfig" in "Bluetooth":
The filter criteria include RSSI, device name, UUID, and company ID：

(7) Support to set "ScanConfig" in "Bluetooth":

The parameters contain the Scan Switch, Scan Interval and Scan Device Number.

(9) Support to set the WIFI module connection password in the "Security Settings" of "Wireless Network Settings",then click "save" or "Apply":

Note: "save" only saves the new configuration, and the new configuration is used only after the power failure and restart. "Apply" indicates that the new configuration is used immediately, and the new configuration is still used after the power failure and restart(Clicking "Apply" will exit the WIFI module setting).

(10) Support to set the administrator account and password of the webpage in "Security" of "Wireless Settings", then click "Apply":

(11) After setting, the device can transmit data to the specified server IP address and port. Please refer to the data protocol.

Note: If there is still no data being transmitted after setting, please power off and restart the device.