

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 can be up to 150Mbps and BLE data rate can be up to 2Mbps. The Bluetooth gateway also supports the POE switch power supply and 5V adapter power supply.

2 Product Feature

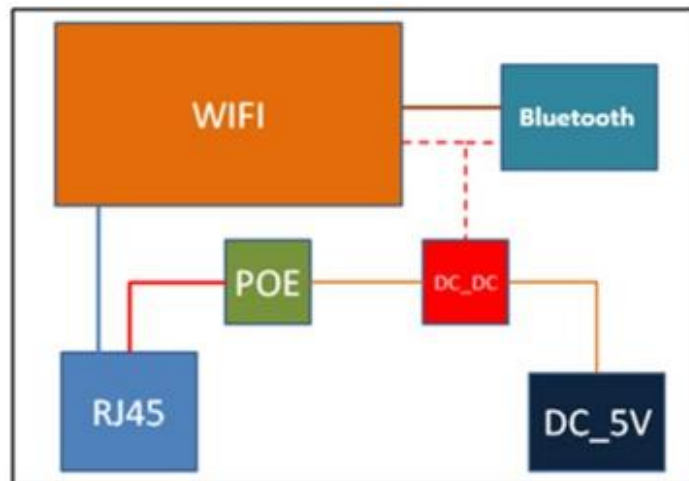
- Support the POE switch power supply and 5V adapter power supply;
- Support IEEE 802.3 standard-compliant solution, including pre-standard POE support;
- Support IEEE 802.11n, IEEE 802.11g, IEEE 802.11b Protocol;
- Support BLE 5.0;
- One WAN/LAN variable network port;

3 Technical Parameters

Dimension	Diameter: 110mm; Height: 35mm
Power Supply	DC 5V、 POE Switch up to 57V
Currents	200mA@5V
Operating Temperature	-20°C~70°C
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	IEEE 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

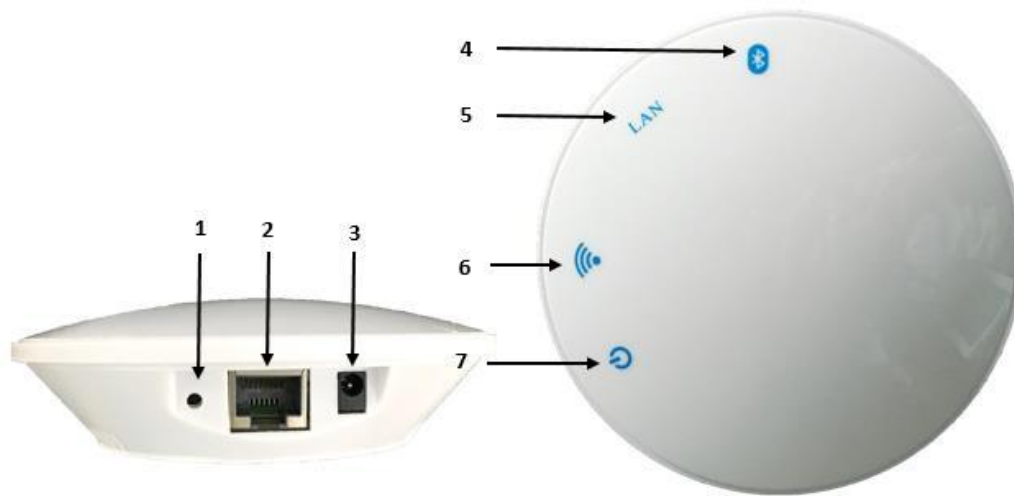
Bluetooth	
Bluetooth Protocol	BLE 5.0
Data Rate	1Mbps
Wireless Security	AES HW Encryption
Connection Distance	150m
Transmit Power	-20~+8dBm

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

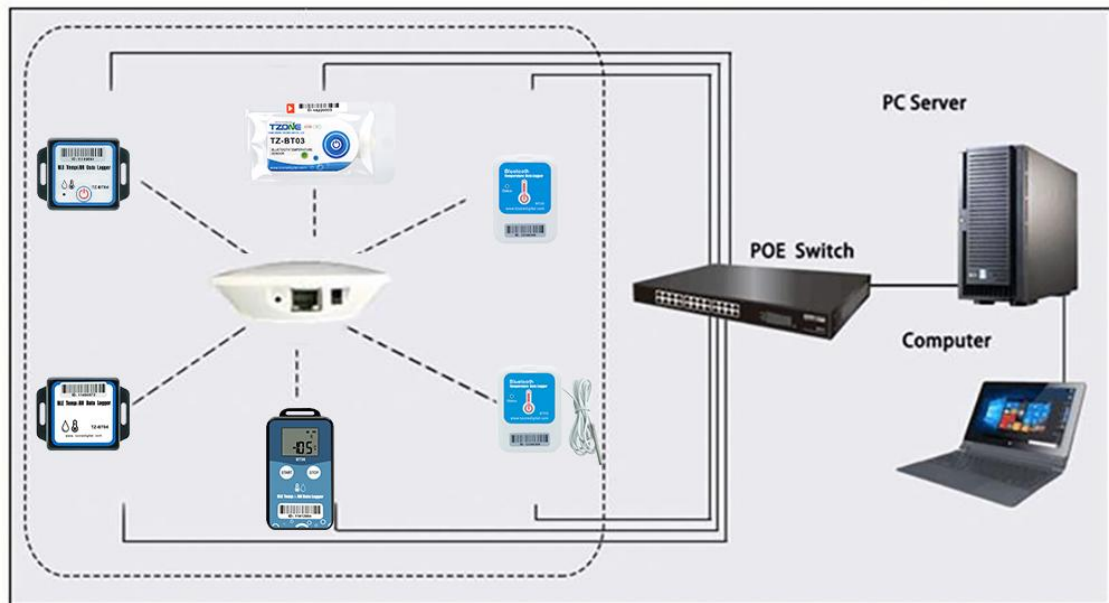


Interfaces	Functions
1. WiFi module reset button	Long press the reset button for more than 5 seconds, and the WiFi module will restore to factory settings
2. Network port	WAN/LAN Variable network port (APP Client is LAN, Gateway is WAN)
3. Charge interface	Connect power plug
4. BLE LED	The LED blinks 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.

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

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Operation Mode Configuration

You may configure the operation mode suitable for you environment.

Bridge:
All ethernet and wireless interfaces are bridged into a single bridge interface.

Gateway:
The first ethernet port is treated as WAN port. The other ethernet ports and the wireless interface are bridged together and are treated as LAN ports.

AP Client:
The wireless apcli interface is treated as WAN port, and the wireless ap interface and the ethernet ports are LAN ports.


NAT Enabled:

TCP Timeout:

UDP Timeout:

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

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importing the file, or reset them to factory default.

Export Settings

Export Button

Import Settings

Settings file location

Load Factory Defaults

Load Default Button

Reboot System

Reboot System Button

Server Type:

TCP Server Init

TCP Server Init IP Setting

TCP Server Init Port Setting

(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).

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AP Client:
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NAT Enabled:

TCP Timeout:

UDP Timeout:

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).

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AP Client Feature

You could configure AP Client parameters here.

AP Client Parameters	
SSID	<input type="text" value="TZONE1"/>
MAC Address (Optional)	<input type="text"/>
Security Mode	<input type="text" value="WPA2PSK"/>
Encryption Type	<input type="text" value="AES"/>
Pass Phrase	<input type="text" value="tzone2014"/>

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

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Export Settings

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Settings file location

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Load Default Button

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Reboot System Button

Server Type:

TCP Server Init

TCP Server Init IP Setting

TCP Server Init Port Setting

(5) Support to view the “Status” in “Administration”:



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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:

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 - ScanContig
 - GatewayBroadcast
 - ConnectParameter
 - BasicInfo

Bluetooth Filter Info Settings

Here you can configure Bluetooth filtering.

Set Filter RSSI

Filter RSSI	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
RSSI	<input type="text" value="-100"/> <small>(range [-127,127])</small>
<input type="button" value="Apply"/>	

Set Filter Device Name

Filter DeviceName	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Device Name	<input type="text" value=",95power*,skylab*"/> <small>(string len in [1,20], match in [0-9a-zA-Z],multiple devname,use ',' separete,such as:GW*,SKY*. Up to 5)</small>
<input type="button" value="Apply"/>	

Set Filter Beacon UUID

Filter Beacon UUID	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Beacon UUID	<input type="text" value="1234567890abcdef1234567890abcdef"/> <small>(string len is 32, match in [a-fA-F0-9])</small>
Beacon UUID2	<input type="text"/> <small>(string len is 32, match in [a-fA-F0-9])</small>
<input type="button" value="Apply"/>	

Set Filter Company ID

Filter Company ID	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Company ID	<input type="text" value="004C"/> <small>(string len is 4, match in [0-9A-F])</small>

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- (7) Support to set “ScanConfig” in “Bluetooth”:
The parameters contain the Scan Switch, Scan Interval and Scan Device Number.

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 - ScanConfig**
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 - BasicInfo

Bluetooth Scan Info Settings

Here you can configure Bluetooth scanning.

Set Scan Switch	
Scan Switch	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
<input type="button" value="Apply"/>	

Set Scan Request Switch	
Scan Request Switch	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
<input type="button" value="Apply"/>	

Set Scan Interval	
Scan Interval(ms)	<input type="text" value="1000"/> <small>(range in [500,4294967295]ms)</small>
<input type="button" value="Apply"/>	

Set Scan Device Number	
Scan Device Number	<input type="text" value="250"/> <small>(range in [1,65535])</small>
<input type="button" value="Apply"/>	

(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).

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Wireless Security/Encryption Settings

Setup the wireless security and encryption to prevent from unauthorized access and monitoring.

Select SSID	
SSID choice	SKYLAB_30EB1F3F55C2 ▼

"SKYLAB_30EB1F3F55C2"	
Security Mode	WPA2-PSK ▼

WPA	
WPAAlgorithms	<input type="radio"/> TKIP <input checked="" type="radio"/> AES <input type="radio"/> TKIPAES
Pass Phrase	12345678
Key Renewal Interval	3600 seconds (0 ~ 4194303)


PMF	
MFPC	<input type="radio"/> Enable <input type="radio"/> Disable
MFPR	<input type="radio"/> Enable <input type="radio"/> Disable
MFPSHA256	<input type="radio"/> Enable <input type="radio"/> Disable

Access Policy	
Policy	Disable ▼
Add a station Mac:	

Save Apply Cancel

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

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System Management

You may configure administrator account and password, NTP settings, and Dynamic DNS settings here.

Administrator Settings

Account	<input type="text" value="admin"/>
Password	<input type="password" value="....."/>
WatchDog	<input checked="" type="radio"/> Enable <input type="radio"/> Disable

NTP Settings

Current Time	<input type="text" value="Sat Jan 3 04:03:45 UTC 1970"/> <input type="button" value="Sync with host"/>
Time Zone:	<input type="text" value="(GMT) England"/> ▼
NTP Server	<input type="text" value="1.openwrt.pool.ntp.org"/> <small>ex: time.nist.gov ntp0.broad.mit.edu time.stdtime.gov.tw</small>
NTP synchronization(hours)	<input type="text" value="1"/>

(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.