

# BW-24NM 工业电台

## 快速启动手册

BEACON GLOBAL TECHNOLOGY



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### 一, 硬件清单, POE 供电电源, BW-24NM 电台, POE 网线 1 根



## 二, 硬件连接图:

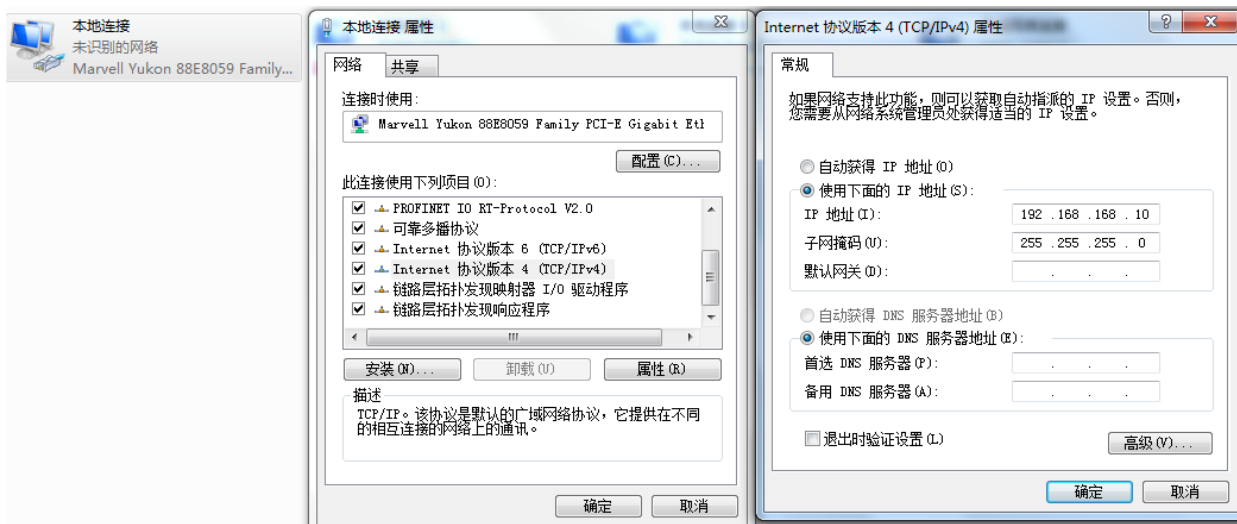


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## 三, 设置本地电脑 IP 地址:

设置 IP 地址 192.168.168.10

子网掩码: 255.255.255.0



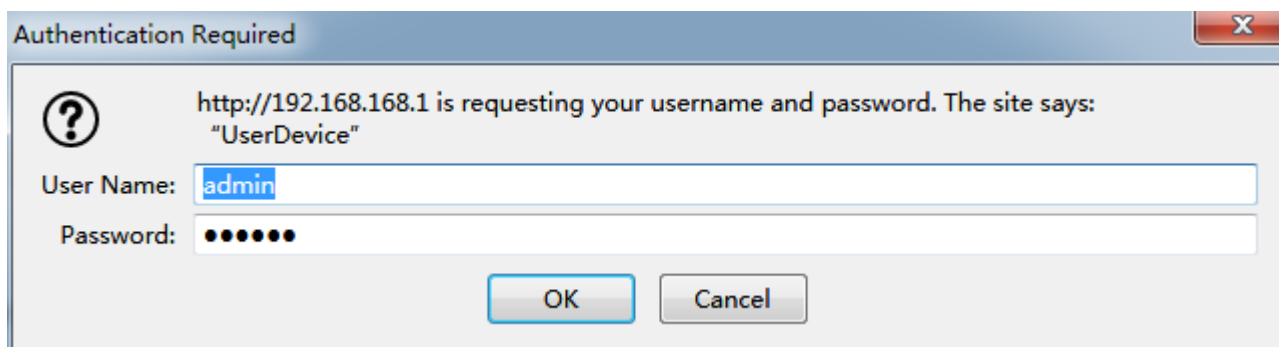
## 四, 配置电台:

### 1) 电台默认地址

IP 地址 192.168.168.1 子网掩码: 255.255.255.0

在浏览器输入 192.168.168.1 提示输入用户名和密码，并点击登录。

用户名: admin 密码: admin



Authentication Required

http://192.168.168.1 is requesting your username and password. The site says: "UserDevice"

User Name:

Password:

OK Cancel

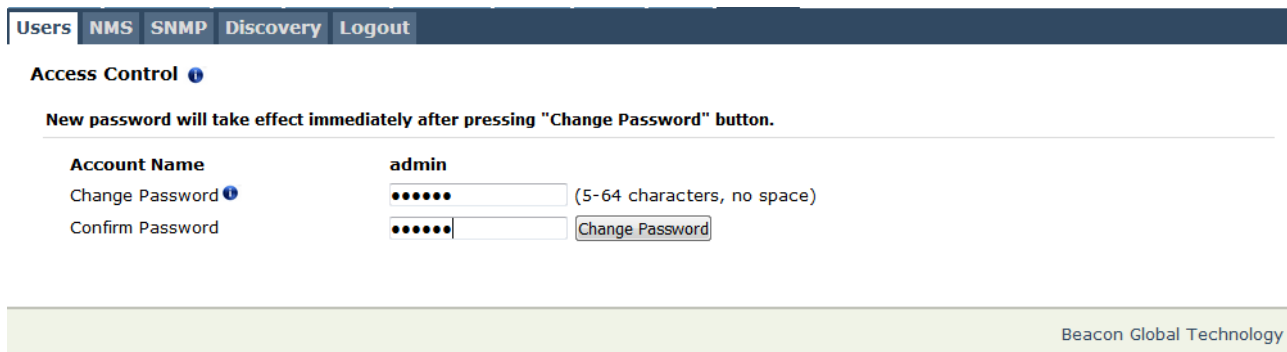
## 2) 电台默认地址

第一次登陆后**必须要求**修改密码，因为默认密码 admin 不安全，需要更换密码

Please change admin password



OK



Users NMS SNMP Discovery Logout

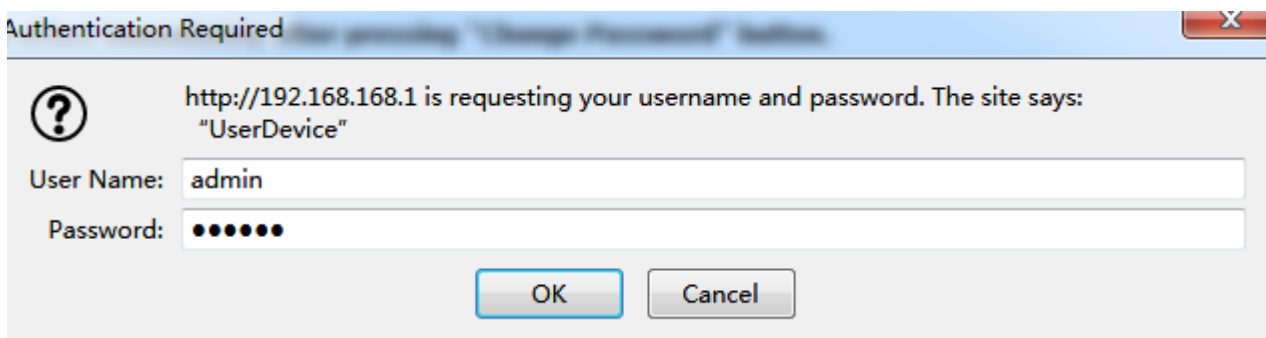
Access Control ⓘ

New password will take effect immediately after pressing "Change Password" button.

|                   |                                         |                                                |
|-------------------|-----------------------------------------|------------------------------------------------|
| Account Name      | admin                                   |                                                |
| Change Password ⓘ | <input type="password" value="••••••"/> | (5-64 characters, no space)                    |
| Confirm Password  | <input type="password" value="••••••"/> | <input type="button" value="Change Password"/> |

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修改完后，使用新密码重新登录。



Authentication Required

http://192.168.168.1 is requesting your username and password. The site says: "UserDevice"

User Name:

Password:

OK Cancel

### 3) 电台主页面

| System                                       | Network | IPv6 | Wireless | Firewall | Serial | Apps | Diag | Admin |
|----------------------------------------------|---------|------|----------|----------|--------|------|------|-------|
| Summary Settings Services Maintenance Reboot |         |      |          |          |        |      |      |       |

#### System Information

| System Information |            |               |                     |
|--------------------|------------|---------------|---------------------|
| Host Name          | UserDevice | Description   | myBW-24NM           |
| Product Name       | BW-24NM    | System Date   | 2019-02-26 18:55:08 |
| Hardware Version   | 1.0        | System Uptime | 20 min              |
| Software Version   | v1.3.0     | Build Date    | 2019-02-26          |
| Software Build     | 1048       | Build Time    | 18:35:49            |

#### LAN Status

|             |                        |                 |               |
|-------------|------------------------|-----------------|---------------|
| MAC Address | 00:0F:92:04:3F:AC      |                 |               |
| IP Address  | 192.168.168.1 (static) | Connection Type | static        |
| Subnet Mask | 255.255.255.0          | Gateway         | 192.168.168.1 |
| Primary DNS | N/A                    | Secondary DNS   | N/A           |

#### WAN Status

|             |                   |                 |      |
|-------------|-------------------|-----------------|------|
| MAC Address | 00:0F:92:05:3F:AC |                 |      |
| IP Address  | N/A               | Connection Type | dhcp |
| Subnet Mask | N/A               | Gateway         | N/A  |
| Primary DNS | N/A               | Secondary DNS   | N/A  |

Radio is disabled

[Stop Refreshing](#) Interval: 20(in seconds)

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### 4) 电台本机 LAN 口 IP 地址修改

在顶层导航栏，点击 Network-LAN 进入以下配置页面。

| System                                       | Network | IPv6 | Wireless | Firewall | Serial | Apps | Diag | Admin |
|----------------------------------------------|---------|------|----------|----------|--------|------|------|-------|
| Status LAN WAN DHCP Routes Ports Device List |         |      |          |          |        |      |      |       |

#### Network LAN Configuration

##### LAN Interfaces Settings

| No. | Name | Static IP Address | Connection Type | DHCP Server | Config               |
|-----|------|-------------------|-----------------|-------------|----------------------|
| 1   | LAN  | 192.168.168.1     | static          | On          | <a href="#">Edit</a> |

[Add](#)

[Submit](#) [Cancel](#)

在页面右侧，点击 **Edit** 编辑，进入如下配置页面。如果用于无线覆盖，默认开启 DHCP，手机或者平板电脑等通过无线可以自动获取到 IP 地址，如果用于电脑和 PLC 传输数据，或者 PLC 和 PLC 传输数据，建议关闭 DHCP，点击 **Submit** 按钮表示确定。

|        |         |      |          |          |        |             |      |       |
|--------|---------|------|----------|----------|--------|-------------|------|-------|
| System | Network | IPv6 | Wireless | Firewall | Serial | Apps        | Diag | Admin |
| Status | LAN     | WAN  | DHCP     | Routes   | Ports  | Device List |      |       |

### Network LAN Configuration

**LAN Configuration**

|                     |               |
|---------------------|---------------|
| Spanning Tree (STP) | Off           |
| IGMP Snooping       | On            |
| Connection Type     | Static IP     |
| IP Address          | 192.168.168.1 |
| Netmask             | 255.255.255.0 |
| Default Gateway     | 192.168.168.1 |
| Default Route       | Yes           |
| DNS Mode            | Manual        |
| Primary DNS         |               |
| Secondary DNS       |               |

**LAN DHCP**

|             |         |
|-------------|---------|
| DHCP Server | Disable |
|-------------|---------|

Submit « Cancel «

## 5) 电台无线网络修改

注意：可按如下配置进行修改，本段落中未提及的选择项即可保留默认值。

- 无线信道选择—大量 2.4GHz 电台同时使用时，建议选择与周围不冲突的信道，默认是 11；
- 工作模式选择—建议主站设为 Access Point,从站设为 Client；  
—建议无主站配置时网络里面所有电台均选择 MESH 功能
- 传输带宽选择—建议主站选择稳定自动，其他站均选择自动；
- 加密方式选择—建议选择 WPA2 加密方式；
- 发射功率选择—数值越大，传输距离越远，远距离或者现场遮挡较多，建议选择 30dbm。特别近距离例如 10 米之内，可以适当选择较小发射功率避免多径干扰（如有问题请联络 BEACON 支持工程师 [support@beaongt.com](mailto:support@beaongt.com)）。

| System | Network | IPv6 | Wireless | Firewall | Serial | Apps | Diag | Admin |
|--------|---------|------|----------|----------|--------|------|------|-------|
| Status | Radio1  |      |          |          |        |      |      |       |

### Wireless Configuration

#### Radio1 Phy Configuration

|                         |                                                               |                                                                                                     |
|-------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Radio                   | <input type="radio"/> On <input checked="" type="radio"/> Off | 无线是否开启，默认没有开启                                                                                       |
| Mode                    | 802.11NG                                                      | 模式定义了无线网络使用的无线标准。802.11b/g/n模式。从列表中选择适当的操作模式。                                                       |
| High Throughput Mode    | HT20                                                          | 只在使用802.11b、BG或一个模式时才会出现。较低的信道带宽可能提供更长的范围，不容易受到噪音，但在交换数据率。较高的信道带宽可能提供更大的数据速率，但更易受到噪音和较短的距离电位的影响（默认） |
| Advanced Capabilities   | <input type="checkbox"/> Show                                 | 信道号，自动或者1-11自由选择，保持几个无线都在相同的信道号里面，尽量避开所使用的信道号                                                       |
| Channel-Frequency       | 11 - 2.462 GHz                                                | 发射功率（越大越远）此设置建立传输功率电平，该功率电平送给天线。                                                                    |
| Tx Power                | 20 dbm                                                        | 无线距离（指两个电台通讯距离）无线距离参数允许用户设置无线保真信号传输所需的预期距离。默认是100米。                                                 |
| Wireless Distance       | 100 (m)                                                       | 一旦达到rts定义的包大小阈值，系统将调用rc/cts流控制。一个大的rts阈值将提高带宽，而一个较小的rts阈值将帮助系统从障碍物造成的干扰或碰撞中恢复。（默认）                  |
| RTS Thr (256~2346)      | <input checked="" type="checkbox"/> OFF                       | 分割阈值允许系统改变最大的rf数据包大小。增加rf数据包的大小减少了将数据包分解成较小碎片的需要。如果遇到高分组错误率，稍微提高破片阈值可能会提高性能。（默认）                    |
| Fragment Thr (256~2346) | <input checked="" type="checkbox"/> OFF                       |                                                                                                     |

[Add Virtual Interface](#)

#### Radio1 Virtual Interface 1

|                 |                                                                                                 |                                                     |
|-----------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Network         | LAN                                                                                             | 默认 LAN数据源                                           |
| Mode            | Access Point                                                                                    | 无线运行模式，主站，从站，中继，无主                                  |
| TX bitrate      | Auto                                                                                            | 默认 带宽                                               |
| WDS             | <input checked="" type="radio"/> On <input type="radio"/> Off                                   | 默认 无线配电系统（wds）是一种能够实现接入点无线互连的系统。                    |
| ESSID Broadcast | <input checked="" type="radio"/> On <input type="radio"/> Off                                   | 禁用ssid广播有助于保证无线网络的安全。允许ssid（网络名称）的广播将允许其他人“看到”无线网络。 |
| AP Isolation    | <input checked="" type="radio"/> On <input type="radio"/> Off                                   | 将所有的无线客户端设备完全隔离，使之只能访问AP连接的固定网络，相当于无线中的局域网。         |
| WMM             | <input checked="" type="radio"/> On <input type="radio"/> Off <a href="#">WMM Configuration</a> | 通过根据数据类型对数据包进行优先排序来提高网络服务质量的功能。                     |
| SSID            | 000F92FAA80B                                                                                    | 无线网络名字                                              |
| Encryption Type | WPA2 (PSK)                                                                                      | 加密方式                                                |
| WPA PSK         | *****                                                                                           | 密码                                                  |
| Show password   | <input type="checkbox"/>                                                                        | 显示密码                                                |

Submit << Cancel <<

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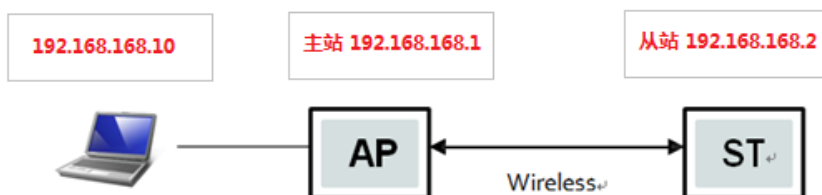
提交— **Submit << Cancel <<** —取消

## 6) 电台能互相连接的必备条件

- A—网络中 SSID 要一样
- B—网络中加密的密码要一样
- C—网络中电台所在的网段要一致，子网掩码要一样。
- D—主站 Access Point 和从站 Client 要配合使用
- E—MESH 无主功能要与 MESH 无主功能配合使用，MESH 功能是指网络里面有超过 3 个或者 3 个电台以上的使用，如果 2 个电台在一个网络里面，请不要使用。

## 7) 主站和从站图示举例

举例配置成为如下的网络结构



- 主站 Access Point:
- 先把电台配置为主站 Access Point, 注意主从站的 SSID 和密码要一致, 调制模式建议一致, 如果下图红色区域内

Radio1 - BW-24NM Adminis X Radio1 - BW-24NM Adminis X +

192.168.168.1/cgi-bin/webif/wireless-wlan0.sh

System Network IPv6 **Wireless** Firewall Serial Apps Diag Admin

Status **Radio1**

### Wireless Configuration

#### Radio1 Phy Configuration

Radio ☒ On ☐ Off

Mode **802.11NG**

High Throughput Mode **HT20**

Advanced Capabilities ☐ Show

Channel-Frequency **Auto**

Tx Power **30 dbm**

Wireless Distance **1000** (m)

RTS Thr (256~2346) ☒ OFF

Fragment Thr (256~2346) ☒ OFF

[Add Virtual Interface](#)

#### Radio1 Virtual Interface 1

Network **LAN**

Mode **Access Point**

TX bitrate **Auto**

WDS ☒ On ☐ Off

ESSID Broadcast ☒ On ☐ Off

AP Isolation ☐ On ☒ Off

WMM ☒ On ☐ Off [WMM Configuration](#)

SSID **qt**

Encryption Type **WPA2 (PSK)**

WPA PSK **123123123**

Show password ☒

之后修改主站电台 IP 地址为 192.168.168.1, 注意无线网络中各个电台 LAN 口 IP 地址在同一个网段内, 且不能重复

System **Network** IPv6 Wireless Firewall Serial Apps Diag Admin

Status **LAN** WAN DHCP Routes Ports Device List

### Network LAN Configuration

#### LAN Configuration

Spanning Tree (STP) **Off**

IGMP Snooping **On**

Connection Type **Static IP**

IP Address **192.168.168.1**

Netmask **255.255.255.0**

Default Gateway **192.168.168.1**

Default Route **Yes**

DNS Mode **Manual**

Primary DNS

Secondary DNS

#### LAN DHCP

DHCP Server **Disable**

- 从站 Client:
- 先把电台配置为从站 Client（也可配置成为中继），注意主从站的 SSID 和密码要一致，调制模式建议一致，如果下图红色区域

192.168.168.2/cgi-bin/webif/wireless-wlan0.sh

**System** **Network** **IPv6** **Wireless** **Firewall** **Serial** **Apps** **Diag** **Admin**

**Status** **Radio1**

**Wireless Configuration**

**Radio1 Phy Configuration**

Radio ☒ On ☐ Off

Mode **802.11NG**

High Throughput Mode **HT20**

Advanced Capabilities ☐ Show

Channel-Frequency **Auto**

Tx Power **30 dbm**

Wireless Distance **1000** (m)

RTS Thr (256~2346) ☒ OFF

Fragment Thr (256~2346) ☒ OFF

[Add Virtual Interface](#)

**Radio1 Virtual Interface 1**

Network **LAN**

Mode **Client**

TX bitrate **Auto**

WDS ☒ On ☐ Off

ESSID Broadcast ☒ On ☐ Off

AP Isolation ☐ On ☒ Off

WMM ☒ On ☐ Off [WMM Configuration](#)

SSID **qt**

Encryption Type **WPA2 (PSK)**

WPA PSK **123123123**

Show password ☒

之后修改从站电台 IP 地址为 192.168.168.2，注意无线网络中各个电台 LAN 口 IP 地址在同一个网段内，且不能重复

**System** **Network** **IPv6** **Wireless** **Firewall** **Serial** **Apps** **Diag** **Admin**

**Status** **LAN** **WAN** **DHCP** **Routes** **Ports** **Device List**

**Network LAN Configuration**

**LAN Configuration**

Spanning Tree (STP) **Off**

IGMP Snooping **On**

Connection Type **Static IP**

IP Address **192.168.168.2**

Netmask **255.255.255.0**

Default Gateway **192.168.168.1**

Default Route **Yes**

DNS Mode **Manual**

Primary DNS

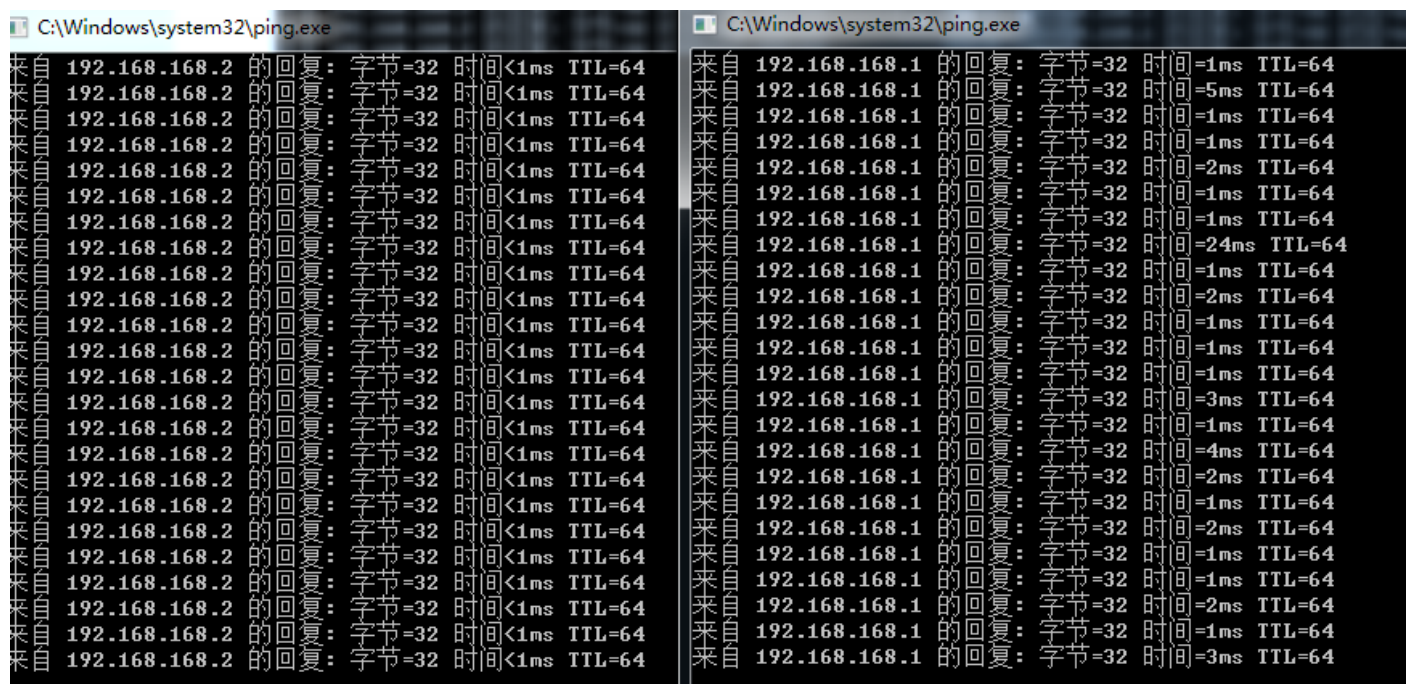
Secondary DNS

**LAN DHCP**

DHCP Server **Disable**

**Submit** **Cancel**

电台自带 ping 功能，可以用来测试 PING 数据包的次数和大小。从站 ping 主站



|        |         |      |          |          |        |      |      |       |
|--------|---------|------|----------|----------|--------|------|------|-------|
| System | Network | IPv6 | Wireless | Firewall | Serial | Apps | Diag | Admin |
|--------|---------|------|----------|----------|--------|------|------|-------|

|      |            |       |
|------|------------|-------|
| Ping | Traceroute | Iperf |
|------|------------|-------|

### Network Tools

#### Ping

Ping Host Name:   
 Ping Count:  (0 = continuous)  
 Ping Size:

---

**Please wait for output of ~ping -c 4 -s 56 192.168.168.1~...**

```

PING 192.168.168.1 (192.168.168.1): 56 data bytes
20:51:21.279497 -- sending icmp request
64 bytes from 192.168.168.1: seq=0 ttl=64 time=7.375 ms
20:51:22.280255 -- sending icmp request
64 bytes from 192.168.168.1: seq=1 ttl=64 time=1.847 ms
20:51:23.280924 -- sending icmp request
64 bytes from 192.168.168.1: seq=2 ttl=64 time=6.716 ms
20:51:24.281581 -- sending icmp request
64 bytes from 192.168.168.1: seq=3 ttl=64 time=6.062 ms

--- 192.168.168.1 ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 1.847/5.500/7.375 ms
  
```

主页或者无线状态会显示信号强度等各种参数

Radio 1 Interface 1 Status

General Status

|                   |         |      |                |                 |               |
|-------------------|---------|------|----------------|-----------------|---------------|
| MAC Address       | Mode    | SSID | Frequency Band | Radio Frequency | Security Mode |
| 00:0F:92:FA:A8:15 | Station | qt   | 2.4G Mode      | 2.462 GHz       | WPA2 (PSK)    |

Traffic Status

|               |                 |                |                  |
|---------------|-----------------|----------------|------------------|
| Receive Bytes | Receive Packets | Transmit Bytes | Transmit Packets |
| 225.101KB     | 1841            | 299.173KB      | 2817             |

Connection Info

|                   |                   |          |            |            |            |             |             |                            |
|-------------------|-------------------|----------|------------|------------|------------|-------------|-------------|----------------------------|
| Remote MAC Addr   | Noise Floor (dBm) | SNR (dB) | RSSI (dBm) | TX CCQ (%) | RX CCQ (%) | TX Rate     | RX Rate     | Signal Level               |
| 00:0F:92:FA:A8:0B | -98               | 64       | -34        | 90         | 100        | 65.0 MBit/s | 58.5 MBit/s | <div><div></div>100%</div> |

Stop Refreshing

Interval: 20(in seconds)

电台自带 ping 功能，可以用来测试 PING 数据包的次数和大小。主站 ping 从站

The screenshot shows the 'Network Tools' section with the 'Ping' tool selected. The configuration fields are: Ping Host Name (192.168.168.1), Ping Count (4), and Ping Size (10000). Below the fields are 'Start', 'Stop', and 'Clear' buttons. The output area displays the results of a ping command: 'Please wait for output of "ping -c 4 -s 10000 192.168.168.1"...'. The output shows four successful ping attempts with varying response times (10.317 ms, 11.939 ms, 8.279 ms, 9.713 ms) and a summary: '4 packets transmitted, 4 packets received, 0% packet loss, round-trip min/avg/max = 8.279/10.062/11.939 ms'.

## 8) MESH 无主站功能图示举例-接上图电台和 IP 地址配置（需要 3 台或 3 台以上）

如下图，注意 MESH 网络中无需主站维护，组成 MESH 网络的每一个电台，配置内容几乎都完全一样。配置好之后，电台之间会自动的根据信号强度，组合成为无线网络。下图为其中一个电台配置页面，注意组网模式选择 **Mesh Point**，MESH ID 和密码需要保持一致

The screenshot shows the 'Wireless Configuration' page for 'Radio1'. The 'Radio1 Phy Configuration' section includes settings for Radio (On), Mode (802.11NG), High Throughput Mode (HT20), Advanced Capabilities (Show), Channel-Frequency (Auto), Tx Power (30 dbm), Wireless Distance (1000 m), RTS Thr (256~2346) (OFF), and Fragment Thr (256~2346) (OFF). Below this is a link to 'Add Virtual Interface'. The 'Radio1 Virtual Interface 1' section includes settings for Network (LAN), Mode (Mesh Point), TX bitrate (Auto), ESSID Broadcast (On), MESH ID (qt), Degree of Mesh Path Agility (Medium), Encryption Type (WPA2(PSK)), WPA PSK (123123123), and Show password (checked). A red circle highlights the 'Mode' (Mesh Point), 'ESSID Broadcast' (On), 'MESH ID' (qt), 'Degree of Mesh Path Agility' (Medium), 'Encryption Type' (WPA2(PSK)), and 'WPA PSK' (123123123) settings.

下图为网络中另外一个电台的配置页

System

Network

IPv6

Wireless

Firewall

Serial

Apps

Diag

Admin

StatusRadio1

Wireless Configuration

Radio1 Phy Configuration

Radio

Mode

High Throughput Mode

Advanced Capabilities

Channel-Frequency

Tx Power

Wireless Distance

RTS Thr (256~2346)

Fragment Thr (256~2346)

[Add Virtual Interface](#)

☒ On ☐ Off

802.11NG

HT20

☐ Show

Auto

30 dbm

1000 (m)

☒ OFF

☒ OFF

Radio1 Virtual Interface 1

Network

Mode

TX bitrate

ESSID Broadcast

MESH ID

Degree of Mesh Path Agility

Encryption Type

WPA PSK

Show password

LAN

Mesh Point

Auto

☒ On ☐ Off

qt

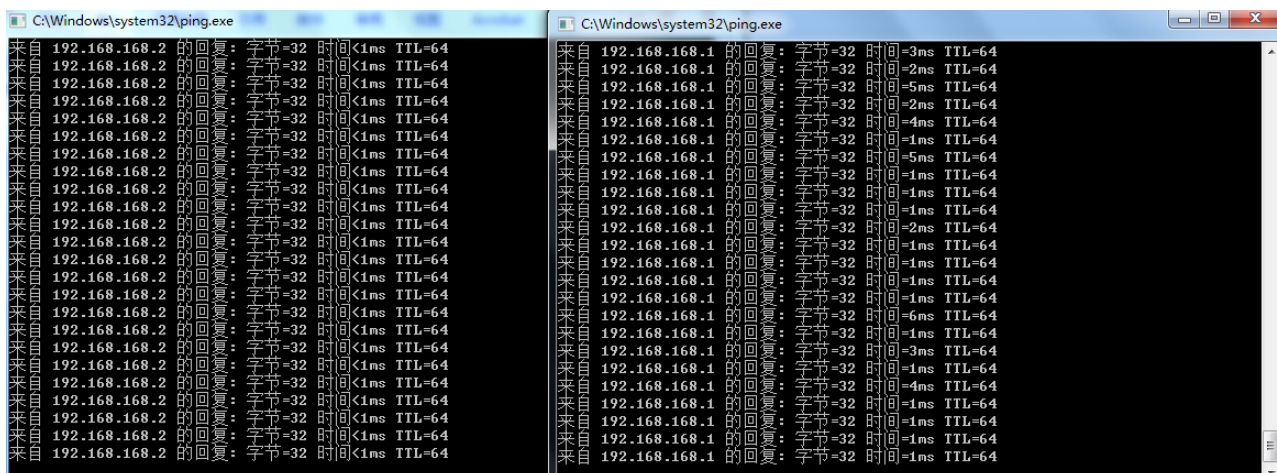
Medium

WPA2(PSK)

123123123

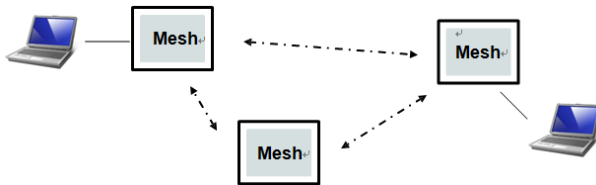
☒

如下是配制成 MESH 功能的 ping 效果



## 监控网络的使用情况

在调试阶段可以使用，正常运行请不要打开该功能，会影响网络传输质量。  
建议 3 个电台以上有遮挡使用 MESH 功能



## 9) 电台其他常用功能-

- 恢复出厂值/备份电台配置/恢复电台配置

System
Network
IPv6
Wireless
Firewall
Serial
Apps
Diag
Admin

Summary
Settings
Services
Maintenance
Reboot

### System Maintenance

**Version Information**

| Product Name | Hardware Type | Build Version     | Build Date | Build Time |
|--------------|---------------|-------------------|------------|------------|
| BW-24NM      | 1.0           | v1.3.0 build 1048 | 2019-02-26 | 18:35:49   |

**Firmware Upgrade**

Erase Current Configurations
Keep All Configurations

Firmware Image
Browse... No file selected.

Upgrade
Upgrade Firmware

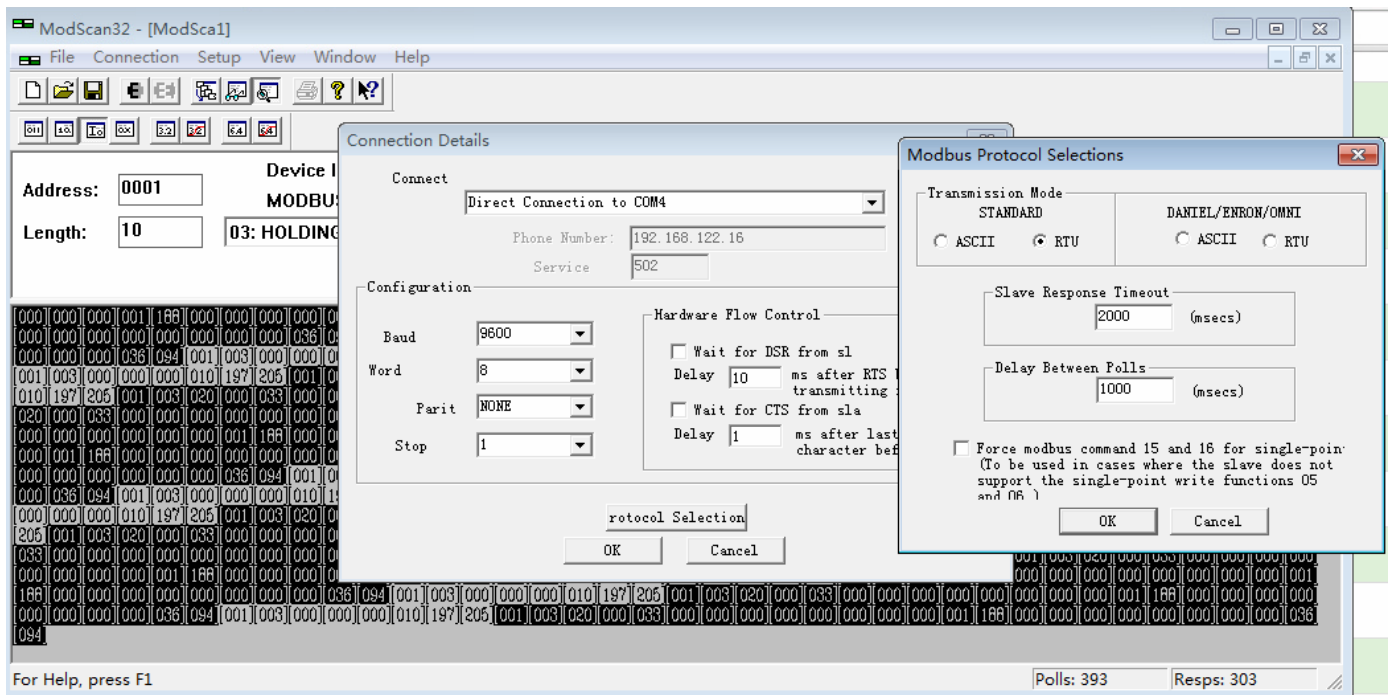
**Reset to Default Configurations**

Reset to Default Configurations
Reset to Default
☐ Wipeout data and logs

**Security for Configurations**

Set Password ⓘ
Update

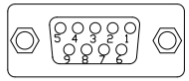
**Backup Configurations**



## 10) 电台串口 RS485 接线和配置

电台侧面有一个 DB9 母头的接口，这个接口可以实现 RS485 或者 RS232 通讯。

举例一： 电台两侧都是 RS485 设备，接线如下



| Pin No. | RS232  | RS485 Full-Dup | RS485 Half-Dup |
|---------|--------|----------------|----------------|
| 1       | DCD    |                |                |
| 2       | RXD    | TX-            | Data-          |
| 3       | TXD    | RX+            |                |
| 4       | DTR    |                |                |
| 5       | Ground |                |                |
| 6       | DSR    |                |                |
| 7       | RTS    | RX-            |                |
| 8       | CTS    | TX+            | Data+          |
| 9       | N/C    |                |                |

Data DB9

RS485 接线 A 接 8

RS485 接线 B 接 2

两侧接法都一样。可实现 1 对 1 或者 1 对多 RS485 设备。

如需使用 RS485 功能，用户可自行配置接线或者订货时候备注 RS485 接线端子套件。

主站电台配置如下

Radio1 - BW-24NM Admini x Summary - BW-24NM Admini x BT-MT-MB2-P x +

192.168.168.1/cgi-bin/webif/wireless-wlan0.sh 90%

System Network IPv6 Wireless Firewall Serial Apps Diag Admin

Status Radio1

### Wireless Configuration

#### Radio1 Phy Configuration

Radio ☒ On ☐ Off

Mode 802.11NG

High Throughput Mode HT20

Advanced Capabilities ☐ Show

Channel-Frequency 11 - 2.462 GHz

Tx Power 30 dbm

Wireless Distance 100 (m)

RTS Thr (256~2346) ☒ OFF

Fragment Thr (256~2346) ☒ OFF

[Add Virtual Interface](#)

#### Radio1 Virtual Interface 1

Network LAN

Mode Access Point

TX bitrate Auto

WDS ☒ On ☐ Off

ESSID Broadcast ☒ On ☐ Off

AP Isolation ☐ On ☒ Off

WMM ☒ On ☐ Off [WMM Configuration](#)

SSID qt

Encryption Type WPA2 (PSK)

WPA PSK .....

Show password ☐

Settings - BW-24NM Admini x Summary - BW-24NM Admini x BT-MT-MB2-P x +

192.168.168.1/cgi-bin/webif/comport-com2.sh 90%

System Network IPv6 Wireless Firewall Serial Apps Diag Admin

Status Settings

### Serial Port Configuration

#### Port Configuration

Port status Data

Port Mode RS485 Half Duplex

Data Baud Rate 19200

Data Format 8N1

Data Mode ☒ Seamless ☐ Transparent

Character Timeout 240

Maximum Packet Size 256

No-Connection Data ☐ Disable ☒ Enable

MODBUS TCP Status ☒ Disable ☐ Enable

IP Protocol Config UDP Point to Multipoint(P)

#### UDP Configuration

Multicast IP Address 224.1.1.2

Multicast Port 20002

Listening port 20012

Time To Live 1

Multicast Interface default

从站电台配置如下

Settings - BW-24NM Admini X Radio1 - BW-24NM Admini X BT-MT-MB2-P X +

192.168.168.2/cgi-bin/webif/wireless-wlan0.sh 90%

System Network IPv6 Wireless Firewall Serial Apps Diag Admin

Status Radio1

### Wireless Configuration

**Radio1 Phy Configuration**

Radio ☒ On ☐ Off

Mode 802.11NG

High Throughput Mode HT20

Advanced Capabilities ☐ Show

Channel-Frequency 11 - 2.462 GHz

Tx Power 30 dbm

Wireless Distance 100 (m)

RTS Thr (256~2346) ☒ OFF

Fragment Thr (256~2346) ☒ OFF

[Add Virtual Interface](#)

**Radio1 Virtual Interface 1**

Network LAN

Mode Client

TX bitrate Auto

WDS ☒ On ☐ Off

ESSID Broadcast ☒ On ☐ Off

AP Isolation ☐ On ☒ Off

WMM ☒ On ☐ Off [WMM Configuration](#)

SSID qt

Encryption Type WPA2 (PSK)

WPA PSK .....

Show password ☐

Settings - BW-24NM Admini X Settings - BW-24NM Admini X BT-MT-MB2-P X +

192.168.168.2/cgi-bin/webif/comport-com2.sh 90%

System Network IPv6 Wireless Firewall Serial Apps Diag Admin

Status Settings

### Serial Port Configuration

**Port Configuration**

Port status Data

Port Mode RS485 Half Duplex

Data Baud Rate 19200

Data Format 8N1

Data Mode ☒ Seamless ☐ Transparent

Character Timeout 240

Maximum Packet Size 256

No-Connection Data ☐ Disable ☒ Enable

MODBUS TCP Status ☒ Disable ☐ Enable

IP Protocol Config UDP Point to Multipoint(MP)

**UDP Configuration**

Remote IP Address 192.168.168.1

Remote port 20012

Multicast IP Address 224.1.1.2

Multicast Port 20002

Multicast Interface default

Submit << Cancel <<

检查主站和从站无线电台通讯状态

Status - BW-24NM Administ X Summary - BW-24NM Admini X BT-MT-MB2-P X +

192.168.168.1/cgi-bin/webif/status-wlan.sh 90%

System Network IPv6 **Wireless** Firewall Serial Apps Diag Admin

Status **Radio1**

### Wireless Interfaces

**Radio 1 Interface 1 Status**

**General Status**

| MAC Address       | Mode         | SSID | Frequency Band | Radio Frequency | Security Mode |
|-------------------|--------------|------|----------------|-----------------|---------------|
| 00:0F:92:FA:A8:AB | Access Point | qt   | 2.4G Mode      | 2.462 GHz       | WPA2(PSK)     |

**Traffic Status**

| Receive Bytes | Receive Packets | Transmit Bytes | Transmit Packets |
|---------------|-----------------|----------------|------------------|
| 9.696MB       | 38694           | 13.191MB       | 30995            |

**Connection Info**

| IP Address | Remote MAC Addr      | Noise Floor (dBm) | SNR (dB) | RSSI (dBm) | TX CCQ (%) | RX CCQ (%)  | TX Rate     | RX Rate | Signal Level |
|------------|----------------------|-------------------|----------|------------|------------|-------------|-------------|---------|--------------|
| Unknown    | 00:0F:92:FA:A8:AA-91 | 54                | -37      | 92         | 100        | 65.0 MBit/s | 52.0 MBit/s | 100%    |              |

[Stop Refreshing](#) Interval: 20(in seconds)

Beacon Global Technology

Status - BW-24NM Administ X Status - BW-24NM Administ X BT-MT-MB2-P X +

192.168.168.2/cgi-bin/webif/status-wlan.sh 90%

System Network IPv6 **Wireless** Firewall Serial Apps Diag Admin

Status **Radio1**

### Wireless Interfaces

**Radio 1 Interface 1 Status**

**General Status**

| MAC Address       | Mode    | SSID | Frequency Band | Radio Frequency | Security Mode |
|-------------------|---------|------|----------------|-----------------|---------------|
| 00:0F:92:FA:A8:AA | Station | qt   | 2.4G Mode      | 2.462 GHz       | WPA2(PSK)     |

**Traffic Status**

| Receive Bytes | Receive Packets | Transmit Bytes | Transmit Packets |
|---------------|-----------------|----------------|------------------|
| 1.178MB       | 15150           | 8.207MB        | 15515            |

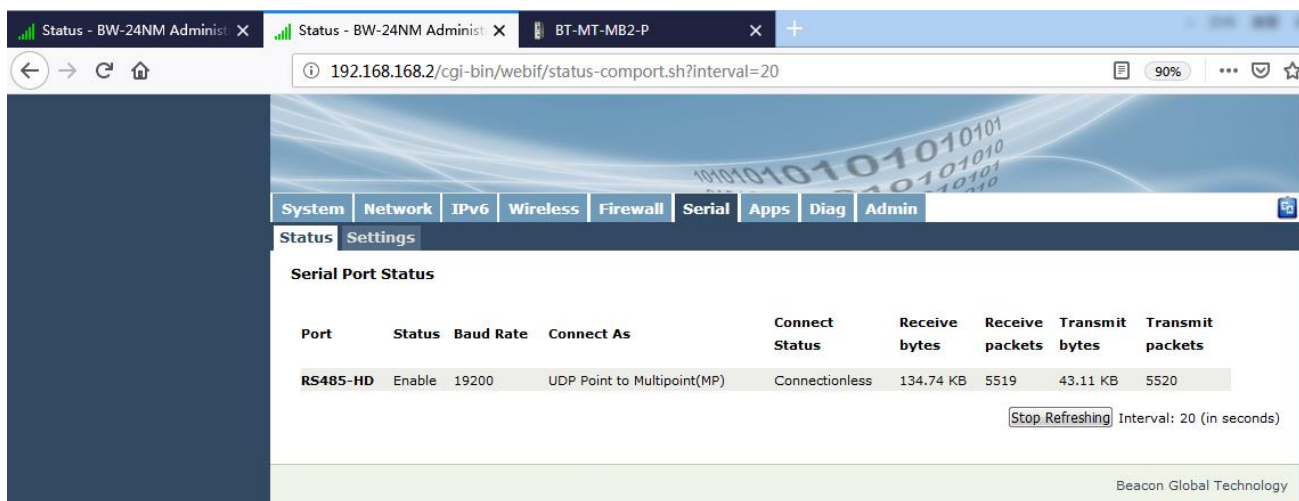
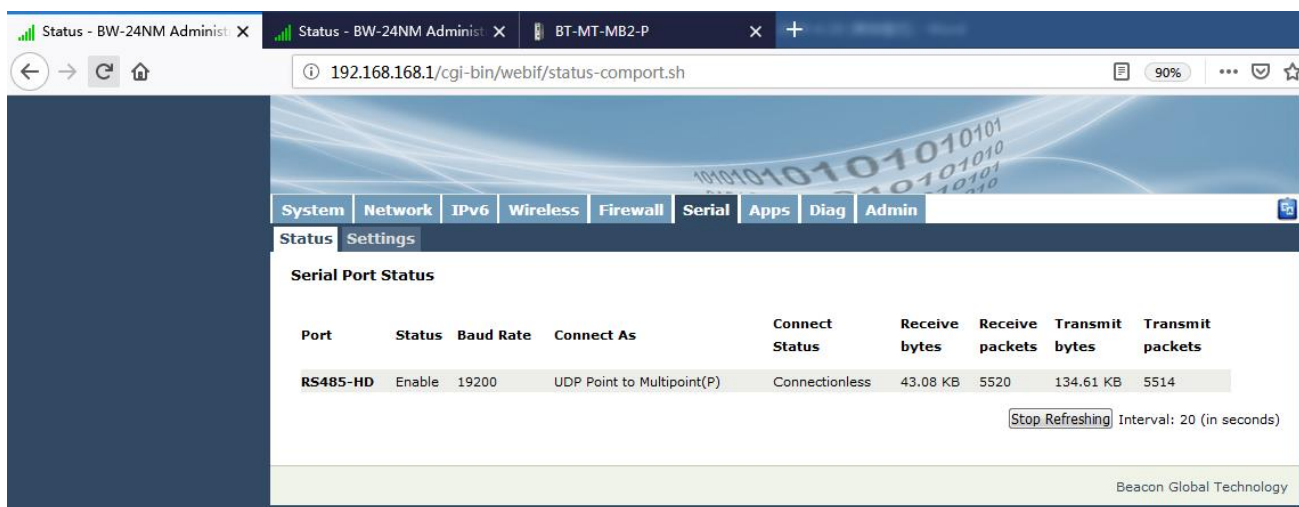
**Connection Info**

| Remote MAC Addr      | Noise Floor (dBm) | SNR (dB) | RSSI (dBm) | TX CCQ (%) | RX CCQ (%)  | TX Rate     | RX Rate | Signal Level |
|----------------------|-------------------|----------|------------|------------|-------------|-------------|---------|--------------|
| 00:0F:92:FA:A8:AB-98 | 64                | -34      | 87         | 100        | 58.5 MBit/s | 65.0 MBit/s | 100%    |              |

[Stop Refreshing](#) Interval: 20(in seconds)

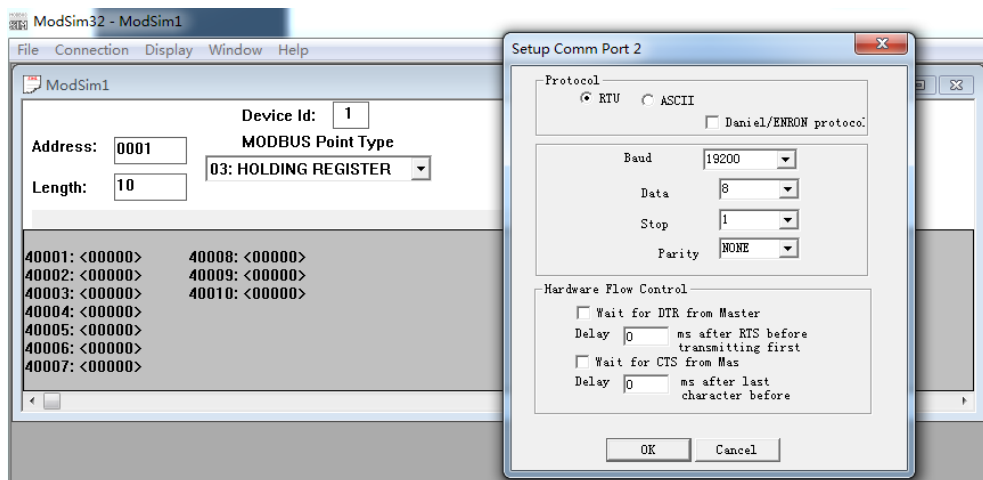
Beacon Global Technology

检查主站和从站无线电台串口通讯状态

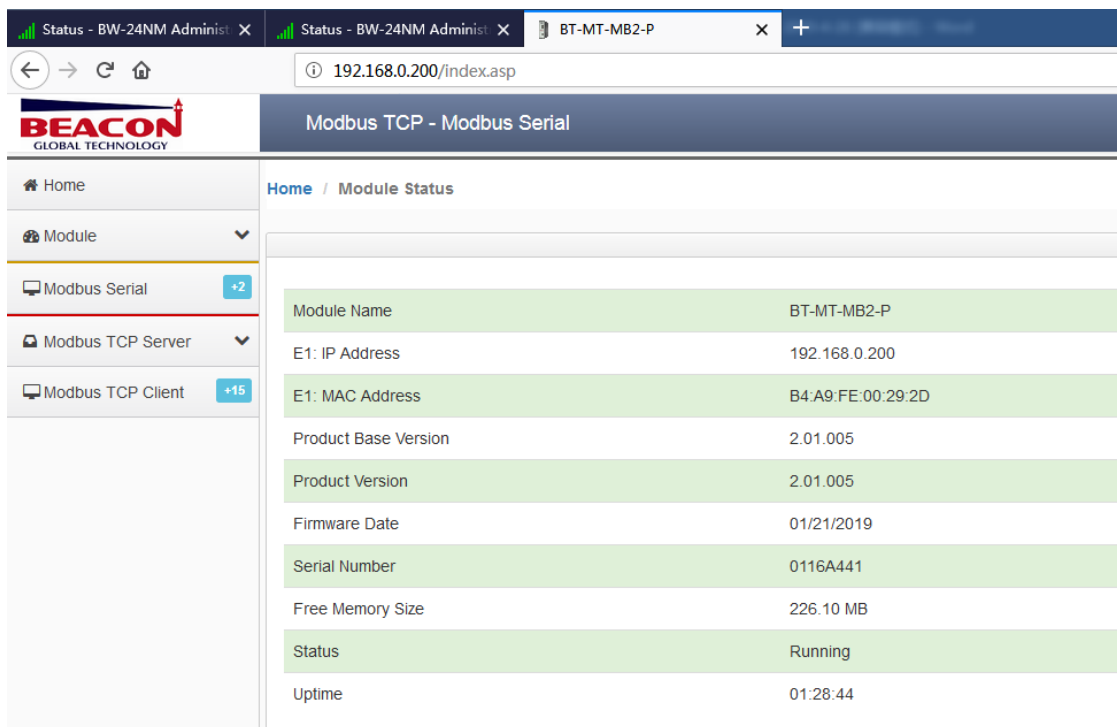


### 检查设备串口通讯状态

本例使用 MODBUS RTU 仿真软件，电脑使用 USB 转 RS485 电缆，使用 MODSIM 软件仿真 MODBUS RTU 从站地址 1，波特率 19200，数据位 8，停止位 1，校验位 无。

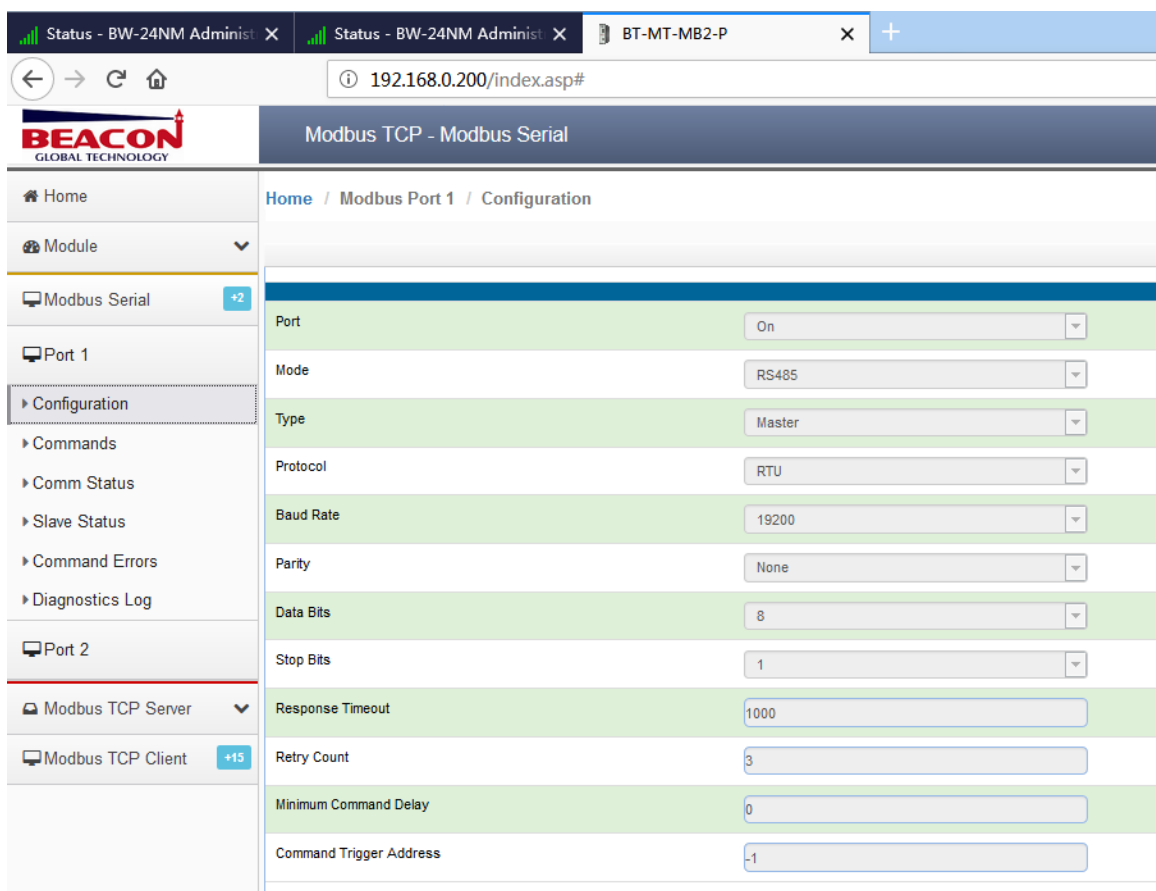


另外一侧使用 BEACON 的 BT-MT-MB2-P 网关做 MODBUS RTU 主站，下图为网关配置页面



The screenshot shows the 'Modbus TCP - Modbus Serial' status page for the BT-MT-MB2-P module. The left sidebar contains a navigation menu with 'Home', 'Module', 'Modbus Serial' (selected), 'Modbus TCP Server', and 'Modbus TCP Client'. The main content area displays the following information:

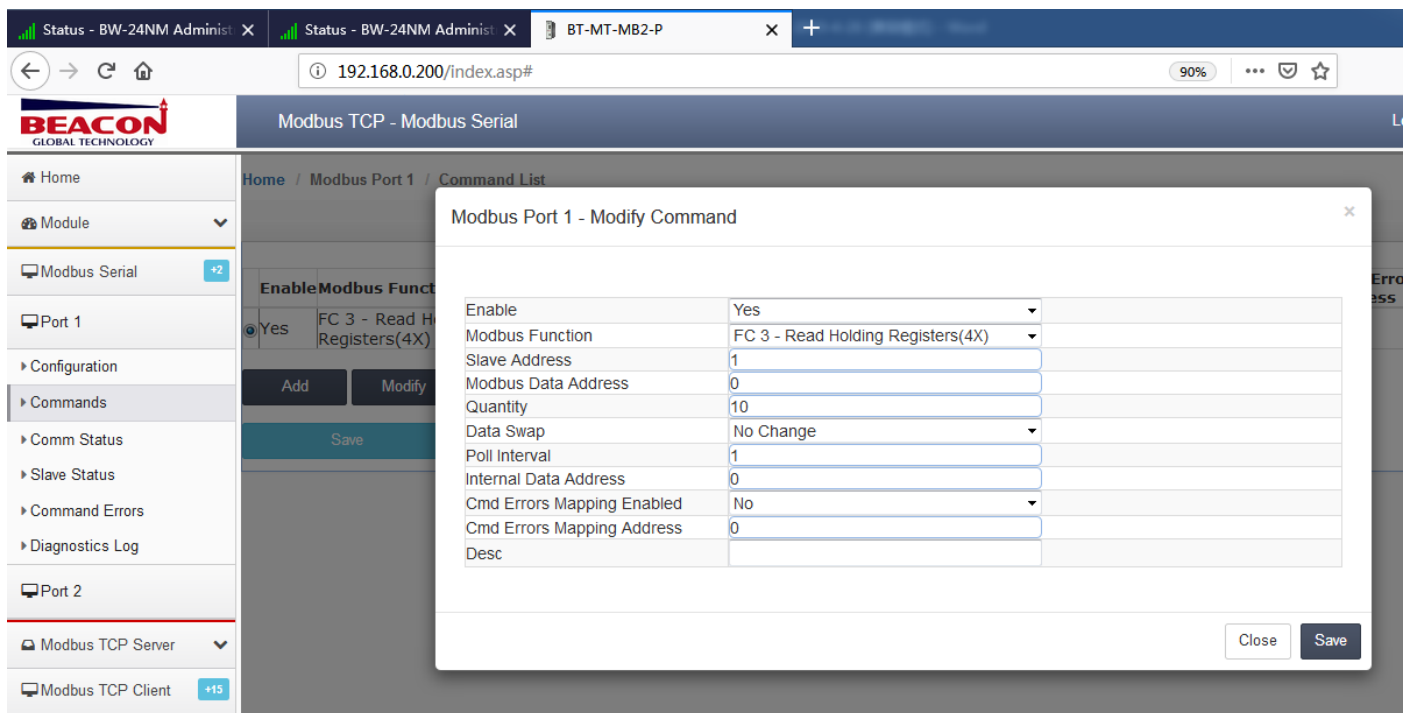
|                      |                   |
|----------------------|-------------------|
| Module Name          | BT-MT-MB2-P       |
| E1: IP Address       | 192.168.0.200     |
| E1: MAC Address      | B4:A9:FE:00:29:2D |
| Product Base Version | 2.01.005          |
| Product Version      | 2.01.005          |
| Firmware Date        | 01/21/2019        |
| Serial Number        | 0116A441          |
| Free Memory Size     | 226.10 MB         |
| Status               | Running           |
| Uptime               | 01:28:44          |



The screenshot shows the 'Modbus TCP - Modbus Serial' Configuration page for the BT-MT-MB2-P module. The left sidebar contains a navigation menu with 'Home', 'Module', 'Modbus Serial' (selected), 'Port 1', 'Configuration' (selected), 'Commands', 'Comm Status', 'Slave Status', 'Command Errors', 'Diagnostics Log', 'Port 2', 'Modbus TCP Server', and 'Modbus TCP Client'. The main content area displays the following configuration parameters:

|                         |        |
|-------------------------|--------|
| Port                    | On     |
| Mode                    | RS485  |
| Type                    | Master |
| Protocol                | RTU    |
| Baud Rate               | 19200  |
| Parity                  | None   |
| Data Bits               | 8      |
| Stop Bits               | 1      |
| Response Timeout        | 1000   |
| Retry Count             | 3      |
| Minimum Command Delay   | 0      |
| Command Trigger Address | -1     |

下图为在网关 BT-MT-MB2-P 中建立一条 Modbus 指令，使用功能码 FC3，读取 Modbus1 号从站中的连续的 10 个寄存器数据

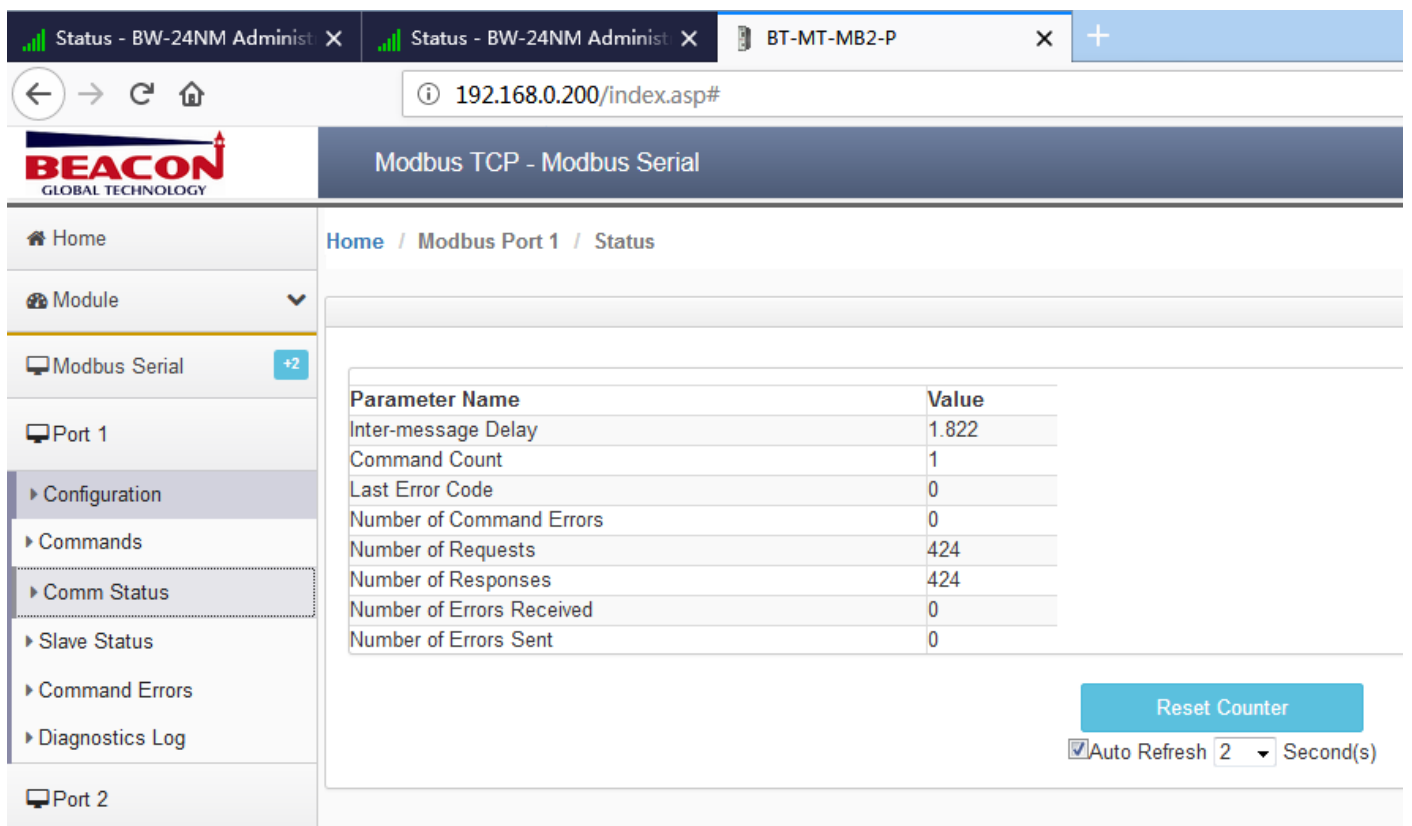


The screenshot shows the BEACON Modbus TCP - Modbus Serial interface. A modal dialog box titled 'Modbus Port 1 - Modify Command' is open, displaying the following configuration:

|                            |                                   |
|----------------------------|-----------------------------------|
| Enable                     | Yes                               |
| Modbus Function            | FC 3 - Read Holding Registers(4X) |
| Slave Address              | 1                                 |
| Modbus Data Address        | 0                                 |
| Quantity                   | 10                                |
| Data Swap                  | No Change                         |
| Poll Interval              | 1                                 |
| Internal Data Address      | 0                                 |
| Cmd Errors Mapping Enabled | No                                |
| Cmd Errors Mapping Address | 0                                 |
| Desc                       |                                   |

The background interface shows the 'Modbus Port 1' configuration page with a sidebar menu on the left containing options like Home, Module, Modbus Serial, Port 1, Configuration, Commands, Comm Status, Slave Status, Command Errors, and Diagnostics Log.

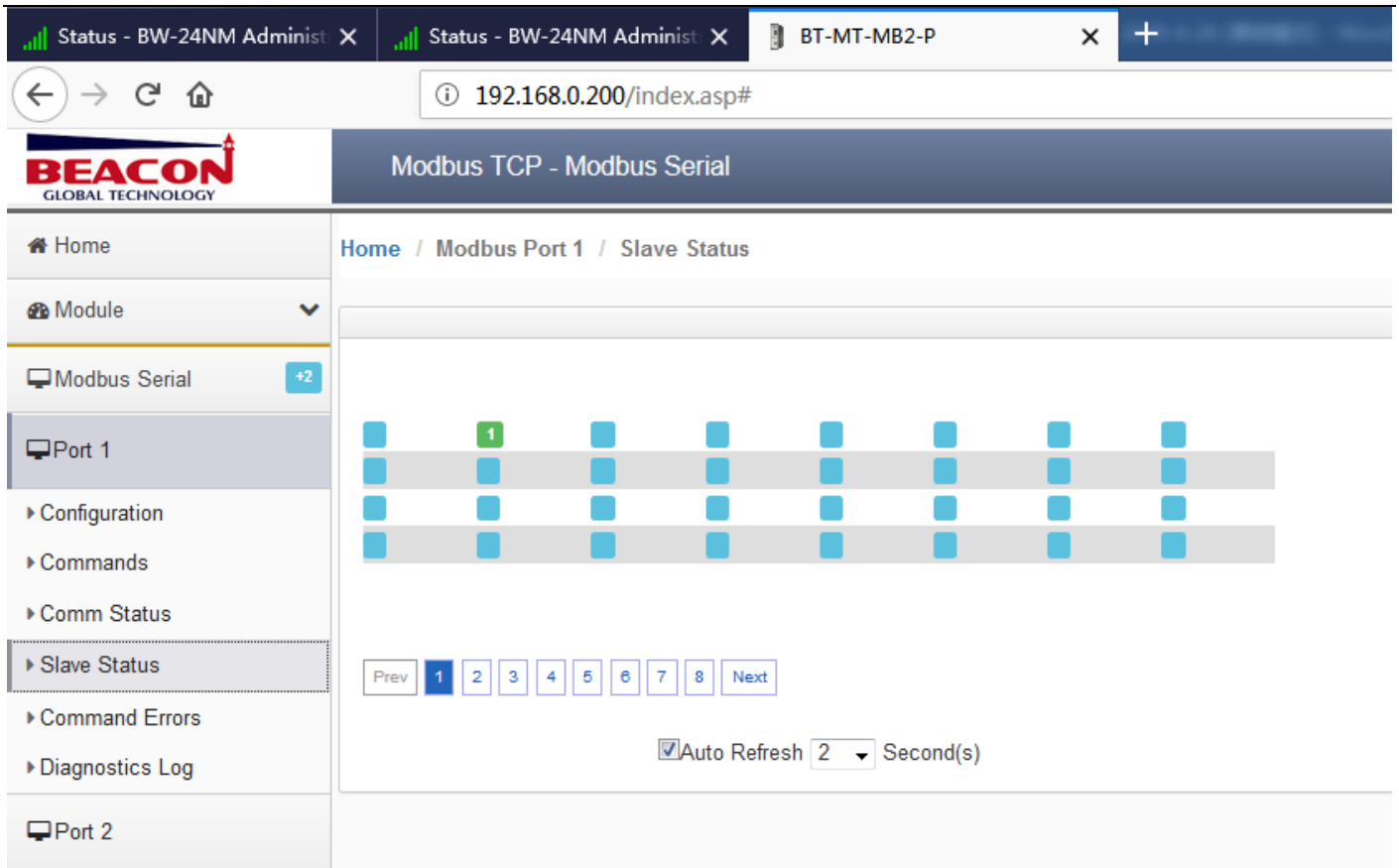
检查主站命令状态，此命令含义 1 秒钟读一次 1 号从站 40001-40010 地址位，总共 10 个 16 位的整数放到网关内部寄存器 0-9 里面。



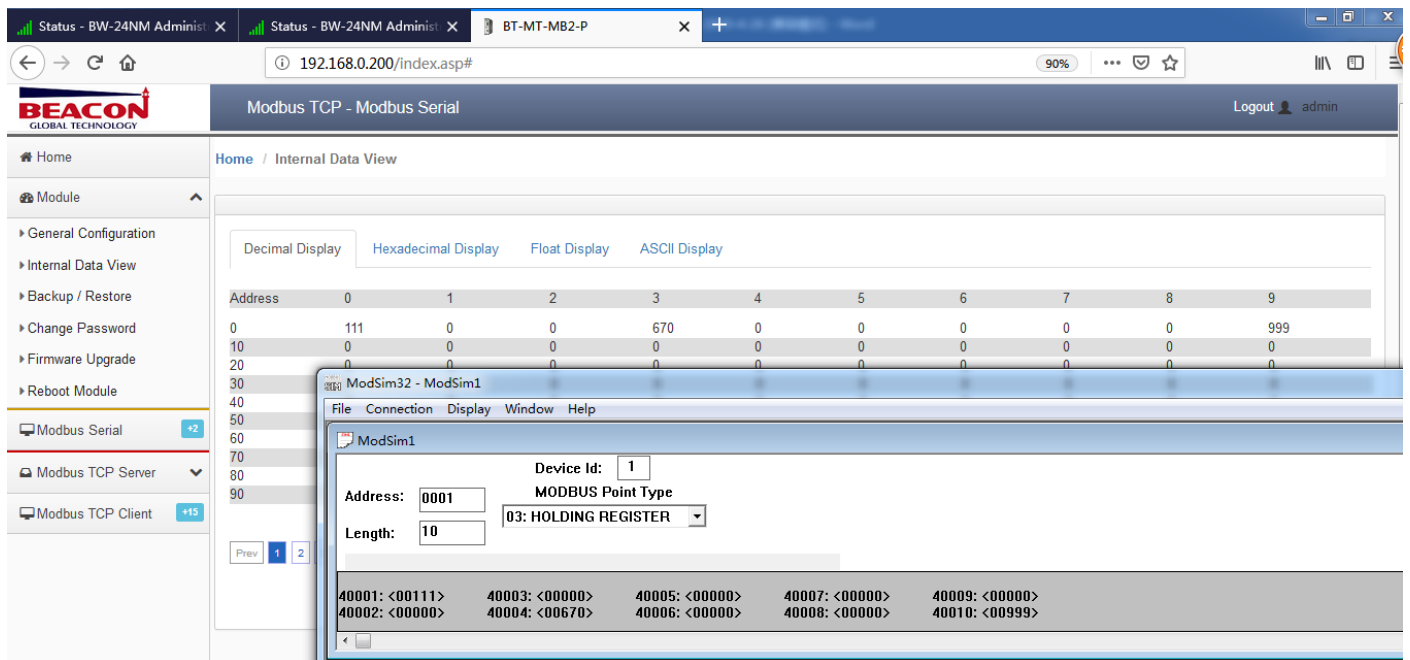
The screenshot shows the BEACON Modbus TCP - Modbus Serial interface. The 'Modbus Port 1 - Status' page is displayed, showing the following status information:

| Parameter Name            | Value |
|---------------------------|-------|
| Inter-message Delay       | 1.822 |
| Command Count             | 1     |
| Last Error Code           | 0     |
| Number of Command Errors  | 0     |
| Number of Requests        | 424   |
| Number of Responses       | 424   |
| Number of Errors Received | 0     |
| Number of Errors Sent     | 0     |

At the bottom right, there is a 'Reset Counter' button and a checkbox for 'Auto Refresh' set to 2 Second(s).



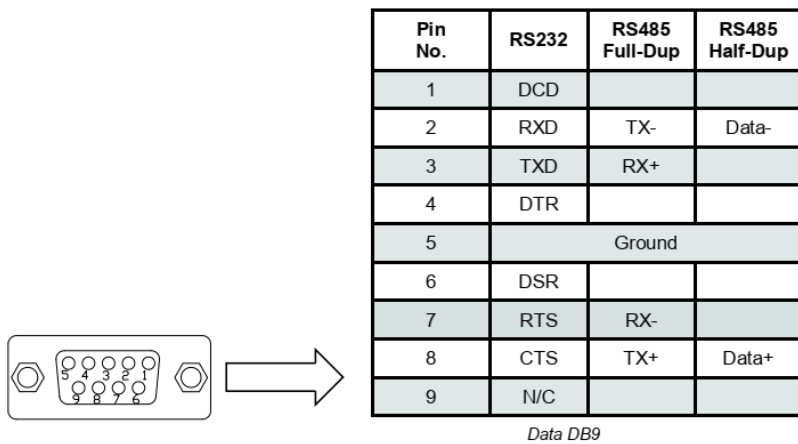
可以看到报文发送和接收整齐排列，检查电脑中运行 Modsim32 做 Modbus 从站所发出的数据与网关内部寄存器接收到数据相互一致。



## 11) 电台串口 RS232 接线和配置

电台侧面有一个 DB9 母头的接口，这个接口可以实现 RS485 或者 RS232 通讯。

举例一： 电台两侧都是 RS232 设备，接线如下



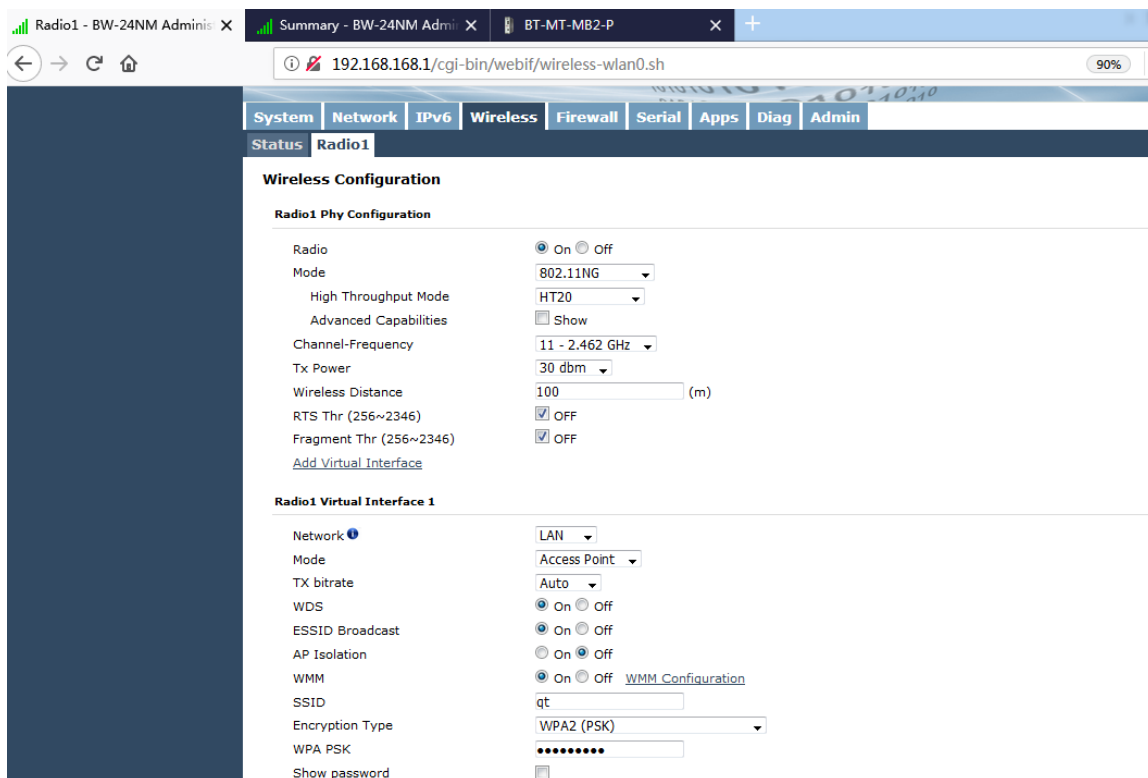
### RS232 接线 2,3,5

电台两侧的 RS232 都使用直连线，23 不用交叉。

两侧接法都一样。可实现 1 对 1 或者 1 对多 232 设备。

如需使用 RS232 功能，用户可自行配置接线或者订货时候备注 RS232 接线端子套件。

主站电台配置如下



The screenshot shows the 'Serial Port Configuration' page in the Beacon web interface. The browser address bar shows '192.168.168.1/cgi-bin/webif/comport-com2.sh'. The interface has a top navigation bar with tabs: System, Network, IPv6, Wireless, Firewall, Serial, Apps, Diag, Admin. Below this is a sub-navigation bar with 'Status' and 'Settings'. The 'Serial Port Configuration' section is active, showing two main configuration areas: 'Port Configuration' and 'UDP Configuration'.

**Serial Port Configuration**

**Port Configuration**

|                     |                                                                             |
|---------------------|-----------------------------------------------------------------------------|
| Port status         | Data                                                                        |
| Port Mode           | RS232                                                                       |
| Data Baud Rate      | 19200                                                                       |
| Data Format         | 8N1                                                                         |
| Data Mode           | <input checked="" type="radio"/> Seamless <input type="radio"/> Transparent |
| Character Timeout   | 240                                                                         |
| Maximum Packet Size | 256                                                                         |
| No-Connection Data  | <input type="radio"/> Disable <input checked="" type="radio"/> Enable       |
| MODBUS TCP Status   | <input checked="" type="radio"/> Disable <input type="radio"/> Enable       |
| IP Protocol Config  | UDP Point to Multipoint(P)                                                  |

**UDP Configuration**

|                      |           |
|----------------------|-----------|
| Multicast IP Address | 224.1.1.2 |
| Multicast Port       | 20002     |
| Listening port       | 20012     |
| Time To Live         | 1         |
| Multicast Interface  | default   |

从站电台配置如下

The screenshot shows the 'Wireless Configuration' page for 'Radio1' in the Beacon web interface. The browser address bar shows '192.168.168.2/cgi-bin/webif/wireless-wlan0.sh'. The interface has a top navigation bar with tabs: System, Network, IPv6, Wireless, Firewall, Serial, Apps, Diag, Admin. Below this is a sub-navigation bar with 'Status' and 'Radio1'. The 'Wireless Configuration' section is active, showing two main configuration areas: 'Radio1 Phy Configuration' and 'Radio1 Virtual Interface 1'.

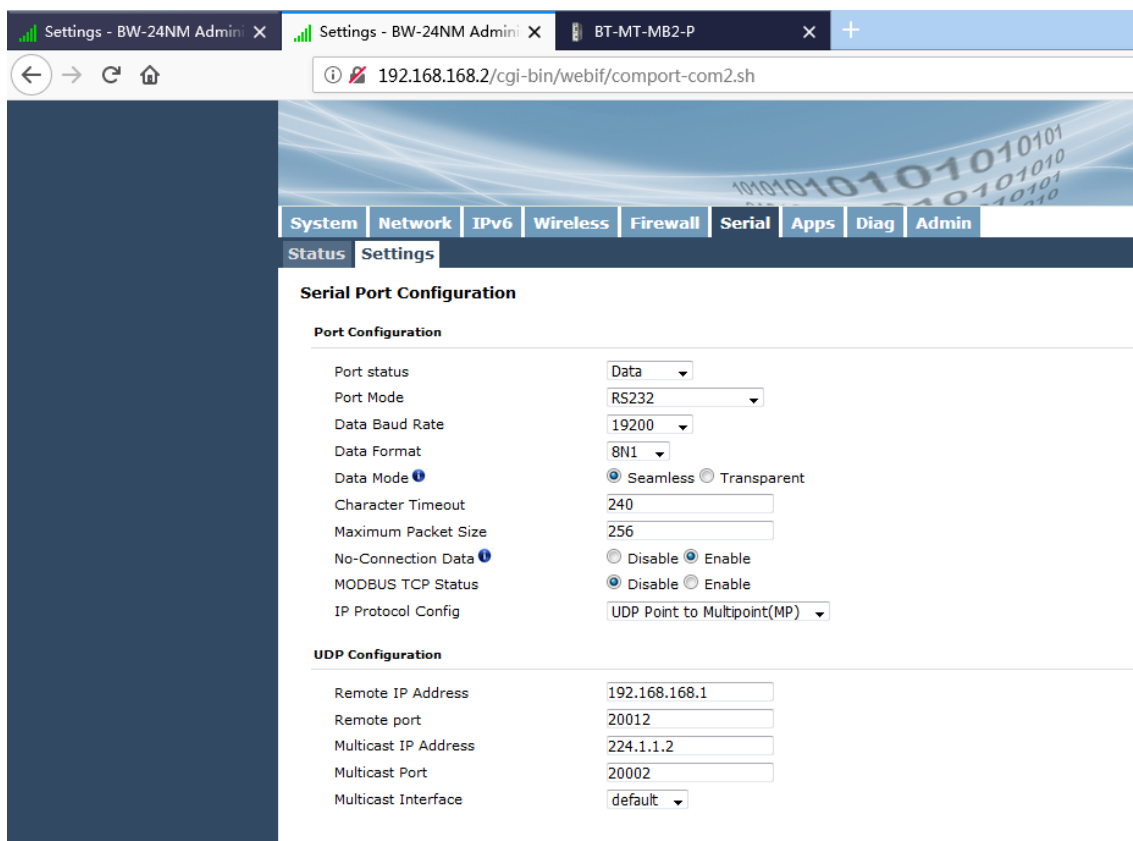
**Wireless Configuration**

**Radio1 Phy Configuration**

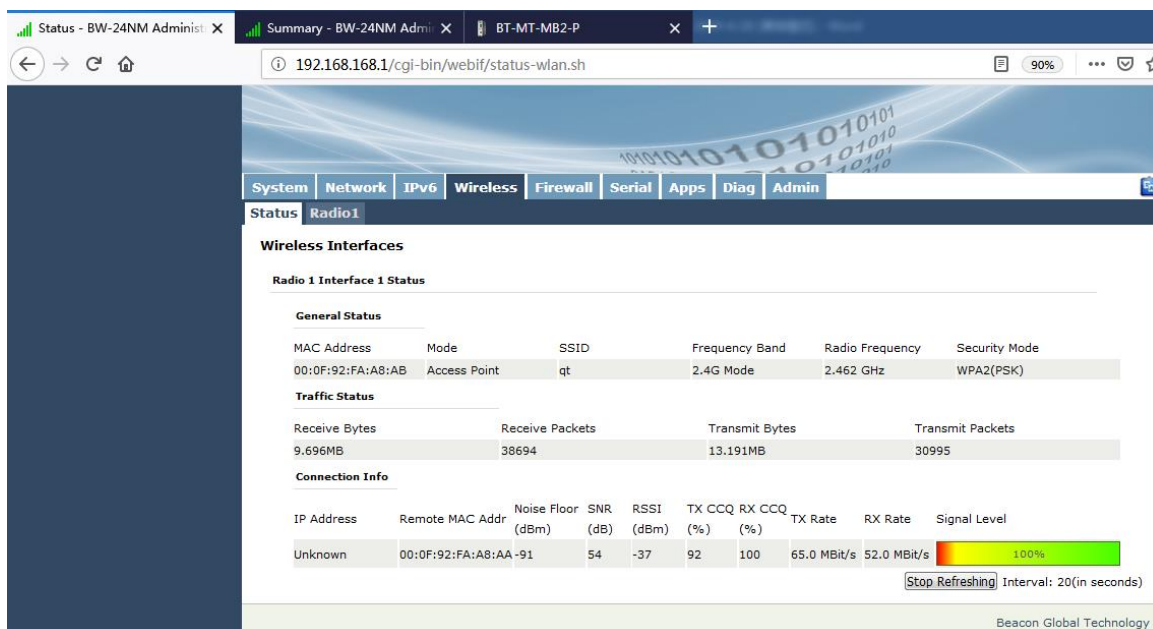
|                                       |                                                               |
|---------------------------------------|---------------------------------------------------------------|
| Radio                                 | <input checked="" type="radio"/> On <input type="radio"/> Off |
| Mode                                  | 802.11NG                                                      |
| High Throughput Mode                  | HT20                                                          |
| Advanced Capabilities                 | <input type="checkbox"/> Show                                 |
| Channel-Frequency                     | 11 - 2.462 GHz                                                |
| Tx Power                              | 30 dbm                                                        |
| Wireless Distance                     | 100 (m)                                                       |
| RTS Thr (256~2346)                    | <input checked="" type="checkbox"/> OFF                       |
| Fragment Thr (256~2346)               | <input checked="" type="checkbox"/> OFF                       |
| <a href="#">Add Virtual Interface</a> |                                                               |

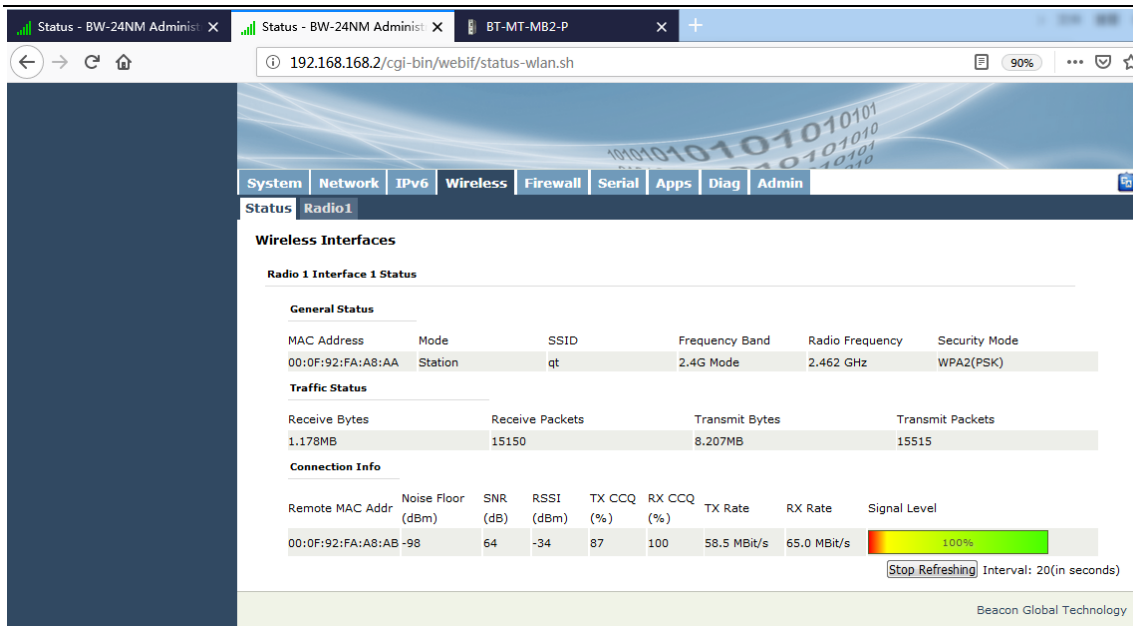
**Radio1 Virtual Interface 1**

|                 |                                                                                                 |
|-----------------|-------------------------------------------------------------------------------------------------|
| Network         | LAN                                                                                             |
| Mode            | Client                                                                                          |
| TX bitrate      | Auto                                                                                            |
| WDS             | <input checked="" type="radio"/> On <input type="radio"/> Off                                   |
| ESSID Broadcast | <input checked="" type="radio"/> On <input type="radio"/> Off                                   |
| AP Isolation    | <input type="radio"/> On <input checked="" type="radio"/> Off                                   |
| WMM             | <input checked="" type="radio"/> On <input type="radio"/> Off <a href="#">WMM Configuration</a> |
| SSID            | qt                                                                                              |
| Encryption Type | WPA2 (PSK)                                                                                      |
| WPA PSK         | *****                                                                                           |
| Show password   | <input type="checkbox"/>                                                                        |

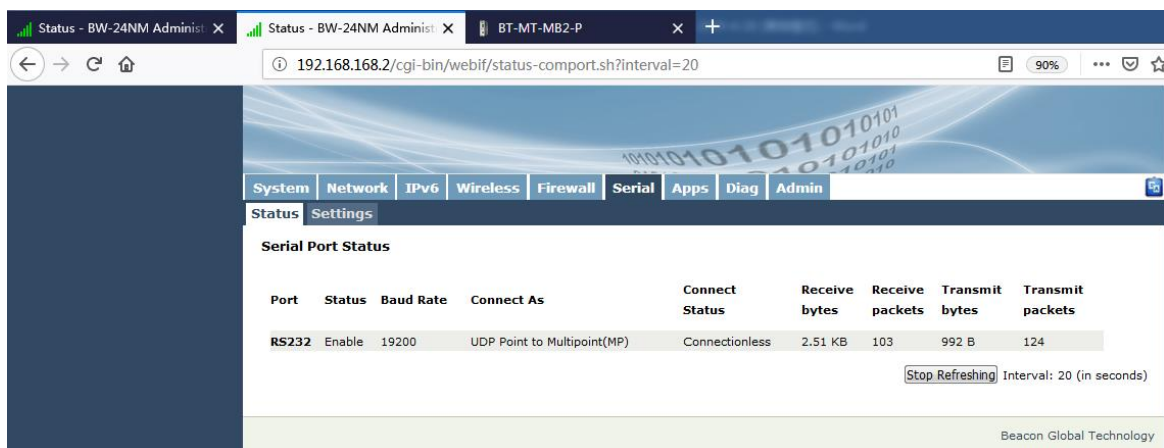
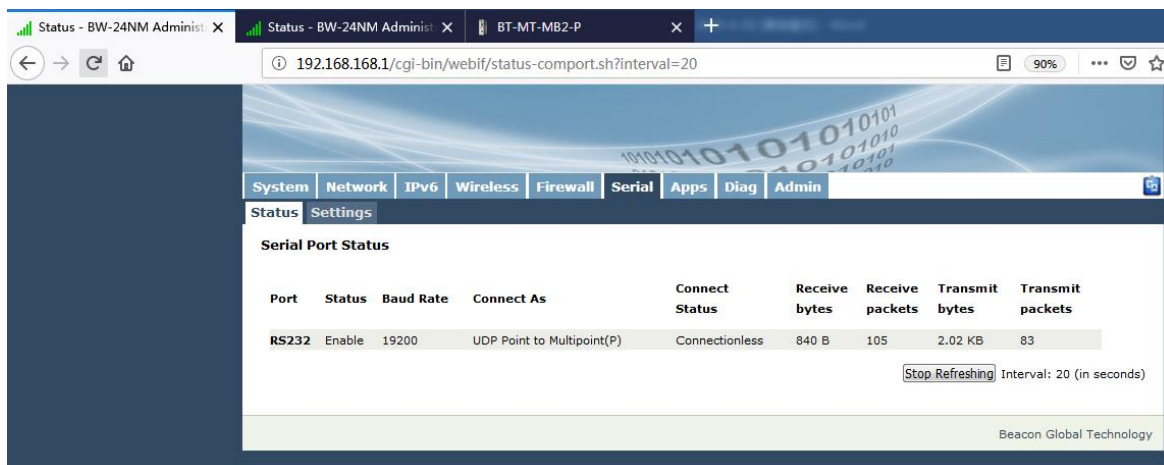


## 检查主站和从站无线电台通讯状态





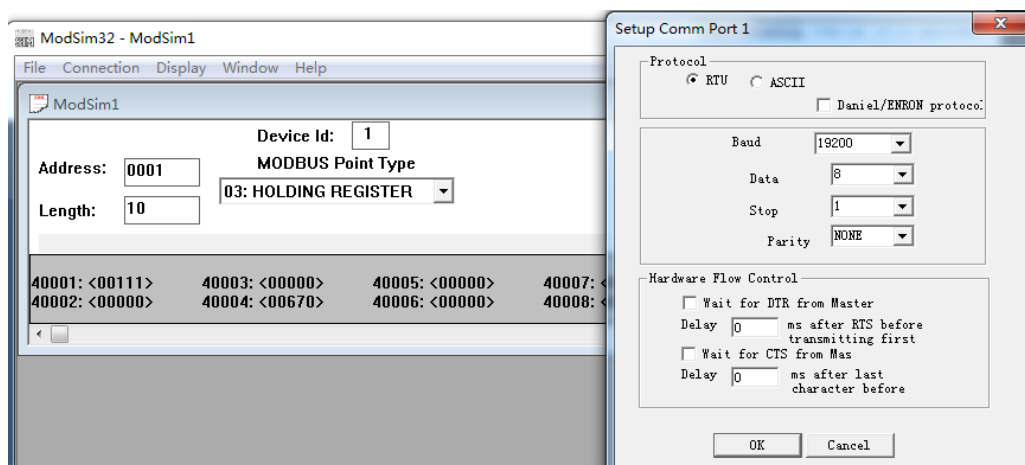
检查主站和从站无线电台串口通讯状态



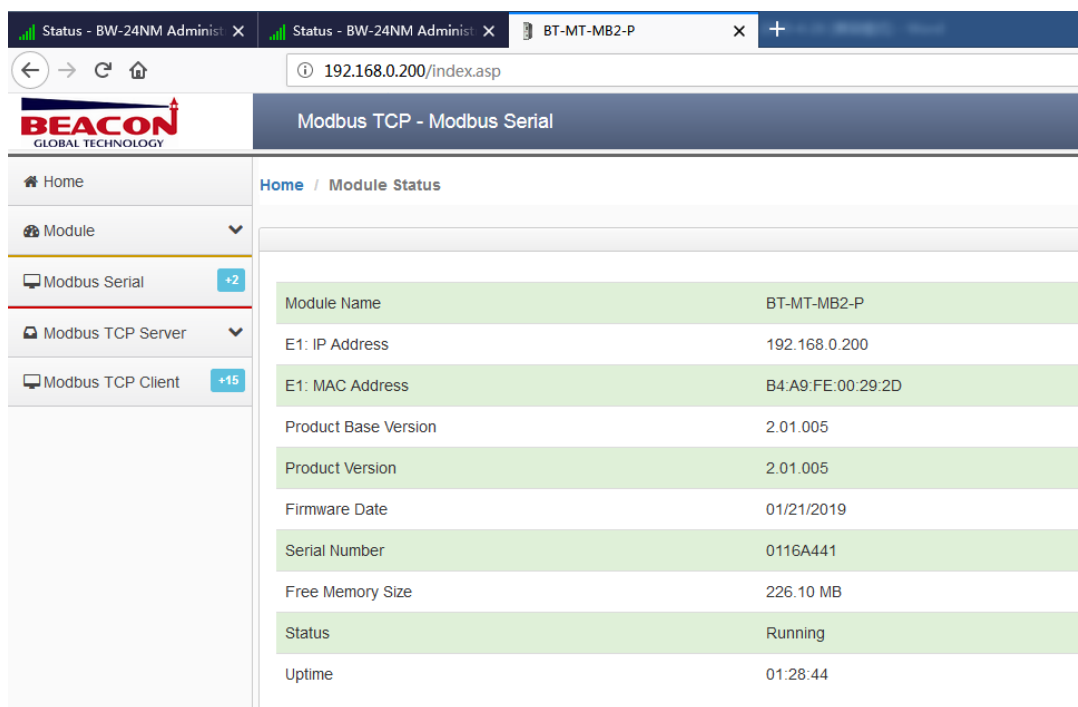
检查设备串口通讯状态

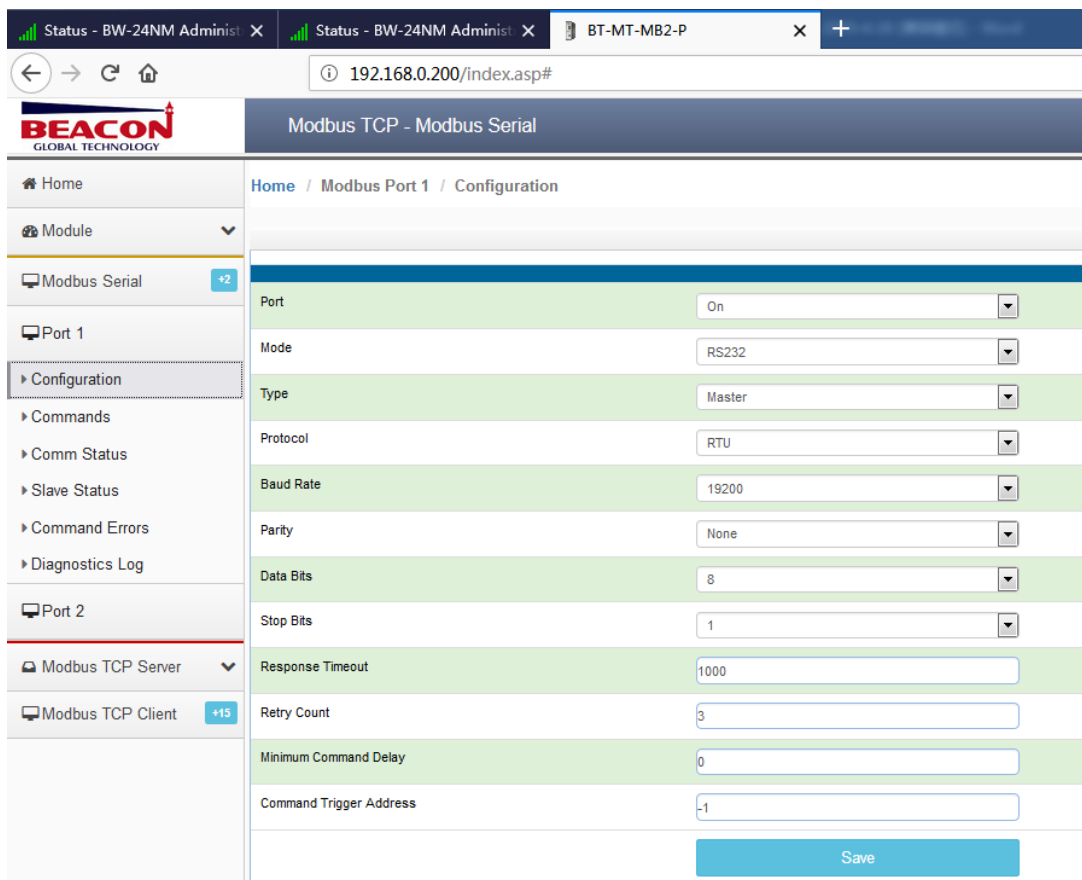
本例使用 MODBUS RTU 仿真软件，电脑使用 USB 转 RS232 电缆，使用 MODSIM 软件仿真 MODBUS RTU 从站

从站地址 1，波特率 19200，数据位 8，停止位 1，校验位 无。



另外一侧使用 BT-MT-MB2-P 网关做 MODBUS RTU 主站





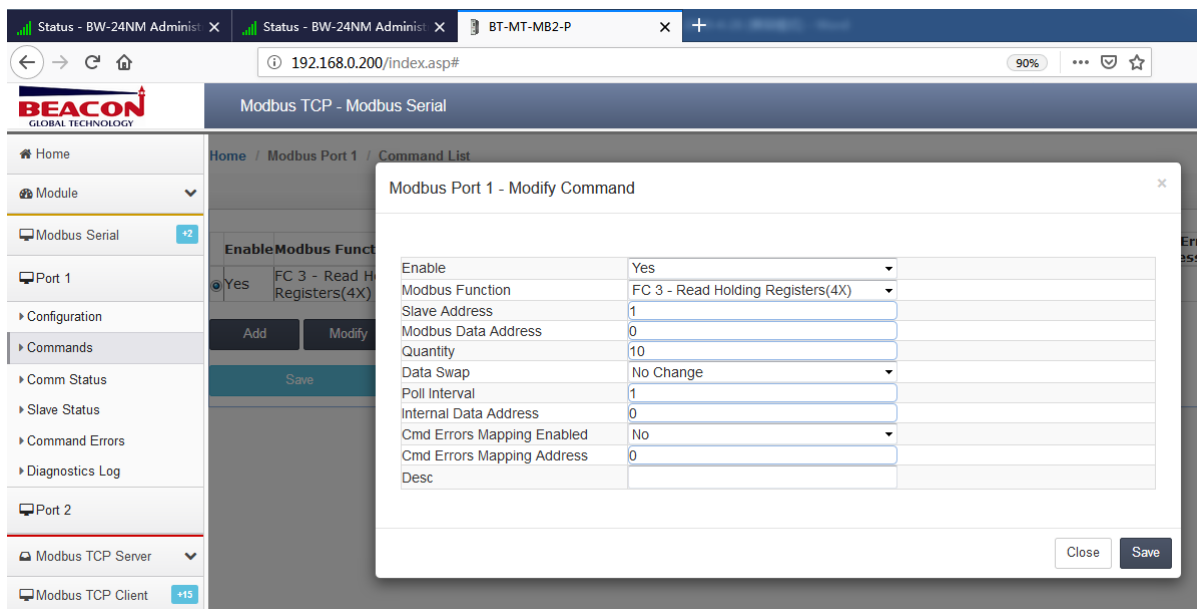
Modbus TCP - Modbus Serial

Home / Modbus Port 1 / Configuration

|                         |        |
|-------------------------|--------|
| Port                    | On     |
| Mode                    | RS232  |
| Type                    | Master |
| Protocol                | RTU    |
| Baud Rate               | 19200  |
| Parity                  | None   |
| Data Bits               | 8      |
| Stop Bits               | 1      |
| Response Timeout        | 1000   |
| Retry Count             | 3      |
| Minimum Command Delay   | 0      |
| Command Trigger Address | -1     |

Save

在网关中配置一条 Modbus 主站指令



Modbus Port 1 - Modify Command

|                            |                                   |
|----------------------------|-----------------------------------|
| Enable                     | Yes                               |
| Modbus Function            | FC 3 - Read Holding Registers(4X) |
| Slave Address              | 1                                 |
| Modbus Data Address        | 0                                 |
| Quantity                   | 10                                |
| Data Swap                  | No Change                         |
| Poll Interval              | 1                                 |
| Internal Data Address      | 0                                 |
| Cmd Errors Mapping Enabled | No                                |
| Cmd Errors Mapping Address | 0                                 |
| Desc                       |                                   |

Close Save

检查主站命令状态，此命令含义 1 秒钟读一次 1 号从站 40001-40010 地址位，总共 10 个 16 位的整数放到网关内部寄存器 0-9 里面。

Status - BW-24NM Administ

Status - BW-24NM Administ

BT-MT-MB2-P

+

192.168.0.200/index.asp#

BEACON  
GLOBAL TECHNOLOGY

Home

Module

Modbus Serial +2

Port 1

Configuration

Commands

Comm Status

Slave Status

Command Errors

Diagnostics Log

Port 2

Modbus TCP - Modbus Serial

Home / Modbus Port 1 / Status

| Parameter Name            | Value |
|---------------------------|-------|
| Inter-message Delay       | 1.822 |
| Command Count             | 1     |
| Last Error Code           | 0     |
| Number of Command Errors  | 0     |
| Number of Requests        | 424   |
| Number of Responses       | 424   |
| Number of Errors Received | 0     |
| Number of Errors Sent     | 0     |

Reset Counter

☒ Auto Refresh 2 Second(s)

Status - BW-24NM Administ

Status - BW-24NM Administ

BT-MT-MB2-P

+

192.168.0.200/index.asp#

BEACON  
GLOBAL TECHNOLOGY

Home

Module

Modbus Serial +2

Port 1

Configuration

Commands

Comm Status

Slave Status

Command Errors

Diagnostics Log

Port 2

Modbus TCP - Modbus Serial

Home / Modbus Port 1 / Slave Status

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Prev

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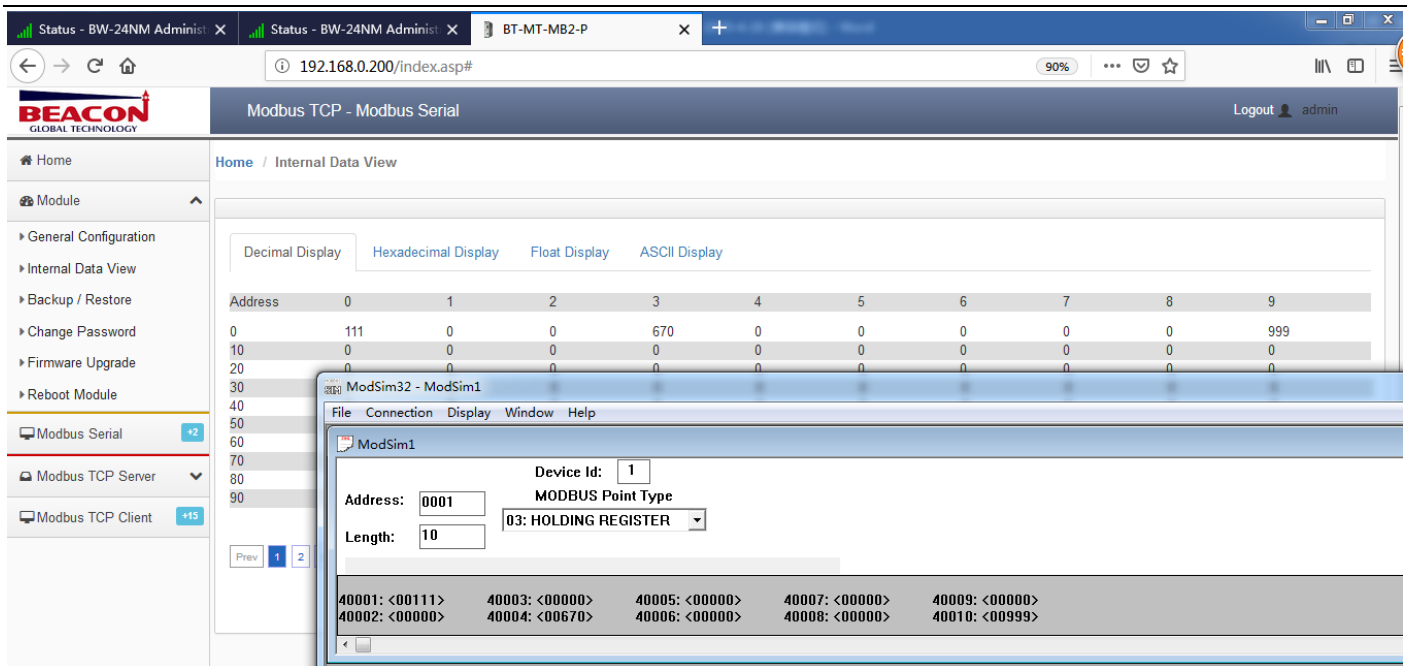
7

8

Next

☒ Auto Refresh 2 Second(s)

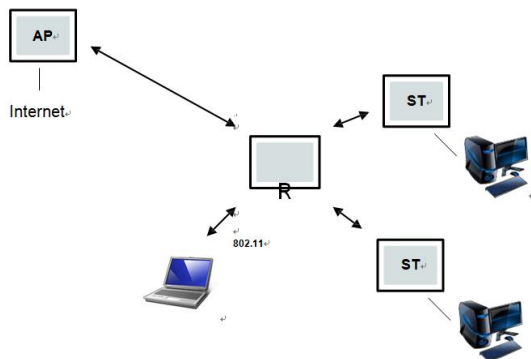
可以看到报文发送和接收整齐排列，检查电脑做 Modbus 从站所发出的数据与网关内部寄存器接收到数据相互对应。



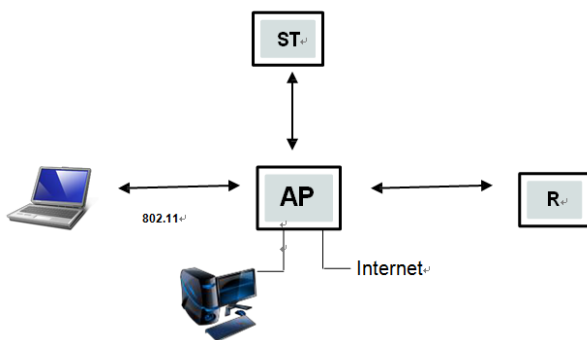
## 五、常用电台网络拓扑图

AP 主站，R 中继，ST 从站，MESH 无主站

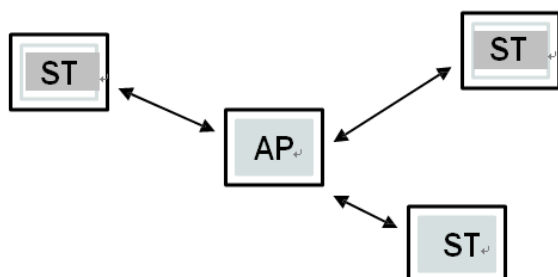
模式 1：从站通过中继连接主站



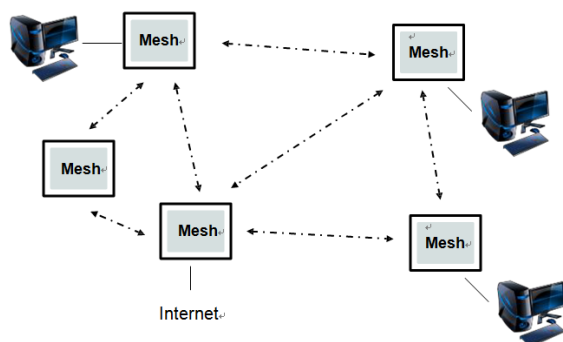
模式 2：主站同时连接从站和中继



### 模式 3：主站直接连接从站（无中继）



### 模式 4：MESH 网络，无主站



### 联系我们

如果在使用过程中有更多的问题，可以通过以下方式联系我们获得支持。

|                  |                                                              |
|------------------|--------------------------------------------------------------|
| 客户服务热线<br>(中国大陆) |                                                              |
| 技术支持             | <a href="mailto:support@beacong.com">support@beacong.com</a> |
| 亚太区销售            | <a href="mailto:asia@beacong.com">asia@beacong.com</a>       |
| 北美区销售            | <a href="mailto:usa@beacong.com">usa@beacong.com</a>         |