
Model ATC-1000WF

WiFi Solutions for Serial Connections

User Manual



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Important Announcement

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1 Introduction

ATC-1000WF wireless serial device servers give you an easy way to connect your RS-232/485/422 serial device to WLAN.

The RS232 connection application has been used for a long time. RS232 cable has limitations in distance. WLAN has become a worldwide standard protocol for wireless application. There are many application for using RS232 connection over WLAN,include POS,data capture,telemetry,PLC controllers,remote control,vending machine,industrial control ,and others.The device that supports connection over WLAN is called as wireless to Serial Server.

ATC-1000WF wireless serial device servers support automatic IP configuration protocols and manual configuration via a handy web browser console.An external antenna increases the range of the wireless connection.Users can position the adjustable antenna for maximum signal strength or even replace the antenna with their own for additional flexibility and scalability.This feature is particularly useful when a serial device is connected in a high interference area.As an added feature,a signal strength indicator is located on the front panel to make it easier to troubleshoot connection problems.

ATC-1000WF wireless serial device servers ensure the compatibility of network software that uses a standard network API by providing TCP Server Mode, TCP Client Mode, and UDP Mode. The Real COM/TTY drivers allow software that works with COM/TTY ports to be set up to work over a TCP/IP network in no time. This excellent feature preserves your software investment and lets you enjoy the benefits of networking your serial devices instantly.

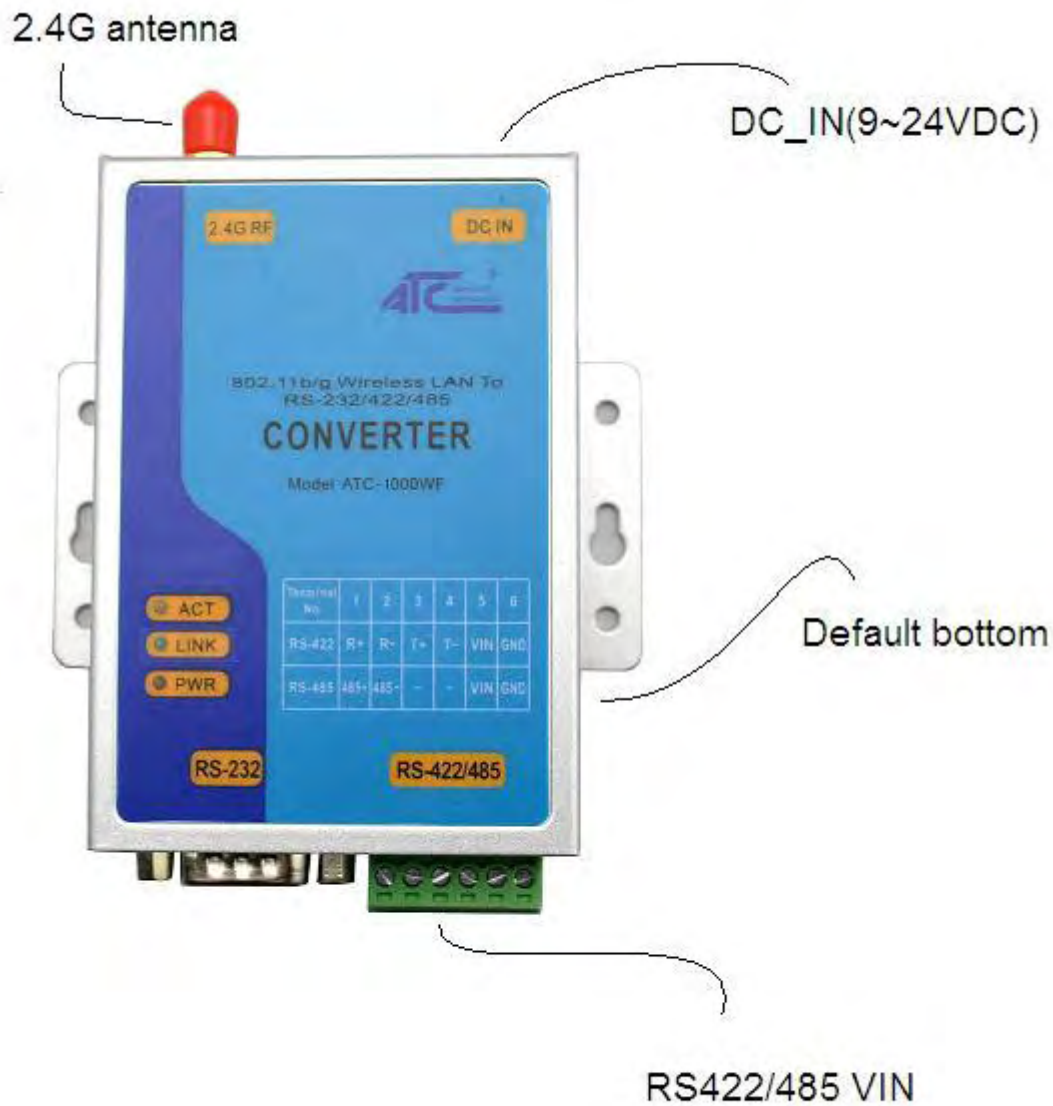
To make your management task easier, the ATC-1000WF provides additional features, such as password authentication, IP filter, WEP support for 64-bit and 128-bit encryption, and SNMP support.

Packaging

Please check ones package contains the following items:

- § ATC-1000WF x 1
- § Power Adapter 9~24VDC x 1
- § Product CD containing configuration utility x 1
- § ATC-1000WF quick start guide x 1
- § Monopole Antenna (2dBi RP-SMA) x 1

2 Hardware Setup



2.1 LED Indicators

2.1.1 LINK LED

Message	Description
Off	Wi-Fi Disconnected
On	Wi-Fi Connected

Table 1. LINK LED Message

2.1.2 ACT LED

Message	Description
Off	No data transmit between serial port and RF
Blinking	Data transmit between serial port and RF

Table 2. ACT LED Message

2.1.3 PWR LED

Message	Description
On	Power on
Off	Power off

Table4. PWR LED Message

2.2 Installation Procedures

Installation of antenna:

Screw the SMA male pin of the antenna to the female SMA outlet of the ATC-1000WF tightly.

Warning: The antenna should be screwed tightly, or the signal quality of antenna will be influenced!

Installation of cable:

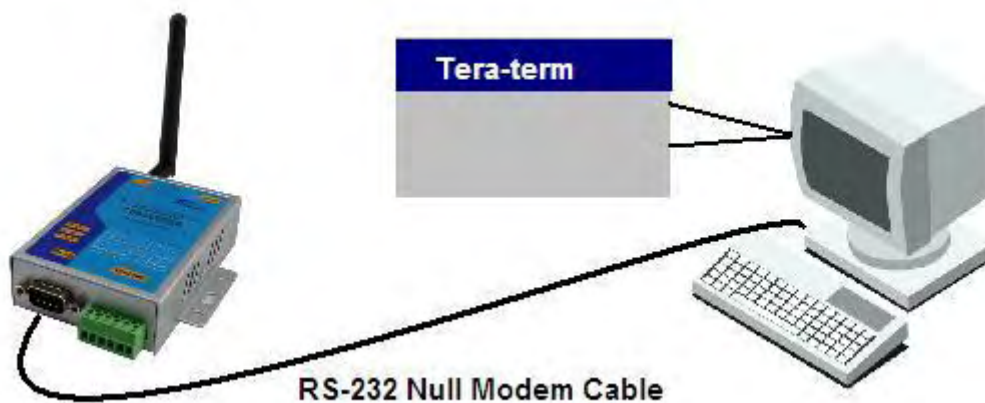
Uses a RS232 or RS422 or RS485 data cable connect the ATC-1000WF to user's device.

2.3 Power

The power range of ATC-1000WF is DC 9~24V. We recommend use to use the standard DC 9V/1A power adapter.

3 Configuration

Before configuration, we should connect the ATC-1000WF to a PC with a RS-232 cable as following.



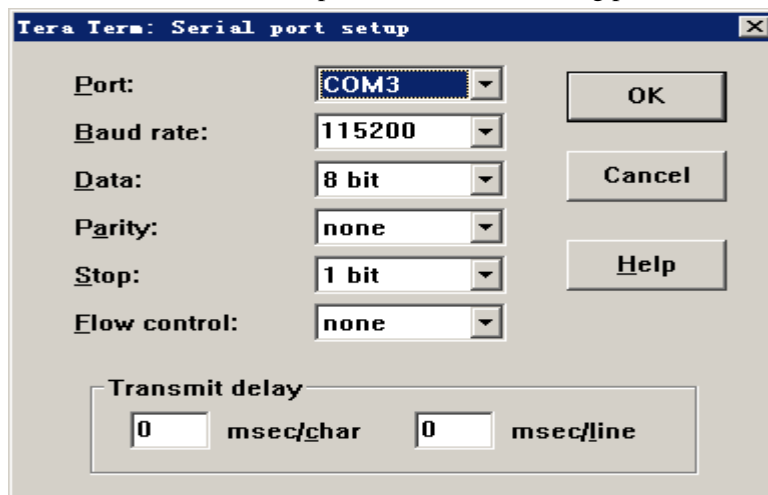
3.1 Configuration Introduction

For ATC-1000WF you can configure via webpage or send command by **Tera-Term**.

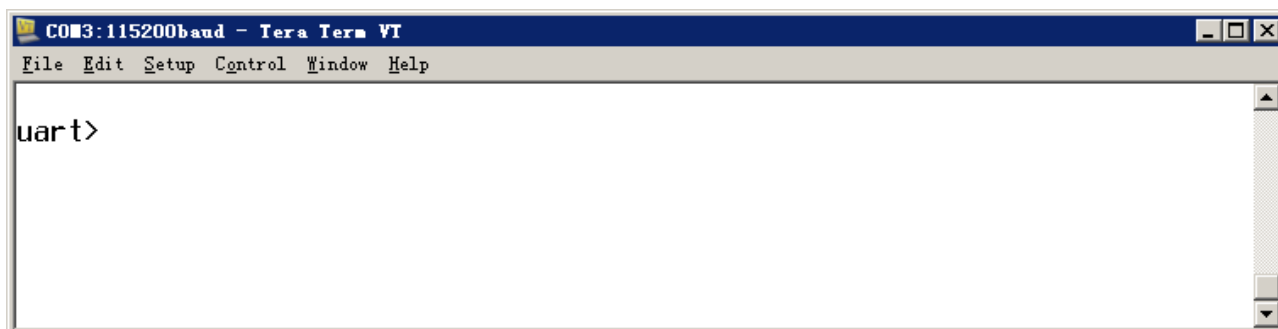
3.2 Configure via Tera-Term

Default parameters of serial port are: 115200bps, 8bits, no parity, 1 stop bit, no flow control.

Firstly,configure **Tera-Term** with the default parameters,like following picture.



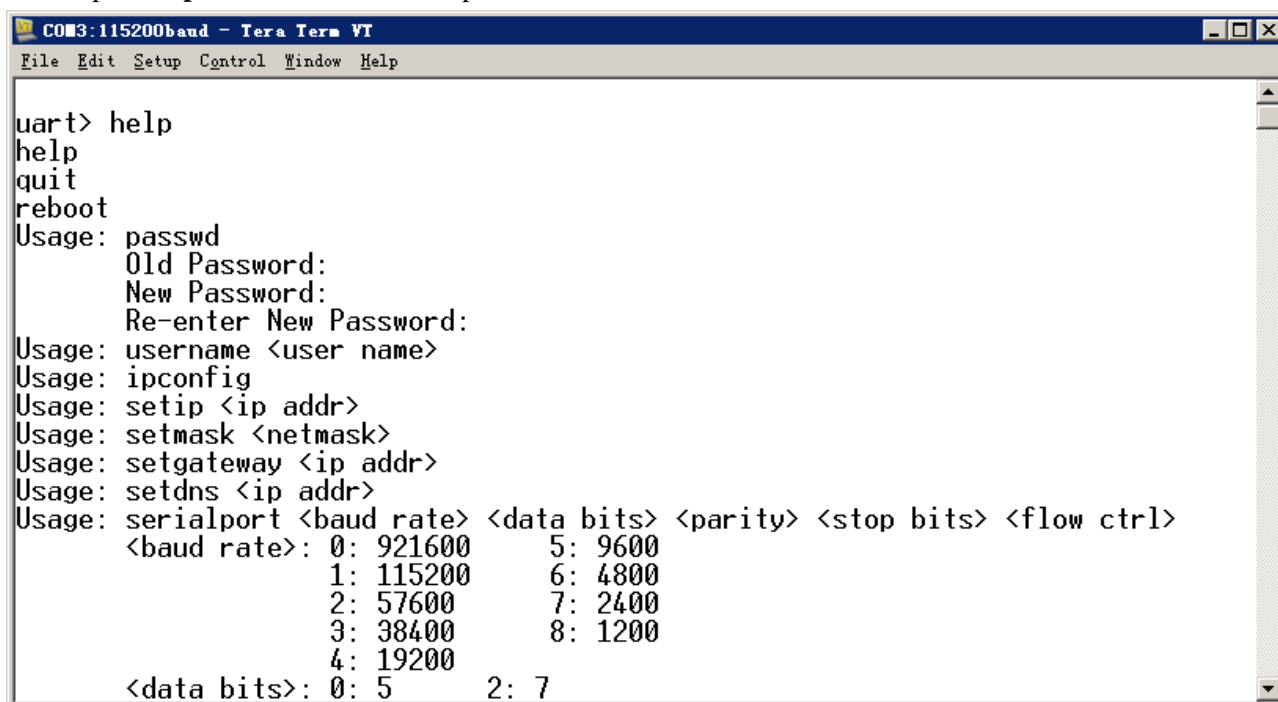
Run **Tera-Term** on the PC,and then enter “+++”.The interface like following will appear.



```
COM3:115200baud - Tera Term VT
File Edit Setup Control Window Help

uart>
```

Then input “help”, the all command will print in the window. Like below.



```
COM3:115200baud - Tera Term VT
File Edit Setup Control Window Help

uart> help
help
quit
reboot
Usage: passwd
      Old Password:
      New Password:
      Re-enter New Password:
Usage: username <user name>
Usage: ipconfig
Usage: setip <ip addr>
Usage: setmask <netmask>
Usage: setgateway <ip addr>
Usage: setdns <ip addr>
Usage: serialport <baud rate> <data bits> <parity> <stop bits> <flow ctrl>
      <baud rate>:  0: 921600    5: 9600
                  1: 115200    6: 4800
                  2: 57600     7: 2400
                  3: 38400     8: 1200
                  4: 19200
      <data bits>:  0: 5       2: 7
```

The commands can be classified into two functions, one is to execute command and the other is to set configuration. The commands for setting configuration can be used in 2 ways: one is to display the current settings when no argument is given and the other is to set the configuration with provided arguments.

3.2.1 Detail description for command

Following will introduce some commonly used commands.

Ø +++

When you power on ATC-1000WF, enter this command to turn to CMD mode.

Ø AXCmd2Net

Enter this command, ATC-1000WF will return back to data transmit mode.

Ø help

Enter this command to get all commands of this product.

Ø setnt <0 = Infra mode, 1 = Ad-hoc mode>

This command can change the work mode of WLAN.

For example: `setnt -- check current work mode`
`setnt 0 -- turn to Infra mode (AP)`

Ø `sisrvy`

Enter this command to search available access point.

Ø `jbss <ID in site-survey table>`

Enter this command to access a point available. The ID number must be an index in the site survey result list.

Ø `ipconfig`

Use this command to check current network parameters of ATC-1000WF, such as IP address, subnet address and gateway address.

Note: Every command should be send out with “<CR>” ---- the “Enter” key on keyboard.

3.3 Configure by Webpage

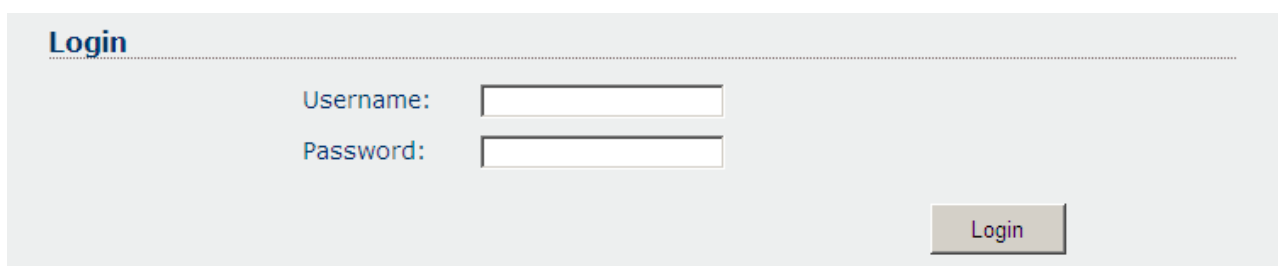
Here we will use Infra mode (AP) as example. And you also can use Ad-Hoc mode to do this, the webpage is same. When access to a router by AP mode, the product will assign an IP address by router. For example: 192.168.1.100.

3.3.1 Login Authentication Page

Run the Internet Explorer, type the IP address into the address bar, like following.



When enter to this address, the following page will appear.

A screenshot of a web login page. The page has a light blue background. At the top left, the word "Login" is written in blue. Below it, there are two input fields: "Username:" followed by a text box, and "Password:" followed by a text box. To the right of these fields is a button labeled "Login".

Default User Name: **admin**, Default User Name: **admin**.

The HTTP server will redirect to Basic page if the authentication is successful.

3.3.2 Basic Page

Logout

Basic
Advanced
Security
WiFi
WiFi Wizard
Status

Serial Settings

Device Name:
Device name can be up to 16 characters.

Data Baud Rate:

Data Bits:

Data Parity:

Stop Bits:

Flow Control:

Rs485:

Network Settings

DHCP Client:

Static IP Address:

Static Subnet Mask:

Static Default Gateway:

Static DNS Server:

Connection Type:

Transmit Timer (ms):
Please enter an integer between 10~65535.

Server/Client Mode:

Server Listening Port:
Please enter an integer between 1024~65535.

Client Destination Host Name/IP:
Please enter host name or IP address(e.g. asix.com.tw or 10.4.1.100).

Client Destination Port:
Please enter an integer between 1024~65535.

On this page, the **Client Destination Host Name/IP** field can accept either host name or IP address format; for example, you can enter “abnerliu.vicp.cc” or “192.168.1.200” in this field.

This page supports 4 command bottoms:

- Ø **Apply** : submits the current settings on this page to the device server.
- Ø **Cancel**: cancels the changed settings on this page.

Ø **Restore_Default:** restore the device server back to factory default setting. When click it, a warning dialog will appear. You can click **OK** to continue operation or click **Cancel** to cancel the operation.

Ø **Reboot:** restart the device server.

When clicking Apply or Reboot, a confirmation window will appear. User can click OK to continue the operation, or click Cancel to cancel the operation.

3.3.3 Advanced Page

The screenshot displays the 'Advanced' tab of a web interface. It features a navigation bar with 'Basic', 'Advanced', 'Security', 'WiFi', 'WiFi Wizard', and 'Status' tabs, and a 'Logout' link. The main content area is divided into four sections:

- Boot Loader Firmware Upgrade:** Includes input fields for 'TFTP Server IP' (0.0.0.0) and 'File Name'. A note states 'File name can be up to 63 characters.' Below are 'Apply', 'Cancel', and 'Upgrade_Bootldr' buttons.
- MCPU Firmware Upgrade:** Includes input fields for 'TFTP Server IP' (0.0.0.0) and 'File Name'. A note states 'File name can be up to 63 characters.' Below are 'Apply', 'Cancel', and 'Upgrade_MCPU' buttons.
- WCPU Firmware Upgrade:** Includes input fields for 'TFTP Server IP' (0.0.0.0) and 'File Name'. A note states 'File name can be up to 63 characters.' Below are 'Apply', 'Cancel', and 'Upgrade_WCPU' buttons.
- E-mail & Auto Warning Report Settings:** Includes input fields for 'E-mail Server Address/IP' (asix.com.tw), 'From E-mail Address' (ds@asix.com.tw), and three 'To E-mail Address' fields (to1@asix.com.tw, to2@asix.com.tw, to3@asix.com.tw). A note states 'Please enter host name or IP address(e.g. asix.com.tw or 10.4.1.100)'. Below are dropdown menus for 'Cold Start', 'Authentication Failure', 'Local IP Address Changed', and 'Password Changed', all set to 'Disable'.

This page supports 3 firmware upgrade buttons. Note that before user performs the firmware upgrade, one should start TFTP server.

Ø **Upgrade_Bootldr:** upgrades the boot-loader firmware and then reboot the device server.

Ø **Upgrade_MCPU:** upgrades the MCP CPU firmware and then reboot the device server.

Ø **Upgrade_WCPU:** upgrades the WCPU firmware and then reboot the device server.

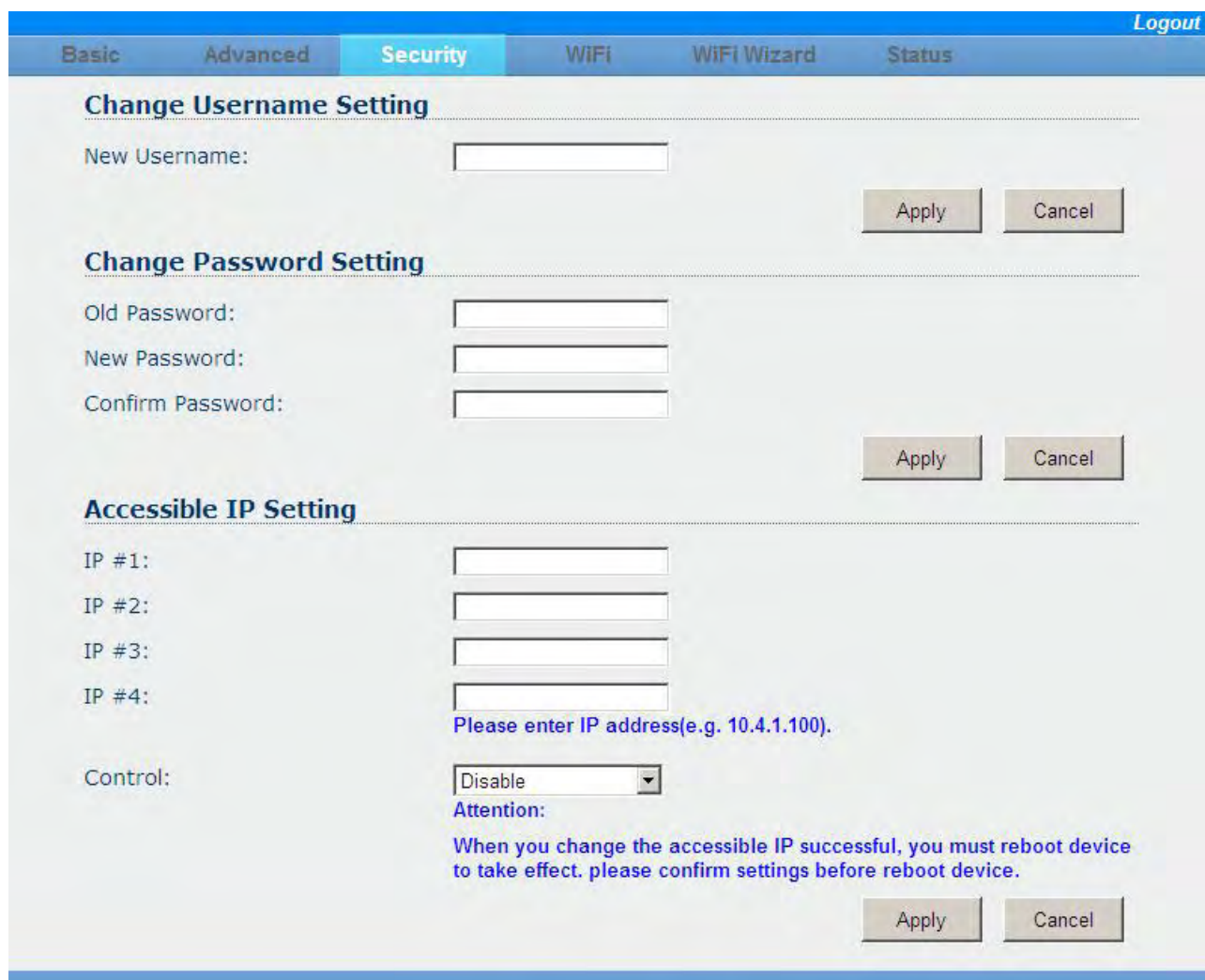
User should enter correct TFTP server IP address and the firmware file name (without file path is fine) for upgrade before clicking these bottoms.

When clicking Apply or any firmware upgrade button, a confirmation window will appear. User can press OK to continue the operation, or press Cancel to cancel the operation.

The E-mail Server Address/IP field can accept host name or IP address format, for example, you can enter “abnerliu.vicp.cc” or “1921.168.2.100” in this field.

The device server supports the DHCP server service and user can setup the settings of DHCP server and press Apply to change the current settings.

3.3.4 Security Page



The screenshot shows the Security page with the following sections:

- Change Username Setting:** A text input field for "New Username:" and "Apply" and "Cancel" buttons.
- Change Password Setting:** Three text input fields for "Old Password:", "New Password:", and "Confirm Password:", and "Apply" and "Cancel" buttons.
- Accessible IP Setting:** Four text input fields for "IP #1:", "IP #2:", "IP #3:", and "IP #4:". Below them is a blue note: "Please enter IP address(e.g. 10.4.1.100).". A "Control:" dropdown menu is set to "Disable". Below that is a blue "Attention:" warning: "When you change the accessible IP successful, you must reboot device to take effect. please confirm settings before reboot device." and "Apply" and "Cancel" buttons.

On this page, the Accessible IP Setting must be used with care. User should enter correct accessible IP address(s) before enabling this function. The new configuration will take effect after the device server reboots.

When clicking Apply, a confirmation window will appear. User can press OK to continue the operation, or press Cancel to cancel the operation.

When clicking Logout at the top right corner of the page, the session will be logged out and redirected to the login page.

3.3.5 WiFi Page

The screenshot shows the WiFi configuration page with the following settings:

- System Settings:**
 - Network Mode: Infrastructure
 - Channel: 1
 - Service Area Name/SSID: galaxywind
 - Security Mode: No Security
- WEP Encryption Key Settings:**
 - Key Length: 64 bits
 - Key Index Select: Key Index 0
 - Key Index 0: 1234567890
 - Key Index 1: 0987654321
 - Key Index 2: a1b2c3d4e5
 - Key Index 3: 0123456789
 - Note: Please enter 10-digit hex for 64-bit key length or 26-digit hex for 128-bit key length.
- AES/TKIP Encryption Key Settings:**
 - AES/TKIP Passphrase: 12345678
 - Note: Please enter a string between 8~63 digits in length.
- WiFi Advanced Settings:**
 - TX Data Rate: Auto
 - Transmission Power Level: 100%
 - Preamble Mode: Auto
 - Beacon Interval (ms): 100
 - Note: Please enter an integer between 20~1000.
 - RTS Threshold: 2432
 - Note: Please enter an integer between 0~2432.
 - Auto Power Control Mode: Enable

Buttons for Apply and Cancel are located at the bottom right of the configuration area.

The page configures the WiFi settings of device server's WiFi network. Note that the current value of WEP Key Index 0~3 fields will be displayed according to Key Length field being selected, either 64 bits or 128 bits (i.e. WEP-64 or WEP-128).

When clicking Apply, a confirmation window will appear. User can press OK to continue the operation, or

press Cancel to cancel the operation.

3.3.6 WiFi Wizard Page

The WiFi Wizard is similar to WiFi page but provides a step by step procedure to help user to configure WiFi network settings and avoid incorrect settings. The WiFi Wizard includes following 6 sub-pages:

- Ø WiFi Link Settings sub-page
- Ø Encryption Selection sub-page
- Ø WiFi Network Advanced Settings sub-page
- Ø The Wizard Complete Successfully sub-page

3.3.6.1 WiFi Link Settings sub-page

Basic Advanced Security WiFi WiFi Wizard Status Logout

Welcome to the WiFi Setup Wizard

This wizard helps you set up your device to join a WiFi access point or set up its own security-enabled WiFi network.

Network Mode: Infrastructure

Channel: 1

Service Area Name/SSID: galaxywind
The service area name can be up to 31 characters.

Security Mode: No Security
AES/TKIP is unsupported in Ad-hoc mode.

To prevent outsiders from accessing your network, we recommend you assign a security mode to your network.

Next Finish

This sub-page provides basic configuration for device server's WiFi network.

3.3.6.2 Encryption Selection sub-page

The screenshot shows the 'WiFi Wizard' interface with the 'WiFi Wizard' tab selected. The main heading is 'Select an Encryption Type for Your WiFi Network'. Below the heading, there is a sub-heading: 'Select an encryption type for your WiFi network, if you do not modify any encryption key, please select the previous key settings.' There are three radio button options: 'WEP encryption key settings', 'AES/TKIP pre-shared key settings', and 'Use the previous key settings'. The 'Use the previous key settings' option is selected. At the bottom, there are 'Next' and 'Back' buttons.

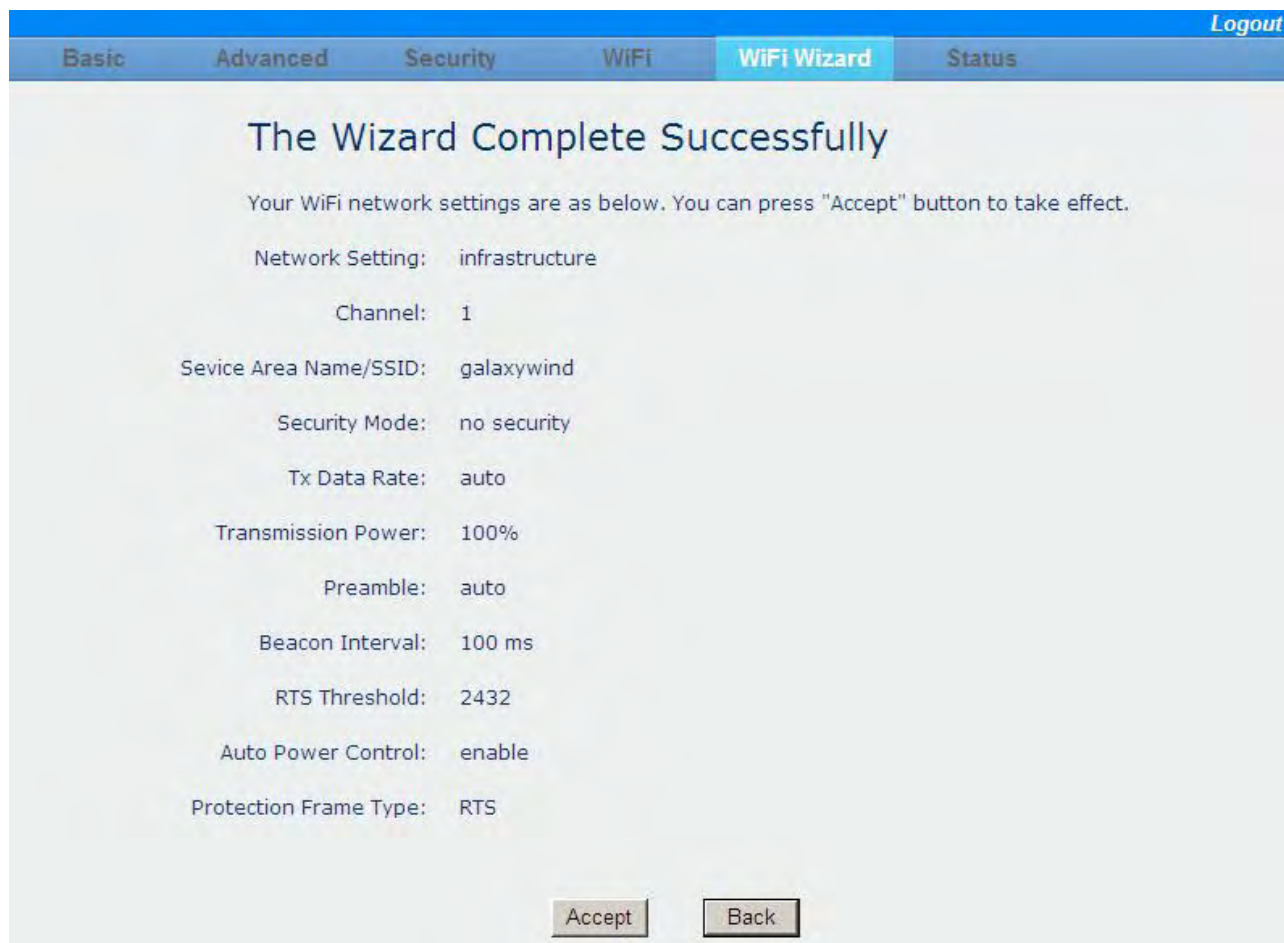
This sub-page configures the encryption type that will be used.

3.3.6.3 WiFi Network Advanced Settings sub-page

The screenshot shows the 'WiFi Network Advanced Settings' page in the 'WiFi Wizard'. The main heading is 'WiFi Network Advanced Settings'. Below the heading, there is a sub-heading: 'Please determine below settings for your WiFi network.' There are several settings: 'TX Data Rate' (Auto), 'Transmission Power Level' (100%), 'Preamble Mode' (Auto), 'Beacon Interval (ms)' (100), 'RTS Threshold' (2432), 'Auto Power Control Mode' (Enable), and 'Protection Frame Type' (RTS). There are 'Next' and 'Back' buttons at the bottom.

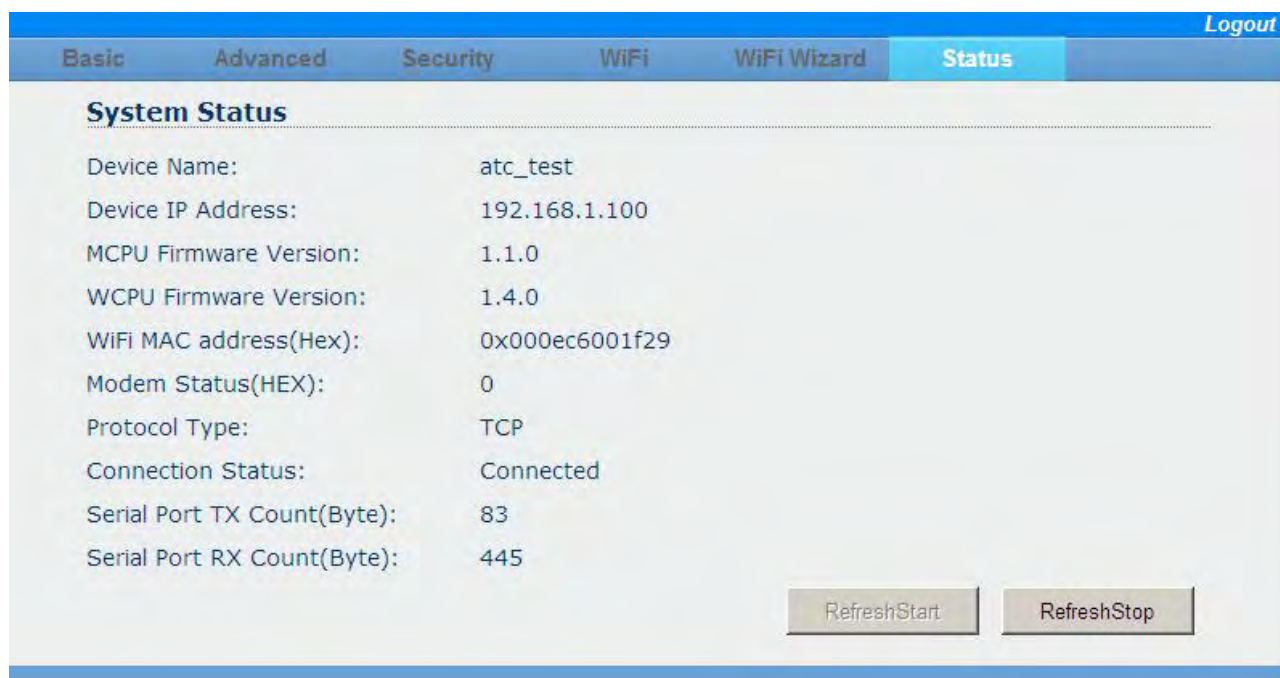
This sub-page configures either WEP-64 or WEP-128 key settings, if WEP encryption is chosen for device server' s WiFi network. The Key Index selects the active key to use among the 4 Key Indexes. Note that the key length must be 10 characters for WEP 64 bits or 26 characters for WEP 128 bits.

3.3.6.4 The Wizard Complete Successfully sub-page



This sub-page displays the new WiFi settings user has configured but not yet saved to ATC-1000WF device. Now, user can review and confirm them.

3.3.7 Status Page



This page displays the current status of ATC-1000WF device server with auto-refreshing in every 3 seconds.

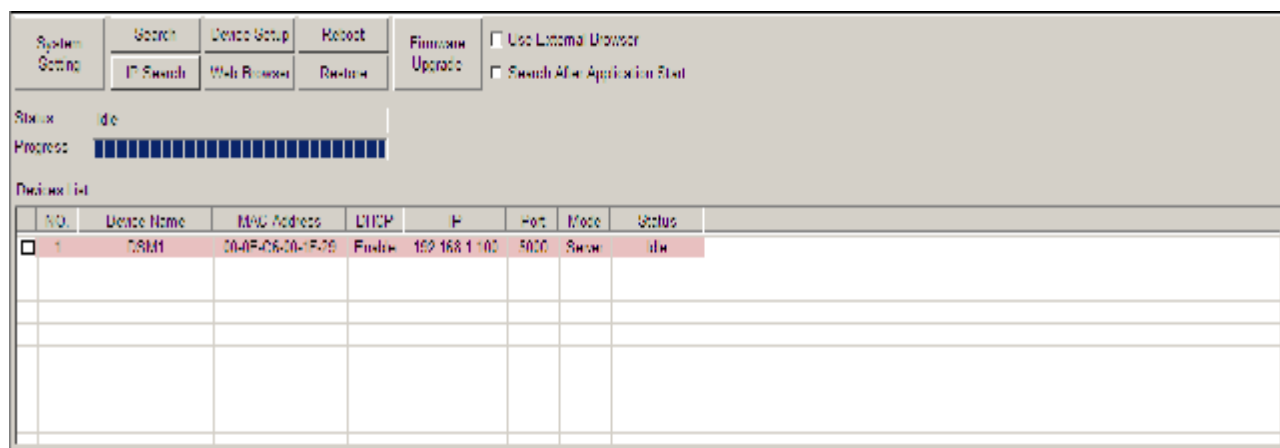
3.4 Software Function Description

This section describes the detailed information of various software functions available, such as AXR2W Configuration Utility.

3.4.1 Device Monitor Tool

This section describes the detailed functions of Device Monitor tool in AXR2W Configuration Utility.

3.4.1.1 Function Window

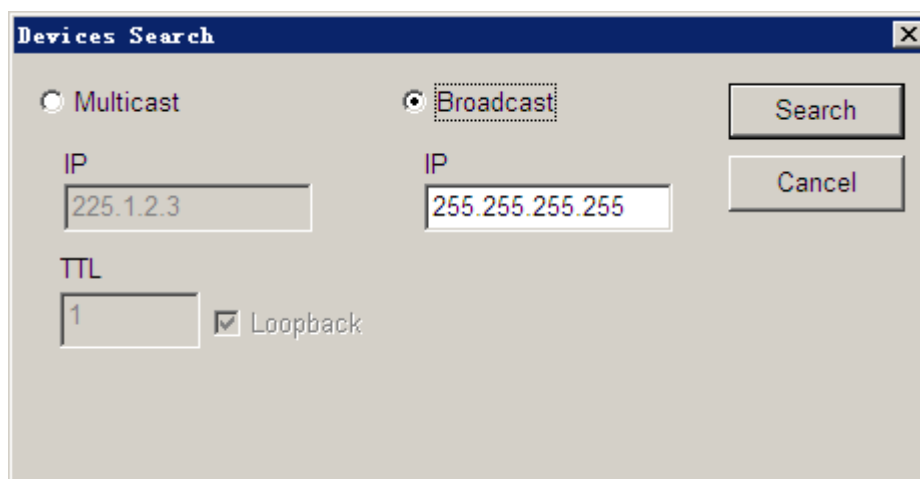


The Device Management tool provides following functions:

- Ø **System Setting:** configures the Search, Reboot, and Reset period.
- Ø **Search:** searches for available AX220xx device(s) on the wireless LAN network.
- Ø **IP Search:** searches the AX220xx device with a specified IP address.
- Ø **Device Setup:** configures the settings of the selected AX220xx device.
- Ø **Web Browser:** opens remote configuration web server of the selected AX220xx device.
- Ø **Reboot:** restarts the selected AX220xx device.
- Ø **Restore:** configures the selected AX220xx device back to factory default settings and restarts it.
- Ø **Firmware Upgrade:** upgrades the firmware code of the selected AX220xx device.

3.4.1.2 Search Dialog

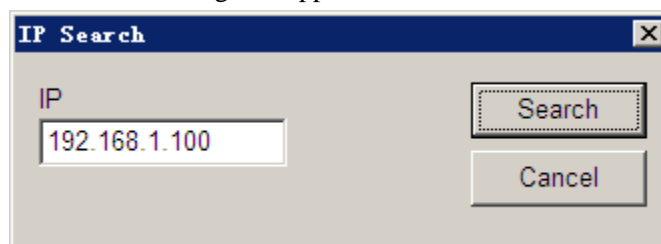
When click the **search** bottom,the search dialog will appear.



This function can support two ways to search device. One is UDP Multicast and UDP Broadcast. The default setting is Broadcast.

3.4.1.2 IP Search Dialog

When clicking IP Search, the IP Search dialog will appear.



Enter the IP address of the device to search the device. E.g.:192.168.1.100

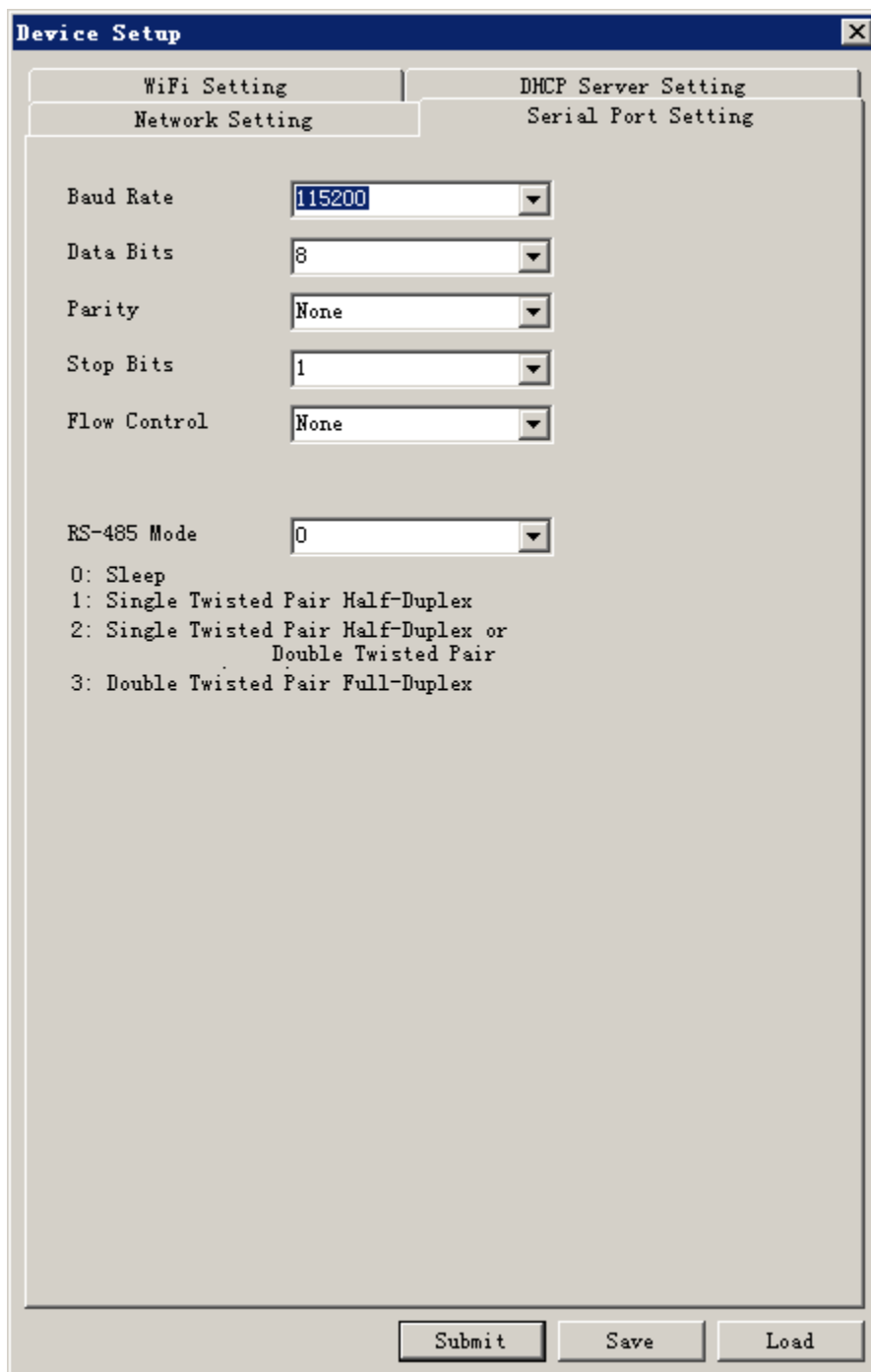
3.4.1.3 Device Setup Dialog

When clicking Device Setup, the Device Setup dialog will pop up with 4 tabs: **Network Setting, Serial Port Setting, WiFi Setting, and DHCP Server Setting.**

The screenshot shows a 'Device Setup' dialog box with a 'Network Setting' tab selected. The dialog is divided into several sections: 'WiFi Setting' and 'DHCP Server Setting' at the top, 'Network Setting' and 'Serial Port Setting' below them. The 'Network Setting' section includes fields for Device Name (DSM1), MAC Address (00-0E-C6-00-1F-29), DHCP (Enable), Server/Client radio buttons, Static IP (192.168.1.100), Data Listening (5000), Destination Port (5000), Destination Hostname/IP (192.168.2.2), Subnet Mask (255.255.255.0), Gateway (192.168.2.1), DNS Server (168.95.1.1), and Transmit Timer (100). The 'DHCP Server Setting' section has checkboxes for Data Packet Type (UDP, TCP, Auto connect after reboot) and Management Packet Type (Broadcast, Multicast). The 'Accessible IP Addresses' section has an 'Enable' checkbox and four IP address fields (IP 1-4), all set to 0.0.0.0. The 'SMTP Configuration Parameters' section includes Domain Name (asix.com.tw), From Address (ds@asix.com.tw), and three To Address fields (to1@asix.com.tw, to2@asix.com.tw, to3@asix.com.tw). The 'Event Enable/Disable' section has dropdown menus for IP, Password Change, Authentication, and Cold, all set to 'Disable'. At the bottom are 'Submit', 'Save', and 'Load' buttons.

Field	Value
Device Name	DSM1
MAC Address	00-0E-C6-00-1F-29
DHCP	Enable
Server/Client	Server
Static IP	192.168.1.100
Data Listening	5000
Destination Port	5000
Destination Hostname/IP	192.168.2.2
Subnet Mask	255.255.255.0
Gateway	192.168.2.1
DNS Server	168.95.1.1
Transmit Timer	100
Data Packet Type	TCP
Management Packet Type	Broadcast
Accessible IP Addresses	0.0.0.0
SMTP Domain Name	asix.com.tw
SMTP From Address	ds@asix.com.tw
SMTP To Address 1	to1@asix.com.tw
SMTP To Address 2	to2@asix.com.tw
SMTP To Address 3	to3@asix.com.tw
Event IP	Disable
Event Password Change	Disable
Event Authentication	Disable
Event Cold	Disable

Network Setting



Serial Port Setting

Device Setup

Network Setting Serial Port Setting

WiFi Setting DHCP Server Setting

System Settings

Wireless Mode: 802.11b/g

Network Mode: Infrastructure

Channel: 1

Service Area: galaxywind

Security Mode: No Security

WEP Encryption Key Settings

Key Length: 64 bits

Key Index Select: Key Index 0

Key Index: 1234567890

Key Index: 0987654321

Key Index: A1B2C3D4E5

Key Index: 0123456789

(Please enter 10 or 26 Hex digits for 64 or 128 bits)

AES/TKIP Encryption Key Settings

AES/TKIP Passphrase (8 ~ 63): 12345678

WiFi Advanced Settings

TX Data Rate: Auto

Transmission Power Level: 100%

Preamble Mode: Auto

Beacon Interval (20ms ~): 100 ms

RTS Threshold (0 ~): 2432

Auto Power Control Mode: Enable

Protection Frame Type: RTS

Submit Save Load

Wifi Setting

The screenshot shows a 'Device Setup' dialog box with a 'DHCP Server Setting' tab selected. The settings are as follows:

Field	Value
IP Pool Start	192 . 168 . 2 . 4
IP Pool End	192 . 168 . 2 . 10
Subnet Mask	255 . 255 . 255 . 0
Default	0 . 0 . 0 . 0
Lease	1440 minutes
Status	Enable

Buttons at the bottom: Submit, Save, Load

DHCP Server Setting

3.4.1.4 Firmware Upgrade Dialog

Note that before user performs the firmware upgrade, one should start TFTP Server tools first.

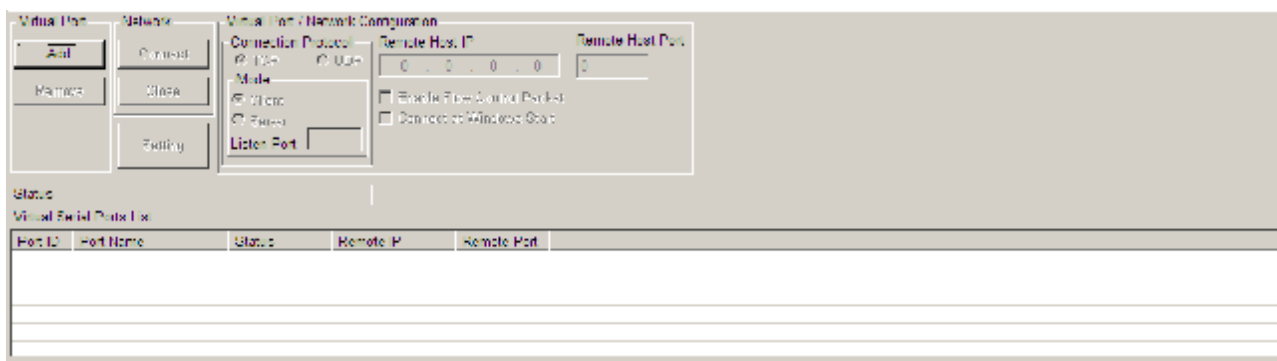
- Ø Select the target ATC-1000WF RS-232 to WiFi device from the Devices List.
- Ø Click Firmware Upgrade to bring up the Firmware Upgrade dialog.
- Ø Choose the firmware file type.

- Ø Input a correct ATC-1000WF RS-232 to WiFi firmware file name.
- Ø Input the TFTP server IP address.
- Ø Click Upgrade Firmware to start upgrading the new ATC-1000WF firmware code.

3.4.2 Virtual Serial Port

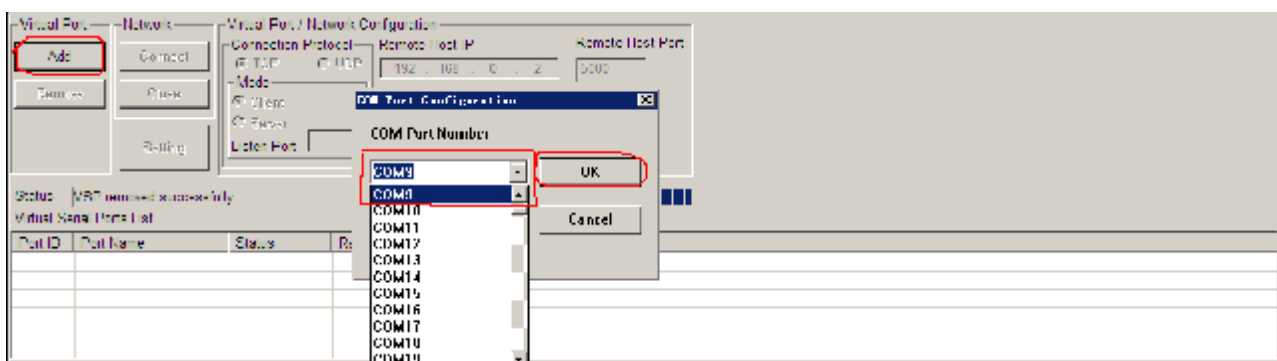
This section describes the detailed functions of Virtual Serial Port tool in AXR2W Configuration Utility.

3.4.2.1 Function Window

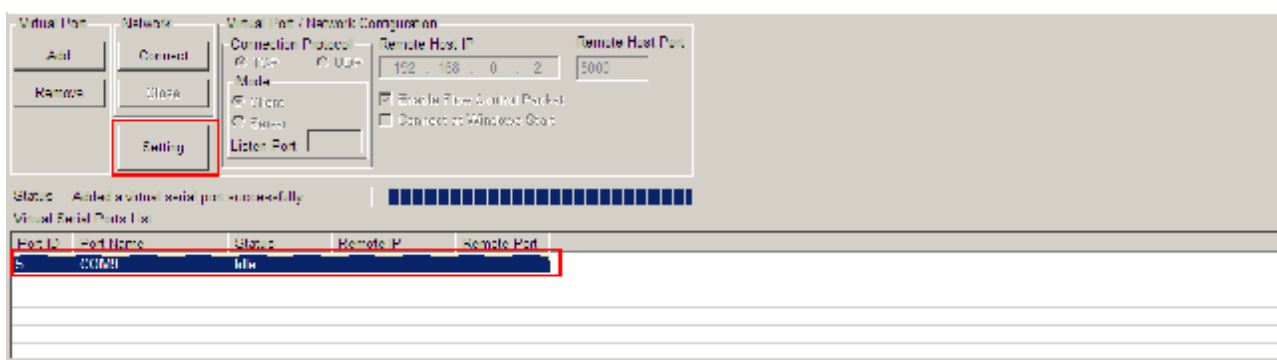


3.4.2.2 Add a Virtual Port

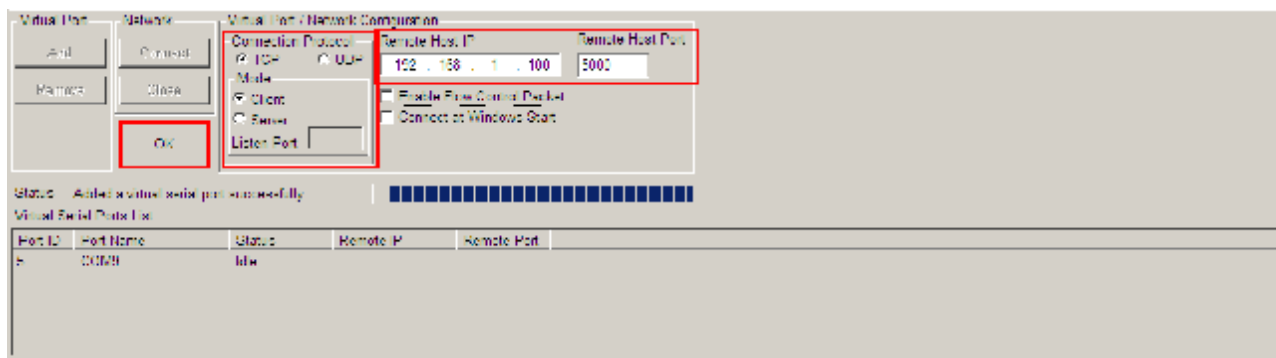
Step 1: Click Add to add a Virtual Serial Port. Below example shows a COM9 Virtual Serial Port being added.



Step2: Select the added Serial Port from the Ports List. And then click setting.



Step3: Select Protocol and work mode, enter the IP address and port number of ATC-1000WF which you want to make a Virtual Port. Then press OK.



3.5 Configure via Telnet

When user wants to use the console through a Telnet client, user must run the Telnet client on PC and the DS must have established the WiFi connection with PC already.

For example, under DOS prompt, user can enter “*telnet 192.168.1.100*”. Then the Telnet client will establish the connection with ATC-100WF’s Telnet server and the message “*username:* “ will show up, if successful. Follow the steps above to login the console of ATC-1000WF.

The command under telnet is same to the command under serial port.

Note: if user enter “telnet IP_Address PortNo.” will enter to the data transmitter mode. For example: “*telnet 192.168.1.100 5000*”.



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