

# ABLELink<sup>®</sup>

## EW5302 Ethernet to Wireless Client Adaptor

### User's Manual



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## **FCC WARNING**

### **Class A for this product**

This product has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This product complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.**

### **IMPORTANT NOTE:**

#### **FCC Radiation Exposure Statement:**

This product complies with FCC radiation exposure limits set forth for an uncontrolled environment. This model should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. IEEE 802.11b/g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

#### **UL Notice for Power supplier**

All the series of EW5302 products are intended to be supplied by a Listed Power Unit marked with "LPS", "Limited Power Source" or "Class 2" and output rate 9~48VDC, 1.0A minimum. Or, use the recommended power supply in "Optional Accessories".

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## 1. Introduction

### 1.1. Overview

EW5302 Wireless Client Adaptor is a bridge between wireless LAN to Ethernet and RS-232/RS-485 communications. It allows almost any Ethernet and serial devices to be connected to a new or existing wireless network. The information transmitted by Wireless Client Adaptor is transparent to both host computers (IP network over wireless LAN) and devices (Ethernet/RS-232/RS-485). Data from the wireless LAN is transmitted to the designated Ethernet/RS-232/RS-485 port and data from Ethernet/RS-232/RS-485 port is transmitted to the Wireless (TCP/IP) transparently.

In the computer integration manufacturing or industrial automation area, Wireless Client Adaptor is used for field devices to direct connect to network.

Many control devices provide the ability to communicate with hosts through Ethernet/RS-232/RS-485 however RS-232/RS-485 serial communication has its limitations. For instance, it is hard to transfer data through Wireless or long distance. With EW5302, it is possible to communicate with a remote device in the Intranet environment or even in the Internet and thus, increases the communication distance dramatically.

Flexible configuration options enable this unit to be setup remotely over IP network by Web browser, or Window utility. Packed in a rugged DIN Rail mountable case and 9~48V DC power input range, EW5302 is ideal for almost any industrial and manufacturing automation.

### 1.2. Features

- Transparent between Ethernet to Wireless networking
- Plus Dual serial port for more connectivity.
- Metal housing and IP50 standard with DIN-Rail mounting.
- 15KV ESD protection for serial ports
- IEEE 802.11g 54Mbps wireless network connectivity
- Support UDP, TCP server and client protocols for Virtual COM mode and pair connection
- Selectable RS-232/RS-485/RS-422 serial mode by software
- Configurable via built-in web server and Windows-based utilities
- Standard 2.4GHz High-gain antenna
- Upgradeable firmware via network

## 2. Getting Started

### 2.1. Packaging Include

- Atop Wireless Client Adaptor x 1
- 5 pins Terminal Block for Serial Connector (TB model only) x 2
- 3 pins Terminal Block for Power Connector (TB model only) x 1
- 4 dBi Antenna x 1
- Wall mount kits x 2
- Atop Wireless Client Adaptor quick start guide x 1
- Product CD containing configuration utility x 1

**NOTE: Notify your sales representative if any of the above items is missing or damaged.**

### 2.2. Ordering information

The EW5302 can be ordered using the following codes.

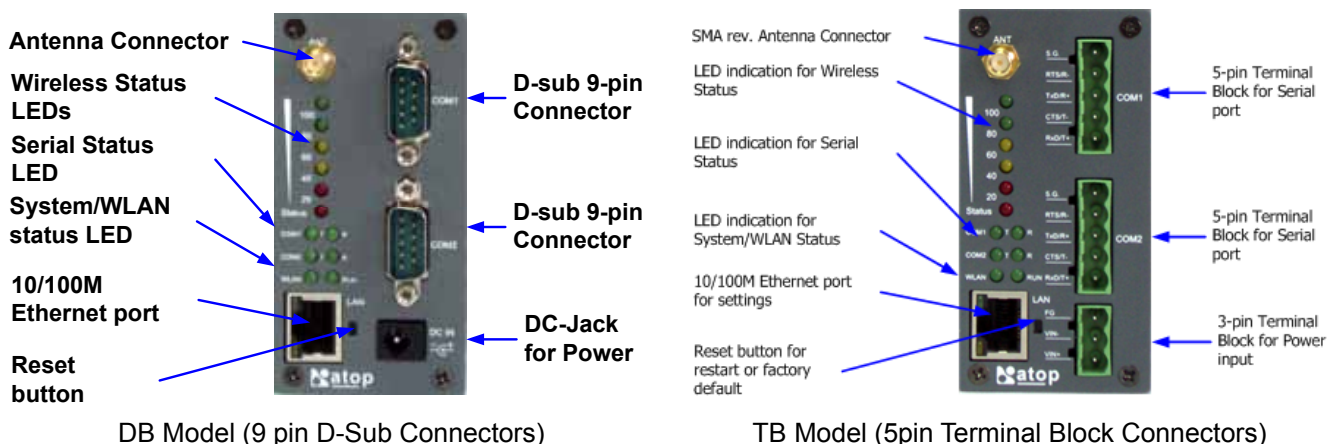
<b>EW5302-WgN1(DB)</b>	Wireless Client Adaptor plus 2-ports with D-Sub 9pin serial connector
<b>EW5302-WgN1(TB)</b>	Wireless Client Adaptor plus 2-ports with Terminal Block serial connector
<b>EW5302-WgN1Sis(TB)</b>	Wireless Client Adaptor plus 2-ports RS-422/485 photo Isolated with terminal block serial Connector

Optional Accessories and their ordering codes

<b>US315-12 (US)</b>	AC100~240V US plug / DC12V 3 pin Terminal block for TB model
<b>USE315-12 (EU)</b>	AC100~240V EU plug / DC12V, 3 pin Terminal block for TB model
<b>1A25F(US)</b>	AC100~240V US plug / DC12V DC-jack for DB model
<b>1A25F(EU)</b>	AC100~240V EU plug / DC12V DC-jack for DB model
<b>HG055</b>	5.5dBi antenna, SMA (R) Female connector with 180cm cable

### 2.3. Interfaces

The interfaces of EW5302 on the front panel are shown in Fig. 1. There are two models, DB model and TB model as shown in the figure.



**Fig. 1. EW5302 Front Panel and Interfaces**

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## 2.4. Installation Procedures

- Prepare necessary cables, DC power adaptor and RS-232/RS-485 connector.
- Place EW5302 under the access point signal coverage area, or connect EW5302 to Ethernet cable with RJ45 connector.
- Connect EW5302 serial port to a Serial device. Please make sure the connector and wiring of RS-232 or RS-485 is correct.
- Plug in EW5302 to DC-9-48V power source (with DC-jack or 3-pin terminal block connector), buzzer will beep and the RUN LED will blink if EW5302 functions normally. For LED Status see Appendix D.4

Use **SerialManager** configuration utility on the Product CD to check the status of EW5302. If it starts up successfully, users shall find the IP and MAC addresses of EW5302. Users can also change IP address, gateway IP address and subnet mask networking parameters of EW5302 according to user networking configurations.



### 3. Software Setup

Now the EW5302 hardware is installed and the power is on, network IP configuration will be set in this section.

#### 3.1. Default Settings

The EW5302 has two IP addresses one for Ethernet interface and another one for wireless network interface. These default settings are shown from under information

Default IP addresses		
Device IP	Subnet mask	Gateway IP
10.0.0.50.100	255.255.0.0	10.0.0.254

The other default settings of EW5302 are shown in the following table

Property	Default Value
<b>Wireless Client Adaptor IP</b>	
IP Address	10.0.50.100
Gateway	10.0.0.254
Subnet Mask	255.255.0.0
<b>Security</b>	
User Name	Admin
Password	Null (Leave it blank)
<b>Serial</b>	
COM	9600/None/ 8/1, No flow control, packet delimiter disabled
Link Mode	TCP Server, Listen port 4660/4661, No Filter, Virtual COM disabled
<b>SNMP</b>	
SysName of SNMP	Name
SysLocation of SNMP	Location
SysContact of SNMP	Contact

Table 1. Factory default settings of the EW5302

**NOTE:** Press push Reset button for 5 seconds and then release to restart EW5302 with the factory default settings.

**Warning:** Please avoid setting LAN and WLAN IP addresses in the same subnet. This may create unexpected networking problems.

## 3.2. IP Assignment

### 3.2.1. Configure IP by SerialManager Utility

Use **SerialManager** configuration utility that comes with Product CD-ROM or Diskette to configure the network parameters. For more details, please refer to Appendix B1.

Find a new device and IP assignment

- Use **SerialManager Utility** to find the new device IP address or to get the device's current IP address as shown in Fig. 2.
- If needed, use **SerialManager Utility** to re-assign a new IP address, Network Mask and Gateway address to the new device.
- Users can also configure User ID, Password and Host Name using **SerialManager Utility**.

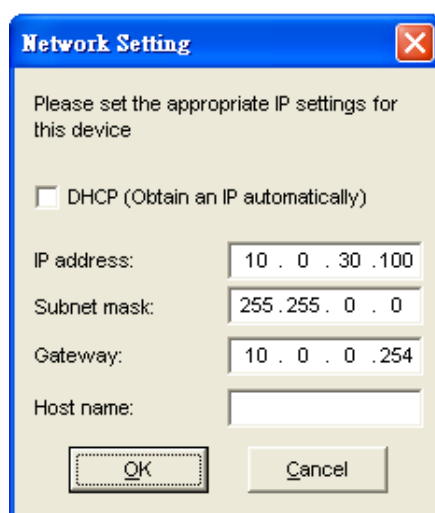


Fig. 2. IP Settings using SerialManager Utility software

Note: All settings will NOT be changed if User ID or Password was incorrect.

If there is more than one device using the same IP address in the same subnet, users need to correct the mapping between MAC address and IP address using ARP commands as explained in the next section.

### 3.2.2. Configure IP address using ARP commands

ARP (Address Resolution Protocol) commands can be used to assign a static IP address on EW5302 using its hardware MAC (Media Access Control) address. The MAC address "0060E9-xxxxxx" is printed on the rear side of EW5302. The following procedures show how to use ARP commands on MS-DOS Command Prompt Window.

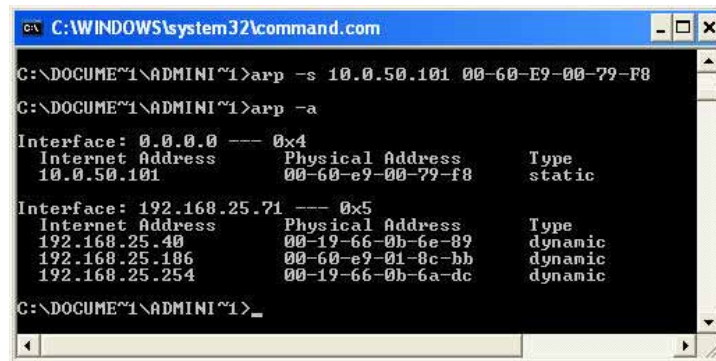
**Example:** Set the IP address 10.0.50.101 to the MAC address 00-60-E9-00-79-F8. Using

```
C:\> arp -s 10.0.50.101 00-60-E9-00-79-F8
```

**arp -a** command shows the current mapping IP and MAC addresses.

**arp -s** "IP address" "MAC address" maps the IP address to a specific MAC address.

**Note:** ARP commands can only be used to set a static IP address of EW5302.



```
C:\WINDOWS\system32\command.com
C:\DOCUMENTS\ADMINI~1>arp -s 10.0.50.101 00-60-E9-00-79-F8
C:\DOCUMENTS\ADMINI~1>arp -a

Interface: 0.0.0.0 --- 0x4
Internet Address      Physical Address      Type
10.0.50.101           00-60-e9-00-79-f8    static

Interface: 192.168.25.71 --- 0x5
Internet Address      Physical Address      Type
192.168.25.40         00-19-66-0b-6e-89    dynamic
192.168.25.186        00-60-e9-01-8c-bb    dynamic
192.168.25.254        00-19-66-0b-6a-dc    dynamic

C:\DOCUMENTS\ADMINI~1>
```

Fig. 3. Mapping IP address to MAC address using ARP Command

### 3.2.3. Configure IP Using Web Interface

Use common web browsers, e.g. Microsoft Internet Explorer or Mozilla Firefox, to configure the network parameters of EW5302.

- Open a Web browser, type in the **IP address** (default IP: 10.0.50.100) of the EW5302 to be configured. The default user name is **admin** and the default password is **null** (leave it blank).
- From the Web **Network links page**, please configure IP address, subnet mask, and gateway address, and then click "**Save Configuration**" to save all settings.
- Click **Restart** button to reboot the device to make the changes effective.

Please refer to contents of Web Configuration section for more details of the settings.

### 3.2.4. Automatic IP address assignment using DHCP

DHCP server can automatically supply an IP address, gateway address, and subnet mask to EW5302 device if its DHCP client function is set. By default, the DHCP client function is disabled, users can activate the DHCP function by following these steps.

- Execute **SerialManager Utility**.
- Click on the **IP address** of EW5302 (This can be the default IP address if it was never set before).
- Click **Config** to pop-up the static IP Dialog Window.
- Check on **Auto IP**.
- Click **Config Now**. (The EW5302 will restart and obtain an IP from DHCP server automatically)

**Note: You need to have a DHCP Server running in your subnet to automatically supply an IP address. Please consult your network administrator if you are not sure.**

### 3.3. TCP/IP Port Number

Default TCP Port numbers of EW5302 are **4660** (1st port) and **4661** (2nd Port) that are associated with the Serial port **COM1** and **COM2**, respectively. After the application program connects to the TCP port 4660 (or 4661) on the EW5302, data of user's application program are transparently transmitted to Serial port COM1 (or COM2) of EW5302.

## 4. Application Connectivity

The EW5302 is designed to transmit data between one or more Ethernet/serial devices to/from one or more TCP/IP devices through wireless Ethernet interface. EW5302 can enhance the accessibility of the serial device through the ubiquitous TCP/IP based Ethernet as well as Wireless Ethernet. The connection distance limit is overcome by EW5302. Examples of these devices are PLC controllers, card readers, display signs, security controls, CNC controller, etc.

### 4.1. TCP & UDP Protocols

EW5302 can operate in two most common transportation protocols, TCP and UDP.

#### 4.1.1. Transmission Control Protocol (TCP)

TCP provides a connection and a byte oriented data stream with control parameters such as flow control, multiple ports option, and order delivery notification. Once the connection is established, data can be transmitted in both directions. TCP guarantees data is transmitted from one node to the other node(s) in orderly. The protocol also distinguishes the transmitted data for different applications (such as a Web server or an Email server) on the same computer.

For redundant or dual-network connectivity purposes, EW5302 offers two TCP operation modes so users may choose for their specific application, TCP Server Mode and TCP Client Mode.

#### 4.1.2. User Datagram Protocol (UDP)

UDP is a faster datagram delivery protocol. User can configure EW5302 to work in the UDP mode. UDP is connectionless protocol and can transmit multicast data to/from a serial device to one/multiple host computer. Because UDP is the connectionless protocol, UDP does not guarantee the reliability and orderly data streams like TCP protocol. Datagram may arrive out of order or lose without notice. But the advantage of UDP is the speed. UDP is faster and hence more attractive in time-sensitive applications.

### 4.2. Connectivity Topology

EW5302 is also equipped with Tunneling and Virtual COM operation modes. It is designed to transmit data to/from multiple serial devices and from/to multiple TCP/IP devices on Ethernet, so it can enhance the accessibility of the serial devices immensely. The example of EW5302 connection topology is shown in Fig. 4. **Note: Please do not connect more than one device on LAN port.**

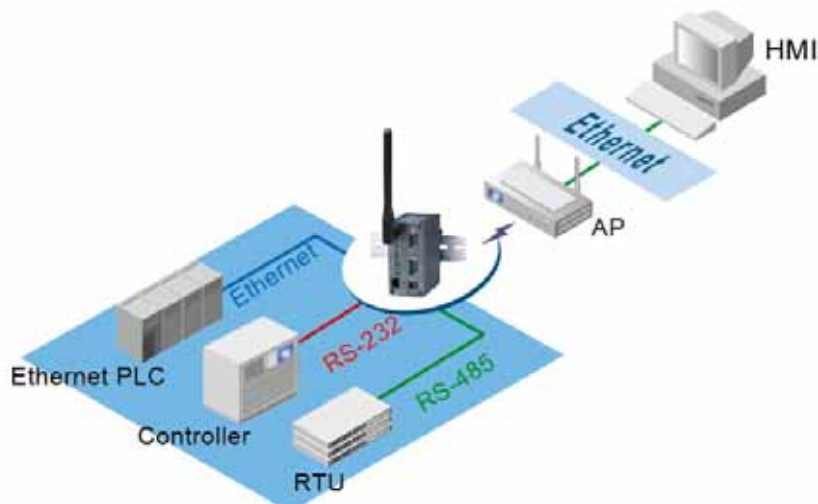


Fig. 4. Typical Topology of EW5302 Connection

### 4.3. Ethernet to WLAN Bridge Function

The EW5302 can also work as a network bridge between Ethernet to WLAN. Packets from WLAN to Ethernet or from Ethernet to WLAN are transferred transparently. This will let the Ethernet devices can be accessed from wireless networks over the wireless interface.

### 4.4. Virtual COM Mode

The **Virtual COM** software emulates a serial port with Internet or LAN topology. In the Virtual COM Mode, COM port data is encapsulated with Ethernet data format. By creating a virtual COM port on a PC, the Virtual COM driver redirects communications from the virtual COM port to the destination IP address (and the designated port number) by encapsulating COM data into IP packet format. **Fig. 5** illustrates a Virtual COM connection diagram.

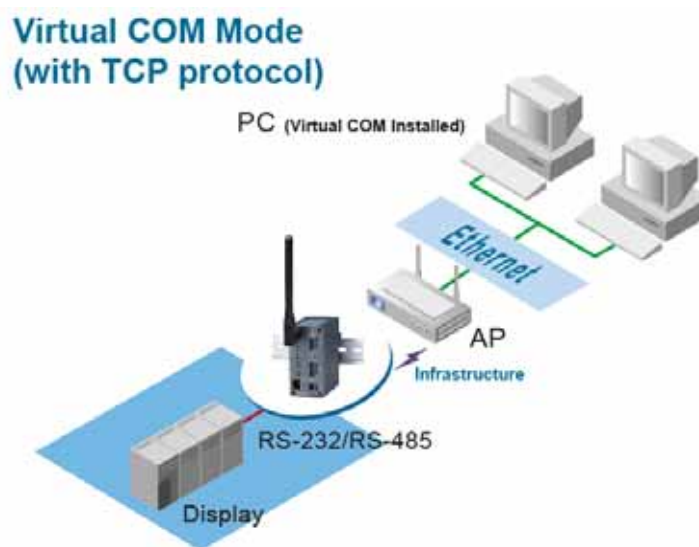


Fig. 5. TCP Connection in Virtual COM Mode

#### 4.4.1. TCP Server in Virtual COM Mode

EW5302 can be configured in the TCP server mode (a computer or PC acts as a client) with a unique IP and Port number, and EW5302 waits passively for the PC to establish a connection. After the connection is established, PC can communicate to serial devices through EW5302.

#### Configure EW5302 to be TCP server

Using one of the two configuration methods, by Web-based and by Windows-based **SerialManager** utility, Users can configure EW5302 to be a TCP Server as follows.

- Disabled the IP filter (default)
- Set the port number (default port is 4660 for COM1, 4661 for COM2).
- If IP filter is enabled, only the assigned source IP is allowed to be connected to EW5302.

#### 4.4.2. TCP Client in Virtual COM Mode

EW5302 can also be configured in TCP Client mode (PC as a server) to establish a TCP connection to an application server on PC, or the Remote Control Host. Once the connection is established, PC or Remote Control Host can exchange data with several serial devices at the same time through EW5302 as shown in Fig. 6.

### Configuring EW5302 to be TCP client

User can configure EW5302 to be as a TCP client, for example, from Fig. 7, PC, as a server, has IP address 10.0.0.100 and listening on port 1000. Each EW5302, connected with serial device, configured as TCP client mode with destination IP address 10.0.0.100 and the destination port 1000, and the IP filter is disabled (by default).

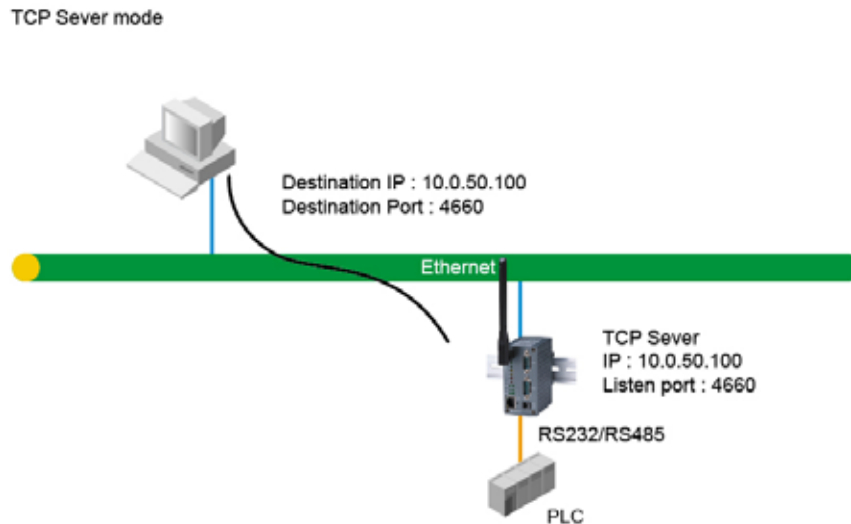


Fig. 6. TCP Server in Virtual COM Mode

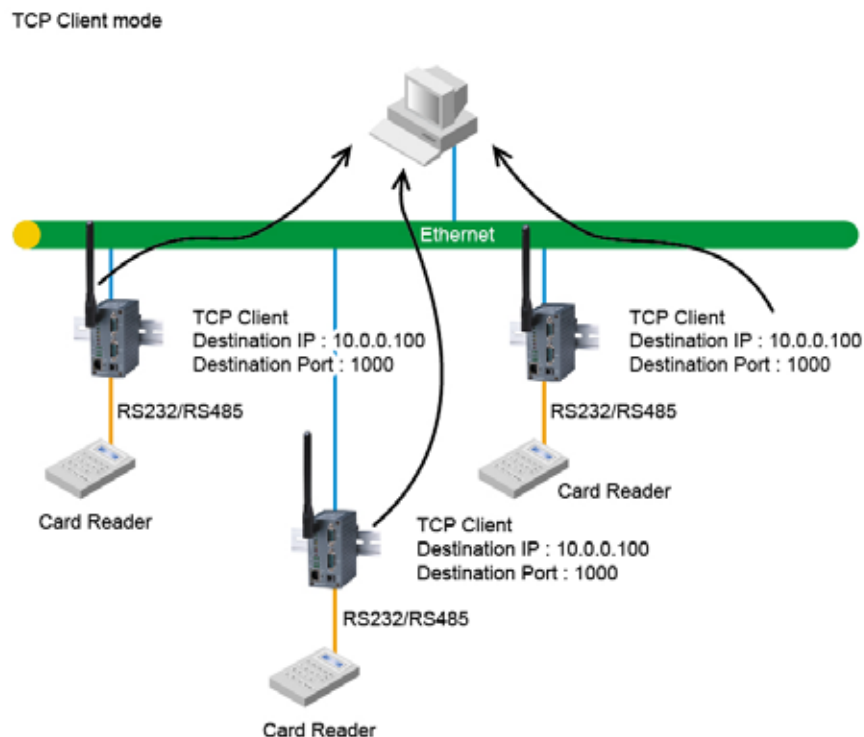


Fig. 7. TCP Client in Virtual COM Mode

## 4.5. Tunneling Mode

Tunneling Mode is used for multiple serial devices to “talk” among one another through EW5302’s wireless LAN or wired Ethernet interface. This mode is particularly useful when two or more serial devices are far

away. This mode can be used to extend the normal RS-232 serial communication distance of 15 m to 100 m or longer as shown in Fig. 8.

One EW5302 can be configured to be the TCP Server Mode with serial device connected and also another EW5302 is configured as TCP client with serial device connected. After the connection is established, both serial devices can exchange data to each other transparently. For example, users can implement EW5302 tunneling mode for Master /Slave mode PLCs or between other serial devices.

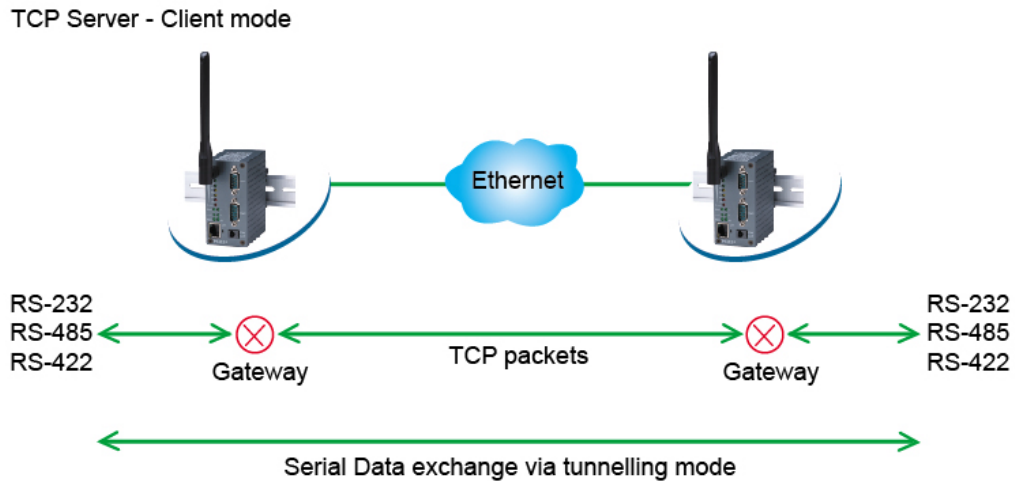


Fig. 8. TCP Link in Tunneling mode

### Configuring EW5302 to Tunneling Mode

Using one of two configuration methods (Web-based or Windows-based **SerialManager** utility), users can configure EW5302 to TCP Server mode with a desired IP address and port, and with other EW5302 is configured as TCP Clients mode with Server IP and port as destination IP and port respectively as shown as an example in Fig. 9.

**Note: TCP client has to assign the destination IP and the destination port corresponding to TCP server's IP and listening port (example: TCP 4660 port).**

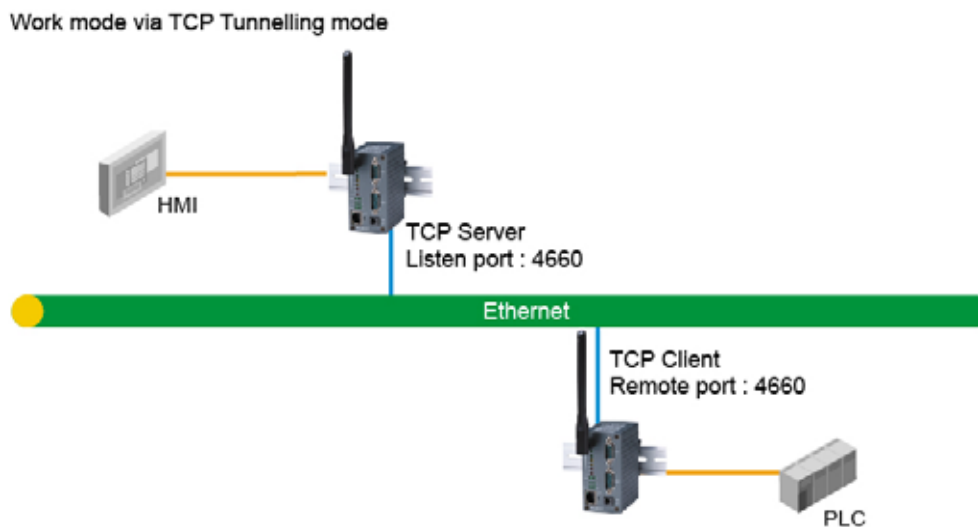


Fig. 9. TCP Tunneling Mode

### 4.6. UDP mode

In UDP mode, users may exchange Multicast data from one EW5302 with multiple EW5302 devices as shown in Fig. 10.

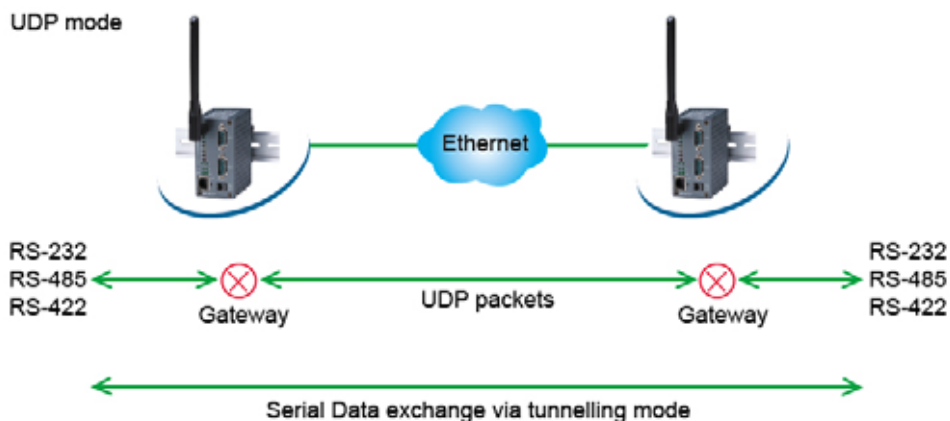


Fig. 10. UDP Link in Tunneling mode

#### Configure EW5302 in UDP Mode

Use one of the two configuration methods (Web-based or Windows-based **SerialManager** utility). Users can configure EW5302 to UDP mode. In UDP mode, EW5302 can be configured to communicate to more than one node (Multicasting). Note that the Multicast IP address is limited by the Class of IP address and subnet mask. As an example, for a network of Class C of subnet 192.168.1.X and a subnet mask of 255.255.255.0, the maximum Multicast IP address to be configured is four destinations IP's.

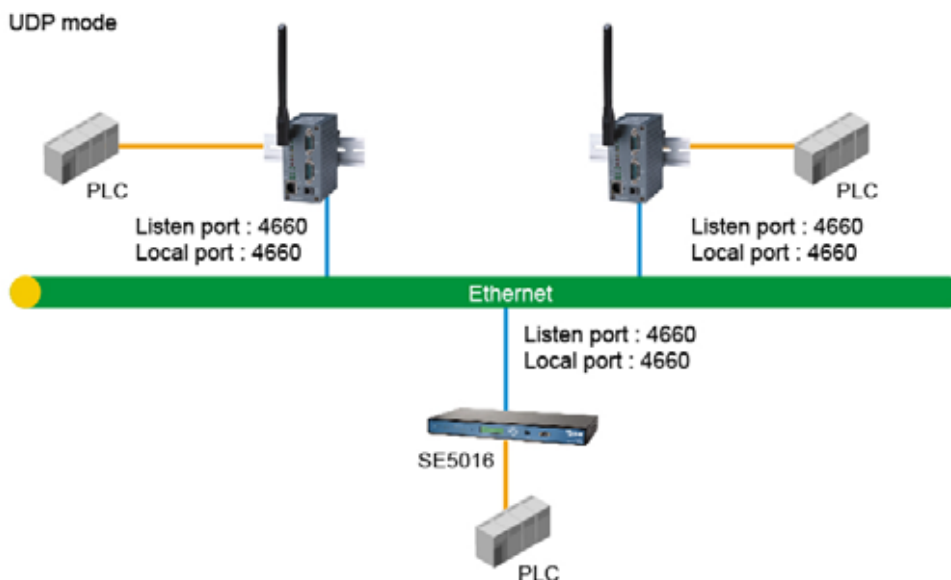


Fig. 11. Multi-UDP Link in Tunneling Mode



## 5. Configure EW5302 by Web Interface

Users need to assign an IP address to EW5302 before working on the web configuration operations. Please refer to Section 3.2 for IP address assignment.

### 5.1. Login to System

Open one of the web browsers, ex. Microsoft IE or Firefox etc. Enter the IP address of EW5302 on the URL. Example: `http://10.0.50.100` or `http://your-device-IP-address`.

The following authentication screen shall appear. Enter User Name and Password then click on “OK”. The default user name is “**admin**” and password is **null** (leave it blank).



Fig. 12. Authentication request for system security


### 5.2. General Information

Once the login is successful, an Overview window gives the general information of EW5302, included Network, and Serial information as shown in Fig. 13.

## Overview

Device Information	
Model Name	EW5302
Device Name	0060e902f8b2
Kernel Version	1.16
AP Version	1.31

Wireless Client Adaptor Information	
MAC Address	00:1A:4D:3C:70:03
Region	America
IP Address	192.168.1.1
Status	wlandemo 00:13:46:FE:B0:2E  100%

COM 1 Information	
Serial Interface	RS-232
Link Mode	TCP Server
Baud Rate	9600
Parity	None
Data bits	8
Stop bits	1
Flow Control	None
Link Status	SERVER MODE: Listening[0]

COM 2 Information	
Serial Interface	RS-232
Link Mode	TCP Server
Baud Rate	9600
Parity	None
Data bits	8
Stop bits	1
Flow Control	None
Link Status	SERVER MODE: Listening[0]

**Link Status: [N] is the session number connected. It's [0] when the link is connecting or listening.**

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**Fig. 13. Overview of system information on a Web Interface**

### 5.2.1. Device Information

EW5302's system information includes Model Name, Device Name, Kernel Version, and AP version. The information is read only and is attributed from setting page or system status.

Device Information	
Model Name	EW5302
Device Name	0060e902f8b2
Kernel Version	1.16
AP Version	1.31

Fig. 14. Device Information from Overview web page

### 5.2.2. Wireless Client Adaptor Information

Wireless Client Adaptor Information fields display both LAN & Wireless LAN (WLAN) information. The information provided are LAN MAC address, Region for Regulation, LAN IP address, WLAN MAC address, [WLAN IP address](#), and Link status.

Wireless Client Adaptor Information	
MAC Address	00:1A:4D:3C:70:03
Region	America
IP Address	192.168.1.1
Status	wlandemo 00:13:46:FE:B0:2E ■■■■ 100%

Fig. 15. Wireless Client Adaptor Information from Overview web page

### 5.2.3. Serial Information

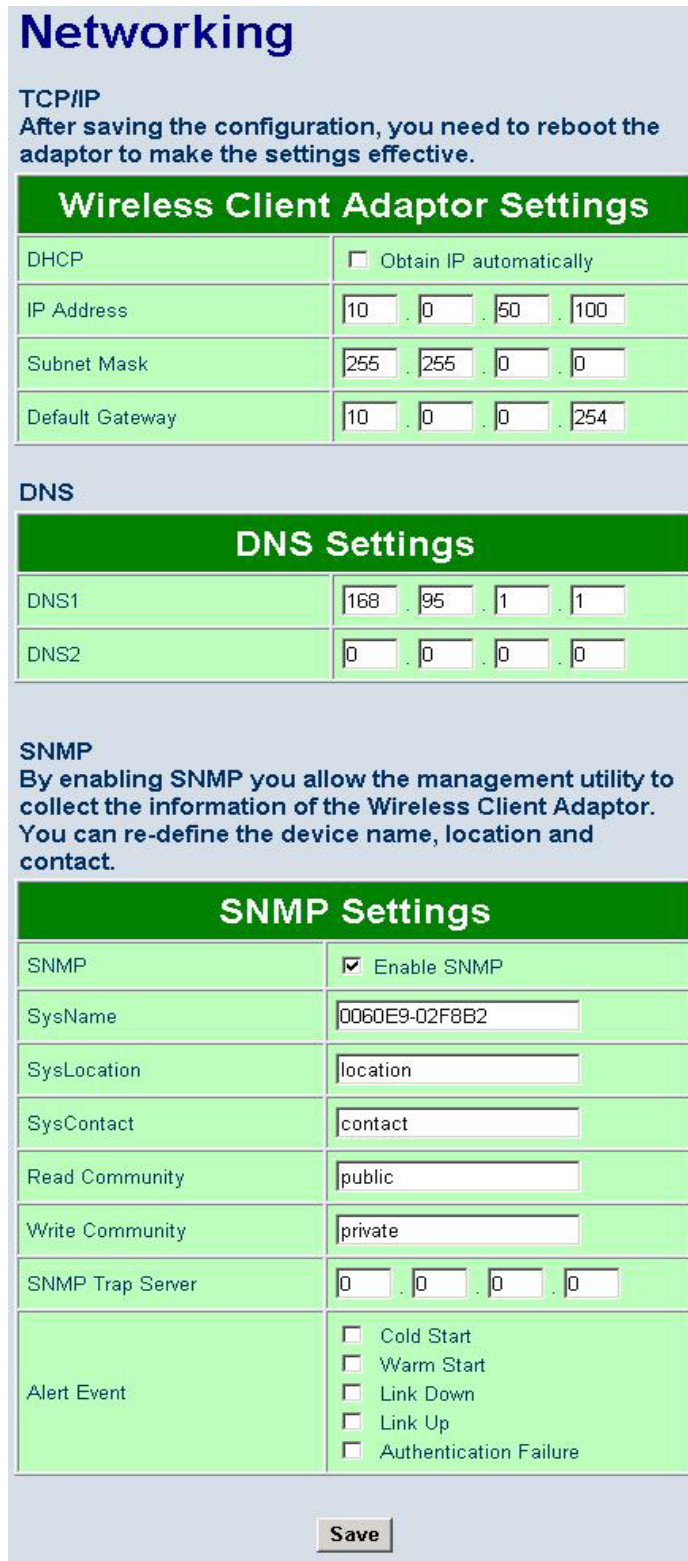
EW5302 COM1 (COM2) information includes UART mode, link mode, baud rate, parity, data bits, stop bits, flow control and link status. The COM1 (COM2) information is read only and is attributed from Serial settings of COM1 or COM2 Port of EW5302.

COM 1 Information	
Serial Interface	RS-232
Link Mode	UDP
Baud Rate	115200
Parity	None
Data bits	8
Stop bits	1
Flow Control	None
Link Status	UDP MODE

Fig. 16. Serial Information from Overview web page

### 5.3. Network Configurations

There are three items allowed to change on Networking page, included Wireless Client Adaptor Settings, DNS Setting and SNMP Settings.



**Networking**

**TCP/IP**  
After saving the configuration, you need to reboot the adaptor to make the settings effective.

**Wireless Client Adaptor Settings**

DHCP	<input type="checkbox"/> Obtain IP automatically
IP Address	10 . 0 . 50 . 100
Subnet Mask	255 . 255 . 0 . 0
Default Gateway	10 . 0 . 0 . 254

**DNS**

**DNS Settings**

DNS1	168 . 95 . 1 . 1
DNS2	0 . 0 . 0 . 0

**SNMP**  
By enabling SNMP you allow the management utility to collect the information of the Wireless Client Adaptor. You can re-define the device name, location and contact.

**SNMP Settings**

SNMP	<input checked="" type="checkbox"/> Enable SNMP
SysName	0060E9-02F8B2
SysLocation	location
SysContact	contact
Read Community	public
Write Community	private
SNMP Trap Server	0 . 0 . 0 . 0
Alert Event	<input type="checkbox"/> Cold Start <input type="checkbox"/> Warm Start <input type="checkbox"/> Link Down <input type="checkbox"/> Link Up <input type="checkbox"/> Authentication Failure

**Save**

Fig. 17. Network information by Web page

### 5.3.1. Wireless Client Adaptor Settings

Click on the “Network” link and the following screen shall appear. Fill in network information on WLAN interface including IP Address, Subnet Mask, and Default Gateway. Alternatively, User may activate DHCP client function by checking on “Obtain an IP automatically” field to automatically obtain IP Address, Subnet mask and Default gateway from a DHCP server.

Wireless Client Adaptor Settings	
DHCP	<input type="checkbox"/> Obtain IP automatically
IP Address	10 . 0 . 50 . 100
Subnet Mask	255 . 255 . 0 . 0
Default Gateway	10 . 0 . 0 . 254

Fig. 18. Wireless Client Adaptor Settings from Network web page

### 5.3.2. DNS Settings

Click on the “Network” link and the following screen shall appear. Fill in the IP Address of DNS Servers in DNS1 and DNS2 fields. Alternatively, User can configure DNS by checking on “Obtain an IP automatically” field in LAN Settings or WLAN Settings fields to automatically obtain DNS from a DHCP server.

DNS Settings	
DNS1	168 . 95 . 1 . 1
DNS2	0 . 0 . 0 . 0

Fig. 19. DNS Settings from Network web page

### 5.3.3. SNMP Settings

Click on the “Network” link and the following screen shall appear. Check on “Enable SNMP” checkbox to continue the setting. Fill in the desired SysName, SysLocation, SysContact information in the fields. To give permission to read/write SNMP information, fill in the “Read Community” and “Write Community”. To set up a trap, fill in the IP address of a SNMP Trap Server, and then select events on which the trap server will catch. The changes of SNMP Settings will take effect only after the EW5302 is restarted.



There are 3 buttons can be operated on the Wireless page

- **Rescan:** Click on the “Rescan” button, and EW5302 will start site-survey procedures, then on the site-survey list will display the access points founded.
- **Select:** On the site-survey list, click on radio button to attach to the access point you wanted.
- **User defined:** Users can also define information of wireless access point to be manually connected.

#### 5.4.1. Wireless Settings

Users can configure wireless LAN parameters through web pages. Pop-up windows page will be shown for advanced wireless settings if “Select” or “User Define” button was clicked. For example, User can configure SSID, BSSID, Topology, Wireless Band Mode, TxRate, Channel, Authentication, and Encryption of the access point that EW5302 want to connect to.

The advanced wireless settings also include Roaming Threshold. User can configure roaming signal threshold. EW5302 will change to the stronger signal wireless access point, if the original access point’s signal strength is less than the roaming threshold.

Wireless Setting	
Roaming Threshold (%/dBm)	<input checked="" type="radio"/> Low (25%/-80) <input type="radio"/> Normal (50%/-70) <input type="radio"/> High (75%/-60)
SSID	<input type="text"/> <small>Leaving it blank may connect to unexpected Access Point.</small>
BSSID (AP MAC)	<input type="text"/> <input type="checkbox"/> Enable
Topology	Infrastructure Mode ▾
Wireless Band Mode	BG Mixed ▾
TxRate	Auto ▾
Channel	1 ▾
Authentication	Open ▾
Encryption	None ▾
WPA-PSK ( 8 ~ 63 characters )	<input type="text"/>
<input checked="" type="radio"/> WEP Key1	Hexadecimal ▾ 64bits ▾ <input type="text"/>
<input type="radio"/> WEP Key2	Hexadecimal ▾ 64bits ▾ <input type="text"/>
<input type="radio"/> WEP Key3	Hexadecimal ▾ 64bits ▾ <input type="text"/>
<input type="radio"/> WEP Key4	Hexadecimal ▾ 64bits ▾ <input type="text"/>

Fig. 22. Pop-up Windows for Wireless Settings

#### 5.4.2. Sample Wireless Application Cases

Below are some screen shot examples of Wireless Settings for different wireless security schemes.

##### I. Attach to the access point without authentication

- **Topology:** Infrastructure Mode
- **Channel:** Auto-assignment from Access point
- **Authentication:** Open
- **Encryption:** None

Wireless Setting	
Roaming Threshold (%/dBm)	<input type="radio"/> Low (25%/-80) <input checked="" type="radio"/> Normal (50%/-70) <input type="radio"/> High (75%/-60)
SSID	<input type="text"/> <i>Leaving it blank may connect to unexpected Access Point.</i>
BSSID (AP MAC)	<input type="text"/> <input type="checkbox"/> Enable
Topology	Infrastructure Mode
Wireless Band Mode	BG Mixed
TxRate	Auto
Channel	1
Authentication	Open
Encryption	None
WPA-PSK ( 8 ~ 63 characters )	<input type="text"/>
<input checked="" type="radio"/> WEP Key1	Hexadecimal 64bits <input type="text"/>
<input type="radio"/> WEP Key2	Hexadecimal 64bits <input type="text"/>
<input type="radio"/> WEP Key3	Hexadecimal 64bits <input type="text"/>
<input type="radio"/> WEP Key4	Hexadecimal 64bits <input type="text"/>

Fig. 23. Open Authorization and no Encryption

## II. Attach to the access point with WEP Encryption

- **Topology:** Infrastructure
- **Channel:** Auto-assignment from Access point
- **Authentication:** Shared
- **Encryption:** WEP
- **WEP Key1~4:** Hexadecimal or ASCII, 64 or 128bit, <WEP Key>

Wireless Setting	
Roaming Threshold (%/dBm)	<input type="radio"/> Low (25%/-80) <input checked="" type="radio"/> Normal (50%/-70) <input type="radio"/> High (75%/-60)
SSID	<input type="text"/> <i>Leaving it blank may connect to unexpected Access Point.</i>
BSSID (AP MAC)	<input type="text"/> <input type="checkbox"/> Enable
Topology	Infrastructure Mode
Wireless Band Mode	BG Mixed
TxRate	Auto
Channel	1
Authentication	Shared
Encryption	WEP
WPA-PSK ( 8 ~ 63 characters )	<input type="text"/>
<input checked="" type="radio"/> WEP Key1	Hexadecimal 64bits <input type="text"/>
<input type="radio"/> WEP Key2	Hexadecimal 64bits <input type="text"/>
<input type="radio"/> WEP Key3	Hexadecimal 64bits <input type="text"/>
<input type="radio"/> WEP Key4	Hexadecimal 64bits <input type="text"/>

Fig. 24. Share Authorization and WEP Encryption

**Note1:** Enter 5 ASCII value or 10 Hexadecimal digit if select 64-bit encryption.

**Note2:** Enter 13 ASCII value or 26 Hexadecimal digit if select 128-bit encryption.



### III. Attach to the access point with WPA-PSK Encryption

- **Topology:** Infrastructure
- **Channel:** Auto-assignment from Access point
- **Authentication:** WPA-PSK
- **Encryption:** TKIP or AES
- **WPA-PSK:** 8~63 Characters

Wireless Setting	
Roaming Threshold (%dBm)	<input type="radio"/> Low (25%/-80) <input checked="" type="radio"/> Normal (50%/-70) <input type="radio"/> High (75%/-60)
SSID	<input type="text"/> <small>Leaving it blank may connect to unexpected Access Point.</small>
BSSID (AP MAC)	<input type="text"/> <input type="checkbox"/> Enable
Topology	Infrastructure Mode ▾
Wireless Band Mode	BG Mixed ▾
TxRate	Auto ▾
Channel	1 ▾
Authentication	WPA-PSK ▾
Encryption	TKIP ▾
WPA-PSK ( 8 ~ 63 characters )	<input type="text"/>
<input checked="" type="radio"/> WEP Key1	Hexadecimal ▾ 64bits ▾ <input type="text"/>
<input type="radio"/> WEP Key2	Hexadecimal ▾ 64bits ▾ <input type="text"/>
<input type="radio"/> WEP Key3	Hexadecimal ▾ 64bits ▾ <input type="text"/>
<input type="radio"/> WEP Key4	Hexadecimal ▾ 64bits ▾ <input type="text"/>

Fig. 25. WPA-PSK Authorization and TKIP Encryption

## 5.5. COM Port Configuration

Users can configure Serial parameters including UART mode, baud rate, parity, data bit and type of flow control and the mode of operations, which are TCP Server, TCP Client, and UDP modes. The COM Port Configuration page is shown in Fig. 26.

### 5.5.1. TCP Server Mode

TCP Server mode is the default Link mode of Serial Settings as shown in Fig. 27. In this mode, the connection waits for a connecting requirement from a remote host PC which is running a “Serial to IP” utility or setting EW5302 in tunneling mode. Users need to configure a listening port to allow clients establishing a connection to this server. Default port number of COM1 is 4660.

IP filtering function is a simple ACL (Access Control List) for incoming IP packets. It can be disabled by setting Source IP to “0.0.0.0”. Users can configure one or a group of IP address for Source IP. If IP filter is enabled, only source IP assigned can be connected to EW5302.

**Note: Enable Virtual COM mode if the remote site PC’s “Serial to IP” tool is installed**

### 5.5.2. TCP Client Mode

Users may enter a Destination IP and Destination port (default: 4660) to establish a connection of counter-pair (remote) host (for example, another EW5302 or PC for data collection) as shown in Fig. 28. EW5302 can support up to two destination hosts simultaneously.

## COM 1

LINK Mode  
To choose specific working mode for COM 1 port.

TCP Server   
  TCP Client   
  UDP

UDP

Local Port:

Destination IP Address 1	<input checked="" type="checkbox"/> Enable	<input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> ~ <input type="text" value="0"/>	Port <input type="text" value="4660"/>
Destination IP Address 2	<input type="checkbox"/> Enable	<input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> ~ <input type="text" value="0"/>	Port <input type="text" value="4660"/>
Destination IP Address 3	<input type="checkbox"/> Enable	<input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> ~ <input type="text" value="0"/>	Port <input type="text" value="4660"/>
Destination IP Address 4	<input type="checkbox"/> Enable	<input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> ~ <input type="text" value="0"/>	Port <input type="text" value="4660"/>

To configure COM 1 port parameters.

Serial Settings

Serial Interface	<input checked="" type="radio"/> RS232 <input type="radio"/> RS422 <input type="radio"/> RS485
Baud Rate	<input type="text" value="9600"/> bps
Parity	<input checked="" type="radio"/> None <input type="radio"/> Odd <input type="radio"/> Even <input type="radio"/> Mark <input type="radio"/> Space
Data bits	<input type="radio"/> 5 bits <input type="radio"/> 6 bits <input type="radio"/> 7 bits <input checked="" type="radio"/> 8 bits
Stop bits	<input checked="" type="radio"/> 1 bit <input type="radio"/> 2 bits
Flow Control	<input checked="" type="radio"/> None <input type="radio"/> Xon/Xoff <input type="radio"/> RTS/CTS
Packet Delimiter (Network to Serial)	<input type="checkbox"/> Enable
	<input type="radio"/> Timer <input type="text" value="10"/> (10~30000) ms
	<input type="radio"/> Characters <input type="text" value="0x0d0a"/> ("0x"+ASCII Code, Ex. 0x0d or 0x0d0a)
Packet Delimiter (Serial to Network)	<input type="checkbox"/> Enable
	<input type="radio"/> Timer <input type="text" value="10"/> (10~30000) ms
	<input type="radio"/> Characters <input type="text" value="0x0d0a"/> ("0x"+ASCII Code, Ex. 0x0d or 0x0d0a)

Packet Delimiter: Collect data into single packet for reduce overhead.

Fig. 26. COM port Information Web Page

## COM 1

LINK Mode  
To choose specific working mode for COM 1 port.

TCP Server   
  TCP Client   
  UDP

TCP Server

Virtual COM	<input type="checkbox"/> Enable
IP Filter	<input type="checkbox"/> Enable
Source IP	<input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/>
Local Port	<input type="text" value="4660"/>
Connect Number Limit	<input type="text" value="1"/>

Fig. 27. TCP Server in Link mode




Fig. 28. TCP Client in Link mode

### 5.5.3. UDP Mode

EW5302 can be configured in a UDP mode to establish connection using Unicast or Multicast data from the serial device to one or multiple host computers as shown in Fig. 29. Vice versa is also true. For example, the original RS-422/ RS485 bus can be transferred and extended connection distance by EW5302.

The destination IP is assigned by a single IP or a group of IP addresses. The configuration is limited by the Local Listening Port. For example, the EW5302 listening port is 4660 which receives data sending from the host computers. EW5302 can support up to 4 group IP addresses for UDP connection, if users needed.

**Note: In UDP mode, the device does not support Virtual COM mode.**

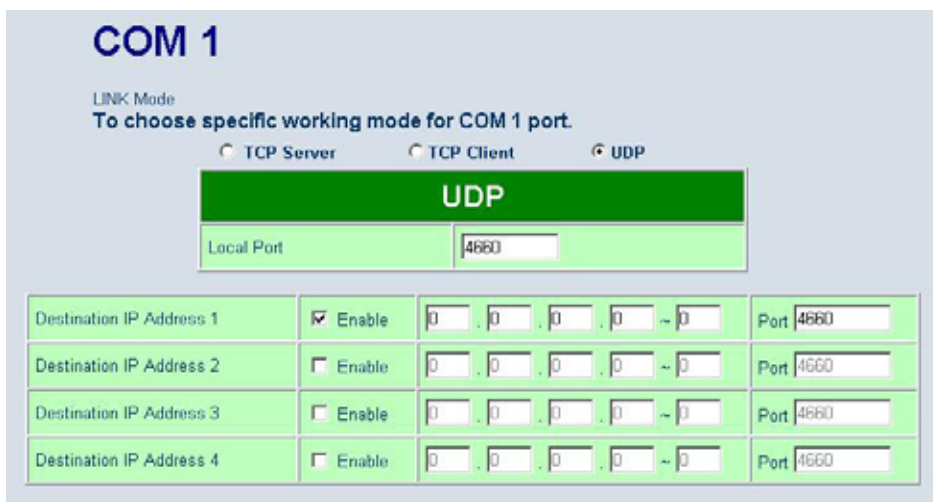


Fig. 29. UDP protocol in Link mode

### 5.5.4. Serial Settings

The Serial settings of parameters for EW5302 are shown in Fig. 30. Users can configure Serial parameters including UART Mode, baud rate, parity, data bit and type of flow control.

- **Configure UART Mode:** RS-232 or RS-485 or RS-422
- **Baud rate (bps):** 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400

- **Parity:** None or Odd or Even or Mark or Space
- **Data bits:** 7 or 8
- **Stop bits:** 1 or 2
- **Flow control:** None or Xon/Xoff or Hardware (RTS/CTS).

**Note:** The isolated Serial port EW5302, Model EW5302-WgN1Sis (TB), only supports speeds up to 230 kbps baud rate.

Serial Settings	
Serial Interface	<input checked="" type="radio"/> RS232 <input type="radio"/> RS422 <input type="radio"/> RS485
Baud Rate	115200 bps
Parity	<input checked="" type="radio"/> None <input type="radio"/> Odd <input type="radio"/> Even <input type="radio"/> Mark <input type="radio"/> Space
Data bits	<input type="radio"/> 5 bits <input type="radio"/> 6 bits <input type="radio"/> 7 bits <input checked="" type="radio"/> 8 bits
Stop bits	<input checked="" type="radio"/> 1 bit <input type="radio"/> 2 bits
Flow Control	<input checked="" type="radio"/> None <input type="radio"/> Xon/Xoff <input type="radio"/> RTS/CTS
Packet Delimiter (Network to Serial)	<input type="checkbox"/> Enable <input checked="" type="radio"/> Timer <input type="text" value="10"/> (10~30000) ms <input type="radio"/> Characters <input type="text" value="0x0d0a"/> ("0x"+ASCII Code, Ex. 0x0d or 0x0d0a)
Packet Delimiter (Serial to Network)	<input type="checkbox"/> Enable <input checked="" type="radio"/> Timer <input type="text" value="10"/> (10~30000) ms <input type="radio"/> Characters <input type="text" value="0x0d0a"/> ("0x"+ASCII Code, Ex. 0x0d or 0x0d0a)

**Fig. 30. Serial Communication Settings from Web Page**

### 5.5.5. Packet delimiter

Packet delimiter is a way of controlling the number of packets in a serial communication. It is designed to keep packets in track. EW5302 provides two ways in parameter setting: (1) Packet delimiter by timer and (2) packet delimiter by Character pattern. By default, packet delimiter timer is 10 ms. the range of packet delimiter timer is 10 to 30,000 ms. For Character pattern terminator, if a character pattern is selected and a data stream ended with "0x0a04", then the entire data buffer of the serial device is transmitted.

## 5.6. Configure System

There are five items for system settings, included Time, WLAN Region, Security, Set to default and Restart.



**Fig. 31. Subsystem menu of system settings by Web Interface**

### 5.6.1. Configure Time by NTP Service

User can set date and time manually by enable "Manual Settings" and fill in date and time manually. User can also enable "NTP" to obtain time automatically from a Time Zone and a NTP server.

## Time

By enabling NTP you allow to adjust and set the device internal time, relative to Greenwich Mean Time.

### Current System Time

Sun Jan 1 15:31:25 UTC 2006 Refresh

---

Enable NTP

### Local Time Zone Setting

Time Zone: (GMT) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London

---

### Sync with Time Server (NTP)

NTP Server: time.nist.gov

---

Enable Manual Setting

### Date and Time Settings

Date: Year: 2006 / Month: Jan / Day: 1

Time: Hour:(0~23): 15 / Minute:(0~59): 31 / Second:(0~59): 25

Save Configuration

Fig. 32. Time service settings from System web page

### 5.6.2. WLAN Region

Click on the “WLAN Region” link and the following screen shall appear. Select the country from drop-down list box to the country that user wants to deploy the EW5302. This selection will affect the bands of channels of EW5302 wireless mode. For example, the normal system level channel configurations for deployments are channels 1, 6 and 11 for FCC countries and 1, 5, 9 and 13 for European Union countries.

## WLAN Region

The default Country is Americas, you can change the Country by selecting. This item influenced the bands of channel and Wireless Mode.

Country Region	America
B/G Band Region	1,2,3,4,5,6,7,8,9,10,11

Save Configuration

Fig. 33. Time service settings from System web page

### 5.6.3. Security (Password Change)

Click on the “Security” link and the following screen shall appear. Enter the old password on “Old Password” field then enter the new password on “New Password” and the “Verified Password” fields, and then click on

“Save Configuration” to update the password. The maximum number of characters of each field is 8 characters.

**Note:** User may press the default reset key to reset password to the default value (blank)



**Security**

The default password is null, you can change the password by filling in the new password to New Password and Verified Password fields, be aware that password is case sensitive.

Old Password	<input type="text"/>
New Password	<input type="text"/>
Verified Password	<input type="text"/>

**Fig. 34. Change password from System Security Page**

#### 5.6.4. Restoring Factory Default Configurations

User can click on “Set to default and Restart” button to restore EW5302’s settings to factory default.



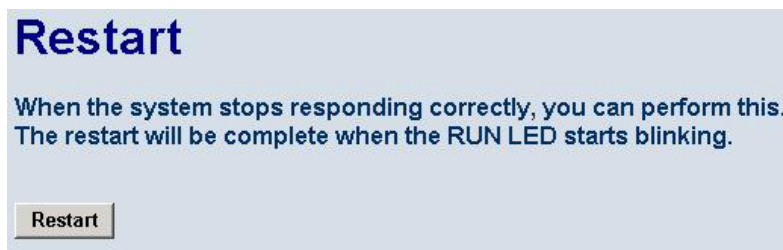
**Set to default**

Restore all parameters to default.

**Fig. 35. Set all parameters to factory default by Web Interface**

#### 5.6.5. Restart System

The changes of networking parameters will take effect only after the EW5302 is restarted. User can restart the EW5302 manually by click on Restart button on the restart menu web page.



**Restart**

When the system stops responding correctly, you can perform this. The restart will be complete when the RUN LED starts blinking.

**Fig. 36. Restart system by Web**

## Appendix A. Using Virtual COM

**Virtual COM** is a software driver for Microsoft Windows operating system to convert the data in COM port format to IP protocol format, and to transfer the data between the COM port on EW5302 device and the IP network. As shown in Fig. 37, by creating Virtual COM ports on a PC, the PC can redirect the communications from the Virtual COM ports over a TCP/IP network to a connection port of a EW5302 which is also connected to a Serial device. By using Virtual COM ports, the application running on the PC can send and receive data from the Serial device transparently over the TCP/IP network.

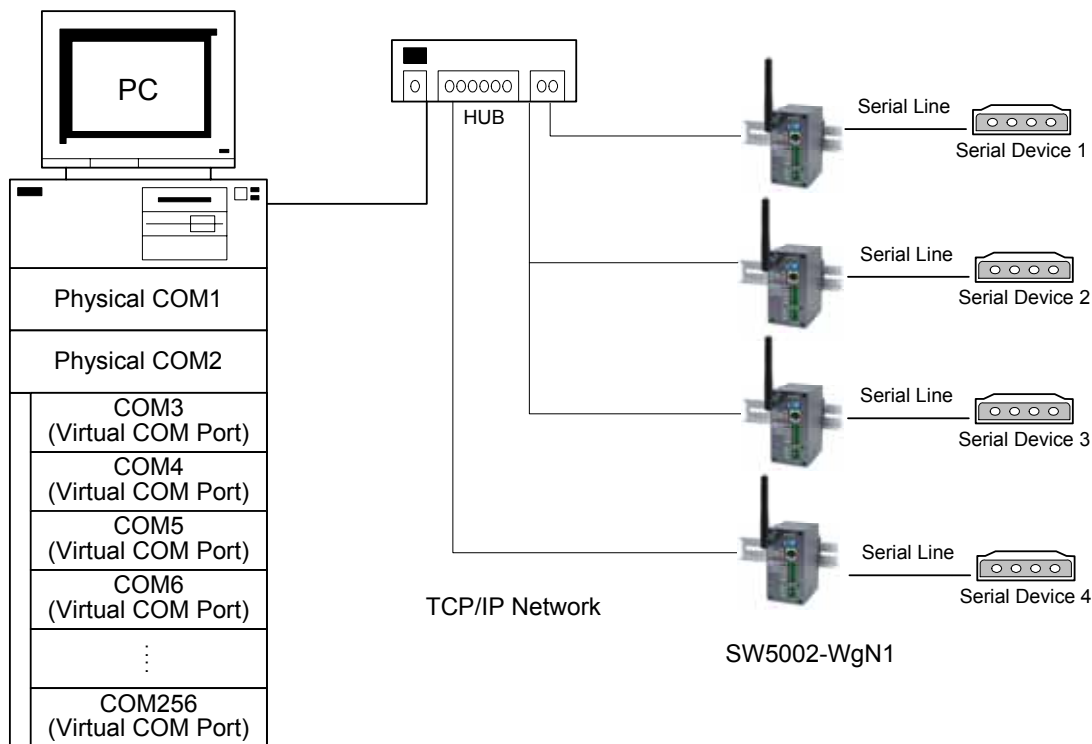


Fig. 37. Setup of a Virtual COM driver

### A.1. Pre-installation Requirements

Please check the operating system on your PC complied with the following requirements:

- Processor: Intel-compatible, Pentium class
- Operation system: Windows Server 2003, Window Vista, Windows XP, Windows 2000, Windows NT 4.0 SP5 or later, Windows Me, Windows 98, Windows 95, Microsoft NT/2000 Terminal Server, Citrix Meta Frame
- Windows Installer 2.0
- Network: Microsoft TCP/IP networking software

### A.2. Limitation and Installation

#### Limitation

Virtual COM driver provides users to select up to 256 COM ports as Virtual COM ports using **SerialManager** Utility software. Users can select them from a list of COM ports, which is from COM1 up to COM256.

## Installation

Make sure you have turned off all anti-virus software before beginning the installation. Run **Vcom.exe** program included in the Product CD to install Virtual COM for your operating system. At the end of the installation, please select one or two COM ports to become the Virtual COM ports.

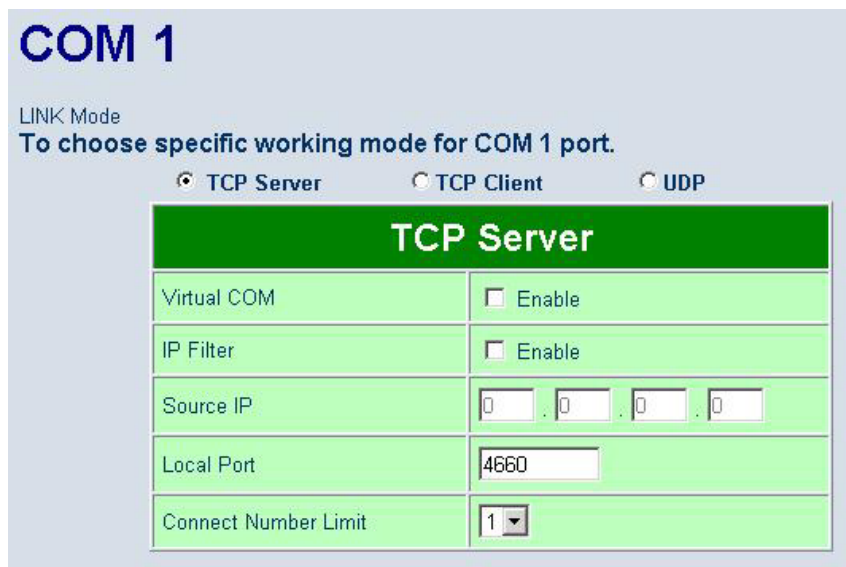
## Uninstalling

- From Windows Start menu, select Setting\ Control Panel\ Add/Remove Programs.
- Select Virtual COM in the list of installed software.
- Click the Add/Remove button to remove the program, or from Windows Start menu select Programs, Virtual COM, and click Uninstall Virtual COM to remove the program.

## A.3. Virtual COM Communication

### Enable Virtual COM on EW5302 by web interface

To access EW5302 device from a web browser, typing its IP address in URL location bar, and then click on “Serial” link to access Serial page. On the top half of the page, click on “TCP Server” and enable Virtual COM by putting a check in front of the “Enable” checkbox. Then, type in the local port number in the “Local Port” field as indicated in Fig. 38.



TCP Server	
Virtual COM	<input type="checkbox"/> Enable
IP Filter	<input type="checkbox"/> Enable
Source IP	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>
Local Port	<input type="text" value="4660"/>
Connect Number Limit	<input type="text" value="1"/>

Fig. 38. Enable Virtual COM Mode using Web page

### Running Serial to IP for program on PC

On Window Start Menu, go to Program\Serial\IP\Control panel\, The “Serial to IP for Control Panel” window shall appear. Then select the serial port that you want to set up as shown in Fig. 39. On the right of the panel is the sample for COM10 settings. On the left is the list of the COM ports that have been selected for configuration. Change the list by clicking the Select Ports button. Each COM port has its own settings. When clicking on a COM port on the left list, the Control Panel changes to reflect the parameters of the selected port.

**Note: The COM port changes become effective immediately.**



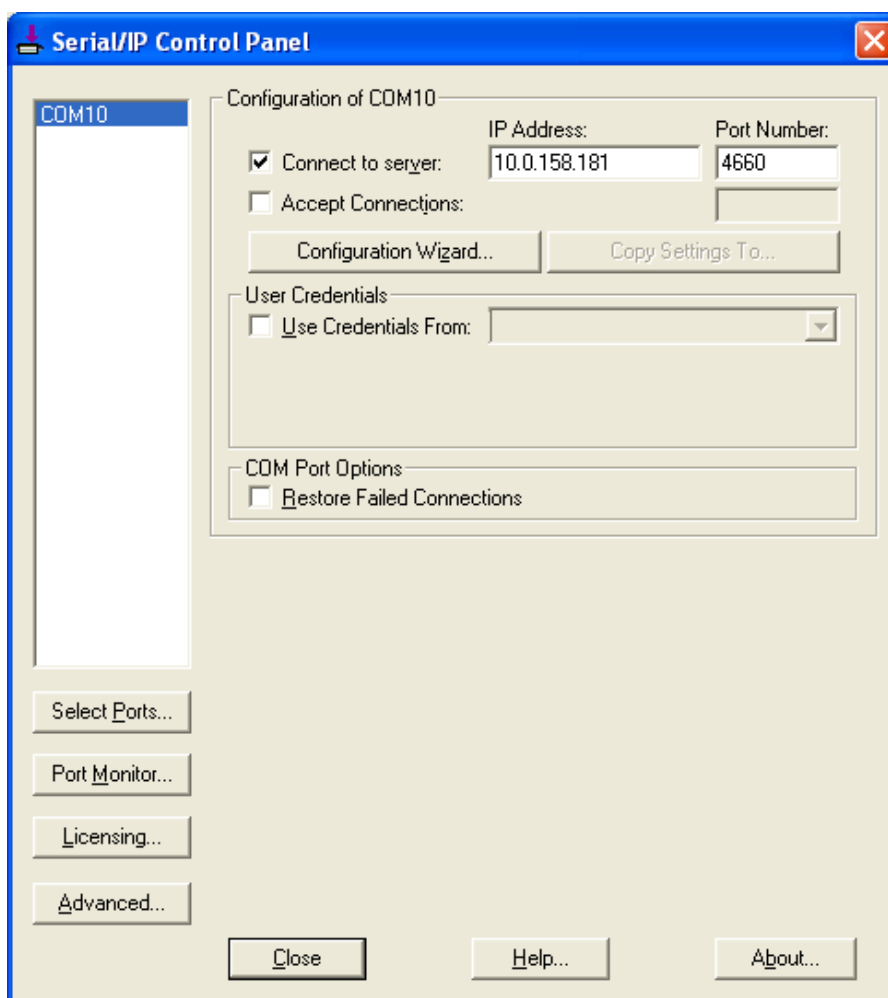


Fig. 39. Detailed Setting of Serial/IP Control Panel

### Configure Virtual COM Ports

To configure Virtual COM port as shown in Fig. 39, it can be configured as follows.

- Select a COM port on the list.
- Check “Connected to Server” and enter the EW5302 IP address in “IP Address” field.
- In the “Port Number” field, enter the TCP port number of the EW5302. The default port is 4660.
- By default, “User Credentials” is not required. However, if it does require, you will need a username and password to access EW5302 device.
- Click “Configuration Wizard” to pop up a dialog to set up a configuration.
- On “Username” and “Password”, the default is no login required. If the EW5302 does require the login, you must provide a username and password to access the EW5302 device.
- Click the “Start” button that shall appear on the wizard window. This step verifies that the Virtual COM Redirector communicates with the EW5302. If “Log” display does not show any error, click “Use Settings” to apply the settings and return to the Control Panel.
- Settings on the “Connection Protocol” must match the TCP/IP protocol supported by the EW5302. The Configuration Wizard is capable of determining the correct settings.
- On “COM Port Options”, the settings must match the COM port behavior expected by the PC application. The Configuration Wizard will recommend such settings.

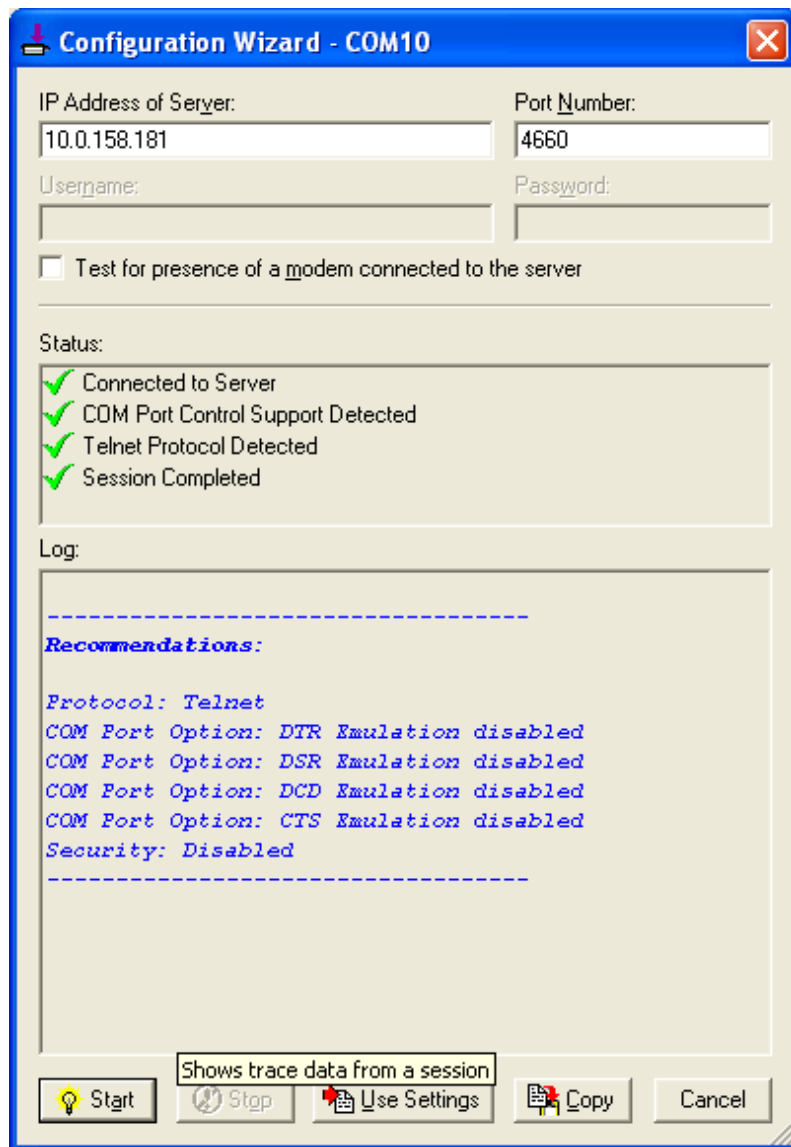


Fig. 40. Configuration Wizard from Serial to IP tool

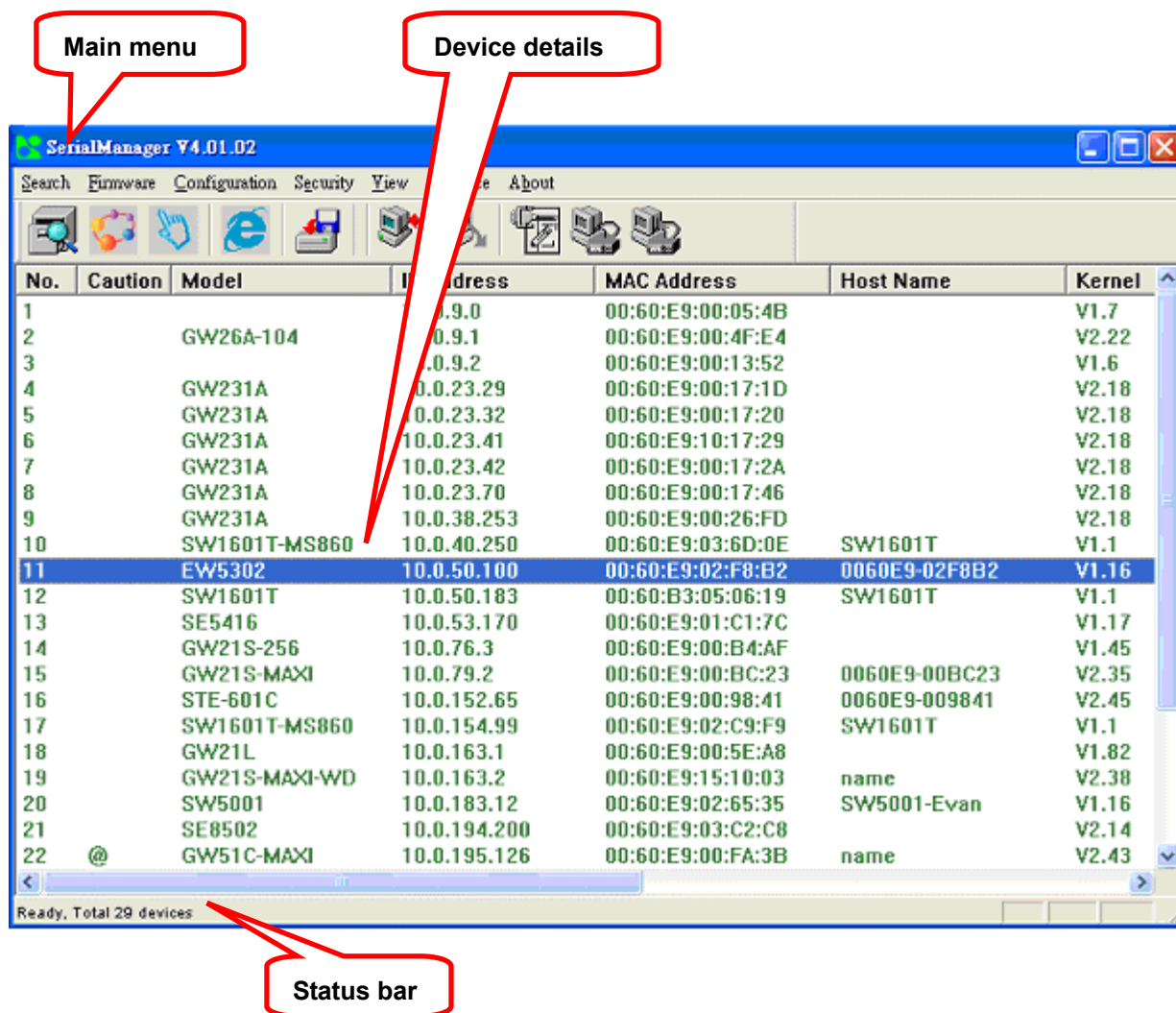
## Appendix B. Configuration Utility

### B.1. SerialManager utility Introduction

**SerialManager** utility, developed by ATOP, is a special tool for device management and configuration. It can realize the daily management on various ATOP network devices for address search, device positioning, parameter configuring, and firmware downloading.

### B.2. Interface

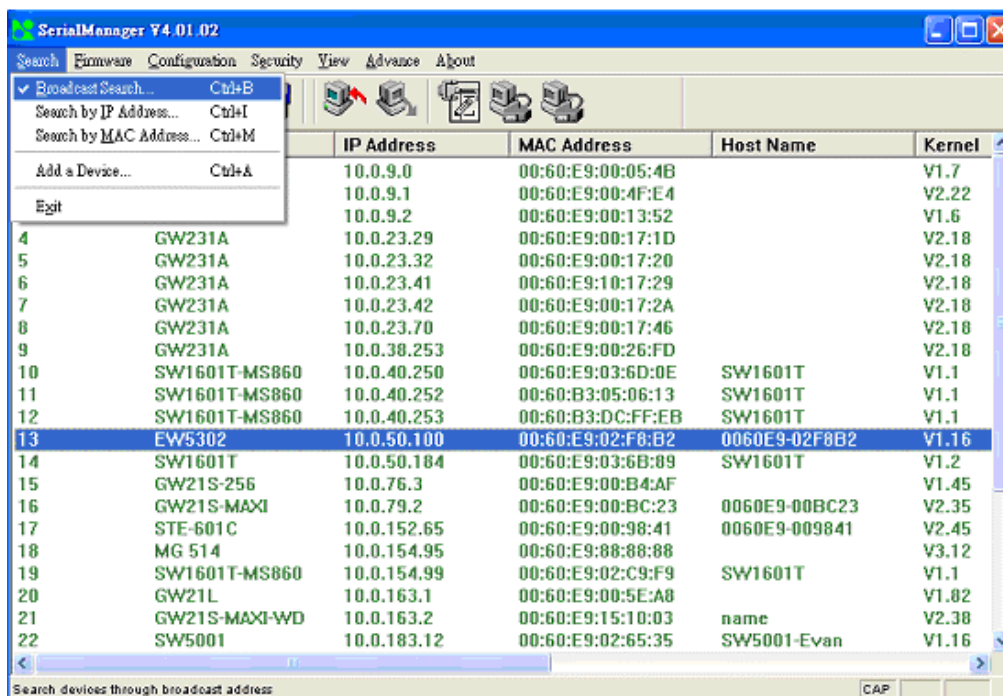
The operating interface of the **SerialManager utility** is shown below:



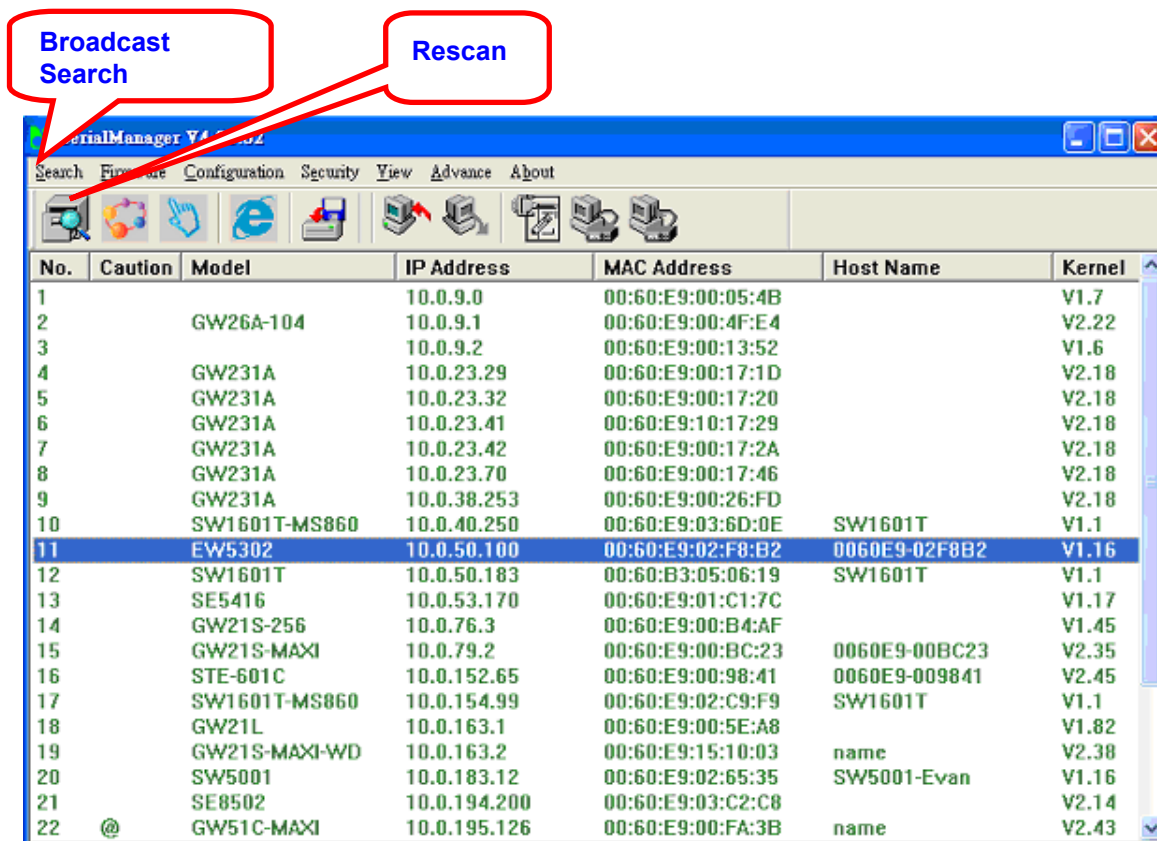
### B.3. Functions

#### B.3.1. Device Search

This function is applied to search devices in the network. There are four methods to search devices, Search by Broadcast, Search by IP addresses, Search by MAC addresses and Rescanning devices by using the current search way. To select the search methods, users click the "Search" on the main menu which is shown below.

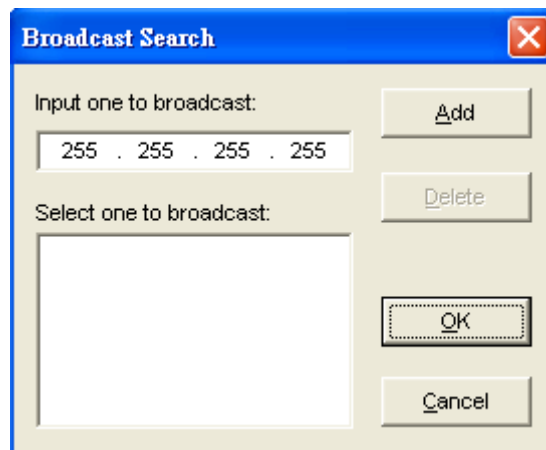


Alternatively, users can select by clicking a button on the toolbar as below.



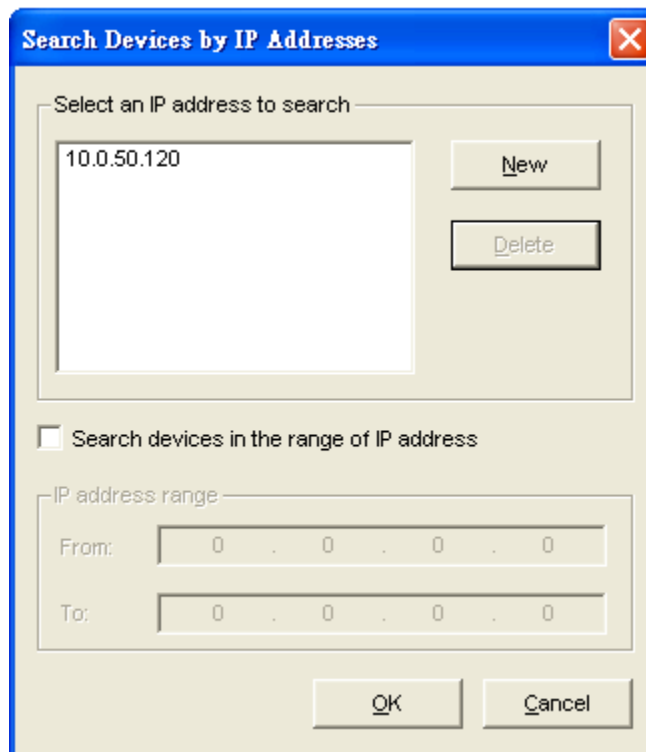
### Broadcast Search

Once “Broadcast Search” is selected, a box will pop up as below. The user may type in or select different broadcast address based on his or her own requirement.



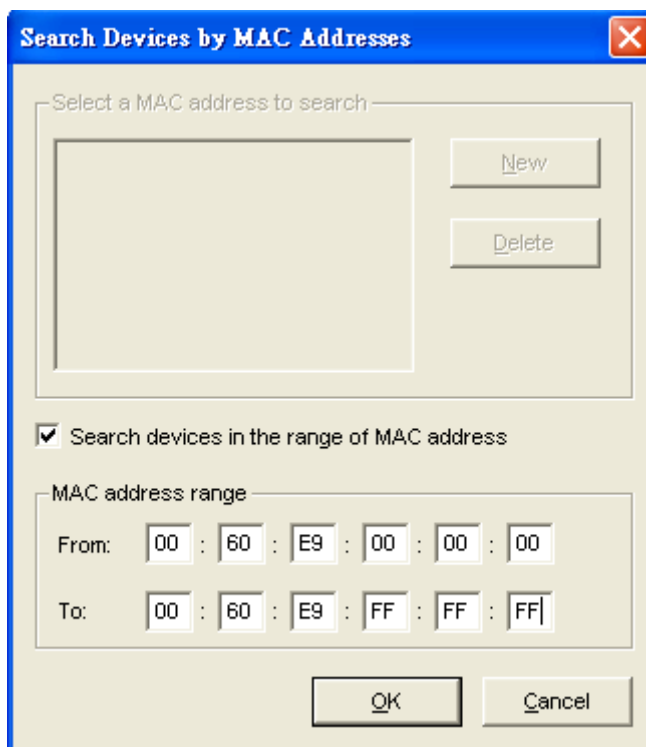
### Search by IP address

Once "Search by IP Address" is selected, an interface will pop up as below. Here user may have two options: Select an IP address to search or Search device in the range of IP address.



### Search by MAC Address

If "Search by MAC Address" is selected, another box will pop up as below. Here the user may search in two ways: "Search a MAC address to search" or "Search devices in the range of MAC address"

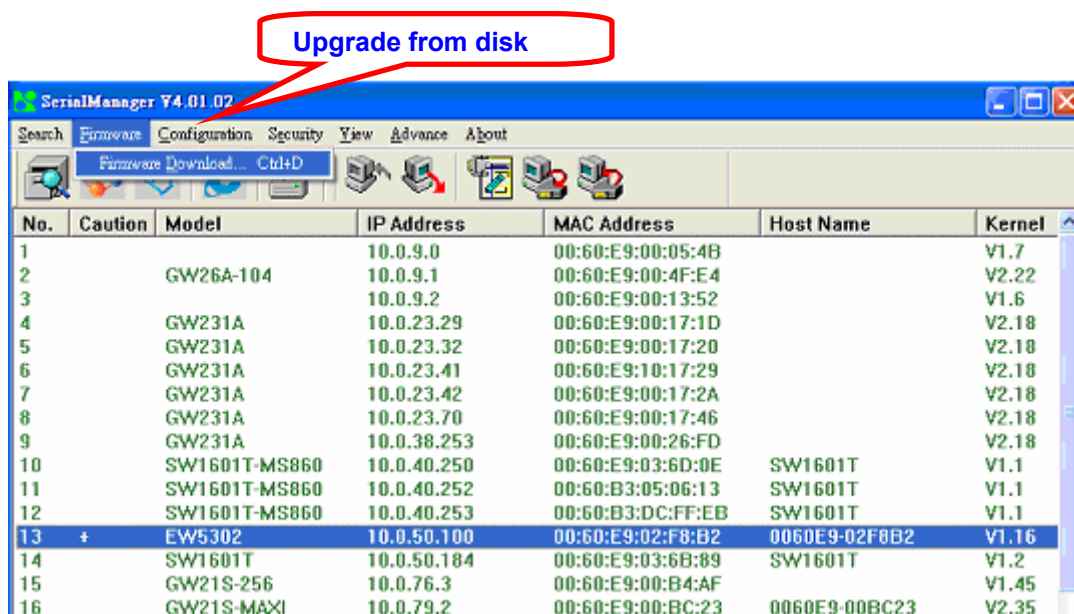


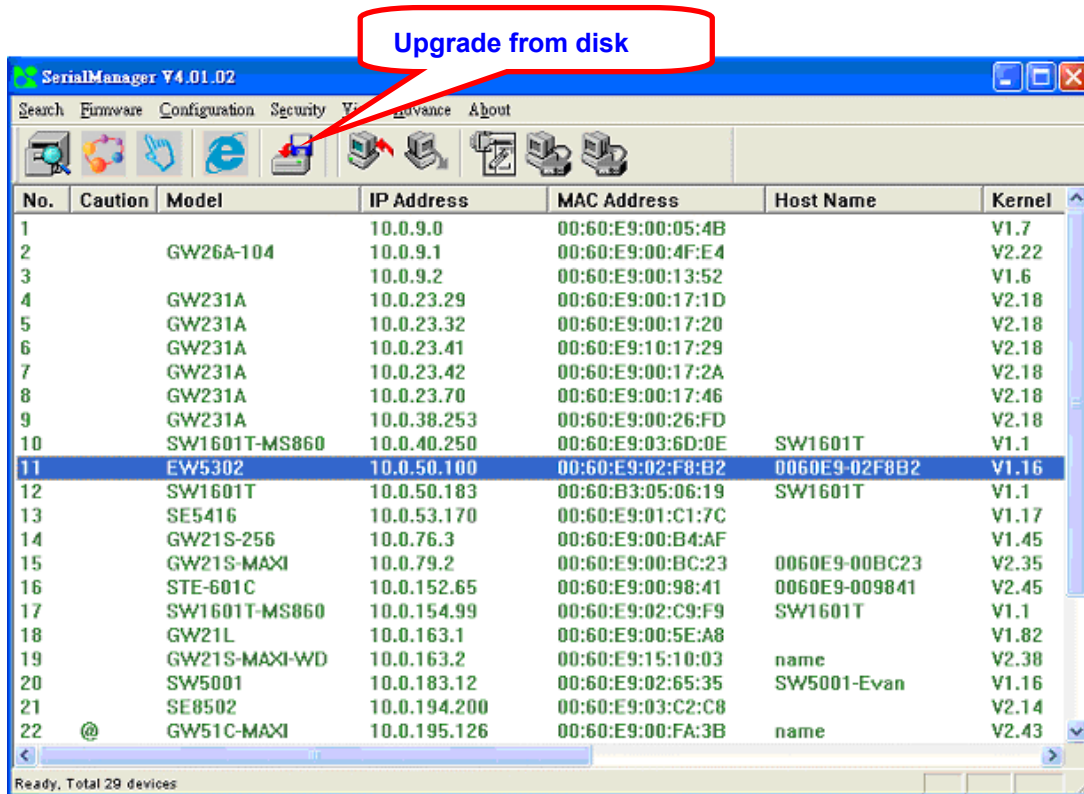
### Rescan

Once the user click the “Rescan” button on the toolbar, the SerialManager utility shall re-search devices by using the current search way.

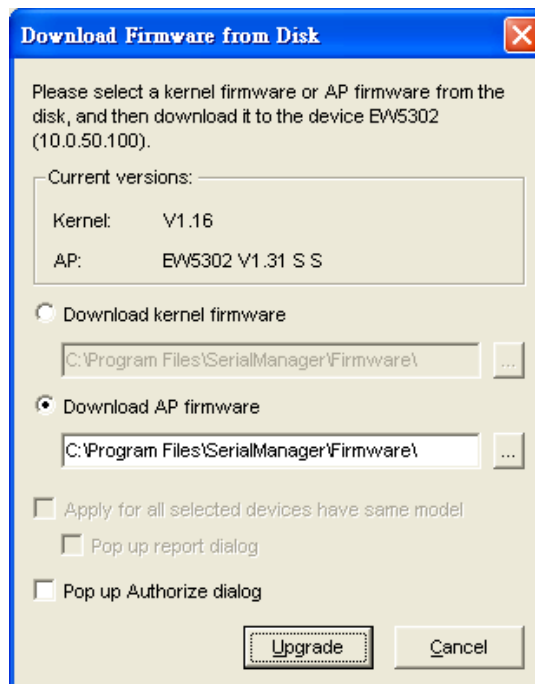
### B.3.2. Firmware

This function is applied to downloading a firmware into the selected device. The user can enter the window for downloading by firstly clicking a designated network device, and then selecting the submenu option “Firmware Download” in the main menu option “Firmware”, or directly clicking the button **Upgrade from disk**.



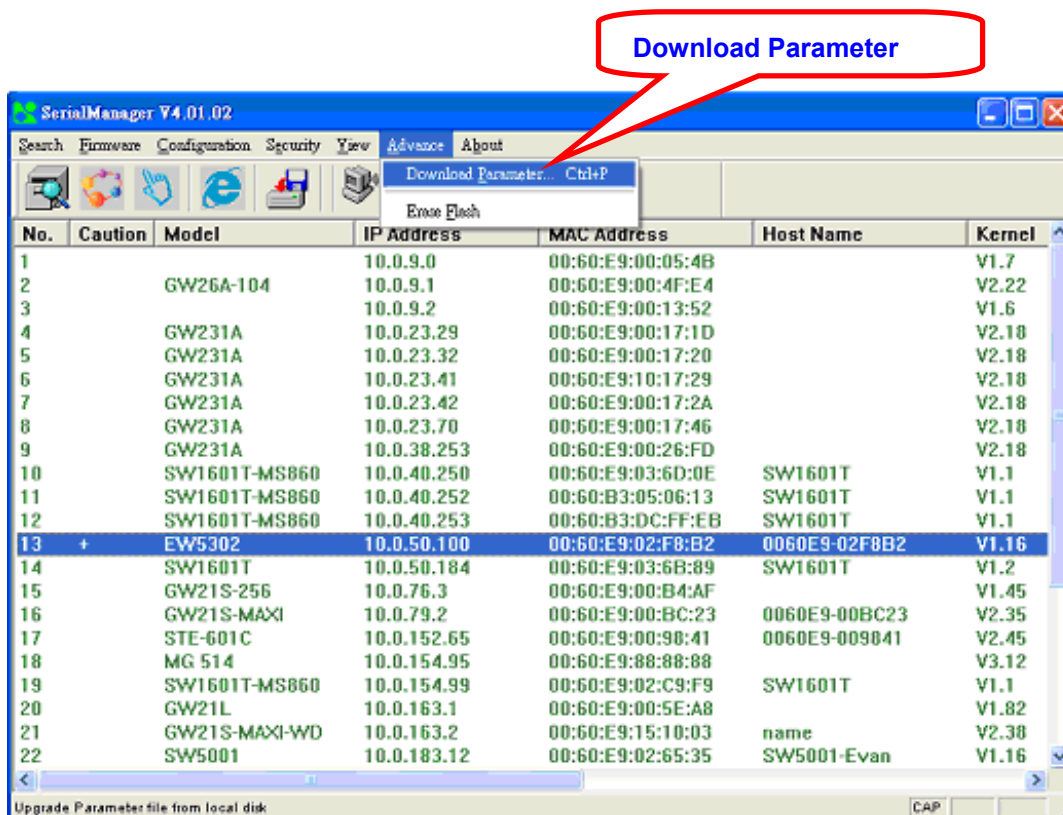


And then the user can select and download the required firmware from the disk, as shown in the figure below. The user can also select several same devices at one time, and realize the firmware updating for them by selecting **Apply for all selected devices have same model**.



You may want to save device's parameters before upgrading a firmware, and then it can be downloaded to the device after upgrading. Alternatively, you can configure one device and save device's parameters to be downloaded to other devices of the same model. In some devices with JFFS2 file system supported, the

user can download the values of related parameters into the device that supports the JFFS2 file system through a submenu **Download Parameter**. See details as the figure below.



A Dialog is opened and prompted for users to browse and to select a parameter file to be downloaded to devices as shown below.

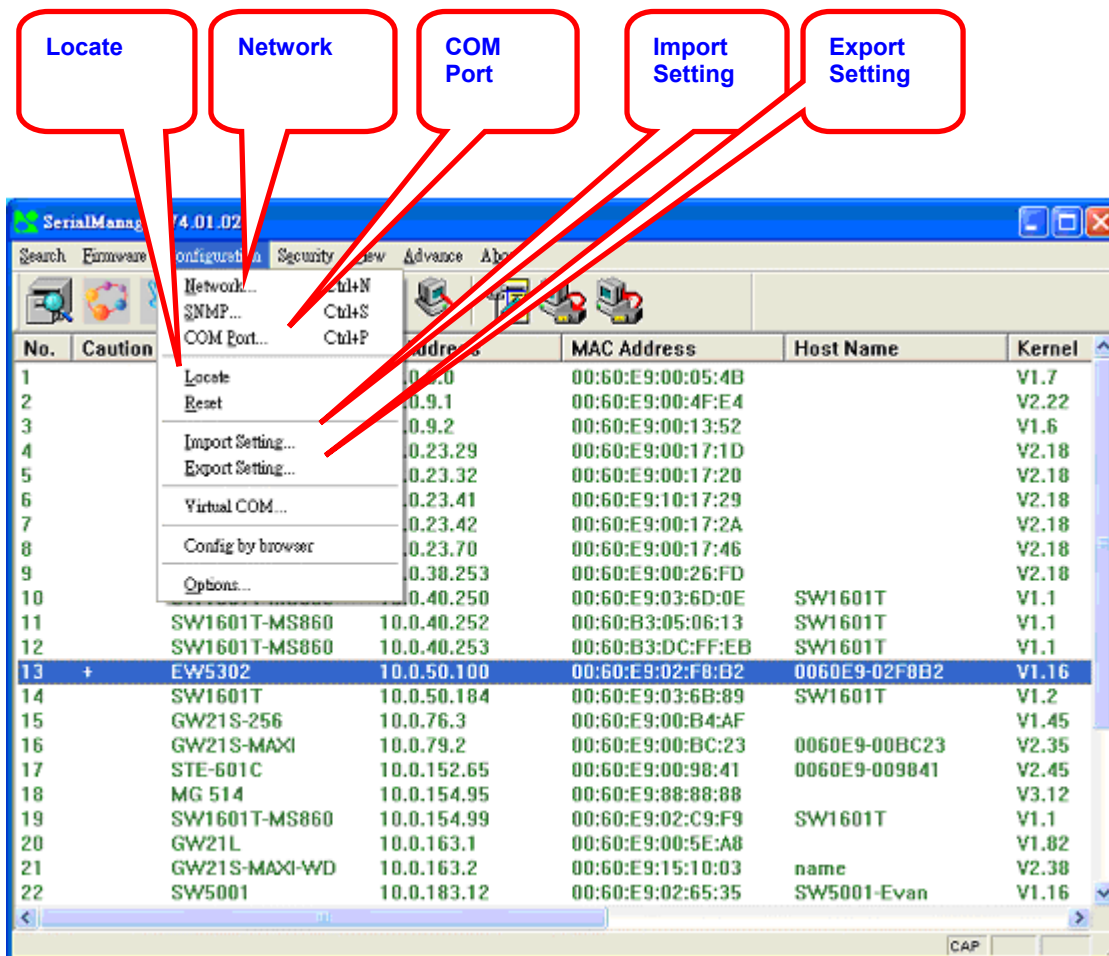


**Note:** Some of the outdated firmware versions do not support **SerialManager** firmware upgrade function. Please refer to Appendix "Upgrading System Software" for details.

### B.3.3. Configuration

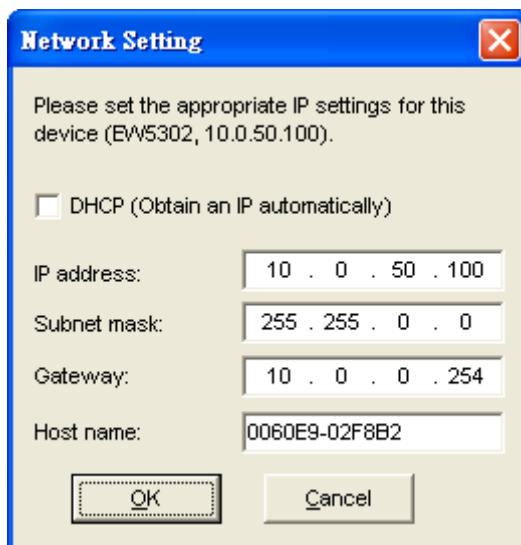
This function is for device configuration to set up parameters, to import and to export the parameters, and to set up some options. Here is the list of configurations: "Network", "SNMP", "COM Port", "Locate", "Reset", "Import Setting", "Export Setting", "Virtual COM", "Config by browser" and "Options." Users can carry out a configuration operating through menu or by clicking the corresponded button on the toolbar, shown as the figure below:





### Network

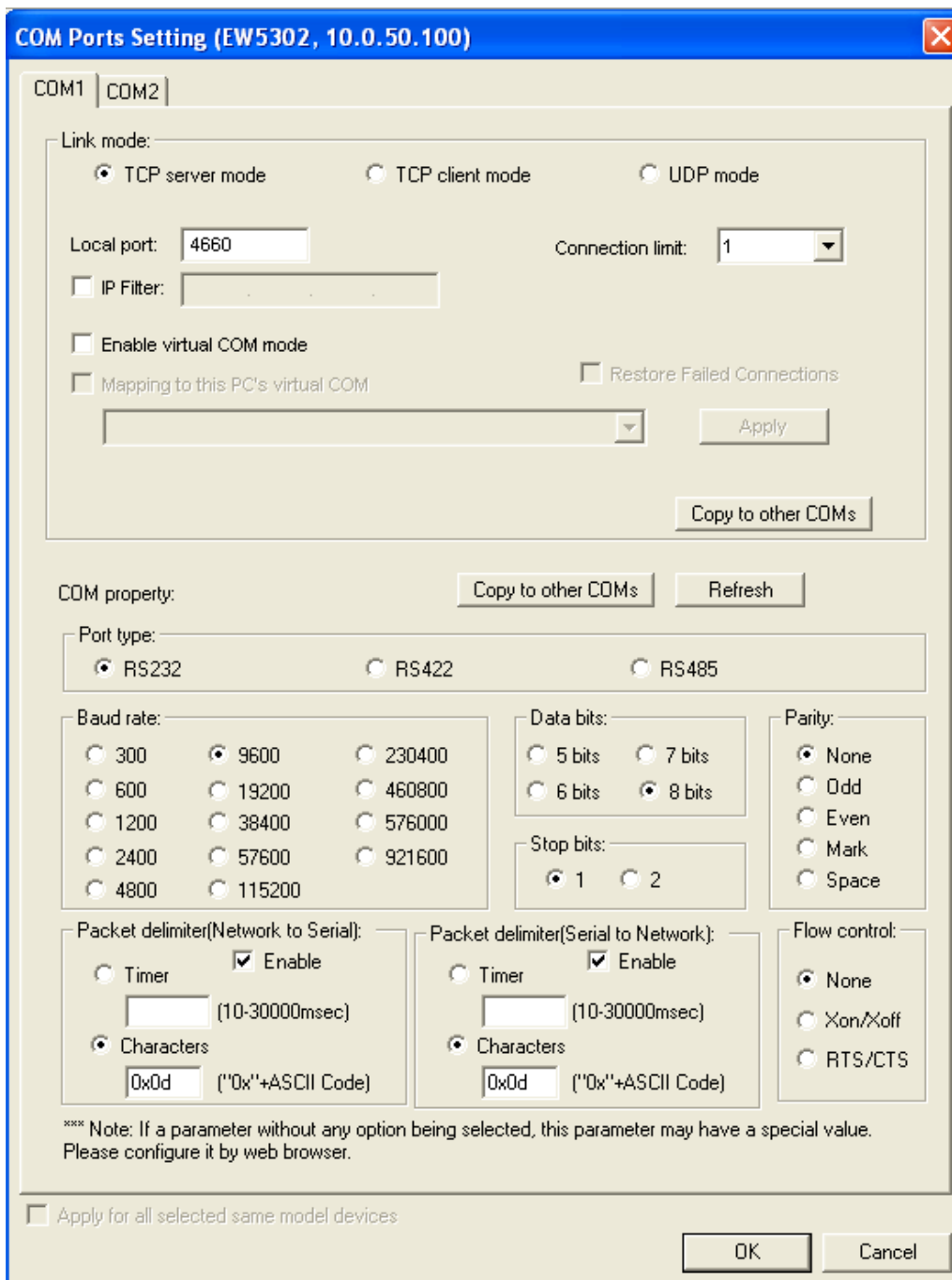
The user can modify the IP address of any selected device, shown as the figure below. You can statically assign IP address, Subnet mask, and Gateway. Optionally, you can set up the device with a host name. You can select DHCP option to obtain an IP address automatically.



## COM Port

ATOP has developed various Serial server products, and some of the ATOP devices are specially applied to some serial-port servers, while this function is applied to the configuration of COM port parameters only. The COM Port setting dialog is shown below.

**Note: This function can be realized only after a successful login.**



The user can also select several devices at one time, and carry out the configuration for them at the same time by selecting "Apply for all selected same model devices"

**Note: COM tabs: generated automatically according to the COM port number of the device. If a device has 4 COM ports, there will be, for example, 4 tabs, COM1, COM2, COM3, and COM4.**

Link mode: this is to set up a TCP or UDP connection between the Serial port and the other network devices. Each COM port corresponds to a link mode, TCP or UDP, which is used to transfer data. The user can set each link mode and the working parameters according to requirements.

COM property: this is to represent the working parameter of the Serial port including: Serial port type, baud rate, data bit, stop bit, parity bit, data packet delimiter and flow control, etc.

### Locate

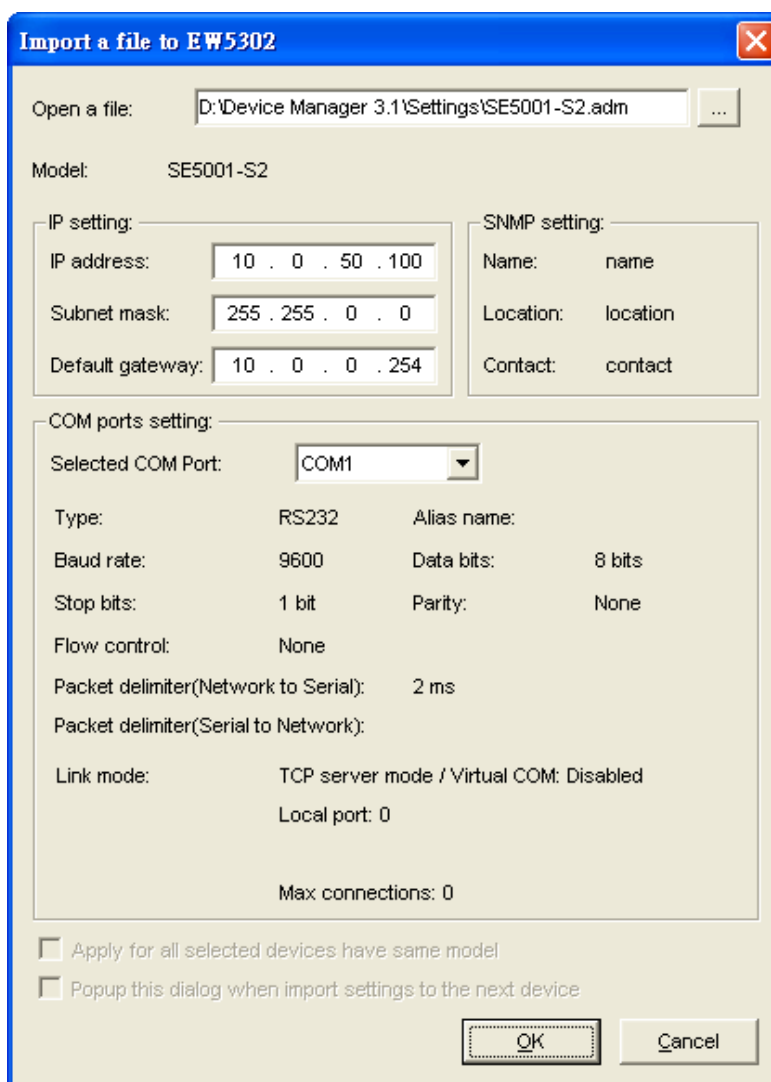
The user can apply this function to locate a device when its IP address is known, but its position is unknown. If a device is selected, the device will appear to sing. Users can locate the device by selecting the Configuration submenu **Locate** or clicking the **Locate** button on the toolbar.

### Reset

The device should be restarted after a successful modification of parameter configuration. Users can also carry out a restart through the submenu option **Reset**.

### Import Setting

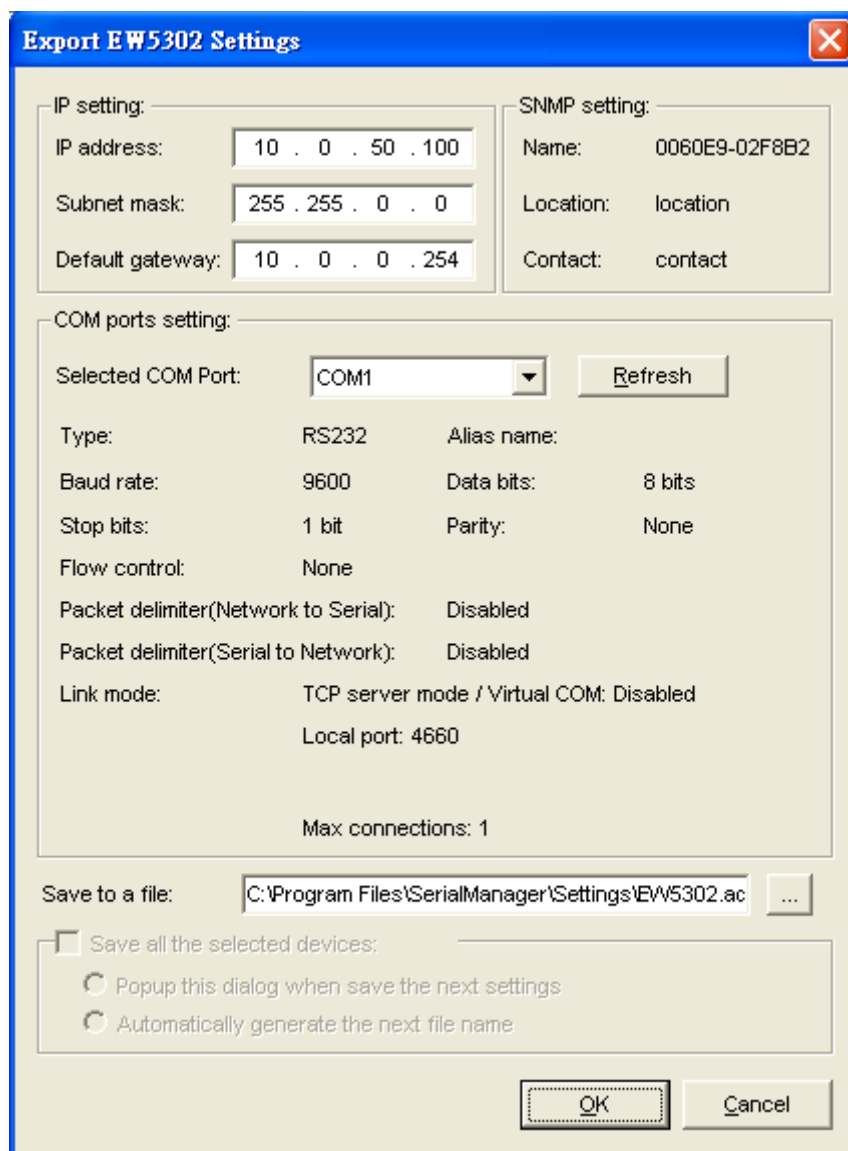
If a network has a large number of devices which are used for a same purpose, it would be very complicated to carry out the parameter configuration for each device in the network one by one. Users can import the parameter configuration of a standard parameter file directly into all the devices of the network through the submenu option **Import setting** or clicking the **Import setting** button on the toolbar. The dialog to import parameter settings is shown below.



The user can also select several devices at one time, and upload the parameter configuration of the standard parameter file into all the selected devices by selecting "Apply for all selected devices have same model."

### Export Setting

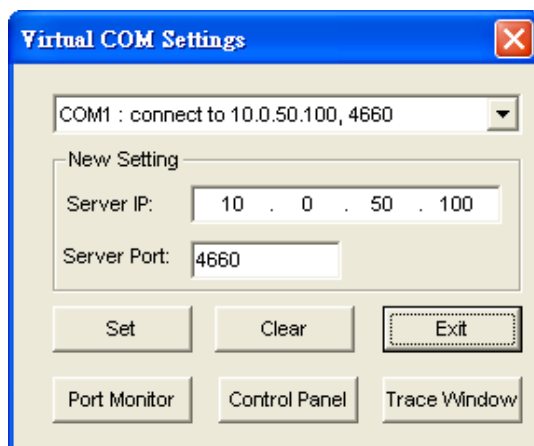
Users can save the parameter information of a standard device into a parameter file through the submenu option **Export setting** or clicking the **Export setting** button on the toolbar for backup purpose or to be imported to other device. The dialog of Export Setting is shown in the figure below.



The user can also select several devices at one time, and save the parameter information of these selected devices into a designated parameter file by selecting "Save all the selected devices".

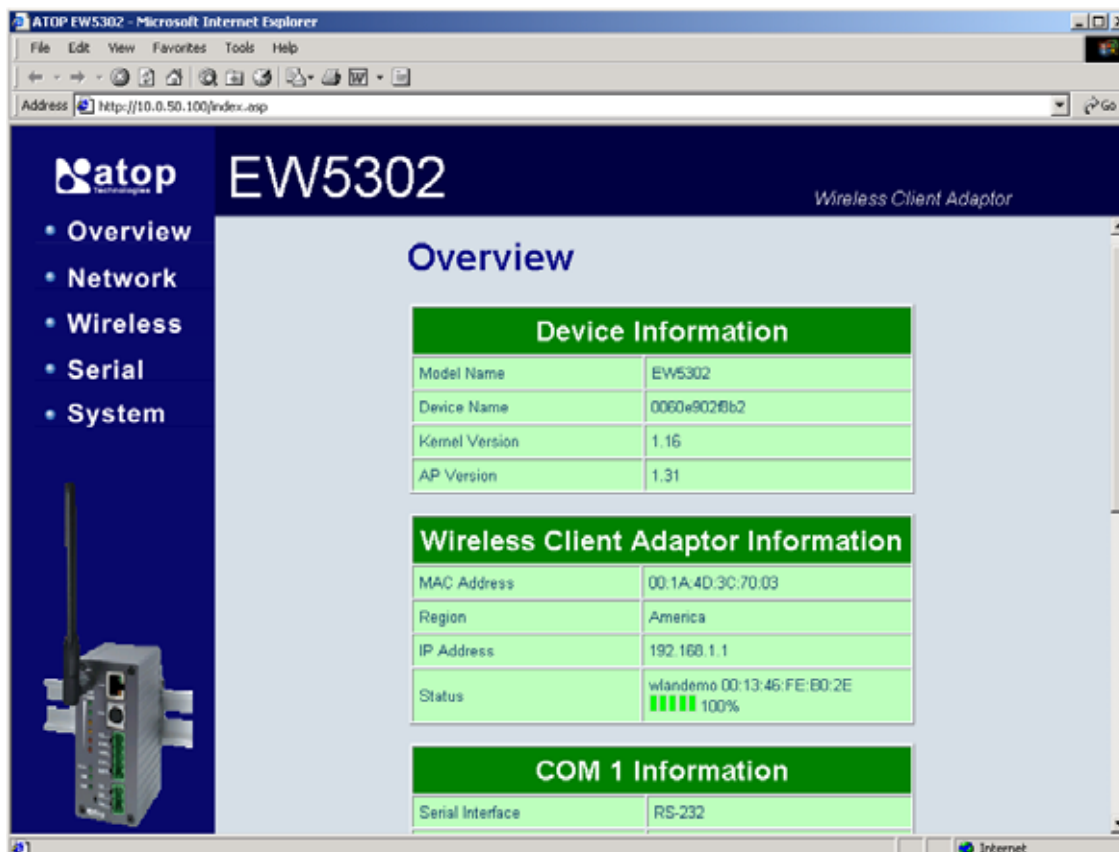
### Virtual COM

Some devices are supplied with the function of virtual serial port, and the user can carry out any related setting through the submenu option "Virtual COM", which is shown in the figure below. You can set up Server IP address and Server Port to interact with other applications.



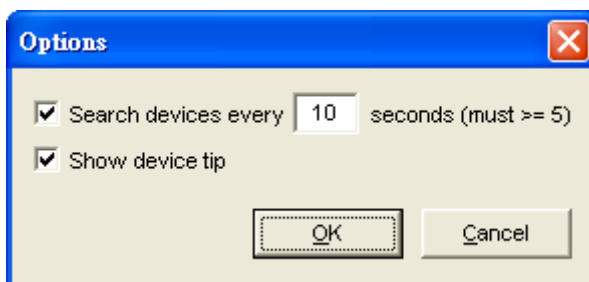
### Configure by Browser

Some devices are supplied with built-in Web servers, which will be used to configure similar to SerialManager software. Users can carry out any parameter setting directly through the submenu option "Config by Browser", and a Web browser is shown in the figure below.



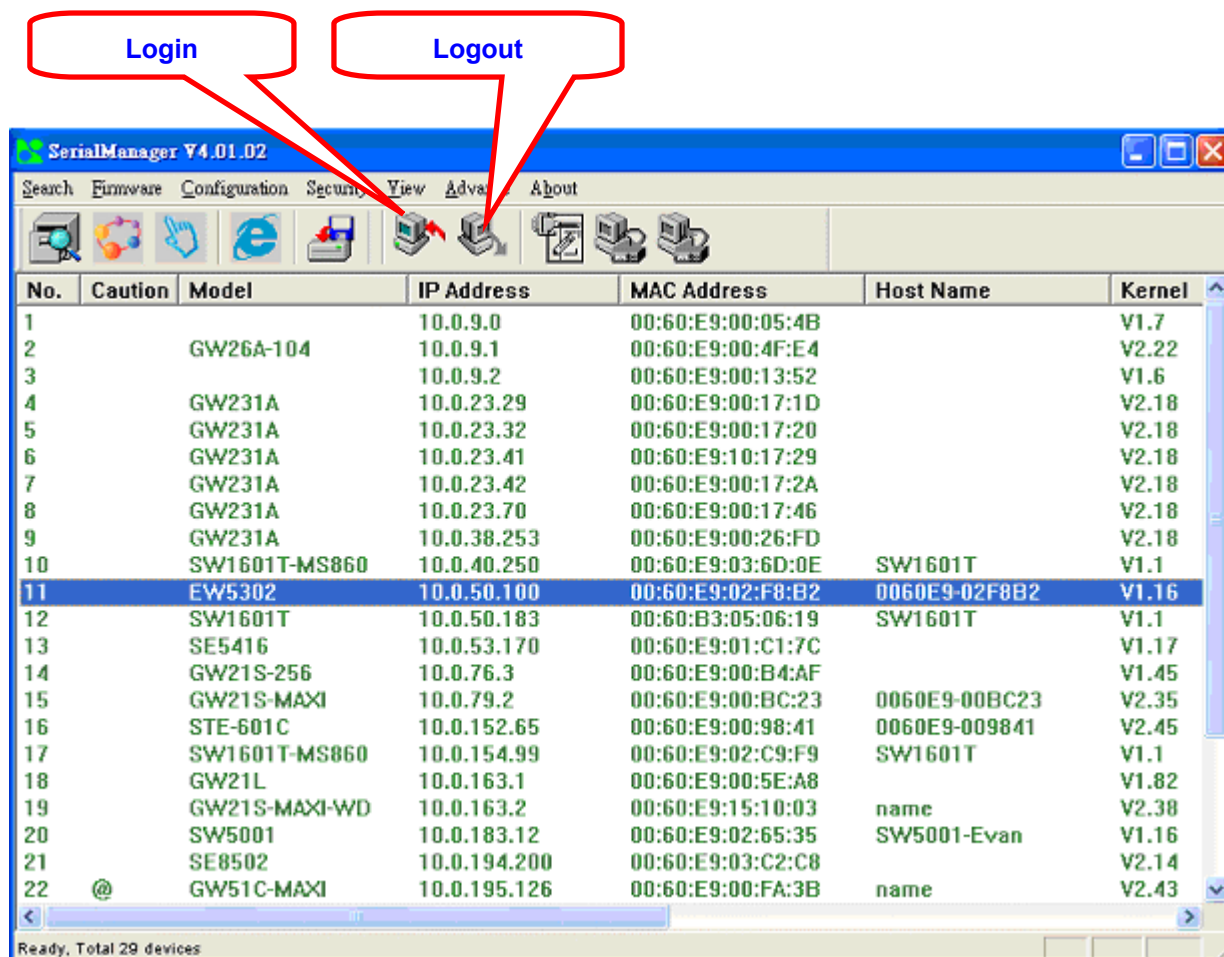
### Option

The option is mainly applied to setting some common working rules of SerialManager utility, such as the device search time interval or whether to display any device information tip. The dialog is shown in the figure below.



### B.3.4. Security

This function is applied to the security protection for the network devices, so as to supply some necessary protection to a device for configuration modifying, configuration leading-in and leading-out, and some other important functions. Here three functions are mainly supplied, including: **Login**, **Logout** and **Change Password**, shown in the figure below.



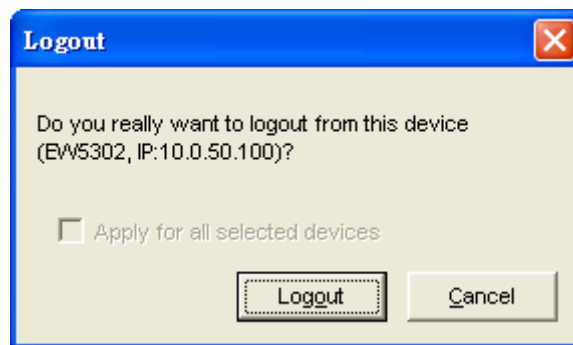
### Login

This function is applied to the login to any network device, as some important devices can only be operated after a successful login, shown in the figure below. The user can also select several devices at one time, and log into them at the same time by selecting “Apply for all selected devices.”



### Logout

This function is applied to the logout from any network device, as the user should always carry out a logout after he/she has finished the operating action to any important device, shown in the figure below. The user can also select several devices at one time, and log out them at the same time by selecting “Apply for all selected devices.”



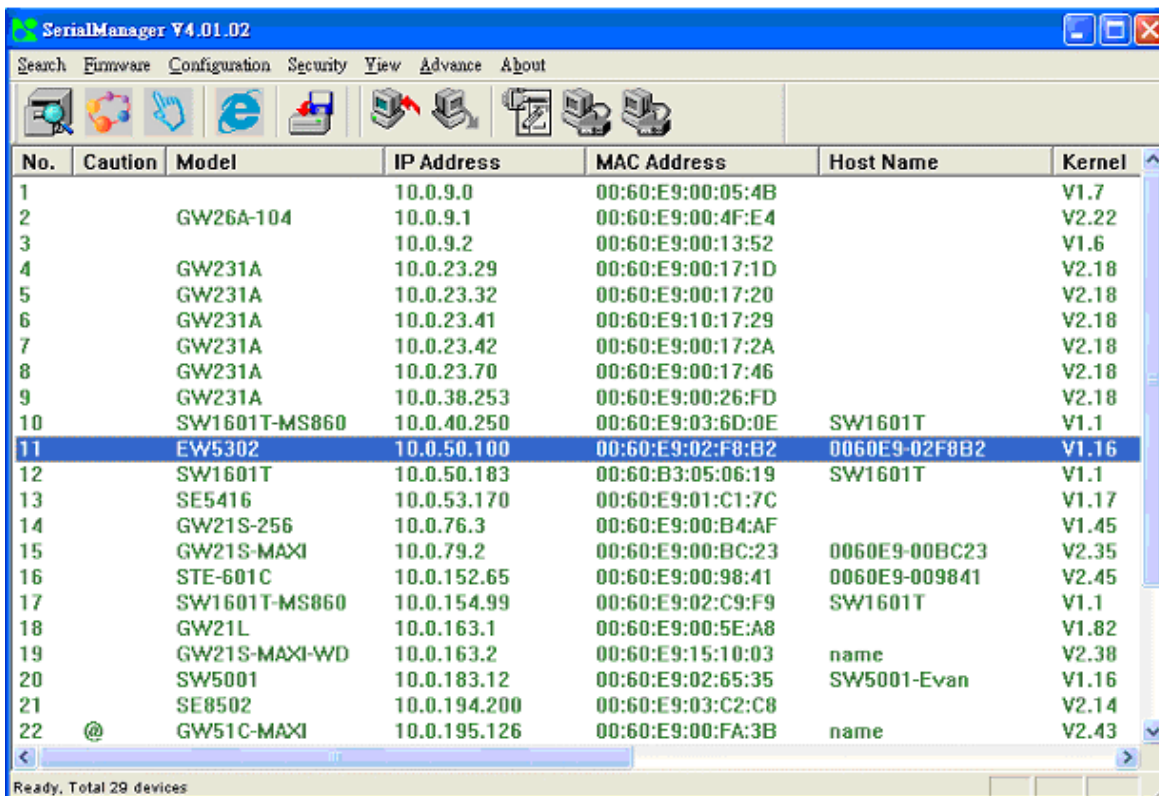
### Change Password

This function is applied to modifying the password for logging in any network device, but can only be realized after a successful log-in, shown in the figure below. The user can also select several devices at one time, and modify their pins at the same time by selecting “Apply for all selected devices.”



### B.3.5. View

The user can select a display mode of the network device according to his/her own requirement through the menu option "View", such as: display in sequence of device module name, or display in sequence of IP address and so on, shown in the figure below.



No.	Caution	Model	IP Address	MAC Address	Host Name	Kernel
1			10.0.9.0	00:60:E9:00:05:4B		V1.7
2		GW26A-104	10.0.9.1	00:60:E9:00:4F:E4		V2.22
3			10.0.9.2	00:60:E9:00:13:52		V1.6
4		GW231A	10.0.23.29	00:60:E9:00:17:1D		V2.18
5		GW231A	10.0.23.32	00:60:E9:00:17:20		V2.18
6		GW231A	10.0.23.41	00:60:E9:10:17:29		V2.18
7		GW231A	10.0.23.42	00:60:E9:00:17:2A		V2.18
8		GW231A	10.0.23.70	00:60:E9:00:17:46		V2.18
9		GW231A	10.0.38.253	00:60:E9:00:26:FD		V2.18
10		SW1601T-MS860	10.0.40.250	00:60:E9:03:6D:0E	SW1601T	V1.1
11		EW5302	10.0.50.100	00:60:E9:02:F8:B2	0060E9-02F8B2	V1.16
12		SW1601T	10.0.50.183	00:60:B3:05:06:19	SW1601T	V1.1
13		SE5416	10.0.53.170	00:60:E9:01:C1:7C		V1.17
14		GW21S-256	10.0.76.3	00:60:E9:00:B4:AF		V1.45
15		GW21S-MAXI	10.0.79.2	00:60:E9:00:BC:23	0060E9-00BC23	V2.35
16		STE-601C	10.0.152.65	00:60:E9:00:98:41	0060E9-009841	V2.45
17		SW1601T-MS860	10.0.154.99	00:60:E9:02:C9:F9	SW1601T	V1.1
18		GW21L	10.0.163.1	00:60:E9:00:5E:A8		V1.82
19		GW21S-MAXI-WD	10.0.163.2	00:60:E9:15:10:03	name	V2.38
20		SW5001	10.0.183.12	00:60:E9:02:65:35	SW5001-Evan	V1.16
21		SE8502	10.0.194.200	00:60:E9:03:C2:C8		V2.14
22	@	GW51C-MAXI	10.0.195.126	00:60:E9:00:FA:3B	name	V2.43

### B.3.6. About

This function is mainly applied to displaying information of the **SerialManager** utility, shown in the figure below.





## Appendix C. Upgrading System Software

An updated version of a device firmware can be downloaded from our website, <http://www.atop.com.tw>. You may use our SerialManager software to upgrade a firmware. Please refer to SerialManager Firmware Download section. For some device, you may use Web Browser to upload a new firmware to the device. If you don't have other options, you may upgrade a firmware over a network connection by using our "linux\_dl\_v2.exe" utility as will be explained below.

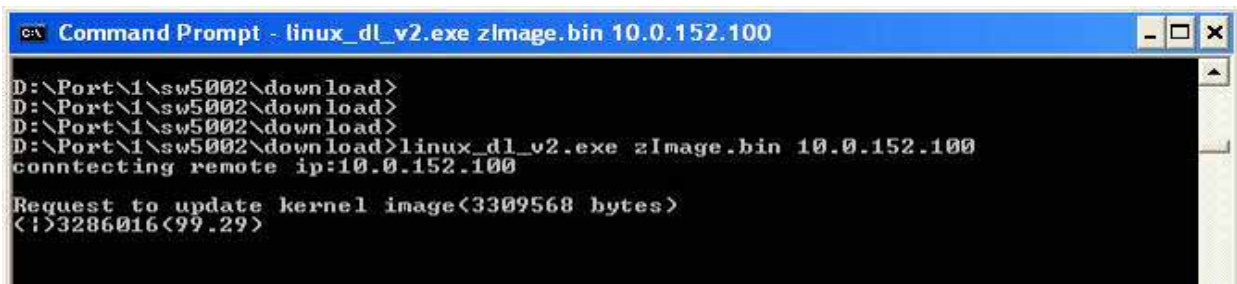
### C.1. System Upgrading Procedures

Follow the upgrading procedures below to download the latest firmware to a device.

- Make sure the PC you will be used to download a firmware and the EW5302 device are on the same network. Use command "ping" or "SerialManager" utility program to verify their availability.
- Edit "dll.bat" to yield the system requirements, Please make sure to save all modifications.
- Run "dll.bat" or type a command and parameters as shown below as shown in Fig. 41.

C:\> linux\_dl\_v2.exe zImage.bin 10.0.152.100 (The device's IP is 10.0.152.100)

Note: "linux\_dl\_v2.exe" is the executable file (which can be found in Setup CD-ROM) for upgrading, zImage.bin is the name of the firmware file, and 10.0.152.100 is the IP address of EW5302.

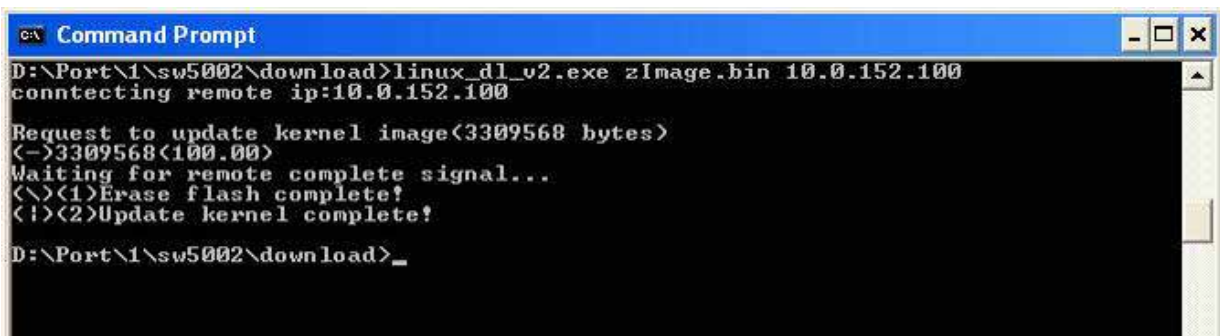


```
Command Prompt - linux_dl_v2.exe zImage.bin 10.0.152.100
D:\Port\1\sw5002\download>
D:\Port\1\sw5002\download>
D:\Port\1\sw5002\download>
D:\Port\1\sw5002\download>linux_dl_v2.exe zImage.bin 10.0.152.100
connecting remote ip:10.0.152.100

Request to update kernel image(3309568 bytes)
<!>3286016<99.29>
```

Fig. 41. Start firmware upgrade procedure for EW5302

EW5302 shall automatically perform the download after the command is executed, and the device will be restarted after the downloading process is successful as shown in Fig. 42.



```
Command Prompt
D:\Port\1\sw5002\download>linux_dl_v2.exe zImage.bin 10.0.152.100
connecting remote ip:10.0.152.100

Request to update kernel image(3309568 bytes)
<->3309568<100.00>
Waiting for remote complete signal...
<><1>Erase flash complete!
<!><2>Update kernel complete!

D:\Port\1\sw5002\download>_
```

Fig. 42. Connected & downloading process for EW5302's Upgrade

### C.2. Critical Issues in Upgrading Process

If the upgrading is successful, EW5302 shall re-program the flash memory, and the buzzer will beep before restarting. It takes around 5 seconds to complete the re-programming. **If any error occurs during the**

process, EW5302 will clear the corresponding memories, and the system will remain the same as the one before the upgrading process.

## Appendix D. Specifications

### D.1. Hardware Specifications

<b>System</b>	
CPU	150 MHz RISC Processor with MMU support
Memory	Flash: 8 MB, 2 MB for Bootloader SDRAM: 16 MB
Interface	Mini-PCI Slot (for Wireless Module)
Watchdog	Hardware Watchdog Reset
Debug Port	CPU Build in COM port
<b>Wireless LAN</b>	
Hardware	Compliance to IEEE 802.11b/g Standard Modulation Type: CCK, DQPSK, DBPSK, OFDM (11g)
Topologies	Infrastructure and Ad-Hoc
Security	WEP 64-bit/128-bit data encryption WPA Compatible (TKIP/AES Encryption) WPA2-PSK
RF Performance	Tx Power: 14 dBm for 802.11b and 13 dBm for 802.11g Rx Sensitivity: -66 dBm @ 54 Mbps, -80 dBm @ 11Mbps Transmission Rate: 54 Mbps (max.) with auto fallback Transmission distance: Up to 300 meters @12 Mbps, in open areas Mobile for Fast Roaming
Interfaces	Reverse SMA connector for an external antenna
<b>Network</b>	
Hardware	10/100M Auto-Negotiation Fast Ethernet
Interface	RJ-45 Connector with 2 LEDs Protection: Built-in 1.5 KV magnetic isolation
Configuration	Using Web-based or a SerialManager program
<b>Serial</b>	
Protocol	Support RS-232/ RS-485/ RS-422 and Software Selection
Interface	Terminal Block Connector –TB model (with 12KV ESD) D-Sub 9-pin Connector –DB Model (with 12KV ESD)
Parameters	Baud Rate: 1200 bps ~ 921 kbps Parity Check: None, Odd, Even, Mark, Space Data Length: 7/8 Bit Stop Bit: 1/2 Flow Control: None, Software: Xon/Xoff, Hardware: RTS/CTS

### Power

Input	DC 9V-48V
Consumption	4.5 W max @ Tx Mode

### Mechanical

Dimensions	H x W x D: 90mm x 45mm x 75mm
Casing	Metal Housing for IP50 Standard

### Environmental

Operating Temperature	0 to 65°C (32 to 140°F), 5 to 95% RH
Storage Temperature	-20 to 85°C (-4 to 185°F), 5 to 95%RH

### Regulatory Approvals

EMC	FCC/CE
Safety	UL
Warranty	5 Years

## D.2. Software Specifications

### Software

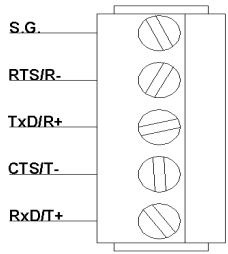
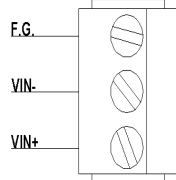
Protocol	ICMP, IP, TCP, UDP, DHCP Client, Telnet, DNS, SNMP, HTTP, SMTP, SNTP
Utility	Virtual COM Utilities for Windows 98/2000/XP/2003/Vista Configure Utilities: Supported for Windows 98/2000/NT/XP/2003/Vista
Configuration	Web browser Windows utility software
Buffer Size	TCP receiving buffer size = 8K bytes TCP transmitting buffer size = 16K bytes RS-232/RS-485 receiving buffer size = 4K bytes RS-232/RS-485 transmitting buffer size = 4K bytes

## D.3. Pin Assignments

### D.3.1. DB9 male connector pin assignments for Serial port

DB9				
	Pin#	RS-232	RS-485	RS-422
	1	DCD		
	2	RXD		T+
	3	TXD	Data+	R+
	4	DTR		
	5	SG (Signal Ground)		
	6	DSR		
	7	RTS	Data-	R-
	8	CTS		T-
	9	RI		

### D.3.2. Terminal block pin assignments for Serial and Power

5-pin for serial connections		RS-232	RS-485	RS-422	3-pin for Power input		
	<b>SG</b>	GND	GND	GND		<b>FG</b>	FG
	<b>RTS/R-</b>	RTS	Data-	R-		<b>Vin-</b>	GND
	<b>TxD/R+</b>	TxD	Data+	R+		<b>Vin+</b>	9~48V
	<b>CTS/T-</b>	CTS		T-			
	<b>RxD/T+</b>	RxD		T+			

Note: RS-485 2 or 4 pins assignments of DB9 connector are different from those of Mini DIN connector.

## D.4. Beep & LED Status

### D.4.1. Startup status

Message	Description
^==^=====^^^ (5sec)	Startup OK and application firmware is enabled

Note: Buzzer indication: “^” : Beep twice      “=” : Beep off

### D.4.2. Wireless Signal Strength status

The Access Point link quality can be detected by LED indicator on EW5302. In a running mode, once press a default key and then release, one of the specified actions below shall be performed depending on the released time after you heard how many beeps. The Access Point radio link quality is indicated by the number of LEDs lid on as shown in the table below.

#### Radio Link Quality LED Message

○ Off      ● On      ☼ Blinking

Operations		Status*	LED1	LED2	LED3	LED4	LED5
<b>Connecting</b>	Search AP (sequentially blinking)	☼	☼	☼	☼	☼	☼
	Connected AP/ Get assigned IP	☼	☼	☼	☼	☼	☼
	Not matched SSID	☼					
	Not available IP	☼	☼				
<b>Connected</b>	Signal Strength is less 20%	●					
	Bad Signal Strength (20%)	●	●				
	Poor Signal Strength (40%)	●	●	●			
	Fair Signal Strength (60%)	●	●	●	●		
	Good Signal Strength (80%)	●	●	●	●	●	
	Excellent Signal Strength (100%)	●	●	●	●	●	●

Note: The lowest LED is indicated for STATUS on the EW5302's front plate.

#### **D.4.3. WLAN LED Message**

<b>Message</b>	<b>Description</b>
LED Off	No data is transmitting on Ethernet
LED Blinking	Data is transmitting on Ethernet

#### **D.4.4. COM Port LED Message**

<b>Message</b>	<b>Description</b>
LED off	No data is transmitting on COM port
LED Blinking	Data is transmitting on COM port

#### **D.4.5. RUN LED Message**

<b>Message</b>	<b>Description</b>
LED Blinking (0.5 sec interval)	AP firmware is running