

# Wireless Serial-Ethernet Server STW-602C User's Manual

Version 1.1





# Important Announcement

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# FCC WARNING

# **Class B for this product**

This product has been tested and found to comply with the limits for a Class B 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**

The STW-602C product is 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

The STW-602C Wireless Serial Server is a gateway between wireless LAN or Ethernet (TCP/IP) and RS-232/RS-485 communications. It allows almost any serial devices to be connected to a new or existing wireless network. The information transmitted by Serial Server is transparent to both host computers (IP network over wireless LAN or Ethernet) and devices (RS-232/RS-485). Data from the wireless LAN or Ethernet (TCP/IP) is transmitted to the designated RS-232/RS-485 port and data from RS-232/RS-485 port is transmitted to the Wireless or Ethernet (TCP/IP) transparently.

In the computer integration manufacturing or industrial automation area, Wireless Serial Server is used for field devices to direct connect to network. Terminal Server (main control program run in the STW-602C) transforms whatever data received from RS-232/RS-485 to TCP/UDP port then connects devices to the IP network via a single application program or multiple application programs.

Many control devices provide the ability to communicate with hosts through RS-232/RS-485 however RS-232/RS-485 serial communication has its limitations. For instance, it is hard to transfer data through a long distance. With the STW-602C, 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 Telnet, web browser, or Window utility. Packed in a rugged DIN Rail mountable case and 9~48V DC power input range, the STW-602C is ideal for almost any industrial and manufacturing automation.

### 1.2. Features

- Dual-port DIN-Rail mounting module.
- Metal housing with IP50 standard.
- 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 console, telnet, 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

- Wireless Serial Server 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
- Wireless Serial Server quick start guide x 1
- Product CD containing configuration utility x 1

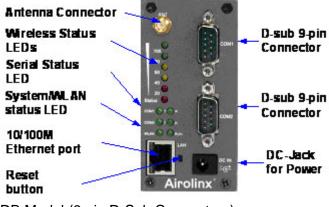
### \* NOTE: Notify your sales representative if any of the above items is missing or damaged.

### 2.2. Ordering information

**STW-601C** 2-ports wireless serial server with D-Sub 9pin serial connector

### 2.3. Interfaces

The STW-602C interface is shown by Fig 1.



DB Model (9 pin D-Sub Connectors)

Fig 1. STW-602C Interfaces

### 2.4. Installation Procedures

- Prepare necessary cables, DC power adapter and RS-232/RS-485 connector.
- Place STW-602C under the access point signal coverage area, or connect STW-602C to Ethernet cable with RJ45 connector.
- Connect STW-602C serial port to serial device, make sure the connector and wiring of RS-232 or RS-485 is correct.
- Plug in STW-602C to DC-9-48V power source (with DC-jack or 3-pin terminal bock connector), buzzer will beep and the RUN LED will blink if STW-602C functions normally. For LED Status sees Appendix D<u>4</u>

Use **SerialManager** configuration utility on the product CD to check the status of STW-602C. If it starts up successfully, User shall find the IP and MAC address of STW-602C. User can change IP address, gateway IP address and subnet mask networking parameters of STW-602C according to user networking configurations.

### Software Setup

Now the STW-602C hardware is installed and power is on, network IP configuration will be set in this section.

### 2.5. Default Settings

The STW-602C 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				
Interface	Device IP	Subnet mask	Gateway IP	
LAN port	10.0.0.50.100	255.255.0.0	10.0.0.254	
WLAN Port	192.168.1.1	255.255.255.0	192.168.1.254	

The other default settings of STW-602C are shown in the following table

Property	Default Value	
Ethernet Port		
IP Address	10.0.50.100	
Gateway	10.0.254	
Subnet Mask	255.255.0.0	
WLAN Port		
IP Address	192.168.1.100	
Gateway	192.168.1.254	
Subnet Mask	255.255.255.0	
Security		
User Name	Admin	
Password	Null (Leave it blank)	
Serial		
СОМ	9600/None/ 8/1,No flow control, packet delimiter disabled	
Link Mode	TCP Server, Listen port 4660/4661, No Filter, Virtual COM disabled	
SNMP		
SysName of SNMP	Name	
SysLocation of SNMP	Location	
SysContact of SNMP	Contact	

Table 1. Default settings of the STW-602C device

\* NOTE: Press reset button for 5 seconds then release the button to restart STW-602C to the default settings.

\* Waring: Please avoid setting LAN and WLAN IP address in the same subnet, that may make unexpect networking problem.

### 2.6. IP Assignment

## 2.6.1. Configure IP by SerialManager Utility

Use **SerialManager** configuration utility that comes with product CD or diskette to configure the network parameters. For more details, please refer to <u>Appendix B1</u>.

#### Find new device and IP assignment

- Use SerialManager Utility for finding new device IP address, get device's current IP from table list
- Re-assigned IP, network mask and gateway if need with SerialManager Utility.
- User can configure User ID, Password and Host Name with SerialManager Utility.

Network Setting				
Please set the appropriate IP settings for this device				
DHCP (Obtain an IP automatically)				
IP address:	10 . 0 . 30 .100			
Subnet mask:	255.255.0.0			
Gateway:	10 . 0 . 0 .254			
Host name:				
<u>O</u> K	Cancel			

Fig 2. IP settings for SerialManager Utility tool

#### \* Note: All settings were NOT changed if user ID or password was incorrect.

If there is more than one device using the same IP address in same Subnet. User has to correct mapping between MAC address & IP address by ARP commands.

#### **ARP commands**

ARP (address resolution protocol) commands can be used to assign a static IP address on STW-602C using its hardware MAC (media access control) address. The MAC address"0060E9-xxxxxx" is printed on the rear side of STW-602C. The following figure shows how to use ARP command on MS-DOS command prompt window.

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

C:\WINDOWS\system32	Ncommand.com	-	□ ×
C:\DOCUME~1\ADMINI~1)	arp -s 10.0.50.101 00-6	50-E9-00-79-F8	
C:\DOCUME~1\ADMINI~1)	≻arp –a		
Interface: 0.0.0.0 Internet Address 10.0.50.101	Øx4 Physical Address 00-60-e9-00-79-f8	Type static	
Interface: 192.168.25 Internet Address 192.168.25.40 192.168.25.186 192.168.25.254	Physical Address 00-19-66-0b-6e-89	Type dynamic dynamic dynamic	
C:\DOCUME^1\ADMINI^1)	-		-

Fig 3. Map IP address to MAC address by ARP Command

\* Note: ARP commands can only be used to set a static IP address of STW-602C

- arp –a command show the current mapping IP and MAC addresses.
- **arp –s** "IP address" "MAC address" map the IP address to specify MAC address.

# 2.6.2. Configure IP by web interface

Use common Web browser, ex. Microsoft Internet Explorer or Mozilla Firefox, to configure the network parameters of STW-602C.

- Open web browser, type in the IP address (default IP: 10.0.50.100) of STW-602C to be configured. Default user name is admin and default password is null (leave it blank).
- Configure IP settings from web Network links page then click "Save Configuration" to save settings.
- Click on "**Restart**" button to make the change effective.

Please refer to contents of <u>Web Configuration section</u> for more details.

### •

### 2.6.3. Configure IP by Telnet utility

Use common Telnet utility, ex. Microsoft Hyper-terminal, to configure the network parameters of STW-602C.

- Run command telnet "IP address" to telnet to STW-602C. Default IP address is 10.0.50.100 and default password is null (leave it blank).
- Configure IP settings from **network settings** menu, and **restart** system after saved settings.

Please refer to <u>Telnet Configuration</u> section for more details.

### 2.6.4. Auto IP with DHCP

**DHCP** server will automatically supply an **IP address gateway address**, and **subnet mask** to STW-602C. By default, the DHCP client function on STW-602C is disabled, user can activate the DHCP functions by the following steps

- Execute SerialManager Utility
- Click on the **IP address** (of STW-602C)
- Click "*Config*" to pop-up the static IP Dialog Window
- Check on "Auto IP"
- Click "*Config Now*" (The STW-602C will restart and obtain the IP from the DHCP server automatically)

## 2.7. TCP/IP Port Number

Default Port numbers of STW-602C is **4660** (1<sup>st</sup> port) & **4661** (2<sup>nd</sup> Port) and it is associated with the serial port **COM1** and **COM2** respectively. After the application program connected to the TCP port 4660 (or 4661) on the STW-602C, data of user's application program are transmitted transparently to STW-602C and vice versa.

# 3. Application Connectivity

STW-602C provides Tunneling and Virtual COM operation mode. The STW-602C is designed to transmit data between one-or-more serial devices to/from one-or-more TCP/IP devices through **wireless** or **wire** Ethernet, so STW-602C can enhance the accessibility of the serial device through the ubiquitous TCP/IP based Ethernet. The connection distance limit is overcome by STW-602C. Examples of these devices are PLC controllers, card readers, display signs, security controls, CNC controller, etc.

# 3.1. TCP & UDP Protocols

STW-602C can be operated in two most common protocols **TCP** and **UDP**.

## 3.1.1. 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, STW-602C offers two TCP operation Modes so users may choose for their specific application, TCP Server Mode and TCP Client Mode.

### 3.1.2. User Datagram Protocol (UDP)

UDP is a faster datagram delivery protocol. User can configure STW-602C 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.

## 3.2. Connectivity Topology

STW-602C 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. **Fig 4.** is the example of STW-602C connection topology.

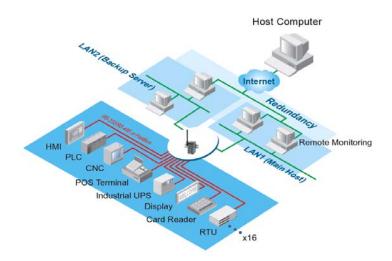


Fig 4. Typical Topology of STW-602C Connection

### 3.2.1. Virtual COM Mode

The **Virtual COM** software emulates a serial port with Internet or LAN topology. In the Virtual COM Mode, COM port data (RS232) is encapsulated to 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 encapsulated COM data into IP data. **Fig 5.** illustrates a Virtual COM connection diagram.

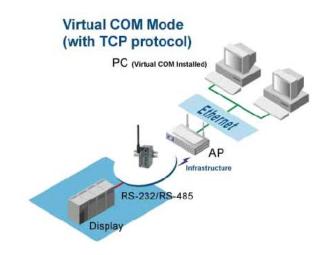


Fig 5. TCP Connection in Virtual COM Mode

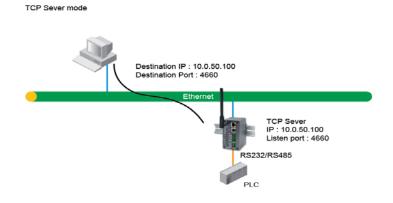
# **TCP Server in Virtual COM Mode**

STW-602C can be configured in the TCP server mode (PC as a client) with a unique IP and Port number, and STW-602C waits passively for the PC to establish a connection to. After the connection is established, PC can communicate to serial devices through STW-602C.

# Configure STW-602C to be TCP server

Using one of the three configuration methods (Telnet, Web, and console), User can configure STW-602C to be as TCP Server as following.

- 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 STW-602C.





## **TCP Client in Virtual COM Mode**

STW-602C can be configured to be 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 STW-602C.

## Configuring STW-602C to be TCP client

User can configure STW-602C to be as TCP Client for example, from **Fig. 7**. PC, as a server, has IP address 10.0.0.100 and listening on port 1000. Each STW-602C, 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).

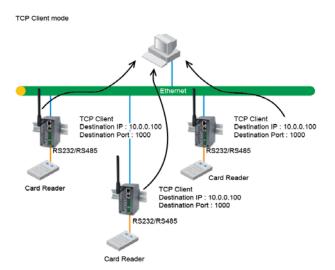


Fig 7. TCP Client in Virtual COM Mode

### 3.2.2. Tunneling Mode

Tunneling Mode is used for multiple serial devices to "talk" among one another through STW-602C's wireless LAN or wired Ethernet. This mode is particularly useful when two or more serial devices are far away. This mode can be used to extend the normal serial communication distance of 15 m to 100 m or longer.

One STW-602C can be configured to be the TCP Server Mode with serial device connected and also another STW-602C 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, User can implement STW-602C tunneling mode for Master /Slave mode PLCs or between other serial devices.

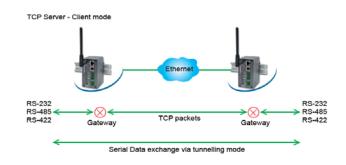


Fig 8. TCP Link in Tunneling mode

## Configuring STW-602C to Tunneling Mode

Using one of three configuration methods (Telnet, Web, or Console), user can configure STW-602C to TCP Server mode with a desired IP address and port, and with other STW-602C is configured as TCP Clients mode with Server IP and port as destination IP and port respectively.

# \* 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).

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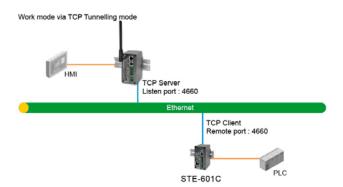


Fig 9. TCP Tunneling Mode

## UDP

In UDP mode, User may exchange Multicast data from one STW-602C with multiple STW-602Cs, Vice versa is also true.



Fig 10. UDP Link in Tunneling mode

# Configure STW-602C in UDP Mode

Use one of the three configuration methods (Telnet, Web, and console). User can configure STW-602C to UDP mode. In UDP mode, STW-602C 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.

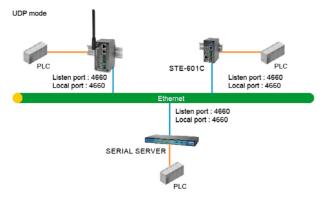


Fig 11. Multi-UDP Link in Tunneling Mode

# 4. Configure STW-602C by web interface

User has to assign IP address to STW-602C before working on web configuration operations. Please refer to <u>section 3.2</u> for more detail.

# 4.1. Login to System

Open one of the web browsers, ex. Microsoft IE or Firefox etc. Enter the IP address of STW-602C on the URL. **Example:** <u>http://10.0.50.100</u> or <u>http://user-device-IP</u>

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. Authorization request for system security

The overview screen shall appear (Fig. 13).

### 4.2. General Information

This system overview window gives the general information on STW-602C, included Network, and Serial information.

#### Devolinx Ethernet-Serial Server

#### Overview

The general device information of Ethernet-Serial Server.		
Device Information		
Model Name	STW-602C	
Device Name	0060e9035aa9	
Kernel Version	1.16	
AP Version	1.37	

Network Information		
LAN	MAC Address	00:60:E9:03:5A:A9
LAN	IP Address	192.168.1.160
	MAC Address	00:1D:7D:30:03:17
	Region	America
WLAN	IP Address	192.168.1.161
	Status	2WIRE019 00:12:88:98:2E:09 100%

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	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 for system information by Web Interface

### **Device Information**

STW-602C's system information includes **model name**. **Device Name**. **Kernel version** and **AP version**. The information is read only and is attributed from another setting page or system status

Device Information		
Model Name	STW-602C	
Device Name	0060e9035aa9	
Kernel Version	1.16	
AP Version	1.37	

Fig 14. Device Information from Overview web page

### **Networking information**

Networking information fields are displayed both 'LAN & Wireless LAN (WLAN) Information. The information provided LAN MAC address, LAN IP address, WLAN MAC address, WLAN IP address and WLAN status

	Network	k Information
	MAC Address	00:60:E9:03:5A:A9
LAN	IP Address	192.168.1.160
	MAC Address	00:1D:7D:30:03:17
	Region	America
WLAN	IP Address	192.168.1.161
	Status	2WIRE019 00:12:88:98:2E:09 100%

Fig 15. Network Information from Overview web page

## **Serial Information**

STW-602C 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 STW-602C.

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]	

Fig 16. Serial Information from Overview web page

# 4.3. Network Configurations

There are four items allowed to change on Network page, included LAN, WLAN, DNS and SNMP Information.

Devolinx Ethe	rnet-Serial Server
Networking	f (
To configure network settings or configuration you have to resta effective.	rt the device to make the settings
	Settings
DHCP	Obtain IP automatically
IP Address	192 168 1 160
Subnet Mask	255 255 255 0
Default Gateway	192 168 1 1
WLAN	l Settings
DHCP	Obtain IP automatically
IP Address	192 168 1 161
Subnet Mask	255 255 255 0
Default Gateway	192 168 1 1
DNS	Settings
DNS1	192 168 1 1
DNS2	
	he management utility to collect the ou can change the device network e system name, location and
	o Settings
SNMP	✓ Enable SNMP
SysName SysLocation	0060E9-035AA9
SysContact	location
Read Community	public
Write Community	private
SNMP Trap Server	0 0 0 0
	Cold Start Warm Start
Alert Event	<ul> <li>Link Down</li> <li>Link Up</li> <li>Authentication Failure</li> </ul>

Fig 17. Network information by Web page

# 4.3.1. LAN Settings

### Operation: [Network] → [LAN Setting]

Click on the "**Network**" link and the following screen shall appear. Fill in IP information on TCP/IP field. Alternatively, click on DHCP to automatically obtain **IP address**, **gateway** and **subnet mask** information.

LAN Settings			
DHCP	Obtain IP automatically		
IP Address	192 168 1 160		
Subnet Mask	255 255 255 0		
Default Gateway	192 168 1 1		

#### Fig 18. LAN Setting from Network web page

## 4.3.2. WLAN Settings

### Operation: [Network] → [WLAN Settings]

Click on the **"Network"** link Mode and the following screen shall appear. Fill in **WLAN IP** information on WLAN settings fields. Alternatively, User may activate DHCP client function by checking on "*Obtain an IP automatically*" field to automatically obtain **IP address**, **gateway** and **subnet mask** from DHCP server.

WLAN Settings				
DHCP	Obtain IP automatical			
IP Address	192 168 1 161			
Subnet Mask	255 255 255 0			
Default Gateway	192 168 1 1			

Fig 19. WLAN Setting from Network web page

## 4.3.3. DNS Settings

#### Operation: [Network] → [DNS Settings]

Click on the **"Network"** link and the following screen shall appear. Fill in DNS information on **DNS Settings** field. 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 DHCP server.

	DNS Settin	gs		
DNS1	192	168	1	1
DNS2	0	0	0	0

Fig 20. DNS Setting from Network web page

### 4.3.4. SNMP Settings

# Operation: [Network] → [SNMP Settings]

Click on the *"Network"* link and the following screen shall appear. Check on "*Enabling Settings*" field. Fill in desired **SysName**, **SysLocation**, **SysContact** information on SNMP Settings fields. The changes of SNMP Settings will take effect only after the STW-602C restarted.

SI	NMP Settings		
SNMP	☑ Enable SNMP		
SysName	0060E9-035AA9		
SysLocation	location		
SysContact	contact		
Read Community	public		
Write Community	private		
SNMP Trap Server	0 0 0 0		
Alert Event	<ul> <li>Cold Start</li> <li>Warm Start</li> <li>Link Down</li> <li>Link Up</li> <li>Authentication Failure</li> </ul>		

Fig 21. SNMP Setting from Network web page

# 4.4. Wireless Configuration

There are three fields of information on Wireless Configuration page which are Default, Current and Site-Survey Information. Click on "*Wireless*" link and the following screen shall appear.

	Devolinx Ethernet-Serial Server									
Wirele	SS									
"Rescan" "Select"	There are three buttons in this page. "Rescan": Search wireless AP. "Select" : Start to connect or Change to default. "User Define": Set wireless manually.									
				Defau	ult Info	mation				
S	SID	BSSI	O (AP MAC)	Торо	logy	TxRate	e Cl	hannel	Encryption	IP Adress
(/	Any)	FF:FF:	FF:FF:FF:FF	Infrast	ructure	54.0 Mb	s/s A	Auto	None	192.168.1.161
	Current Information SSID BSSID (AP MAC) Topology TxRate Channel Encryption Status									
2W	IRE019	00:12	2:88:98:2E:09	Infra	structur	e 54.0 M	lb/s	6	WEP	100%
	Region: [ Americas ] Wireless Band Mode: [ BG Mixed ]									
Select	SSIE		BSSID (AP I	MAC)	Торо	ology	Cha	nnel	Encryption	Strength%
$\odot$	(Any)	)	(Any)		Infrast	ructure		1	None	None
	Select User Define									

Fig 22. Wireless information by Web page

There are 3 buttons can be operated on Wireless page

- Rescan: Click on the "Rescan" button, and STW-602C 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 the access point you wanted
- User defined: Users can also define information for wireless parameters by themselves.

### 4.4.1. Wireless Detail Settings

User 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 (FIG. 23). For example, User can configure SSID, wireless topology, Wireless Band Mode, TxRate, Channel, Authentication, and Encryption of the access point that STW-602C want to connect to.

The advanced wireless settings also include roaming threshold. User can configure roaming signal threshold for the STW-602C. STW-602C will change to the stronger wireless signal access point, if the original access point's signal is less than roaming threshold.

	Wireless Setting
Roaming Threshold (%/dBm)	O Low (25%/-80) ⊙ Normal (50%/-70) O High (75%/-60)
SSID	AAXEON
BSSID (AP MAC)	
Topology	Infrastructure Mode 💌
Wireless Band Mode	BG Mixed 💌
TxRate	Auto 💌
Channel	1
Authentication	Open 🔽
Encryption	None 💌
WPA-PSK ( $8 \sim 63~\text{ASCII}$ or $64~\text{HEX}$ )	
💿 WEP Key1 Hexadecimal 🗸	64bits 💌
🛛 WEP Key2 Hexadecimal 💌	64bits 💌
🔹 WEP Key3 Hexadecimal 💌	64bits 🔽
WEP Key4 Hexadecimal 🗸	64bits 🔽

Fig 23. Pop-up Windows for Wireless Detail settings

### 4.4.2. Sample Wireless Application Cases

Below are some screen shot examples of wireless detail settings for different wireless security schemes.

### Attach access point without Authorization

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

	Wireless Setting		
Roaming Threshold (%/dBm)	○ Low (25%/-80) ⊙ Normal (50%/-70) ○ High (75%/-60)		
SSID	AAXEON		
BSSID (AP MAC)	Enable		
Topology	Infrastructure Mode 💌		
Wireless Band Mode	BG Mixed 💌		
TxRate	Auto 💌		
Channel	1		
Authentication	Open 💌		
Encryption	None 💌		
WPA-PSK (8~63 ASCII or 64 HEX)			
💿 WEP Key1 Hexadecimal 🗸	64bits 💌		
○ WEP Key2 Hexadecimal ∨	64bits 💌		
○ WEP Key3 Hexadecimal	64bits 💌		
🔿 WEP Key4 Hexadecimal 💌	64bits 💌		

Fig 24. Open Authorization and no Encryption

### Attach access point with WEP

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

Wireless Setting					
Roaming Threshold (%/dBm)	○ Low (25%/-80) ⊙ Normal (50%/-70) ○ High (75%/-60)				
SSID	AAXEON				
BSSID (AP MAC)	Enable				
Topology	Infrastructure Mode 💌				
Wireless Band Mode	BG Mixed 💌				
TxRate	Auto 💌				
Channel	1 🗸				
Authentication	Shared 💌				
Encryption	WEP 💌				
WPA-PSK (8~63 ASCII or 64 HEX)					
⊙ WEP Key1 Hexadecimal 💌	64bits 🔽 0123456789				
○ WEP Key2 Hexadecimal 💌	64bits 💌				
○ WEP Key3 Hexadecimal 💌	64bits 💌				
○ WEP Key4 Hexadecimal 💌	64bits 💌				

Fig 25. Share Authorization and WEP Encryption

- \* Note1: Enter 5 ASCII value or 10 Hexadecimal digit if select WEP64 encryption.
- \* Note2: Enter 13 ASCII value or 26 Hexadecimal digit if select WEP128 encryption

### Attach access point with WPA-PSK

- **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)	O Low (25%/-80) ⊙ Normal (50%/-70) O High (75%/-60)					
SSID	AAXEON					
BSSID (AP MAC)	Enable					
Topology	Infrastructure Mode 💌					
Wireless Band Mode	BG Mixed 💌					
TxRate	Auto 💌					
Channel	1					
Authentication	WPA-PSK					
Encryption						
WPA-PSK ( $8 \sim 63$ ASCII or $64$ HEX )	01234567					
🛛 WEP Key1 Hexadecimal 🗸	64bits 💌					
WEP Key2 Hexadecimal 🗸	64bits 🔽					
WEP Key3 Hexadecimal 🗸	64bits 🔽					
🔹 WEP Key4 Hexadecimal 💌	64bits 🔽					

Fig 26. WPA-PSK Authorization and TKIP Encryption

# 4.5. COM Port Configuration

Here User can configure **Serial parameters**, include alias, baud rate, parity, data bit and type of flow control defined by user.

Devolinx Ethernet-Serial Server			
COM 1			
To choose spec	ific working mode for COM 1	port.	
		P Client OUP	
	/irtual COM	P Server	
	P Filter		
3	Source IP		
L	.ocal Port	4660	
C	Connect Number Limit	1	
_			
T ( COU			
To configure COM 1		I Settings	
Serial Interface	⊙RS232 ○RS422 ○RS485		
Baud Rate	9600 💌 bps		
Parity		Even OMark OSpace	
Data bits	O5 bits O6 bits O	7 bits ⊙8 bits	
Stop bits	⊙1 bit O2 bits		
Flow Control	⊙None OXon/Xof	ORTS/CTS	
Packet Delimite (Network to Ser	ial)		
Packet Delimite (Serial to Netwo	ork) Olimer 10		
Packet Delimiter: Collect data into single packet for reduce overhead.			

Fig 27. COM port Information Web Page

## 4.5.1. Link Mode Settings

- Click on the "Serial" link and the Fig. 27 screen will appear.
- Fill in Serial parameter information on **Serial Settings** field
- Click on "*Save Configuration*" button to save the changes.

## 4.5.2. TCP Server Mode

**TCP Server** mode is default Link mode of **Serial Settings**, and it can wait for connecting requirement from remote host PC which running "serial-to IP" utility or setting STW-602Cs in tunneling mode. User has to configure listening port to allow client establish connection to this server. Default port number of STW-602C is 4660.

**IP filtering** function is a simple **ACL** (Access Control List). It can be disabled by setting FILTER\_IP to "0.0.0.0".

User can configure one or group IP for **source IP**. If IP filter is enabled, only source IP assigned can be connected to STW-602C

COM 1			
To choose sp	pecific working mode for COM 1	l port.	
	TCP Server TCP Server	CP Client OUDP	
	тс	P Server	
	Virtual COM	Enable	
	IP Filter	Enable	
	Source IP	0.0.0.0	
	Local Port	4660	
	Connect Number Limit	1	

Fig 28. TCP Server in Link mode

\* Note: Enable Virtual COM mode if the remote site PC's "Serial to IP" tool is installed

### 4.5.3. TCP Client Mode

User may enter destination IP & port (default: 4660) to establish connection of counter-pair (remote) host (For example, another STW-602C, or PC for data-collection). STW-602C can support two destination hosts simultaneously.

COM 1		
To choose s	pecific working mode for C(	OM 1 port.
	TCP Server	TCP Client     UDP
		TCP Client
	Destination IP 1	192 168 1 1
	Destination Port 1	4660
	Destination 2	Enable
	Destination IP 2	0 . 0 . 0
	Destination Port 2	4660
	Destination IP 2	

Fig 29. TCP Client in Link mode

## 4.5.4. UDP Mode

STW-602C 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. Vice versa is also true. For example, the original **RS-422/RS485** bus can be transferred and extended connected distance by STW-602Cs.

The destination IP is assigned by single IP or group IPs, The configuration is limited by the Local Listening Port. For example, on STW-602C listening port is 4660 which receive data sending from the host computers. STW-602C can support up to **4-group** IPs for UDP connection, if users needed.

COM 1				
To choose specific worl	ing mode for C	OM 1 port.		
T ●	CP Server	TCP Client	UDP	_
		UDP		
Local P	ort	4660		
Destination IP Address 1	Enable	192 168 1	26 ~ 50	Port 4660
Destination IP Address 2	Enable	192 168 2	2 51 ~ 75	Port 4661
Destination IP Address 3	Enable	192 168 3	3 76 ~ 100	Port 4662
Destination IP Address 4	Enable	0.0.0	) 0~0	<b>Port</b> 4660

### Fig 30. UDP protocol in Link mode

\* Note: In this phase, UDP mode does not support Virtual COM mode.

### 4.5.5. Serial Settings

This filed can be configured with serial parameters for STW-602C. Here User can configure Serial parameters, include **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:** 1200/2400/4800/9600/19200/38400/57600/115200
- 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).

Serial Settings							
Serial Interface	ORS232 ⊙RS422 ORS485						
Baud Rate	115200 v bps						
Parity	⊙None ○Odd ○Even ○Mark ○Space						
Data bits	O 5 bits O 6 bits O 7 bits ⊙ 8 bits						
Stop bits	⊙1 bit O2 bits						
Flow Control	⊙None OXon/Xoff ORTS/CTS						
Packet Delimiter (Serial to Network)	Enable           Timer         10         (10~30000) ms           Characters         0x0d0a         ("0x"+ASCII Code, Ex. 0x0d or 0x0d0a)						

Fig 31. Serial Communication Settings from Web Page

### 4.5.6. Delimiter Settings

#### 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. STW-602C 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** msec. For Character pattern terminator, if "character pattern is selected and a data stream ended with "0x0a04", then the entire data buffer of the serial device is transmitted.

User can also choose character pattern as the packet delimiter indicated.

## 4.6. Configure System

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



Fig 32. Subsystem menu of system settings Web Interface

### 4.6.1. Configure Time by NTP Service

#### Operation: System→Time

User can set date and time manually by fill in "Set Date and Time manually" field. User can also configure NTP Server to obtain Network time automatically.

Time	
By enabling NTP y Time.	rou allow to adjust and set the device internal time, relative to Greenwich Mean
	Current System Time
	Fri Jan 6 00:27:55 UTC 2006 Refresh
Enable NTP	
	Local Time Zone Setting
Time Zone	(GMT-08:00) Pacific Time (US & Canada); Tijuana 💌
	Sync with Time Server (NTP)
NTP Server	time.nist.gov
Enable Manua	I Setting
	Date and Time Settings
Date	Year: 2006 🖌 / Month: Jan 🖌 / Day: 6 🖌
Time	Hour:(0~23) : 0 V Minute:(0~59) : 27 V Second:(0~59): 55 V
	Save Configuration

Fig 33. Time service settings from System web page

# 4.6.2. WLAN Region

### Operation: System->WLAN Region

Click on the "WLAN Region" link and the following screen shall appear (Fig. 34).

	as, you can change the Country by I the bands of channel and Wireless
Country Region	America 💌
B/G Band Region	1,2,3,4,5,6,7,8,9,10,11
Save	Configuration

Fig 34. Time service settings from System web page

Select the country from drop-down list box to country that user wants to implement the STW-602C. This selection will be effected to the bands of channel of STW-602C 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

# 4.6.3. Security (change the Password)

#### **Operation: System->Security**

Click on the "Security" link and the following screen shall appear (Fig. 35).

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 is 8 characters.

Security The default password is null, y filling in the new password to Password fields, be aware tha	
User name	admin
Old Password	
New Password	
Verified Password	
Save	Configuration

Fig 35. Change password from System Security Page

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

# 4.6.4. Restoring Factory Default Configurations

#### Operation: System→ Set to Default

User can click on "*set to default and restart*" button to restore STW-602C's settings to factory default (Fig. 36).



Fig 36. Set all parameters to factory default by Web Interface

## 4.6.5. Restart System

#### Operation: System → Restart

The changes of networking parameters will take effect only after the STW-602C is restarted. User can restart the STW-602C manually by click on Restart button on the restart menu web page (**Fig 37**).

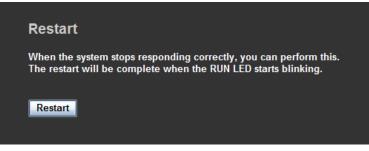


Fig 37. Restart system by Web

### 5. Telnet Configuration

User can also use Telnet utility to change STW-602C configuration settings.

- Open Ms-DOS command prompt window or other telnet tools
- Enter the "IP address" of the STW-602C (For example, Telnet 10.0.50.100). The system then prompts for username and password, the default username is "admin" and the default password is null (blank).

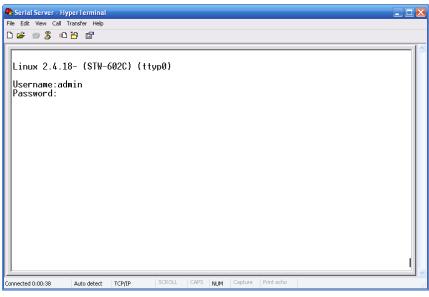


Fig 38. Login into System by Telnet

Then the following main menu shall appear

Serial Server - HyperTerminal	
Eile Edit View Call Iransfer Help	
다 🛎 🚿 🗥 다 🎦 📾	
Linux 2.4.18- (STW-602C) (ttyp0) Username:admin Password:	
Model Name : STW-602C Device Name : 0060e9035aa9 Kernel Version : 1.16 AP Version : 1.37	
Main Menu	
[0]EXIT [1]Overview [2]Networking Settings [3]Wireless Settings [4]Serial Settings [5]Security Settings [6]Restart [7]Roaming Information :	
Connected 0:00:57 Auto detect TCP/IP SCROLL	CAPS NUM Capture Print echo

Fig 39. Overview information by telnet

- If the STW-602C does not receive any command within **1 minute**, Telnet will be terminated automatically.
- The changes of networking parameters will take effect only after the STW-602C is restarted.

# 5.1. General Information

### Operation: [Main]→[1 Overview]

Select "1" from "Input choice (0~6) and enter:" to enter "overview page.

This system overview window gives the general information on Ethernet & WLAN IP, MAC address, SNMP information, kernel and AP version, and the connection status of the STW-602C (Fig. 39).

The following overview information shall appear.

### Device Information:

Model Name: STW-602C's Model Device Name: [Allows for changes in SNMP settings] Kernel Version: [Read Only, Generated by system] AP Version: [Read Only, Generated by system]

### **Ethernet Information:**

MAC: [Read Only]IP: [Allows for changes in Network Page]

### WLAN Information:

MAC: [Read Only]

IP: [Allows for changes in Auto IP of Network Page] Connected: [SSID name, if Wireless STW-602C is connected]

2	Serial Server - HyperTerminal	_ 🗆 🖂
E	ile Edit <u>V</u> iew <u>C</u> all Iransfer <u>H</u> elp	
E	) 🚅 🍘 🕉 🗈 🎦 🗃	
	 Overview	^
	Device Information Model Name : STW-602C Device Name : 0060e9035aa9 Kernel Version : 1.16 AP Version : 1.37	
	Ethernet Information MAC : 00:60:E9:03:5A:A9 IP : 192.168.001.160	=
	PAUSE(Enter)	~
<		>
Co	onnected 0:03:23 Auto detect TCP/IP SCROLL CAPS NUM Capture Print e	cho

Fig 40. System Information from Overview

#### DNS Information:

**DNS1:** [IP address of 1<sup>st</sup> DNS Server, Allows for changes in Auto IP of Networking Page] **DNS2**: [IP address of 2<sup>nd</sup> DNS Server, Allows for changes in Auto IP of Networking Page]

### SNMP Information:

SNMP Status: Enable [or Disable, Allows for changes in Networking Page]

SysName: [Allows for changes in Networking Page]SysLocation: [Allows for changes in Networking Page]SysContact: Allows for changes in Networking Page]

### **Serial Information:**

UART mode RS485/RS232/RS422 Link Mode: TCP Server [or TCP Client/UDP Mode, Allows for changes in Serial Page] Baud rate: 115200 [or 1200/2400/4800/9600...Allows for changes in Serial Page] Parity: None [or Even/Odd/Space/Mark...Allows for changes in Serial Page] Data bits: 8 [or 7 (bits).Allows for changes in Serial Page] Stop bits 1 bit or 2 bits Flow Control None, Xon/Xoff, RTS/CTS

# 5.2. Networking Configuration

### Operation: [Main]→[2 Networking]:

Select "2" on "Input choice (0~6) and enter:" to enter Networking settings page.

2	Serial Server - Hy	perTerminal								×
Đ	le <u>E</u> dit ⊻iew <u>⊂</u> all <u>T</u>	ransfer <u>H</u> elp								
С	) 🗃 🍵 🔏 🗈	🖰 😭								
		Main Me	nu	 	-					^
	[0]EXIT [1]Overview [2]Networkin [3]Wireless [4]Serial Se [5]Security [6]Restart [7]Roaming ] :2	Setting ettings Setting	s s							
		Network	ing	 						
	[0]EXIT [1]LAN Sett: [2]DNS Sett: [3]SNMP Set :_	ings		 						
<	]								>	
Co	nnected 0:04:26	Auto detect	TCP/IP	SCROLL	CAPS	NUM	Capture	Print echo		

Fig 41. Networking Settings by Telnet

#### \* Note: Press "0" key to return to the previous menu

This section allows for changes in **IP address, subnet mask, gateway IP address and SNMP** information. Please note that setting changes will not take effect until the STW-602C is restarted.

# 5.2.1. LAN Settings

#### Operation: [Main]→[2 Networking]→[1 LAN Settings]

Select "1" from "*Input choice (0~3) and enter on Networking page*." to enter LAN Settings page. The MAC address, IP address, subnet mask, gateway address, and IP mode information will be shown (Fig. 42). User also can set IP, Netmask, Gateway, and IP mode of LAN interfaces by enter the corresponding menus and values. For example, enter 1 for setting the IP address on LAN interface.

Serial Server - Hy Ele Edit Yiew Call I	ransfer <u>H</u> elp						-	
	Networki	ing						^
[0]EXIT [1]LAN Sett [2]DNS Sett [3]SNMP Set :1	ings							
	LAN Set	tings						
[0]EXIT [*]MAC [1]IP [2]Netmask [3]Gateway	:192.1 :255.2	):E9:03: 68.001. 255.255.	160 000	-				
[4]IP Mode	:Stati	IC.001.	001					=
<								>
Connected 0:04:58	Auto detect	TCP/IP	SCROLL	CAPS	NUM	Capture	Print echo	

Fig 42. LAN Settings by Telnet

### 5.2.2. DNS Settings

### Operation: [Main]→[2 Networking]→[2 DNS Settings]

Select "2" from "*Input choice (0~3) and enter on Networking page*." to enter DNS Settings page. Fill in the DNS information DNS1 or DNS2 or both according to user DNS server (Fig. 43).

4	Serial Server - HyperTerminal	
Eile	Edit <u>V</u> iew <u>C</u> all <u>T</u> ransfer <u>H</u> elp	
D	🖻 💮 🍒 🗈 🎦 🖆	
ŀ	Networking	<u>^</u>
	[Ø]EXIT [1]LAN Settings [2]DNS Settings [3]SNMP Settings :2	
	DNS Settings	
	[0]EXIT [1]DNS1 :192.168.001.001 [2]DNS2 :	
		<u> </u>
		ture Print er

Fig 43. DNS Settings by Telnet

# 5.2.3. SNMP Settings

#### Operation: [Main] $\rightarrow$ [2 Networking] $\rightarrow$ [3 SNMP Settings]

Select "3" from "*Input choice (0~3) and enter on Networking page*." to enter SNMP Settings page. User can enable/disable SNMP, and set network identification information on SNMP Settings page. The changes will not become effective until STW-602C is restarted

STW-602C basically supports get/set SNMP parameters, these are **SysName** (System Name), **SysLocation** (System Location) and **SysContact** (System Contact). These fields will response and supply basic system information from standard SNMP query. User can set the SNMP system parameters by enter the corresponding menus and values. For example, **enter 2** for changing the **SysName** then enter the desired name.

🎨 Serial Server - HyperTerminal	🛛 🔀
Eile Edit View Call Transfer Help	
□☞ ◎ Ѯ ▫□``` ᢨ	
Networking	
[0]EXIT [1]LAN Settings [2]DNS Settings [3]SNMP Settings :3	
SNMP Settings	
[0]EXIT[1]SNMP: Enable[2]SysName: 0060E9-035AA9[3]SysLocation: location[4]SysContact: contact[5]Read Community: public[6]Write Community: private	
[7]SNMP Trap Server : 000.000.000.000 [8]Alert Event :-	
<	>
Connected 0:06:04 Auto detect TCP/IP SCROLL CAPS NUM Capt	ure Print echo

Fig 44. SNMP Settings by Telnet

## 5.3. Wireless Configuration

#### Operation: [Main] $\rightarrow$ [3 Wireless Settings]

Select "3" from "Input choice (0~6) and enter." the following screen shall appear (Fig. 45).

User can configure wireless **IP**, **Netmask**, **Gateway**, **IP mode**, and **Region** by enter the comenu and corresponding values.

corresponding

🌯 Serial Server - Hy	perTerminal					
<u>F</u> ile <u>E</u> dit ⊻iew <u>⊂</u> all <u>T</u>	ransfer <u>H</u> elp					
D 🚅 🌚 🏅 🗈	8					
	Wireless	s Setti	ngs	-		^
[0]EXIT [*]MAC [1]IP [2]Netmask [3]Gateway [4]IP Mode [5]Region [6]Site Surv [7]Manually	:192.1 :255.2 :192.1 :Stati :Ameri	68.001 255.255 68.001 .c .cas	5.000			
<u></u>						
<						>
Connected 0:06:46	Auto detect	TCP/IP	SCROLL	CAPS	NUM	Capture P

Fig 45. Configure Wireless Settings by Telnet

# 5.3.1. Wireless IP, Netmask, Gateway and IP mode Settings

#### Operation: [Main] $\rightarrow$ [3 Wireless Settings] $\rightarrow$ [1 IP]/[2 Netmask]/ [3 Gateway]/[4 IP Mode]

User can configure STW-602C Wireless IP/Netmask/Gateway by enter 1/2/3 at Wireless Settings page and enter the desired IP/Netmask/Gateway address.

User can also configure wireless IP mode by enter 4 at Wireless Settings page and enter 1 for static IP address or enter 2 for DHCP mode (Fig. 47).

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[0]EXIT [*]MAC [1]IP [2]Netmask [3]Gateway [4]IP Mode [5]Region [6]Site Sur [7]Manually	:192. :255. :192. :Stat :Amer vey	ic icas	.161 .000		
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Fig 46. Configure Wireless Networking by Telnet

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[0]EXIT [*]MAC [1]IP [2]Netmask [3]Gateway [4]IP Mode [5]Region [6]Site Sur [7]Manually :4	:192. :255. :192. :Stat :Amer: vey	ic icas	.161 .000	_			
[0]EXIT [1]Static [2]DHCP :							
<							>
Connected 0:07:55	Auto detect	TCP/IP	SCROLL	CAPS	NUM	Capture	Print echo

Fig 47. Configure Wireless IP mode by Telnet

## 5.3.2. Configure Region

#### Operation: [Main] $\rightarrow$ [3 Wireless Setting] $\rightarrow$ [5 Region]

WLAN Region is the geography area that user want to implement the STW-602C. Because the wireless channel implement the frequency band differently in a different regions. User can configure the **WLAN Region** by **enter 5** at **Wireless Settings page** and enter the menu according to user's region.

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Wireless Settings	^
[0]EXIT [* MAC :00:00:00:00:00:00 [1]IP :192.168.001.161 [2]Netmask :255.255.255.000 [3]Gateway :192.168.001.001 [4]IP Mode :Static [5]Region :Americas [6]Site Survey [7]Manually Settings :5	
[0]EXIT [1]Other [2]Americas [3]Japan [4]Singapore [5]Taiwan [6]Europe [7]Spain [8]France [9]Israel	
:	=
	<u> </u>
Connected 0:08:26 Auto detect TCP/IP SCROLL CAPS NUM Capture	Print echo

Fig 48. Wireless Region by Telnet

### 5.3.3. Site Survey

#### Operation: [Main] $\rightarrow$ [3 Wireless Setting] $\rightarrow$ [6 Site Survey]

Site survey function can support to auto-assignment wireless parameters, and attached to access point selected automatically. After user do the **site survey** the result of all access points nearby will be displayed (**Fig.49**). Then user can select the access point that user want STW-602C to be connected to by enter the number of access point (**Fig. 50**).

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(1) (2) (3)	2WIRE019 PBSDGST01	00:12:88 00:0F:B5 00:02:6F	:98:2E:09 :9C:6F:3B :50:82:1D	100%  96%  20%	6  2  4	WEP WEP TKIP	Infrastructure Infrastructure Infrastructure	
( 4)  [0]EXIT	detau1			70% j	91 	IK1P, j.	Infrastructure	
[1]Rescan [2]Connect S :	SSID							
<	11	1						>
Connected 0:09:14	Auto detect TCP/IF	SCROLL	CAPS NUM	Capture	Print	echo		

Fig 49. Wireless AP List from Site Survey

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Region:[Ame Wireless Ba	ericas] and Mode:[BG Mixed]						(
NO	SSID;	MAC	SQ	CHI	Encry	Net	
(1) (2) (3) (4)	2WIRE019 00:12:8 PBSDGST01 00:0F:B  00:02:6 default 00:40:C	8:98:2E:09 1 5:9C:6F:3B  F:50:82:1D  7:FD:01:0A	00%  96%  20%  76%	6  2  4  9	WEP Ir WEP Ir TKIP Ir TKIP,Ir	nfrastructure nfrastructure nfrastructure nfrastructure	
[0]EXIT [1]Rescan [2]Connect :2	SSID						
Input Conne	ect SSID by number:_						
<b>`</b>	Auto detect TCP/IP SCRC	LL CAPS NUM	Capture	Loca	echo		>

Fig 50. Connected to AP from Site list

## 5.3.4. Manual Wireless Settings

#### Operation: [Main] $\rightarrow$ [3 Wireless Setting] $\rightarrow$ [7 Manually Settings]

User can manually configure STW-602C wireless configurations by enter 7 at the Wireless Settings page. Then user can set any wireless parameters by enter the menu corresponding to that parameters. Wireless parameters are shown in **Fig. 51** below.

Serial Server - HyperTerminal	🛛 🔀
<u> E</u> ile <u>E</u> dit <u>V</u> iew <u>C</u> all <u>T</u> ransfer <u>H</u> elp	
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Wireless Others Settin Wireless Others Settin [0]EXIT [1]Roaming Threshold(%/dBm) [2]Topology [3]SSID [4]Wireless Band Mode [5]TxRate [6]Channel(AD-Hoc Only) [7]Authentication [8]Encryption Type [9]WEP Key Length [a]Default WEP Key(1~4) [b]WEP Key 2 Format [c]WEP Key 3 Format [c]WEP Key 3 Format [d]WEP Key 3 Format [d]WEP Key 4 Format [f]WEP Key 2(HEX) [g]WEP Key 2(HEX) [i]WEP Key 4(HEX) [j]WPA-PSK(characters) :	
Connected 0:10:22 Auto detect TCP/IP	SCROLL CAPS NUM Capture Print echo :

Fig 51. Configure Wireless LAN by Manual

## 5.3.5. Configure Ad-Hoc Mode

#### Operation: [Main] $\rightarrow$ [3 Wireless Setting] $\rightarrow$ [7 Manually Settings] $\rightarrow$ [2 Topology]

Independent Basic Service Set (IBSS), the most basic type of IEEE 802.11 wireless LAN, is commonly referred to as an ad-hoc network. An IBSS may consist of as few as two stations. Unlike infrastructure mode, all stations are capable of communicating directly with each other without access point.

User can configure Wireless STW-602C to be Ad-Hoc mode, by manually configure the wireless **network topology** as shown in **Fig.52** below.

) :(50%/-70) :Infrastructure :Any :BG Mixed :AUTO :1 :Open :WEP :64bits :1 :HEX :HEX :HEX :HEX :HEX :**** **** ****
[2] Adhoc

Fig 52. Configure Ad-Hoc mode by Telnet

User can select wireless link by none or WEP encryption in Ad-hoc mode and these encryptions can support applications from customer's requirements.

## **Configure Wireless for WEP**

#### Operation: [Main] $\rightarrow$ [3 Wireless Setting] $\rightarrow$ [7 Manually Settings] $\rightarrow$ [8 Encryption Type]

For security reason, Wireless STW-602C can configure to use **WEP key** of **40 bits or 128 bits**, or advance **WPA-PSK** to securely communicate in the wireless network. WEP key manually configure via telnet screen is shown as **Fig. 53** below.

Wireless Others Settings [0]EXIT [1]Roaming Threshold(%/dBm) : (50%/-70) [2]Topology : Adhoc [3]SSID : Any [4]Wireless Band Mode : B Only [5]TxRate : AUTO [6]Channel(AD-Hoc Only) : 1 [7]Authentication : Open [8]Encryption Type : WEP [9]WEP Key Length : 64bits [a]Default WEP Key(1~4) : 1 [b]WEP Key 1 Format : HEX [c]WEP Key 2 Format : HEX [c]WEP Key 3 Format : HEX [d]WEP Key 4 Format : HEX [f]WEP Key 1(HEX) : ***** [h]WEP Key 3(HEX) : ***** [i]WEP Key 4(HEX) : ***** [i]WPA-PSK(characters) : *****	Serial Server - HyperTerminal File Edit View Call Iransfer Help D 2 2 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2	
Connected 0:45:16 Auto detect   TCP/IP   SCROLL   CAPS   NIM   Capture   Princecho   21	[0]EXIT [1]Roaming Threshold(%/dBm):(50% [2]Topology Addw [3]SSID Any [4]Wireless Band Mode B Or [5]TxRate AUTO [6]Channel(AD-Hoc Only) 1 [7]Authentication Oper [8]Encryption Type WEP [9]WEP Key Length 64bi [a]Default WEP Key(1~4) 1 [b]WEP Key 1 Format HEX [c]WEP Key 2 Format HEX [c]WEP Key 3 Format HEX [d]WEP Key 3 Format HEX [d]WEP Key 4 Format HEX [f]WEP Key 2(HEX) ***** [h]WEP Key 3(HEX) ***** [i]WEP Key 4(HEX) ***** [i]WEP Key 4(HEX) *****	oc hly ts *

Fig 53. Configure WEP 64 bits Settings in Ad-Hoc mode with open key

- \* Note1: Enter 5 ASCII value or 10 Hexadecimal digit if select WEP64 encryption.
- \* Note2: Enter 13 ASCII value or 26 Hexadecimal digit if select WEP128 encryption

## 5.3.6. Configure Infrastructure Mode

#### Operation: [Main] $\rightarrow$ [3 Wireless Setting] $\rightarrow$ [7 Manually Settings] $\rightarrow$ [2 Topology]

The 802.11 infrastructure networking framework is the framework which devices communicated with each other have to connect to an Access Point (AP) first before connect to the other devices.

Wireless STW-602C supports different type of authorizations in infrastructure modes; include Open system, shared encryption with WEP64/128, WPA-PSK, from wireless encryption features.

The Figures below are some screen shot schemes for different authorized modes.

#### Settings with open authorization and none encryption

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

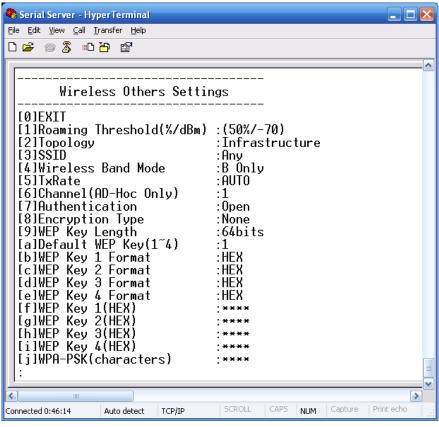


Fig 54. Wireless: Open authorization and none encryption

Configure share authorization with WEP encryption

- **Topology:** Infrastructure
- Channel: Auto-assignment from Access point
- Authentication: shared
- Encryption: WEP

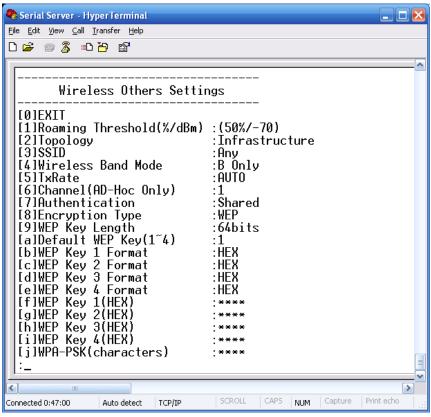


Fig 55. Wireless: Share authorization and WEP encryption

Configure wireless network via access point with WPA-PSK

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

Serial Server - HyperTerminal         File Edit View Call Transfer Help         □ ☞ ◎ ፩ ==□ 씁 ≦	
Wireless Others Settin [0]EXIT [1]Roaming Threshold(%/dBm) [2]Topology [3]SSID [4]Wireless Band Mode [5]TxRate [6]Channel(AD-Hoc Only) [7]Authentication [8]Encryption Type [9]WEP Key Length [a]Default WEP Key(1~4) [b]WEP Key 2 Format [c]WEP Key 2 Format [c]WEP Key 3 Format [c]WEP Key 4 Format [f]WEP Key 2(HEX) [g]WEP Key 2(HEX) [j]WPA-PSK(characters) :	:(50%/-70) :Infrastructure :Any :B Only :AUTO :1 :WPA-PSK :TKIP :64bits :1 :HEX :HEX :HEX :HEX :HEX :HEX :**** ****
Connected 0:47:32 Auto detect TCP/IP	SCROLL CAPS NUM Capture Print echo

Fig 56. Wireless: WPA-PSK authorization and TKIP encryption

## 5.4. COM Port Configuration

User can configure serial parameters, include COM1(COM2) operation mode, port parameters, enable or disable serial buffer's data and packet delimiter.

🧠 Serial Server - Hyj	perTermina	l					
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	Main Me	enu		_			^
[0]EXIT [1]Overview [2]Networkin [3]Wireless [4]Serial Se	Setting	ings gs					
[5]Security [6]Restart [7]Roaming ] :4	Setting	-					
	Serial	Settings					≡
[0]EXIT [1]COM1 [2]COM2 :				_			
<							<u> </u>
Connected 0:00:57	Auto detect	TCP/IP	SCROLL	CAPS	NUM	Capture	Print echo

Fig 57. Select COM Port from Serial Settings by Telnet

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	COM1 Set	tings					
[0]EXIT [1]link mode Local Por [2]Baud rate [3]Parity [4]Data bits [5]Stop bits [6]Flow cont [7]Serial Ir [8]Delimiter [9]Delimiter	t s rol terface (Network	to Ser	ts t t 2 2 ial):Dis	sable sable			<b>X</b>
<							>
Connected 0:07:44	Auto detect	TCP/IP	SCROLL	CAPS	NUM	Capture	Print echo

Fig 58. The COM1 Setting page

## 5.4.1. TCP Server Mode for Link Mode

#### Operation: [Main] $\rightarrow$ [4 Serial Settings] $\rightarrow$ [1 Link mode] $\rightarrow$ [1 TCP Server]

TCP Server mode is **default** setting for Link mode of serial settings of STW-602C, and it can be configured to wait for the host computers to establish a connection with the serial device through STW-602C. STW-602C needs to be configure the listening port to waiting for host connection, Default Port number of STW-602C is 4660 (4661) and it is associated with the serial port COM1 (COM2). After the connection is established, data can flow in both directions. STW-602C can wait for connection requested from remote PC which installed "**serial-to IP**" tool or counter-pair STW-602C in **tunneling mode**. After the application program being connected to the TCP port 4660 (4661) on the STW-602C, data of user application program are transmitted transparently to serial devices through STW-602C and vice versa.

User enters 1 at COM1 (COM2) Settings page and enters 1 for the TCP Server mode. To enable the remote client which install "**serial-to IP**" to connect to STW-602C, user has to **enable** the **Virtual COM** and Set up the designated **port** number.

**IP filtering** menu is a simple **ACL (Access Control List)**. It can be disabled by setting **FILTER\_IP** to **"0.0.0.0"**. User can configure one or group IPs for source IP in IP filtering. If **IP filtering** is **enabled**, only **source IP** assigned can connect to STW-602C.

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	COM1 Set	tings		_		^
[0]EXIT [1]link mode Virtual C Local Por [2]Baud rate [3]Parity [4]Data bits [5]Stop bits [6]Flow cont [7]Serial In [8]Delimiter [9]Delimiter	OM t rol terface (Network	to Ser	le ts t 2 ial):Di			
Connected 0:12:27	Auto detect	TCP/IP	SCROLL	CAPS IN	JUM Capture	Print echo

#### Fig 59. TCP Server mode in link mode

#### \* Note: Enable Virtual COM mode if the remote site PC's "Serial to IP" tool is installed.

#### 5.4.2. TCP Client for Link Mode

#### Operation: [Main] $\rightarrow$ [4 Serial Settings] $\rightarrow$ [1 Link mode] $\rightarrow$ [2 TCP Client]

User can configure STW-602C to work in TCP Client mode. On destination IP & port (default: COM1:4660/COM2:4661), Enter the desired destination IP and port (Server IP and port) that STW-602C want to connect to (For example, another STW-602C, or PC for data-collection). The STW-602C can support two destination host computers simultaneously. **Fig. 60** is the **TCP Client** page.

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<u>File E</u> dit <u>V</u> iew <u>C</u> all <u>T</u> ransfer <u>H</u> elp	
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<b>]</b>	~
COM1 Settings	
<pre>[0]EXIT [1]Link mode : TCP Client Destination IP 1 :008.000.000.100 Destination Port 1 :4660 [2]Baud rate :9600 [3]Parity :None [4]Data bits :8 bits [5]Stop bits :1 bit [6]Flow control :None [7]Serial Interface :RS232 [8]Delimiter(Network to Serial):Disable [9]Delimiter(Serial to Network):Disable :</pre>	
Connected 0:09:49 Auto detect TCP/ID SCROLL CAPS NUM Capture	Print echo
Connected 0:09:49 Auto detect TCP/IP SCROLL CAPS NUM Capture	Frinciecho 🦼

Fig 60. TCP Client mode in link mode

#### 5.4.3. UDP for Link Mode

#### Operation: [Main] $\rightarrow$ [4 Serial Settings] $\rightarrow$ [1 Link mode] $\rightarrow$ [3 UDP]

STW-602C can be configured to work in UDP mode to establish connection using **Unicast** or **Multicast** protocol. Data can be transmitted from one or multiple serial devices to/from one or multiple host PCs and vice versa. For example, the original RS-422/ RS485 bus data is transferred over the extended connected distance by STW-602Cs, The destination IP is assigned by single IP or group IPs, The configuration is limited by the Local Listening Port, default 4660 and 4661 on the COM1 and COM2 of STW-602C.

STW-602C can support up to 4-group IPs for UDP connection, if users needed.

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COM1 Settings	
[0]EXIT[1]Iink mode:UDPLocal Port:4660Destination IP 1:008.000.000.101 ~ 102Destination Port 1:4661[2]Baud rate:9600[3]Parity:None[4]Data bits:8 bits[5]Stop bits:1 bit[6]Flow control:None[7]Serial Interface:RS232[8]Delimiter(Network to Serial):Disable[9]Delimiter(Serial to Network):Disable	
:	
	>
Connected 0:11:37 Auto detect TCP/IP SCROLL CAPS NUM Capture	Print echo 🔡

Fig 61. UDP mode in link mode

\* Note: In this phase, UDP mode does not support Virtual COM mode.

#### 5.4.4. Serial Settings

#### **Operation:**

[Main]  $\rightarrow$  [4 Serial Settings]  $\rightarrow$  [2 Baud rate]/ [3 Parity]/[4 Data bits]/ [5 Stop bits]/ [6 Flow control] User can configure baud rate, data bits, parity, stop bit and type of flow control.

_	Serial Server - HyperTerminal	×
	ile Edit View ⊆all Iransfer Help ) 🖙 📨 🔏 ⊫D 🎦 🖼	
П		
	COM1 Settings	
	Image: Image and the system[0]EXIT[1]link mode[1]link mode[1]link modeLocal Port:EnableLocal Port:2Baud rate:9600[3]Parity[3]Parity[3]Parity:None[4]Data bits:1]Enter[5]Stop bits:1] bit[6]Flow control:None[7]Serial Interface[8]Delimiter(Network to Serial):Disable[9]Delimiter(Serial to Network):Disable	
	:_	
Co	sonnected 0:12:27 Auto detect TCP/JP SCROLL CAPS NUM Capture Print echo	

Fig 62. Serial Settings by Telnet

#### 5.4.5. Packet Delimiter

#### [Main] $\rightarrow$ [4 Serial Settings] $\rightarrow$ [8 Delimiter (Network to Serial)]/ [9 Delimiter (Serial to Network)]

Packet delimiter is a way of controlling the number of packets in a serial communication. It is designed to keep packets in track. STW-602C provides two ways in packet delimiter parameter setting: (1) Packet delimiter **by timer** and (2) Packet delimiter **by character**. By **default, packet delimiter timer is 10 ms**. The ranges of packet delimiter timer is 10 to 30,000 ms, If "character pattern' is selected, for a data stream ended with "**0x0d0a**", then the entire data buffer of the serial device is transmitted.

User can change packet delimiter timer by following the steps below.

## **Configure Network Delimiter using Timer**

## [Main]→[4 Serial Settings]→ [8 Delimiter (Network to Serial)]/ [9 Delimiter (Serial to Network)] $\rightarrow$ [1 Timer]

User can choose **packet delimiter timer**'s value as the packet delimiter indicated in **Fig. 63** below

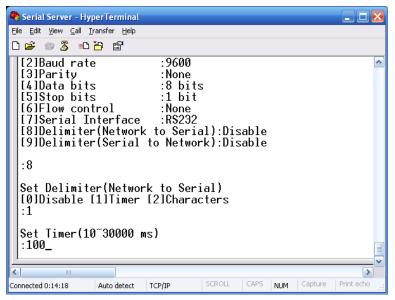


Fig 63. Configure Network Delimiter using Timer

## **Configure Network Delimiter using Characters**

## [Main]→[4 Serial Settings]→ [8 Delimiter (Network to Serial)]/ [9 Delimiter(Serial to Network)] →[2 Characters]

User can choose **packet delimiter character** pattern as the packet delimiter indicated in the **Fig. 64** below:

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<u>File E</u> dit ⊻iew <u>C</u> all <u>T</u> ransfer <u>H</u> elp		
🏽 🖆 🏐 🔏 🗈 🎦 😭		
[3]Parity [4]Data bits [5]Stop bits [6]Flow control [7]Serial Interface [8]Delimiter(Network [9]Delimiter(Serial t :9 Set Delimiter(Serial [0]Disable [1]Timer [ :2 Set Characters(0x+ASC :0x0d0a_	to Serial):Timer(100ms) to Network):Disable to Network)	
<		
Connected 0:15:03 Auto detect	TCP/IP SCROLL CAPS NUM Capture Pri	nt echo 🛒

Fig 64. Configure Network Delimiter using Characters

## 5.5. Security Configuration

## Operation: [Main] $\rightarrow$ [5 Security]

User can change password of STW-602C with this menu.

🍣 Serial Server - HyperTerminal	_ 🗆 🔀
<u>File E</u> dit <u>V</u> iew <u>C</u> all <u>I</u> ransfer <u>H</u> elp	
Main Menu	^
[0]EXIT [1]Overview [2]Networking Settings [3]Wireless Settings [4]Serial Settings [5]Security Settings [6]Restart [7]Roaming Information :5	
Security	
[0]EXIT [1]Change Password [2]Change Username :	
	>
Connected 0:15:57 Auto detect TCP/IP SCROLL CAPS NUM Capture Print e	cho 🔡 🔡

Fig 65. Security settings by Telnet

## 5.5.1. Change the Password

Operation: [Main]  $\rightarrow$  [5 Security] $\rightarrow$  [1 Change Password]

Enter desired password on "New password" fields.

🍣 Serial Server - HyperTerminal							
<u>File E</u> dit <u>V</u> iew <u>C</u> all <u>T</u> ransfer <u>H</u> elp							
다 🛩 🖉 🖏 👘 🎦							
[4]Serial Settings [5]Security Settings [6]Restart [7]Roaming Informati :5							•
Security	,						
[0]EXIT [1]Change Password [2]Change Username :1 New password: Successed							•
<u> </u>							
Connected 0:16:59 Auto detect	TCP/IP	SCROLL	CAPS	NUM	Capture	Print echo	

#### Fig 66. Changing the Password by Telnet

\* Note: User may press the reset key on the product to reset to default password (blank).

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## Appendix A. Using Virtual COM

**Virtual COM** driver mode for windows converts COM port data (RS232) to IP data to control the RS-232C port on a STW-602C over the IP network. By creating Virtual COM ports on the PC, Virtual COM redirects the communications from the Virtual COM ports to an IP address and port number on a STW-602C which connected to the serial devices. The following figure is Virtual COM connection diagram.

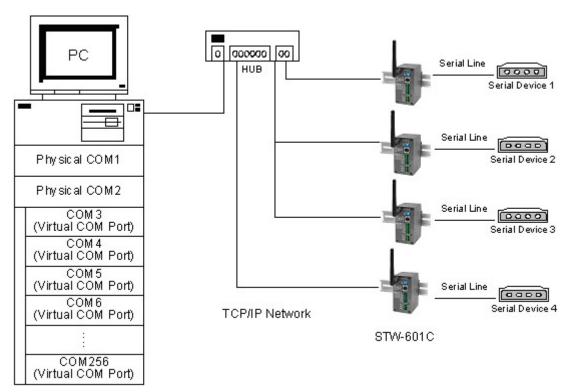


Fig 67. Setup of a Virtual COM driver

## 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, 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. Applying to the STW-602C

#### Limitation

Virtual COM driver provides user to select up to **256 COM ports** as Virtual COM ports in a SerialManager Utility PC. User 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 CD to install Virtual COM for your operating system.

In 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 Serial IP for in the list of installed software.
- Click the Add/Remove button to remove the program, or From Windows Start menu select Programs, Serial IP click Uninstall Serial IP to remove the program.

## A.3. Virtual COM Communication

#### Enable Virtual COM on STW-602C by web interface

From web browser access to STW-602C by typing its IP address, 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 the following screen.

COM 1	
To choose specific working mode for C • TCP Server	COM 1 port. • TCP Client • UDP
	TCP Server
Virtual COM	☑ Enable
IP Filter	Enable
Source IP	0.0.0.0
Local Port	4660
Connect Number Lin	mit 1

Fig 68. Enable Virtual COM Mode by Web page

## Enable Virtual COM on STW-602C by Telnet

User may also enable Virtual COM through telnet by setting Serial as a TCP server, and enter the local port number for Serial, then enable virtual COM as shown in the following procedure:

## Login STW-602C via Telnet

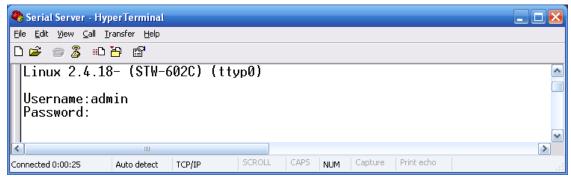


Fig 69. Login into STW-602C by Telnet or Console

Select serial setting for TCP server/Client, and enabling Virtual COM mode

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<u>Eile Edit View Call Iransfer H</u> elp	
COM1 Settings	^
[0]EXIT       :ICP_Server         Virtual COM       :Enable         Local Port       :4660         [2]Baud rate       :9600         [3]Parity       :None         [4]Data bits       :8 bits         [5]Stop bits       :1 bit         [6]Flow control       :None         [7]Serial Interface       :RS232         [8]Delimiter(Network to Serial):Disable         [9]Delimiter(Serial to Network):Disable         :	
	>
Connected 0:01:17 Auto detect TCP/IP SCROLL CAPS NUM Capture Print echo	

Fig 70. Enable Virtual COM mode by Telnet

## 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.

📥 Serial/IP Cont	rol Panel		×
COM10	Configuration of COM10	IP Address:	Port Number:
	Connect to server:	192.168.1.160	4660
	Accept Connections:		
	Configuration Wizard	Copy Sett	ngs Io
	Use Credentials From:		~
	COM Port Options		
	Edit Fold Options E Bestore Failed Conner	otions	
Select Ports			
Port <u>M</u> onitor			
Licensing			
<u>A</u> dvanced			
	<u>C</u> lose	<u>H</u> elp	A <u>b</u> out

Fig 71. Detail setting from Serial/IP

On the right of the panel is a sample for COM 4 settings. On the left is the list of the COM ports that have been selected (on **Select Ports** window) for use by the Virtual COM Redirector. Change the list by clicking the **Select Ports** button.

Each COM port has its own settings. When click on a COM port, the Control Panel changes to reflect that the selected port.

#### \* Note: COM port changes become effective immediately.

#### **Configure Virtual COM Ports**

Serial/IP COM port can be changed as follows:

- Select a COM port on the list.
- On IP Address of Server, enter STW-602C IP address.
- On Port Number, enter the TCP port number of the STW-602C.
- On Server Credentials, the default is No Login Required. If the STW-602C does require login by the Virtual COM Redirector, the Virtual COM Redirector must provide a username and/or password every time an application tries to access the STW-602C.
- Click the Configuration Wizard button and then click the Start button that shall appear on the wizard window. This step verifies that the Virtual COM Redirector communicates with the STW-602C. If Log display does not show errors, click Use Settings, return to the Control Panel
- Settings on the Connection Protocol must match the TCP/IP protocol supported by the STW-602C. 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.

📥 Configuration Wizard - COM10	$\mathbf{X}$
IP Address of Ser <u>v</u> er:	Port <u>N</u> umber:
192.168.1.160	4660
User <u>n</u> ame:	Pass <u>w</u> ord:
Test for presence of a <u>m</u> odem connected to t	he server
Status:	
🗸 Trying 192.168.1.160	▲
<ul> <li>Connected to Server</li> </ul>	
COM Port Control Support Detected	
✓ Telnet Protocol Detected	v
Session Completed	· · · · · · · · · · · · · · · · · · ·
Log:	
Recommendations:	
Protocol: Telnet	
COM Fort Option: DTR Emulation di	
COM Port Option: DSR Emulation da	
COM Fort Option: DCD Emulation de COM Fort Option: CTS Emulation de	
Security: Disabled	Jubica
·	
1	
😵 Start 🖉 Stop  🐴 Use Settings	Cancel

Fig 72. Configuration Wizard from Serial to IP tool

## **Appendix B. Configuration Utility**

## **B.1. SerialManager utility Introduction**

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

## **B.2.** Interface

The operating interface of the SerialManager utility shown as below:

Main menu	Device details			
X Serij manager V4.00.07				🛛
Search Firmware Configuration Securit				
No. Caution Model	IP Address	MAC Address	Host Name	Kernel
1 STE-501C	192.168.1.22	00:60:E9:02:D3:1C	name	V2.45
2 STW-602C	192.168.1.160	00:60:E9:03:5A:A9	0060E9-035AA9	V1.16
Ready, Total 2 devices				NUM
Stat	us bar			

## **B.3.** Functions

## **B3.1 Device Search**

This function is applied to search devices in the network. The user can use four ways to search devices. They are search by broadcast, search by special IP addresses, search by special MAC addresses and rescanning devices by using the current search way. The user can select his required search way by clicking the **Search** option on the main menu, shown as below:

SerialManager V4.00		rity <u>V</u> iew <u>H</u> elp			
✓ Broadcast Search Search by IP Address Search by MAC Address	Ctrl+B Ctrl+I				
· · · · · · · · · · · · · · · · · · ·		IP Address	MAC Address	Host Name	Kernel
Add a Device	Ctrl+A	192.168.1.22	00:60:E9:02:D3:1C	name	V2.45
Exit		192.168.1.160	00:60:E9:03:5A:A9	0060E9-035AA9	V1.16
4					8
Search devices through broadc	ast address				NUM

Or, select by clicking a button on the toolbar, as below:

Broa Sear	dcast ch	Rescan	)		
-	er V4.00	View Help			_ 🗆 🔀
No. Caution	Model	IP Address	MAC Address	Host Name	Kernel
1	STE-501C	192.168.1.22	00:60:E9:02:D3:1C	name	V2.45
2	STW-602C	192.168.1.160	00:60:E9:03:5A:A9	0060E9-035AA9	V1.16
Ready, Total 2 devi					NUM

## **B3.1.1 Broadcast Search**

Once **Broadcast Search** is selected, a box will pop up as below:

Broadcast Search	X
Input one to broadcast:	<u>A</u> dd
255 . 255 . 255 . 255	
Select one to broadcast:	Delete
	<u>o</u> k
	<u>C</u> ancel

The user may type in or select different broadcast address based on his/her own requirement.

## **B3.1.2 Search by IP address**

Once Search by IP Address is selected, an interface will pop up as below:

Search Dev	ices by IP	Addre	sses			×
-Select an li	P address to	search				
192.168.1	.160 ]			!	New	
				<u> </u>	jelete	
Search d	levices in the	e range o	of IP add	ress		
_ IP address	range ——					
From:	0.	0		0.	0	1
To:	0.	0		0.	0	1
			<u>о</u> к		<u>C</u> ancel	

Here user may have two options: Select an IP address to search or Search device in the range of IP address.

## **B3.1.3 Search by MAC Address**

If Search by MAC Address is selected, another box will pop up as below:

Search Devices by MAC Addresses 🛛 🔀
Select a MAC address to search
New
Delete
Search devices in the range of MAC address
MAC address range
From: 00 : 00 : 00 : 00 : 00 : 00
To: 00 : 00 : 00 : 00 : 00 : 00
<u>O</u> K <u>C</u> ancel

Here the user may search in two ways: Search a MAC address to search or Search devices in the range of MAC address

#### B3.1.4 Rescan

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

## **B3.2 Firmware**

This function is applied to downloading a firmware into a selected device.

	(	Upgrade from dis	k		
🔀 SerialManager	V4.00.07				
Search Eirmware C	onfiguration S <u>e</u> cur	view <u>H</u> elp			
	from Disk Ctrl+D Parameter Ctrl+P	<u>&gt; 5</u> 7 8 9 9			
No. Caution N		IP Address	MAC Address	Host Name	Kernel
	STE-501C STW-602C	192.168.1.22 192.168.1.160	00:60:E9:02:D3:1C 00:60:E9:03:5A:A9	name 0060E9-035AA9	¥2.45 ¥1.16
<	101				NUM
Upgrade kernel or AP fro	rom local disk	Upgrade from c	lisk		NUM
		Upgrade from c	lisk		
<b>V SerialManager</b> Search Eirmware Qu			lisk		
SerialManager Search Eirmware Qu	V4.00.07 ionfiguration Security			Host Name	
SerialManager Search Eirmware C No. Caution M 1 S	V4.00.07 configuration Security Configuration Security Addel STE-501C	Eep W Eep M So To So	MAC Address 00:60:E9:02:D3:1C	Host Name name	Kernel     V2.45
SerialManager Search Eirmware C No. Caution M 1 S	V4.00.07 configuration Security Configuration Security	W Help	MAC Address		Kernel
SerialManager Search Eirmware Co No. Caution M 1 S	V4.00.07 configuration Security Configuration Security Addel STE-501C	Eep W Eep M So To So	MAC Address 00:60:E9:02:D3:1C	name	Kernel     V2.45

The user can enter the window for downloading by firstly clicking a designated network device, and then selecting the submenu option **Upgrade from disk** 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:

Download Firmware from Disk 🛛 🛛 🔀				
Please select a kernel firmware or AP firmware from the disk, and then download it to the device STVV-602C (192.168.1.160).				
Current versions:				
Kernel: V1.16				
AP: STW-602C V1.38 S S				
Download kernel firmware     C:\Program Files\SerialManager\Firmware\       Download AP firmware				
C:\Program Files\SerialManager\Firmware\				
Apply for all selected devices have same model     Pop up report dialog				
Pop up Authorize dialog				
Upgrade <u>Cancel</u>				

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**.

Download Parameter						
🔀 SerialManag	ger V4.00.07				_ 🗆 🔀	
	<u>Configuration</u> Security	View H				
	de from Disk Ctrl+D load Parameter Ctrl+P	<u> </u>				
No. Caution	Model	IP Address	MAC Address	Host Name	Kernel	
1	STE-501C	192.168.1.22	00:60:E9:02:D3:1C	name	¥2.45	
2	STW-602C	192.168.1.160	00:60:E9:03:5A:A9	0060E9-035AA9	V1.16	
<	Ш				>	
Upgrade kernel or A	AP from local disk				NUM	

In addition for some devices with JFFS2 file system supported, the user can download the related parameter data into the device that supports the JFFS2 file system through a submenu **Download Parameter**. See details as the figure below:



**Note:** Some of old firmware version did not support SerialManual firmware upgrade function. Please refer to appendix "Upgrading System Software "for detail.

## **B3.3 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 as the figure below:

Spearch         Ernware         Configuration         Spearch         Mac         Host Name         Kernel           No.         Caution         Model         IP Address         MAC Address         Host Name         Kernel           1         STE-501C         192.168.1.22         00:60:E9:02:D3:1C         name         V2.45           2         STW-602C         192.168.1.160         00:60:E9:03:5A:A9         0060E9-035AA3         V1.16	Search         Einnware         Configuration         Sector         Yew         Here           Image: Sector         Image: Sector	$ \frown                                   $	Logout			
Spearch         Eproversion         Spearch         User         User <th>Sparth         Firmware         Configuration         Sparth         Yew         Yew<th></th><th></th><th></th><th></th><th></th></th>	Sparth         Firmware         Configuration         Sparth         Yew         Yew <th></th> <th></th> <th></th> <th></th> <th></th>					
Spearch         Eproversion         Spearch         User         User <th>Sparth         Firmware         Configuration         Sparth         Yew         Yew<th>SerialManager V4.00.07</th><th></th><th></th><th></th><th></th></th>	Sparth         Firmware         Configuration         Sparth         Yew         Yew <th>SerialManager V4.00.07</th> <th></th> <th></th> <th></th> <th></th>	SerialManager V4.00.07				
No.         Caution         Model         IP Address         MAC Address         Host Name         Kernel           1         STE-501C         192.168.1.22         00:60:E9:03:51         name         V2.45           2         STW-602C         192.168.1.160         00:60:E9:03:5A:A9         0060E9-035AA9         V1.16	No.         Caution         Model         IP Address         MAC Address         Host Name         Kernel           1         STE-501C         192.168.1.22         00:60:E9:02:D3:1C         name         V2.45           2         STW-602C         192.168.1.160         00:60:E9:03:5A:A9         0060E9-035AA9         V1.16		<u>V</u> iew <u>H</u> e			
1         STE-501C         192.168.1.22         00:60:E9:02:D3:1C         name         V2.45           2         STW-602C         192.168.1.160         00:60:E9:03:5A:A9         0060E9-035AA9         V1.16	1         STE-501C         192.168.1.22         00:60:E9:02:D3:1C         name         V2.45           2         STW-602C         192.168.1.160         00:60:E9:03:5A:A9         0060E9-035AA9         V1.16	🗐 🖓 🖉 🥭 🛃	9 & E & 9	3		
2 STW-602C 192.168.1.160 00:60:E9:03:5A:A9 0060E9-035AA9 V1.16	2 STW-602C 192.168.1.160 00:60:E9:03:5A:A9 0060E9-035AA9 V1.16	No. Caution Model	IP Address	MAC Address	Host Name	Kernel
		2 STW-602C	192.168.1.160	00:60:E9:03:5A:A9	0060E9-035AA9	¥1.16
	2 m					

## B3.3.1 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 as the figure below:

Login		×
Enter a user r device.	name and password to login to this	
Device:	STVV-602C IP:192.168.1.160	
User Name:	admin	
Password:		
Г	Apply for all selected devices	
	Login <u>C</u> ancel	

The user can also select several devices at one time, and log in them at the same time by selecting **Apply** for all selected devices.

#### B3.3.2 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 as the figure below:

Logout 🔀
Do you really want to logout from this device (STW-602C, IP:192.168.1.160)?
Apply for all selected devices
Logout <u>C</u> ancel

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.

#### **B3.3.3 Change Password**

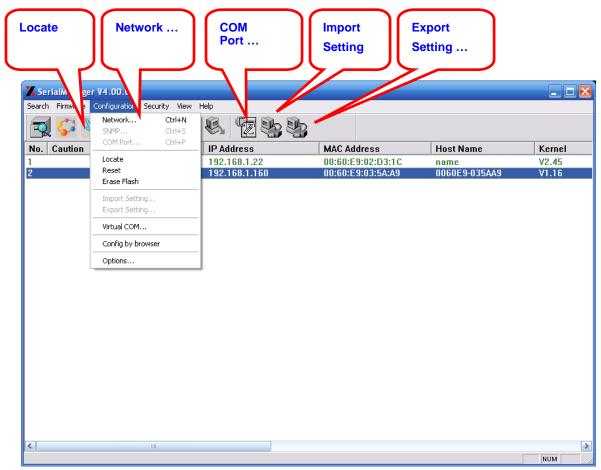
This function is applied to modifying the password for logging in any network device, but can only be realized after a successful log-in, shown as the figure below:

Change Password	]					
To change your device (STW-602C, IP:192.168.1.160) password, please provide the following information and then click OK.						
Old Password:						
New Password:						
Verified Password:						
Apply for all selected devices						
<u>OK</u> ancel						

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**.

#### **B3.4 Configuration**

This function is applied to the configuring, import and export of work parameters for any network device, and here are mainly supplied with: 'Network ...', 'COM Port...', 'Locate', 'Reset', 'Erase Flash', 'Import Setting...', 'Export Setting...', 'Virtual COM...', 'Config by IE' and 'Options', and some other application functions. The user can carry out a configuration operating through menu or by clicking the corresponded button on the toolbar, shown as the figure below:



#### B3.4.1 Network ...

The user can modify the IP address of any selected device, shown as the figure below:

Network Setting	×					
Please set the appropriate IP settings for this device (STW-602C, 192.168.1.160).						
🔲 DHCP (Obtain an I	P automatically)					
IP address:	192.168.1.160					
Subnet mask:	255 . 255 . 255 . 0					
Gateway:	192.168.1.1					
Host name:	0060E9-035AA9					
<u>O</u> K	Cancel					

## B3.4.2 COM Port ...

Various network products and some of the devices are specially supplied to some serial-port servers, while this function is applied to the configuration of COM port parameters.

Note: This function can be realized only after a successful login, shown as the figure below:

COM Ports Setting (STW-602C,	192.168.1.1	60)					
COM1 COM2							
Link mode: • TCP server mode							
COM property:	C	opy to other COMs	<u>R</u> efresh				
• RS232	O RS422	C RS48	15				
Baud rate:         300       9600         600       19200         1200       38400         2400       57600         4800       115200         Packet delimiter(Network to Serial         Timer       Enable         10       (10-30000msec)         Characters         ("0x"+ASCII Code         **** Note: If a parameter without any	()               	Data bits: 7 bits 8 bits Stop bits: 1 2 t delimiter(Serial to Network imer 10 (10-30000msec) characters (''0x''+ASCII Coc	None     Xon/Xoff     RTS/CTS de)				
Please configure it by web browser			OK Cancel				

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:

- 1 . COM tags: generated automatically according to the COM port number of the device. If a device has 4 COM port, there will be 4 tags: respectively COM1, COM2, COM3, COM4, and the like.
- 2. Connecting mode: it means the connecting mode between the serial-port server and other network devices. Each COM corresponds to a connecting mode through which the transferring data will not be interfered by that in another connection. The user can set each corresponded connecting mode and the working parameter by clicking the button "Option", shown as the figure below:

			TCP Client Mo	de 🔣
TCP Server Mode		$\overline{\mathbf{x}}$	Destination IP ac	ldress: . 0 . 0
	•	-	, Destisation work	0
Local port:	4660		Destination port:	0
Connection limit:	1 🔻	]	🔲 Enable desti	nation 2:
🔲 Specify IP addre	SS:		Destination IP ac	ldress:
		1	0.0	. 0 . 0
Enable virtual CC			Destination port:	4660
ОК	Cancel		ОК	Cancel
TCP Server mod	le		TCP Clier	nt mode
	UDP Mode			
	Local port:	0		
	Destination:	1 💌	🔽 Enable	
	IP addresse	es:		
	From:	0.0.	0.0	
	To:	0.0.	0.0	
	Destination	port:	4	
		ок	Cancel	

UDP mode

3. COM port property: it mainly represents the working parameter of the serial port setting, including: serial-port working type, baud rate, data bit, stop bit, parity bit, data packet delimiter and flow control, etc.

#### B3.4.3 Locate

The user can apply this function to locate a device when he knows it's IP address, but doesn't know its position. If a device is selected, the device will appear with singing by which the user can locate the device through the submenu option **Locate** or clicking the **Locate** button on the toolbar.

#### B3.4.4 Reset

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

#### B3.4.5 Erase Flash

Some devices are supplied to the user with a certain capacity of Flash memory to save the user's data. And the user can erase the Flash through the submenu option **Erase Flash** or clicking the **Erase Flash** button on the toolbar when the memory capacity is to be used up or the history data are unnecessary to be saved.

#### B3.4.6 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 of the devices in the network one by one, while the user can import the parameter information 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, thus the work procedures can be largely reduced, shown as the figure below:

Import a file to Si	W-602C			
Open a file: C	:\stw-602c\STVV-6	i02C.adm		
Model: ST/V-	602C			
- IP setting:			-SNMP settir	na:
IP address:	192.168.1.	160	Name:	0060E9-035A/
Subnet mask:	255 . 255 . 255 .	0	Location:	location
Default gateway:	192.168.1.	_	Contact:	contact
	102.100.1		Contact.	
COM ports setting:	0014			
Selected COM Port	COM1		1	
Туре:	RS232	Alias r	name:	
Baud rate:	0	Data k	oits:	15 bits
Stop bits:	1 bit	Parity:	:	None
Flow control:	None			
Packet delimiter(Ne	twork to Serial):	Disabl	ed	
Packet delimiter(Se	erial to Network):	Disabl	ed	
Link mode:	TCP server	mode / Vi	irtual COM: Er	nabled
	Local port:	4660		
	Max connec	ctions: 1		
Apply for all sele	cted devices have	e same mo	odel	
Popup this dialog	when import setti	ngs to the	e next device	
		[	<u>o</u> k	Cancel
		L		

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

## B3.4.7 Export 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 of the devices in the network one by one, while the user 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, thus the parameter information can be led in over again from this parameter file when the user is to carry out a configuration for any other device, shown as the figure below:

Export STW-602C Se	ttings			×
- IP setting:		SNMF	o setting:	
_	2.168.1.1		-	AAS
Subnet mask: 25	5 . 255 . 255 .	0 Loca	tion: location	
Default gateway: 19	2.168.1.	1 Cont	act: contact	
COM ports setting:		] [		
Selected COM Port:	COM1	•	<u>R</u> efresh	
Туре:	RS232	Alias name:		
Baud rate:	0	Data bits:	15 bits	
Stop bits:	1 bit	Parity:	None	
Flow control:	None			
Packet delimiter(Netw	ork to Serial):	Disabled		
Packet delimiter(Serial	to Network):	Disabled		
Link mode:	TCP server m	ode / Virtual C	OM: Enabled	
	Local port: 46	60		
	Max connecti	ons: 1		
Save to a file:	Program Files\Se	erialManager\S	ettings\STVV-6020	
Save all the select	ed devices:			
C Popup this dialog	g when save the	next settings		
C Automatically ge	nerate the next f	ile name		
		<b></b>		
			<u>OK</u> anc	el

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".

## **B3.4.8 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", shown as the figure below:

Virtual COM Sett	ings 🔀
Select Port:	COM2
Server IP:	192 . 168 . 1 . 160
Server Port:	4660
	Set
	Advanced Close

## B3.4.9 Configure by IE

Some devices are supplied with build-in Web servers, and the user can carry out any parameter setting

directly through the submenu option **Config by IE**, shown as the figure below:

🖉 Aaxeon STW-602C - Wind	lows Internet Explorer			
🔆 🗸 🖉 http://192.16	8.1.160/index.asp		🖌 🏞 🗙 Google	P •
<u>Fi</u> le <u>E</u> dit <u>V</u> iew F <u>a</u> vorites	<u>T</u> ools <u>H</u> elp			n -
🚖 🏟 🏾 🌈 Aaxeon STW-6020	-		🗄 • 🔊	• 🖶 • 🔂 Bage • 🎯 Tools • 🎽
aareon	I	Devolinx Ethe	rnet-Serial Server	
<u>Overview</u>	Overvie	ew		
<u>Network</u>	The gener	al device information	of Ethernet-Serial Server.	
Wireless		Device	Information	8
	Model	Name	STW-602C	
<u>Serial</u>	Device	Name	0060e9035aa9	
<u>System</u>	Kernel	Version	1.16	
<ul> <li><u>Time</u></li> <li><u>WLAN Region</u></li> </ul>	AP Vers	sion	1.38	
<ul> <li><u>Security</u></li> <li><u>Set to default</u></li> <li><u>Restart</u></li> </ul>				
	LAN	MAC Address	00:60:E9:03:5A:A9	
	LAN	IP Address	192.168.1.160	
		MAC Address	00:1D:7D:30:03:17	
		Region	America	
	WLAN	IP Address	192.168.1.161	
		Status	2WIRE019 00:12:88:98:2E:09	
Done			😜 Inten	

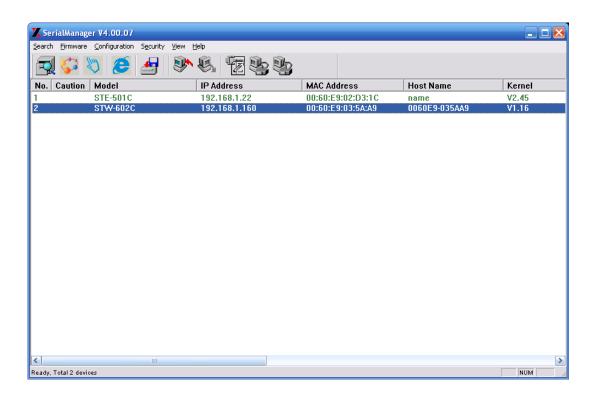
#### B3.4.10 Option

The option is mainly applied to setting some common work rules of SerialManager utility, such as: search for the time interval of a network device, or whether to display any device indication and so on, shown as the figure below:

Options 🔀
<ul> <li>Search devices every 10 seconds (must &gt;= 5)</li> <li>Show device tip</li> </ul>
<u>OK</u> ancel

#### 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 as the figure below:



#### B3.6 Help

This function is mainly applied to displaying some help information of the SerialManager utility, shown as the figure below:



## Appendix C. Upgrading System Software

Updated version of firmware can be downloaded from <u>www.aaxeon.com</u>.

## **C.1. System Upgrading Procedures**

Follow the upgrading procedures below for the latest firmware.

- Make sure the PC and STW-602C on the same network. Use command "**ping**" or "**SerialManager**" utility program to verify their availability
- Edit "dll.bat" to fit the system requirements, Be sure to save all modifications
- Run dll.bat ,or type command and parameters by linux\_dl\_v2.exe, the following screen shall appear:

linux\_dl\_v2.exe zlmage.bin 192.168.1.160 (device's IP is 192.168.1.160)

\* Tips : "linux\_dl\_v2.exe" is the upgraded executing file(can find on setup cd) and zlmage.bin is the name of the firmware file; xxx.xxx.xxx is the IP address of STW-602C.

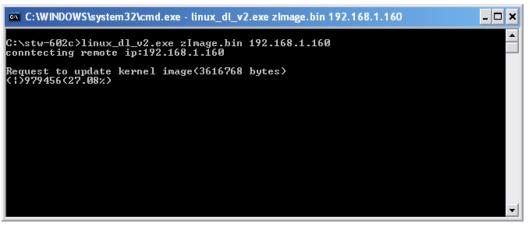


Fig 81. Start firmware upgrade procedure for STW-602C

STW-602C shall automatically perform the download at first phase, and restart after downloaded process at secondary phase

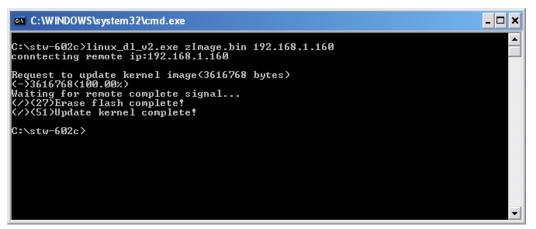


Fig 82. Connected & downloading process for STW-602C's Upgrade

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

If the upgrading is successful, STW-602C shall re-program the flash memory, and the buzzer will beep before restarting. It takes around 5 seconds to complete the re-programming. **If an error occurs during the** 

process, STW-602C 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

System	
CPU	150MHz RISC with MMU support
Memory	Flash: 8MB, 2MB for Bootloader /
	SDRAM: 16MBytes.
Interface	Mini-PCI Slot (for Wireless Module)
Watchdog	Hardware Watchdog Reset
Debug Port	CPU Build in Com.
Wireless LAN	
Protocols	Compliance for IEEE802.11b/g
	Modulation Type: CCK, DQPSK, DBPSK, OFDM (11g)
Topologies	Infrastructure, Ad-Hoc
Security	WEP 64-bit/128-bit data encryption
	WPA Compatible (TKIP/AES Encryption)
RF Performance	Tx Power 11b: 14dBm / 11g: 13 dBm
	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 Antenna
Network	
Protocol	10/100M Auto-Negotiation Fast Ethernet
Interface	RJ-45 Connector with 2LEDs
	Protection: Built-in 1.5 KV magnetic isolation
Application	Configuration with Telnet Protocol
Serial	
Protocols	Support RS232/485/422 & Software Selection
Interface	Terminal Block Connector –TB model (with 12KV ESD)
	D-sub 9-pin Connector –DB Model (with 12KV ESD)
Parameters	Baud Rate: 1200~921Kbps
	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	HxWxD: 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, SNTI
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
	Telnet Console
	Windows utility
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

DB9 male connector pin assignments for Serial

DB9						
	Pin#	RS-232	RS-485	RS-422		
	1	DCD				
	2	RXD		T+		
4 5	3	TXD	Data+	R+		
$\begin{pmatrix}1 & 5\\00000\end{pmatrix}$	4	DTR				
	5	SG				
0 9	6	DSR				
	7	RTS	Data-	R-		
	8	CTS		Т-		
	9	RI				

#### Terminal block pin assignments for Serial and Power

5-pin for serial connections		RS-232	RS-485	RS-422	3-pin for Power input		put
s.c.	SG	GND	GND	GND		FG	FG
RIS/R-	RTS/R-	RTS	Data-	R-	E.G.	Vin-	GND
TxD/R+	TxD/R+	TxD	Data+	R+	VIN-	Vin+	9~48V
	CTS/T-	CTS		T-	VIN+		
	RxD/T+	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

#### Startup status

Message		Description		
<b>^==^=====*^^</b> (5	isec)	Startup OK and AP firmware is enabled		
✤ Buzzer indication: " ^ " : Beep ty	wice	" = " : Beep off		

## Wireless Signal Strength status

The BSS quality can be detected by LED indicator on STW-602C. On running time, pressed default key and then released, one of the specified actions below shall be done that depend on the released time after you heard how many beeps. BSS quality is indicated by count of LEDs as shown below.

## **RSSI LEDs Message:**

Operations			LED1	LED2	LED3	LED4	LED5
Connecting	Search AP (sequentially blinking)	¢	¢.	$\Leftrightarrow$	¢	Ċ.	Þ.
	Connected AP/ Get assigned IP	¢	¢	¢	¢	☆	¢
	Not matched SSID	¢					
	Not available IP	¢	¢				
Connected	Signal Strength is less 20%	•					
	Bad Signal Strength (20%)	•	•				
	Poor Signal Strength (40%)	•	•	•			
	Fair Signal Strength (60%)	•	•	•	•		
	Good Signal Strength (80%)	•	•	•	•	٠	
	Excellent Signal Strength (100%)	•	•	•	•	٠	٠

○ Off ● On ☆ blinking

\* Note: The lowest LED is indicated for STATUS at STW-602C's front plate.

## WLAN LED Message

Message	Description
LED Off	No data is transmitting on Ethernet
LED blinking	Data is transmitting on Ethernet

## COM Port LED Message

Message	Description
LED off	No data is transmitting on COM port
LED on blinking state	Data is transmitting on COM port

## **RUN LED Message**

Message		Description	
LED blinking (rate: 0.5Sec)	AP firmware is running		