

ABLELink[®]

SE5002 Ethernet Serial Server

User's Manual



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Important Announcement

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This document is intended to provide customers with brief descriptions on the product and to assist customers to get started. For detail information and operations of the product, please refer to this manual or the CD attached.

FCC WARNING

Class A for Ethernet Serial Server (Model SE5002 series)

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and radiates radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expenses.

A shielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord can be used.

Use only shielded cables to connect the device's ' RS-232 or RS-485 port.

Be cautioned that changes or modifications not explicitly approved by ATOP Technologies could void your authority to operate the equipment.

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1 Introduction

Many industrial and Commercial devices equipped with slow serial communication ports RS-232, RS-485, and RS-422 are limited in their transmission distance of 15 m. Examples of these devices are PLC controllers, card readers, display signs, security controls, CNC controller, etc. ATOP Technologies has overcome the limit with a family of SE 5002 Series Ethernet Serial Servers. The SE 5002 sever family is designed to transmit data between one-or-more serial device and one-or-more TCP/IP device through Ethernet, and hence enhance the accessibility of the serial device through the ubiquitous TCP/IP based Ethernet.

Of the SE series, the SE 5002 is for RS 232/RS 422/RS 485 without isolation protection built-in, while the SE 5002-S55is is for RS 422 and RS 485 devices built-in isolation protection.

1.1. Packaging

Check your package to make certain it contains the following items:

- Atop SE5002 /SE5002-S55is Ethernet Serial Device Server x 1
- 5 pins Terminal Block for Serial Connector x 1
- 3 pins Terminal Block for Power Connector x 1
- Wall-mounting screws x 2
- Atop Wireless Serial Server quick start guide x 1
- Product CD containing configuration utility x 1

Optional Accessories :

1. Power Adapter - DC Jack 12VDC,1.25A with Lock
2. Din Rail Kit DK-25

1.2. Modes of Operation

The SE 5002 Series can be operated in one of the following 4 modes:

TCP Server Mode : SE5002 can be configured in a TCP server mode on an Ethernet Network to wait for the host computer to establish a connection with the serial device (the client). After the connection is established, data can flow in both directions (Fig.1 TCP Server Mode).

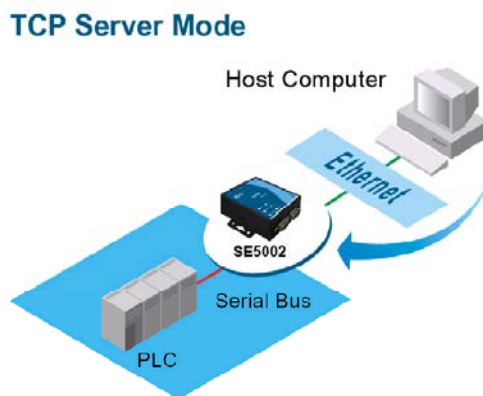


Fig. 1. TCP Server Mode

TCP Client Mode : SE5002 can be configured in a TCP client mode on a TCP/IP Network to actively establish a connection with an applications server –the host computer. After the connection is established, data can flow in both directions (Fig 2 TCP Client Mode).

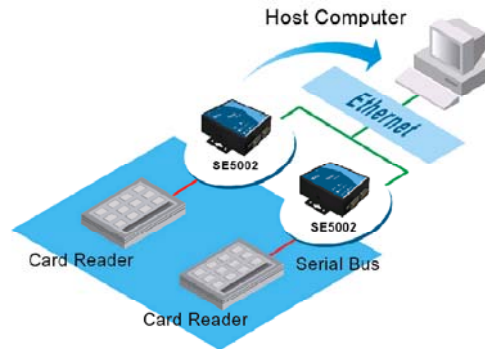


Fig. 2. TCP Client Mode

UDP Mode : UDP is a fast but non-guaranteed datagram delivery protocol. SE5002 can be configured in a UDP mode on a TCP/IP Network to establish a connection, using unicast or broadcast data to and from a serial device to one or multiple host computers (Fig 3 UDP Mode).

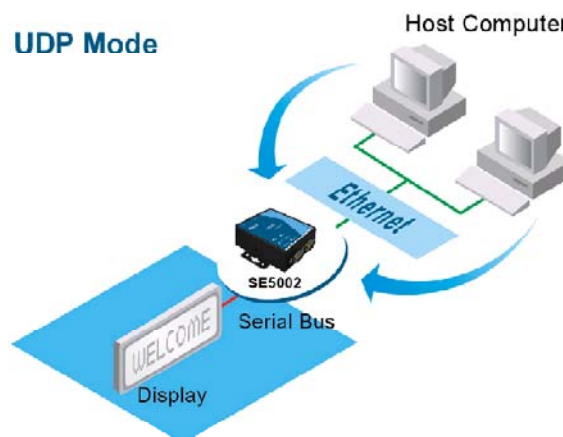


Fig. 3. UDP Mode

Tunneling Mode(Pair Connection) : The tunneling mode is used for multiple serial devices to “talk” to each other through SE 5002’s and their Ethernet connections (Fig 4 Tunneling Mode). This mode is particularly useful when two serial devices are far away, because their communication distance is limited to 15 m.

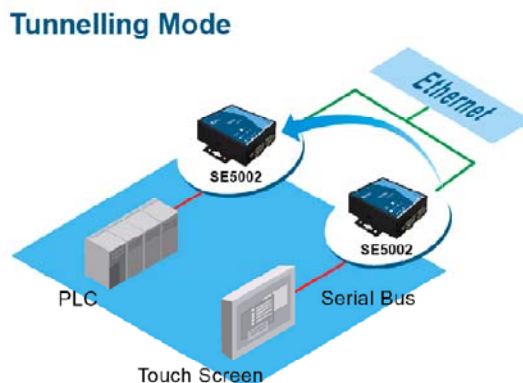


Fig. 4. Tunneling Mode

1.3. Hardware Description

NOTE:

1. **Model SE5002** is for RS-232/422/485 without isolation protection built-in; **SE5002-S55is** is for RS422/485 with isolation protection built-in. See Appendix A.3.1 for full Panel layout.
2. Press the **reset** button to reset to the default values

Fig. 5 Shows the interfaces and the DIN-Rail Mounting settings.

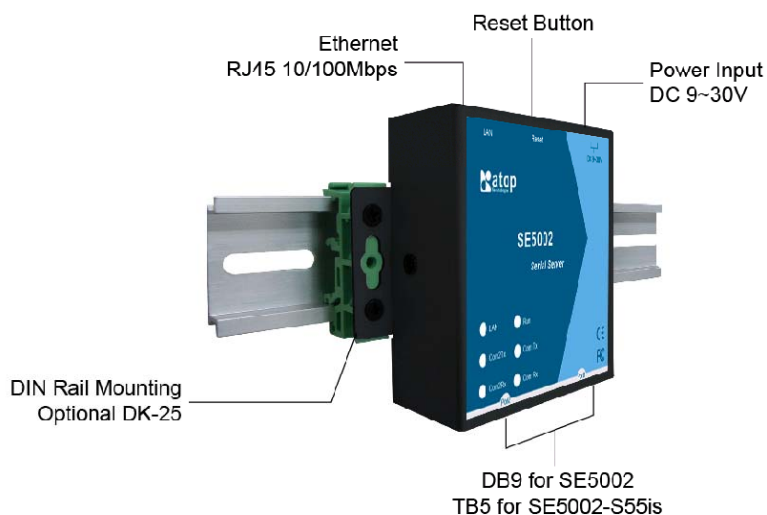


Fig. 5. SE5002 Interfaces and DIN-Rail Mounting settings

2. LED STATUS

2.1 LAN

Message	Description
---------	-------------

Off	Ethernet Disconnected
Blinking Green	Data transmitting on Ethernet at 100Mbps
Blinking Orange	Data transmitting on Ethernet at 10Mbps

Table 1. LAN LED Status

2.1.2 COM

Message	Description
Off	No data transmitting on COM port
Com1(2)TX Blinking	Data transmitting on COM port
Com1(2)RX Blinking	Data receiving on COM port

Table 2. COM Port LED Status

2.1.3 RUN

Message	Description
On	Jumper JP1 Pin1 and Pin2 shorted to disable AP firmware
Blinking	AP firmware running normally

Table 3. RUN LED Status

2.2 Installation Procedures:

Step 1: Connect SE5002 power source Jack. (Or to a 9~30VDC Terminal Block power source which only for SE5002-S55is)

Step 2: Connect SE5002 to the Ethernet network. Use a standard straight-through Ethernet cable when connected to a hub/switch, or connect to a PC's Ethernet port via a cross-over Ethernet cable. However, Always make sure ones PC is on the same sub-net as the SE5002.

Step 3: Connect SE5002's serial port to a serial device.

Step 4: Mount SE5002 to a wall/panel with the screws included or to a Din-Rail rack (Require optional Din-Rail-Kit).

3. SOFTWARE

The SE5002 default parameters are shown in the following table.

Property	Default Value
IP Address	10.0.50.100
Gateway	10.0.0.254
Subnet Mask	255.255.0.0
User Name	admin
Password	Null(leave it blank)
COM 1	9600,None, 8, 1, No flow control, buffer disabled, packet delimiter timer 2ms
COM 2	9600,None, 8, 1, No flow control, buffer disabled, packet delimiter timer 2ms
Link 1	Type: TCP Server, Listen port 4660, Filter=0.0.0.0, Virtual COM disabled
Link 2	Type: TCP Server, Listen port 4661, Filter=0.0.0.0, Virtual COM disabled
SysName of SNMP	name
SysLocation of SNMP	location
SysContact of SNMP	contact

3.1 Configuration by SerialManager

Use **SerialManager** on product CD to configure the SE5002. First click "**Configuration**" (Fig. 6) then assign a static IP (Fig. 7).

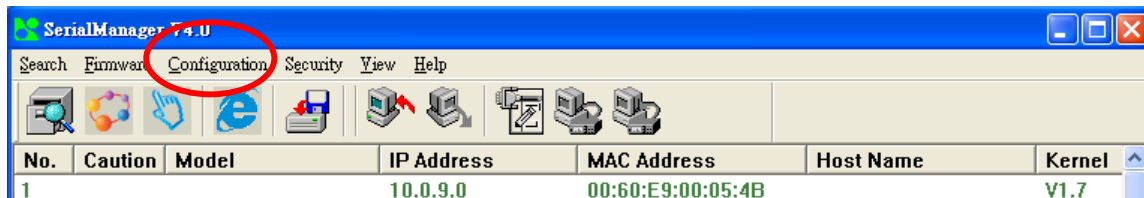


Fig. 6. Configuring the static IP with SerialManager

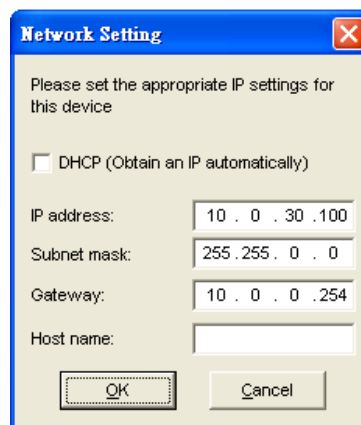


Fig. 7. Static IP dialog window

A DHCP server can automatically assign the IP address and all the network settings, and SE5002 supports the DHCP client functions. By default, the DHCP client function on SE5002 is disabled; one may activate the DHCP client functions by the following steps :

- ➔ Execute SerialManager(Fig. 6)
- ➔ Click on the **IP address** (of SE5002)
- ➔ Click "**Config**" to pop-up the static IP Dialog Window (Fig. 7)
- ➔ Check "**Auto IP**" (Fig. 8)
- ➔ Click "**Config Now**" (The SE5002 will restart and obtain the IP from the DHCP server automatically)

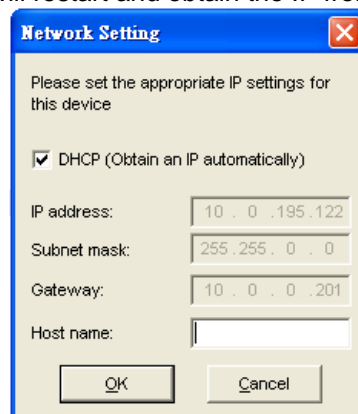
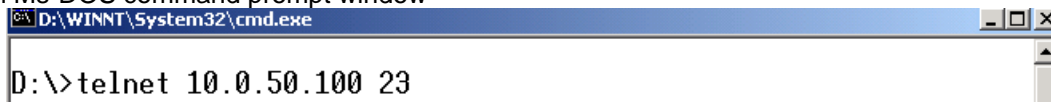


Fig. 8. SerialManager Auto IP Dialog Window

3.2 Configuration by Telnet utility:

One may also use Telnet utility to change configuration settings.

- Open Ms-DOS command prompt window



- Enter in the "Telnet IP_address 23". (For example, **Telnet 10.0.50.100 23**). The system then prompts for a password, the default password is Null (Leave it blank). (Fig. 9)



Fig. 9. Telnet to the system

Note: One may press the reset button to reset the password..

- 1 Then the following main menu shall appear (Fig. 10)

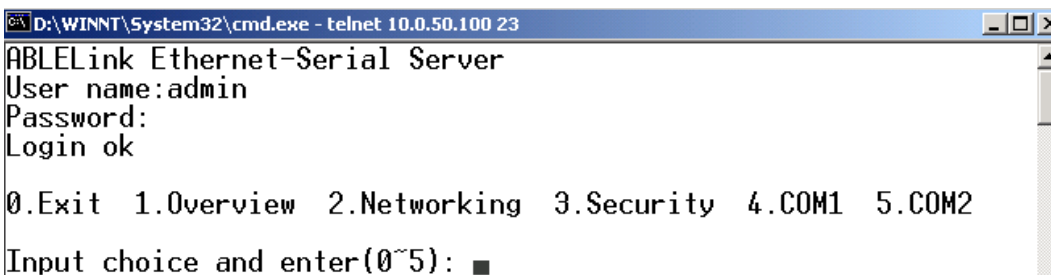
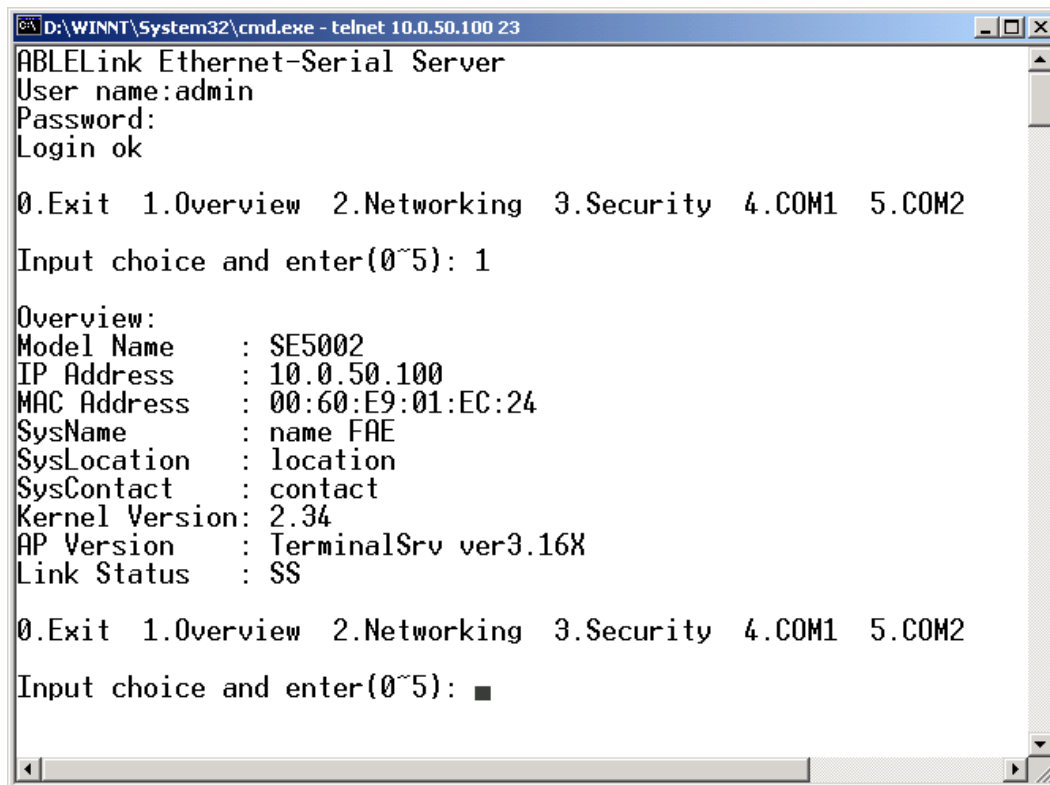


Fig. 10. System main menu

Notes:

1. If the SE5002 does not receive any command within 1 **minute**, Telnet will be terminated automatically.
2. The changes of networking parameters will take effect only after the SE 5002 is exited and restarted.
->Select "1" from "**Input choice and enter (0~5):**" to enter "**overview**" .:(Fig. 11)



```
D:\WINNT\System32\cmd.exe - telnet 10.0.50.100 23
ABLELink Ethernet-Serial Server
User name:admin
Password:
Login ok

0.Exit 1.Overview 2.Networking 3.Security 4.COM1 5.COM2
Input choice and enter(0~5): 1

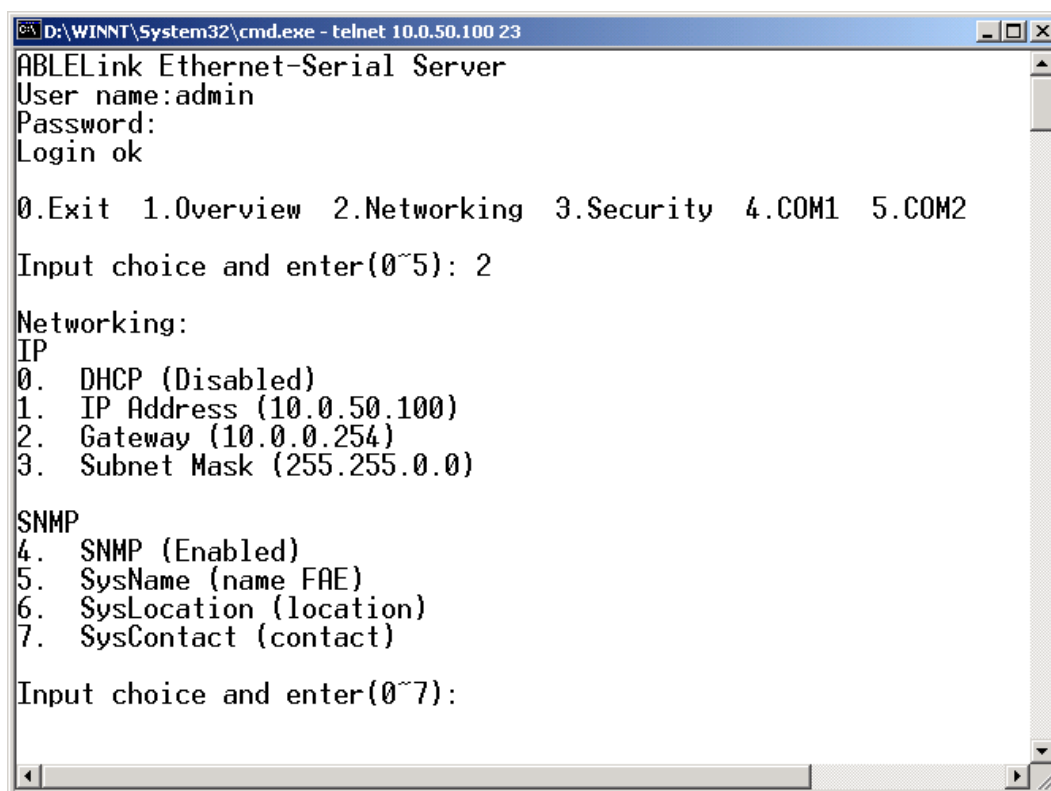
Overview:
Model Name      : SE5002
IP Address      : 10.0.50.100
MAC Address     : 00:60:E9:01:EC:24
SysName        : name FAE
SysLocation     : location
SysContact      : contact
Kernel Version: 2.34
AP Version      : TerminalSrv ver3.16X
Link Status     : SS

0.Exit 1.Overview 2.Networking 3.Security 4.COM1 5.COM2
Input choice and enter(0~5): ■
```

Fig. 11. System configuring using Telnet

This system overview window gives the general information on IP, MAC address, SNMP information, kernel and AP version, and the connection status of the device.

Select "2" on "Input choice and enter (0~5):" to enter **Networking** window (Fig. 12).



```

D:\WINNT\System32\cmd.exe - telnet 10.0.50.100 23
ABLELink Ethernet-Serial Server
User name:admin
Password:
Login ok

0.Exit 1.Overview 2.Networking 3.Security 4.COM1 5.COM2

Input choice and enter(0~5): 2

Networking:
IP
0. DHCP (Disabled)
1. IP Address (10.0.50.100)
2. Gateway (10.0.0.254)
3. Subnet Mask (255.255.0.0)

SNMP
4. SNMP (Enabled)
5. SysName (name FAE)
6. SysLocation (location)
7. SysContact (contact)

Input choice and enter(0~7):
  
```

Fig. 12. Network configuring using Telnet

This screen 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 device is restarted.

Note: Press "**ESC**" key to return to the previous menu .

1. Select "**3**" on "**Input choice and enter (0~5):**" (Fig. 13).



```

Select D:\WINNT\System32\cmd.exe - telnet 10.0.50.100 23
ABLELink Ethernet-Serial Server
User name:admin
Password:
Login ok

0.Exit 1.Overview 2.Networking 3.Security 4.COM1 5.COM2

Input choice and enter(0~5): 3

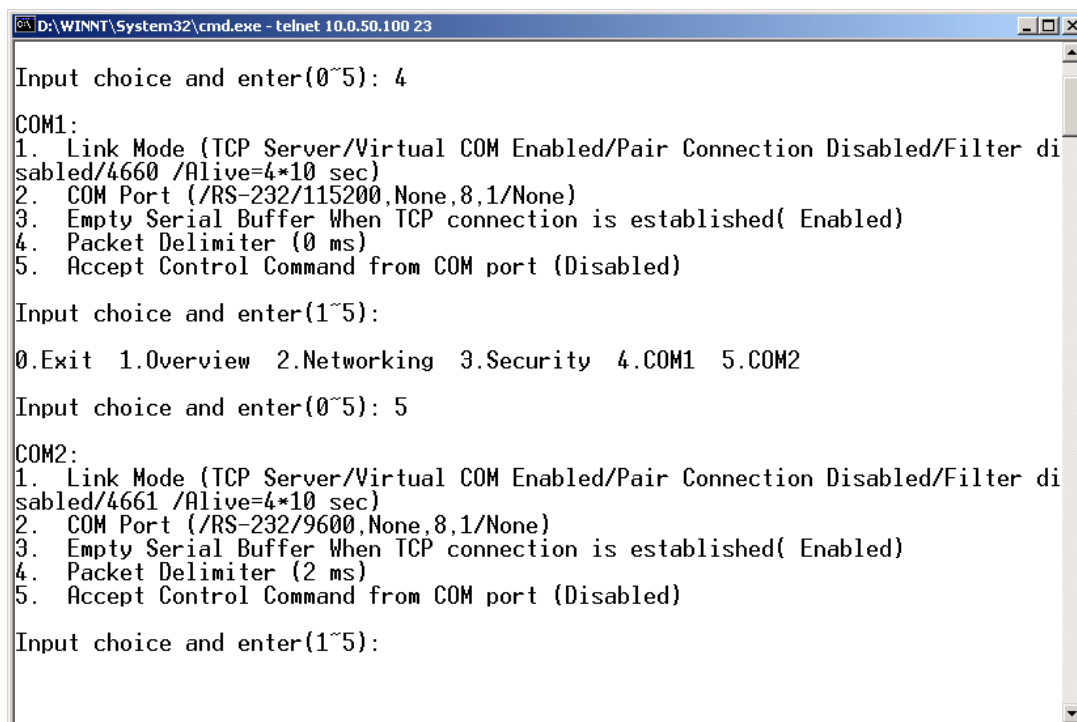
Do you want to change the password (y/n)?y
Please input old password:
Please input new password:****
Please verify new password:****
Password changed! Press enter to continue █
  
```

Fig. 13. changing password using Telnet

2. Enter the old password on "**Please input old password**". Enter in the new password on "**Please input new password**", and again on "**Please verify new password**" fields.

Note: One may press the **Reset** key on the product to reset password.

Select "**4**" on "**Input choice and enter (0~5):**" (Fig. 14).



```

D:\WINNT\System32\cmd.exe - telnet 10.0.50.100 23

Input choice and enter(0~5): 4

COM1:
1. Link Mode (TCP Server/Virtual COM Enabled/Pair Connection Disabled/Filter disabled/4660 /Alive=4*10 sec)
2. COM Port (/RS-232/115200,None,8,1/None)
3. Empty Serial Buffer When TCP connection is established( Enabled)
4. Packet Delimiter (0 ms)
5. Accept Control Command from COM port (Disabled)

Input choice and enter(1~5):

0.Exit 1.Overview 2.Networking 3.Security 4.COM1 5.COM2

Input choice and enter(0~5): 5

COM2:
1. Link Mode (TCP Server/Virtual COM Enabled/Pair Connection Disabled/Filter disabled/4661 /Alive=4*10 sec)
2. COM Port (/RS-232/9600,None,8,1/None)
3. Empty Serial Buffer When TCP connection is established( Enabled)
4. Packet Delimiter (2 ms)
5. Accept Control Command from COM port (Disabled)

Input choice and enter(1~5):

```

Fig. 14. Com1 setup

Here one may configure COM1 parameters, include COM1 operation mode, port parameters, enabling or disabling serial buffer's data and packet delimiter.

LINK Mode Setup **Configure SE5002 as TCP server** : (Fig. 14)

- ➔ Enter 1 on "**Input choice and enter (1~5):**" to select COM1
- ➔ Enter 1 on "**Input choice(1~5) and enter :**" to select **Overview**
- ➔ Input local port on "**Please input local port :**"
- 1. **If one want to enable IP filter :**
 - ➔ Input y on "**Do you want to enable IP filter(y/n)?**"
 - ➔ Input source IP on "**Please input Filter_IP :**"
 - ➔ Double click "**Enter**" key
- 2. **If one don't want to enable IP filter :**
 - ➔ Input n on "**Do you want to enable IP filter(y/n)?**"
 - ➔ Double click "**Enter**" key
 - ➔ Input idle time in "**Please input idle time to send TCP alive packet(4*10sec) :**"(2->the sending TCP keep-alive packet period is 2*10 sec)

Note:

1. One may configure COM1 or COM2 parameter by choosing COM1 or COM2 Link
2. "IP filtering function is disabled by setting FILTER_IP to "0.0.0.0".
3. IP filter is disabled by default
4. If IP filter is enabled, only the source IP assigned can be connected to SE5002.


```

D:\WINNT\System32\cmd.exe - telnet 10.0.50.100 23
0.Exit 1.Overview 2.Networking 3.Security 4.COM1 5.COM2
Input choice and enter(0~5): 4
COM1:
1. Link Mode (TCP Server/Virtual COM Enabled/Pair Connection Disabled/Filter disabled/4660 /Alive=4*10 sec)
2. COM Port (/RS-232/115200,None,8,1/None)
3. Empty Serial Buffer When TCP connection is established( Enabled)
4. Packet Delimiter (0 ms)
5. Accept Control Command from COM port (Disabled)
Input choice and enter(1~5): 1
Link mode
1.TCP server
2.TCP client
3.UDP
4.Virtual COM(Enabled)
5.Pair Connection(Disabled)
Input choice (1 ~ 5) and enter: 1
TCP server
Please input local port:4660
Do you want to enable IP filter (y/n)?y
Please input FILTER_IP:10.0.0.154
Please input idle time to send TCP alive packet (4*10 sec):
2
mode changed! Press enter to continue

```

Fig. 15. Link Mode-TCP server setup

- ➔ Enter **2** on “**Input choice(1~5) and enter :**”(Fig. 15)
- ➔ Input destination IP on “**Please input Destination IP :**” (for instance: **10. 0. 29. 123**)
- ➔ Input destination port on “**Please input Destination port :**”(for instance: **666**)
- 1. Enter **1** for Connected always :
 - ➔ Double click “**Enter**” key
 - ➔ Input idle time in “**Please input idle time to send TCP keep-alive packet(4*10sec) :**”(**2**->the sending TCP keep-alive packet period is 2*10 sec)
- 2. Enter **2** for Triggering by received COM port data :
 - ➔ Input idle time to disconnect on “**Please input idle time to disconnect(0sec , 1~255) :**” (**0**->disable the function; **2** ->the serial Inactivity beyond 2 sec will cause disconnect)
 - ➔ Input error retrying time on “**Please input waiting time for error retrying (0 minute,1~255) :**” (**0**->disable the function; **2** ->SE5002 trying to reconnect per 2 minutes)
 - ➔ Double click “**Enter**” key
 - ➔ Input idle time on “**Please input idle time to send TCP keep-alive packet (4*10sec) :**”(**2**-> sending TCP keep-alive packet period will be 2*10 sec)

```

D:\WINNT\System32\cmd.exe - telnet 10.0.50.100 23
COM1:
1. Link Mode (TCP Server/Virtual COM Enabled/Pair Connection Disabled/Filter disabled/4660 /Alive=2*10 sec)
2. COM Port (/RS-232/115200,None,8,1/None)
3. Empty Serial Buffer When TCP connection is established( Enabled)
4. Packet Delimiter (0 ms)
5. Accept Control Command from COM port (Disabled)

Input choice and enter(1~5): 1
Link mode
1.TCP server
2.TCP client
3.UDP
4.Virtual COM(Enabled)
5.Pair Connection(Disabled)

Input choice (1 ~ 5) and enter: 2
TCP client
Please input destination IP:10.0.29.123
Please input destination port:666

Please select connected type (2)
(1)Connected always
(2)Trigger by receiving COM port data
1

Please input idle time to send TCP alive packet (2*10 sec):
2
mode changed! Press enter to continue

```

Fig. 16. Link Mode-TCP client setup

In this example the **local port** is 4660; the **destination IP** is 10.0.29.254, and the **destination port** is 666(Fig. 17)

```

D:\WINNT\System32\cmd.exe - telnet 10.0.50.100 23
0.Exit 1.Overview 2.Networking 3.Security 4.COM1 5.COM2

Input choice and enter(0~5): 4
COM1:
1. Link Mode (TCP Client/Pair Connection Disabled/Remote 10.0.29.123/666/Connected always /Alive=2*10 sec)
2. COM Port (/RS-232/115200,None,8,1/None)
3. Empty Serial Buffer When TCP connection is established( Enabled)
4. Packet Delimiter (0 ms)
5. Accept Control Command from COM port (Disabled)

Input choice and enter(1~5): 1
Link mode
1.TCP server
2.TCP client
3.UDP
4.Virtual COM(Enabled)
5.Pair Connection(Disabled)

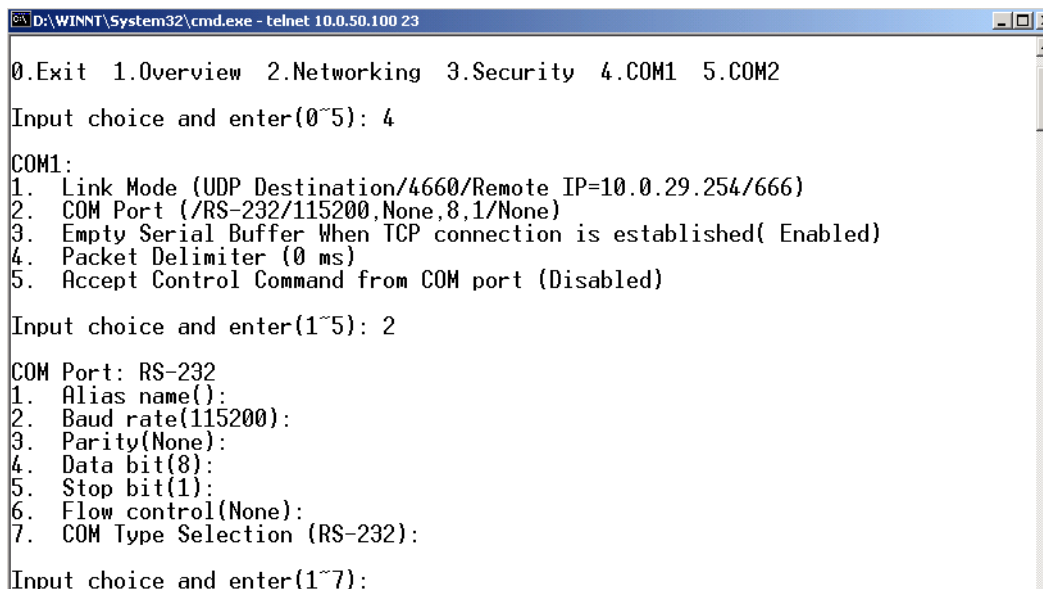
Input choice (1 ~ 5) and enter: 3
UDP
Please input local port:4660
Please input destination IP:10.0.29.254
Please input destination port:666
mode changed! Press enter to continue

COM1:
1. Link Mode (UDP Destination/4660/Remote IP=10.0.29.254/666)
2. COM Port (/RS-232/115200,None,8,1/None)

```

Fig. 17. Link Mode-UDP client setup

Enter **2** on “**Input choice and enter (1~5):**” of COM1, the following screen shall appear; then proceed to assign the COM port **alias**, set **baud rate** and **parity**, determine number of **data bit** and **stop bit**, and decide on the need of **flow control** (Fig. 18)



```

D:\WINNT\System32\cmd.exe - telnet 10.0.50.100 23

0.Exit 1.Overview 2.Networking 3.Security 4.COM1 5.COM2
Input choice and enter(0~5): 4
COM1:
1. Link Mode (UDP Destination/4660/Remote IP=10.0.29.254/666)
2. COM Port (/RS-232/115200,None,8,1/None)
3. Empty Serial Buffer When TCP connection is established( Enabled)
4. Packet Delimiter (0 ms)
5. Accept Control Command from COM port (Disabled)
Input choice and enter(1~5): 2
COM Port: RS-232
1. Alias name():
2. Baud rate(115200):
3. Parity(None):
4. Data bit(8):
5. Stop bit(1):
6. Flow control(None):
7. COM Type Selection (RS-232):
Input choice and enter(1~7):

```

Fig. 18. Com port setting

Enter **3** from “**Input choice and enter (1~5):**” of COM1, by default COM port serial data buffer is enabled meaning that when TCP/IP Ethernet connection is broken, serial data collected from serial device will be emptied on SE5002 once TCP/IP connection is resumed, the serial data will be sent through Ethernet connection, one may disable it if one wish (Fig. 19)



```

D:\WINNT\System32\cmd.exe - telnet 10.0.50.100 23

0.Exit 1.Overview 2.Networking 3.Security 4.COM1 5.COM2
Input choice and enter(0~5): 4
COM1:
1. Link Mode (UDP Destination/4660/Remote IP=10.0.29.254/666)
2. COM Port (/RS-232/115200,None,8,1/None)
3. Empty Serial Buffer When TCP connection is established( Enabled)
4. Packet Delimiter (0 ms)
5. Accept Control Command from COM port (Disabled)
Input choice and enter(1~5): 3
Empty Serial Buffer when TCP connection is established
(1)Enable (2)Disable
Please select the option:1
Option is changed! Press enter to continue

```

Fig. 19. Com port-Enabling serial data buffer

Packet delimiter is a way of controlling the number of packets in a serial communication. It is designed to keep packets intact. SE5002 provides two ways in parameter setting: 1. Packet delimiter timer and 2. Character pattern terminator. By default, packet delimiter timer is 1 ms. The range of packet delimiter timer is 0 to 30,000 msec, as shown in Fig. 20. If “character pattern is selected, for a data stream ended with “0x0a04”, then the entire data buffer of the serial device is transmitted.

```

D:\WINNT\System32\cmd.exe - telnet 10.0.50.100 23

0.Exit 1.Overview 2.Networking 3.Security 4.COM1 5.COM2

Input choice and enter(0~5): 4

COM1:
1. Link Mode (UDP Destination/4660/Remote IP=10.0.29.254/666)
2. COM Port (/RS-232/115200,None,8,1/None)
3. Empty Serial Buffer When TCP connection is established( Enabled)
4. Packet Delimiter (0 ms)
5. Accept Control Command from COM port (Disabled)

Input choice and enter(1~5): 4

Packet delimiter
(1)Timer (2)Characters
Please select delimiter type:1
Please input timer(0 ~ 30000 ms):2
Delimiter changed! Press enter to continue

```

Fig. 20. Setting packet delimiter timer

One may also choose character pattern as the packet delimiter indicated in Fig. 21

```

D:\WINNT\System32\cmd.exe - telnet 10.0.50.100 23

0.Exit 1.Overview 2.Networking 3.Security 4.COM1 5.COM2

Input choice and enter(0~5): 4

COM1:
1. Link Mode (UDP Destination/4660/Remote IP=10.0.29.254/666)
2. COM Port (/RS-232/115200,None,8,1/None)
3. Empty Serial Buffer When TCP connection is established( Enabled)
4. Packet Delimiter (2 ms)
5. Accept Control Command from COM port (Disabled)

Input choice and enter(1~5): 4

Packet delimiter
(1)Timer (2)Characters
Please select delimiter type:2
Please input pattern(max 2 bytes, ex:0x0d0a):

```

Fig. 21. Setting packet delimiter-character pattern

SE5002 also is designed to accept serial control commands directly over Ethernet following the RFC2217 format. For more detail ,contact our Technical Support.

3.3 Configuring Using Web Browser

1. Make sure the PC is on the same network as SE5002
2. Open a web browser, then Enter in the same IP address as the SE5002. The default user name is **admin** and the default password is null (**leave it blank**).
3. The SE5002's network, link mode and COM ports settings can be configured on different web pages.
4. Click "**Save Configuration**" to save settings.
5. Click "**Restart**" button to initial the change.

To modify settings through the web server interface, follow the steps below.

3.3.1 Log in

1. While on the web browser, Enter in the IP address of SE5002 of the URL.
Example: http://10.0.50.100
2. The following authentication screen shall appear (Fig. 22) Enter desired **user name** and **password** then click on OK. The default user name is **admin** and the default password is null(left it blank).



Enter Network Password

Please type your user name and password.

Site: 10.0.50.100

Realm: NeedPassword

User Name:

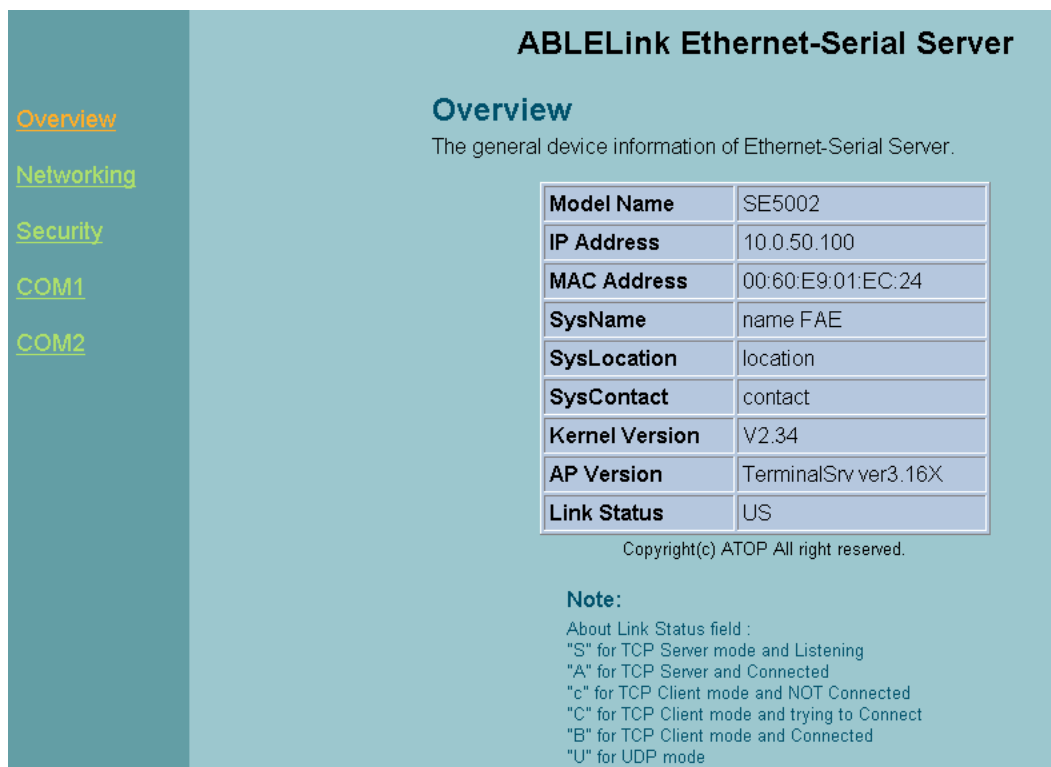
Password:

☐ Save this password in your password list

OK Cancel

Fig. 22. login the system via Web

- 3 The following overview screen shall appear (Fig. 23)



ABLELink Ethernet-Serial Server

Overview

The general device information of Ethernet-Serial Server.

Model Name	SE5002
IP Address	10.0.50.100
MAC Address	00:60:E9:01:EC:24
SysName	name FAE
SysLocation	location
SysContact	contact
Kernel Version	V2.34
AP Version	TerminalSrv ver3.16X
Link Status	US

Copyright(c) ATOP All right reserved.

Note:

About Link Status field :

- "S" for TCP Server mode and Listening
- "A" for TCP Server mode and Connected
- "c" for TCP Client mode and NOT Connected
- "C" for TCP Client mode and trying to Connect
- "B" for TCP Client mode and Connected
- "U" for UDP mode

Fig. 23. Overview

3.3.2 Changing password

1. Click on the "**Security**" link and the following screen shall appear (Fig. 24)




Fig. 24. Change the password

2. Enter the old password on “**Old Password**” field; enter the new password on “**New Password**” and the “**Verified Password**” fields, and then click on “**Save Configuration**” to update the password.

Note: One may press the **reset key** on the product to reset password to the default value.

3.3.3 Networking

Click on “**Networking**” link and the following screen (Fig. 25) shall appear. Fill in IP information on the **TCP/IP** field. Alternatively, click on **DHCP** to obtain **auto IP address, gateway and subnet mask**.

Enable SNMP by checking “**Enable**”; fill in network identification information on **SNMP** and click on the “**Save Configuration**” button to save the changes. The changes will not become effective until SE5002 is restarted (Fig. 25)

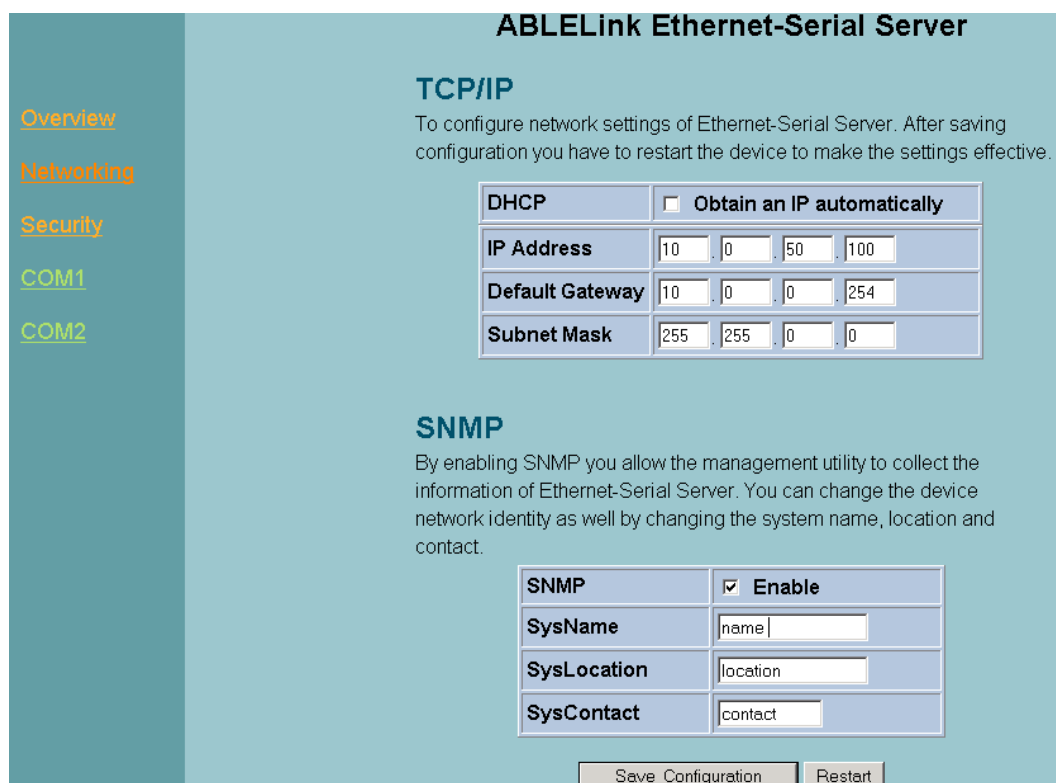


Fig. 25. Network setup

3.3.4 Configuring SE5002 as TCP server :

SE5002 is configured in a transparent mode by default (Fig. 26)

- ➔ Click on **"COM1"** link and the following screen shall appear.
- ➔ Configure SE5002 as TCP server
- ➔ Input local listening port **"4660"**

1.To enable IP filter :

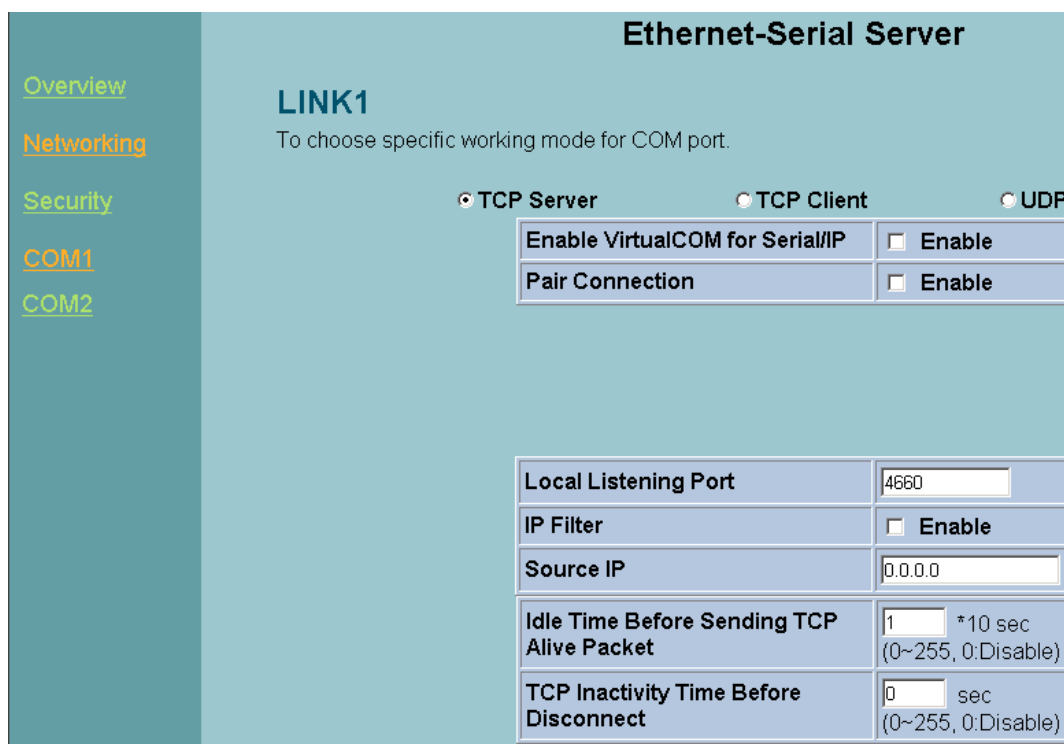
- ➔ Check **"IP filter"**
- ➔ Input source IP on **"Source IP"**

2.If not to enable IP filter :

- ➔ Don't check **"IP filter"**
- ➔ Input idle time on **"Please input idle time to send TCP keep-alive packet(sec) :"** (2->the sending TCP keep-alive packet period will be 2*10 sec)
- ➔ Input TCP Inactivity time in **"TCP Inactivity Time Before Disconnect(sec) :"** (2->TCP Inactivity beyond 2 sec will cause disconnect)
- ➔ Click on **"Save Configuration"** button to save the changes

Notes:

1. One may configure COM1 or COM2 parameter by choosing COM1 or COM2 Link
2. IP filtering function is disabled by setting FILTER_IP to "0.0.0.0".
3. IP filter is disabled by default
4. If IP filter is enabled, only source IP assigned is connected to SE5002.



Ethernet-Serial Server

LINK1
To choose specific working mode for COM port.

☒ TCP Server
 ☐ TCP Client
 ☐ UDP

Enable VirtualCOM for Serial/IP	<input type="checkbox"/> Enable
Pair Connection	<input type="checkbox"/> Enable

Local Listening Port	4660
IP Filter	<input type="checkbox"/> Enable
Source IP	0.0.0.0
Idle Time Before Sending TCP Alive Packet	1 *10 sec (0~255, 0:Disable)
TCP Inactivity Time Before Disconnect	0 sec (0~255, 0:Disable)

COM1
To configure COM port parameters.

Serial Interface	RS-232
Alias Name	
Baud Rate	9600
Parity	<input type="radio"/> None <input type="radio"/> Odd <input type="radio"/> Even <input type="radio"/> Mark <input type="radio"/> Space
Data Bits	<input type="radio"/> 7 bits <input type="radio"/> 8 bits
Stop Bits	<input type="radio"/> 1 bit <input type="radio"/> 2 bits
Flow Control	<input type="radio"/> None <input type="radio"/> RTS/CTS <input type="radio"/> DTR/DSR <input type="radio"/> Xon/Xoff
Xon/Xoff characters	Xon: 0x11 Xoff: 0x13 ("0x"+ASCII Code, e.g. 0x11)
Xon/Xoff Special Control	<input type="checkbox"/> Controlling DTR to simulate receiving Xon/Xoff and reading DSR to get Xon/Xoff currently
Empty Serial Buffer When TCP Connection is Established	<input type="radio"/> YES <input type="radio"/> No, (Default: Yes)
Data Packet Delimiter	<input type="radio"/> Inter-character Time Gap : 2 msec (0~30000, 0:Disable) <input type="radio"/> Characters : 0x0d ("0x" + Hex Code, e.g. "0x0d" or "0x0d0a")
COM Type Selection	<input type="radio"/> RS232 <input type="radio"/> RS485 <input type="radio"/> RS422

Save Configuration

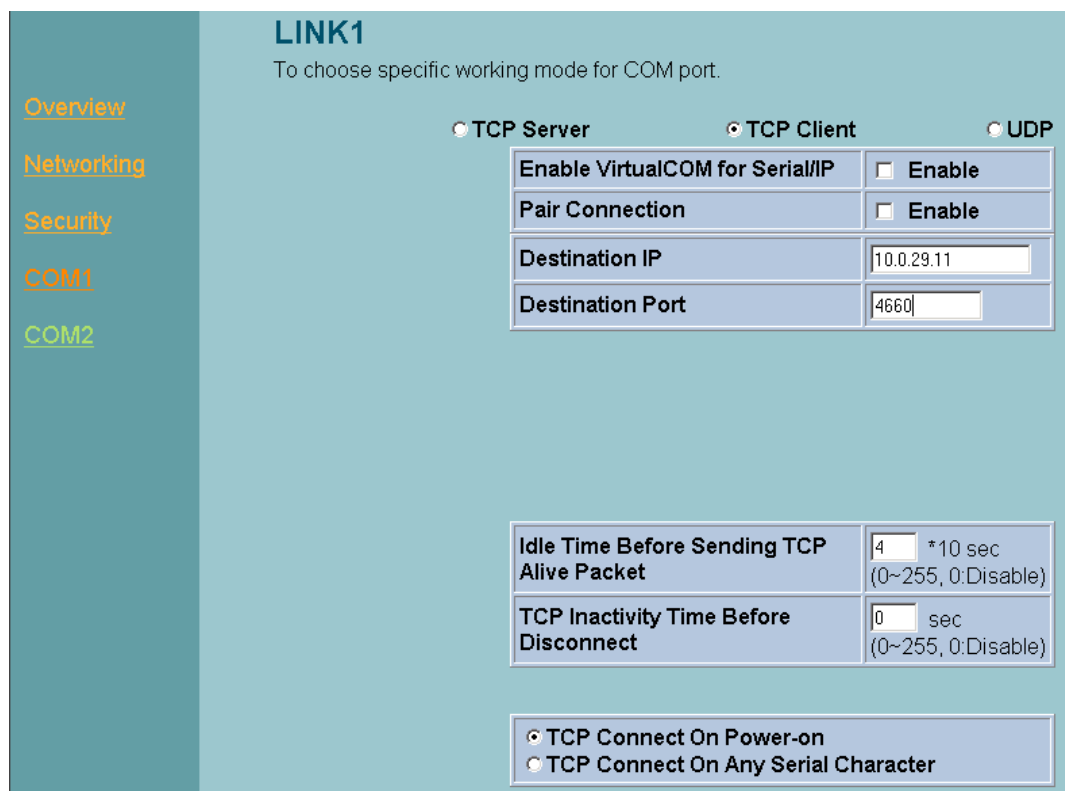
Fig. 26. Com1 setup-TCP server

Notes:

1. Default COM1 of SE5002 is 4660 (COM2 is 4661) and it is associated with the serial port COM1 or COM2. After the application program being connected to the TCP port 4660 on the SE5002, data of ones application program are transparent to both COM1 and SE5002.
2. The serial interface may have different port interfaces for different models.

3.3.5 Configuring SE5002 as TCP client :

- ➔ Configure SE5002 as a TCP client. For example, the destination IP is 10.0.29.11, and the destination port is 4660 (Fig. 27)
- ➔ On **destination IP**, enter "**10.0.29.11**"
- ➔ On destination port, enter "**4660**"
- ➔ Input idle time on "**Please input idle time to send TCP alive packet (sec) :**" (4->the sending TCP keep-alive packet period is 4*10 sec)
 1. Select "**TCP Connect On Power-on**" : It keeps trying to establish TCP connection after Power on
 2. Select "**TCP Connect On Any Serial Character**" : Any serial character will trigger to establish TCP connection
- ➔ Input idle time to disconnect on "**Serial Inactivity Time before disconnect (0sec , 1~255):**" (0->disable the function; 2 -> serial Inactivity beyond 2 sec will cause disconnect)
- ➔ Input error retrying time on "**Waiting Time Between Re-connect Attempts (0 minute, 1~255) :**" (0->disable the function; 2 ->SE5002 trying to reconnect per 2 minutes)
- ➔ Click on "**Save Configuration**" button to save the changes



LINK1
To choose specific working mode for COM port.

☒ TCP Server ☒ TCP Client ☐ UDP

Enable VirtualCOM for Serial/IP	<input type="checkbox"/> Enable
Pair Connection	<input type="checkbox"/> Enable
Destination IP	10.0.29.11
Destination Port	4660

Idle Time Before Sending TCP Alive Packet	4 * 10 sec (0~255, 0:Disable)
TCP Inactivity Time Before Disconnect	0 sec (0~255, 0:Disable)

<input checked="" type="radio"/> TCP Connect On Power-on <input type="radio"/> TCP Connect On Any Serial Character

Fig. 27. Com1 setup-TCP client

3.3.6 Pair Connection(Tunneling Mode)

Pair connection is for two or more serial connections with their own SE5002's to send data over Ethernet to communicate with each other. To do so, choose "**pair connection**" indicated in Fig. 28

ABLELink Ethernet-Serial Server

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[COM1](#)

[COM2](#)

LINK1

To choose specific working mode for COM port.

☒ TCP Server
☐ TCP Client
☐ UDP

Enable VirtualCOM for Serial/IP	<input type="checkbox"/> Enable
Pair Connection	<input checked="" type="checkbox"/> Enable

Local Listening Port	4660
IP Filter	<input type="checkbox"/> Enable
Source IP	10.0.29.254
Idle Time Before Sending TCP Alive Packet	2 *10 sec (0~255, 0:Disable)
TCP Inactivity Time Before Disconnect	0 sec (0~255, 0:Disable)

Fig. 28. Com1 setup –pair connection

3.3.7 Configuring SE5002 in UDP mode :

SE5002 can be configured on a UDP mode to establish connection using unicast or broadcast data from the serial device to one or multiple host computer. Vice versa is also true.

There are 2 UDP communication Modes :

1. **Master (Client) Mode** : To establish a connection using unicast or broadcast data from the serial device to one or multiple host computer.

Note : The configuration is limited by **Destination IP** and **Destination Port**

Using broadcast data from a serial device to multiple host computers : For example, for **destination IP** "10.255.255.255" and **destination port** "4660", the host computer's IP addresses from 10.0.0.1~10.255.255.254 and **listening Port** at 666 can receive data sent from the serial device (Fig. 29)

Note : Broadcast IP address is limited by the Class of IP address and subnet mask. As an example, for a network of Class C subnet 192.168.1.X and a subnet mask of 255.255.255.0, one may configure the broadcast IP address to be 192.168.1.255 (Fig. 31)

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[COM1](#)

[COM2](#)

LINK1

To choose specific working mode for COM port.

☐ TCP Server
☐ TCP Client
☒ UDP

Destination IP	10.255.255.255
Destination Port	666
Local Listening Port	4660

Fig. 29. Com 1 setup –UDP mode

- ➔ On “**destination IP**” enter **10.0.255.255** “
 - ➔ On “**destination port** “ enter **666**”.
 - ➔ On “**Local port** “ enter **4660**”.
 - ➔ Click on “**Save Configuration**” to save the changes.
- Note : If the update is successful, the following screen shall appear (Fig. 30)

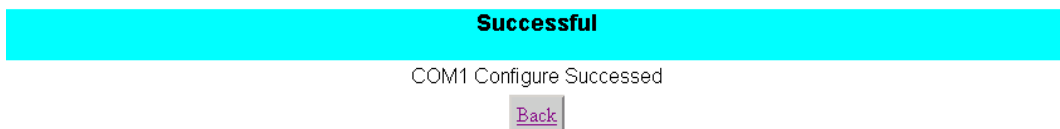


Fig. 30. Configuration successfully updated

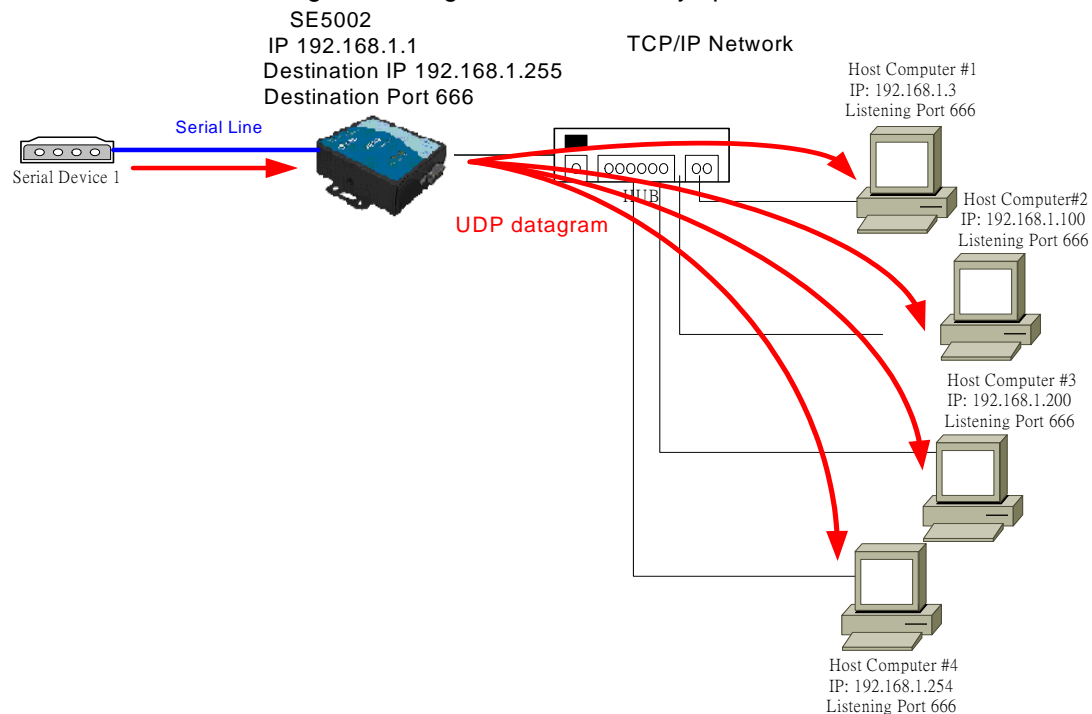


Fig. 31. Data Transmission in a UDP Master(Client) Mode

2. **Slave (Server) Mode** : To establish a connection using unicast or broadcast data from one or multiple host computer to a serial device.(Fig. 32)

Notes : The configuration is limited by the Local Listening Port (For example, on the SE5002 listening the port is 4660 which receives data from the Host Computer).

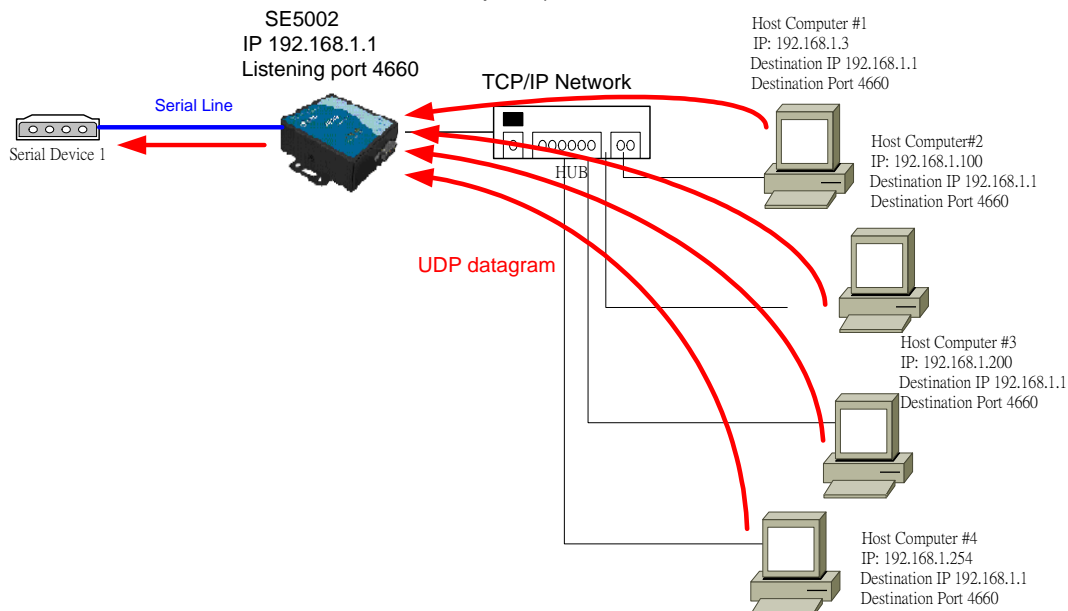


Fig. 32. Data Transmission in a UDP Slave(server) Mode

3.4 Assigning new IP Address with ARP commands

ARP (address resolution protocol) commands can be used to assign a static IP address on SE5002 using its hardware MAC (media access control) address. The MAC address "0060E9-xxxxxx" is printed on the rear side of device . The following shows how it works on MS-DOS command prompt window.

Example: change IP from 10.0.50.100 to 10.0.50.101, and MAC address being 00-60-e9-11-11-01

Step1: Add the new host IP to the ARP table

- ➔ Open Ms-DOS command prompt window
- ➔ Input **arp -s 10.0.50.101 00-60-E9-11-11-01**(Fig. 33)

```
C:\Documents and Settings\Administrator>arp -s 10.0.50.101 00-60-e9-11-11-01
C:\Documents and Settings\Administrator>
```

Fig. 33. Ms-DOS command prompt window: add host computer IP to ARP table

Step2: Change to the new IP via Telnet port 1(Fig. 34)

- ➔ Input **telnet 10.0.50.101 1**

Note : Telnet will fail and then SE5002 restarts automatically. Afterward, the new IP address is changed to 10.0.50.101

Step3: Using the new IP to configure SE5002 via Telnet

- ➔ Input **telnet 10.0.50.101**

Note:

1. Both PC's IP and SE5002 's IP must belong to the same subnet.
2. The changed IP address must be legal; otherwise it will change back to the default value (10.0.50.100) after restart.

```

C:\>Command Prompt - telnet 10.0.50.101 1
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-1999 Microsoft Corp.

C:\>arp -s 10.0.50.101 00-60-e9-00-79-f8
C:\>arp -a

Interface: 10.0.154.223 on Interface 0x1000003
Internet Address      Physical Address      Type
10.0.50.101          00-60-e9-00-79-f8    static

C:\>telnet 10.0.50.101 1
Connecting To 10.0.50.101...
  
```

Fig. 34. Assigning a new IP address with ARP command

4. USING VIRTUAL COM

Virtual COM driver mode for windows converts COM data to LAN data for control of the COM port on SE5002 via LAN. By creating virtual COM ports on the PC, the Virtual COM driver redirects the communications from the virtual COM ports to an IP address and port number on a SE5002 that connects the serial line device to the network. Fig. 35 illustrates a Virtual COM connection diagram.

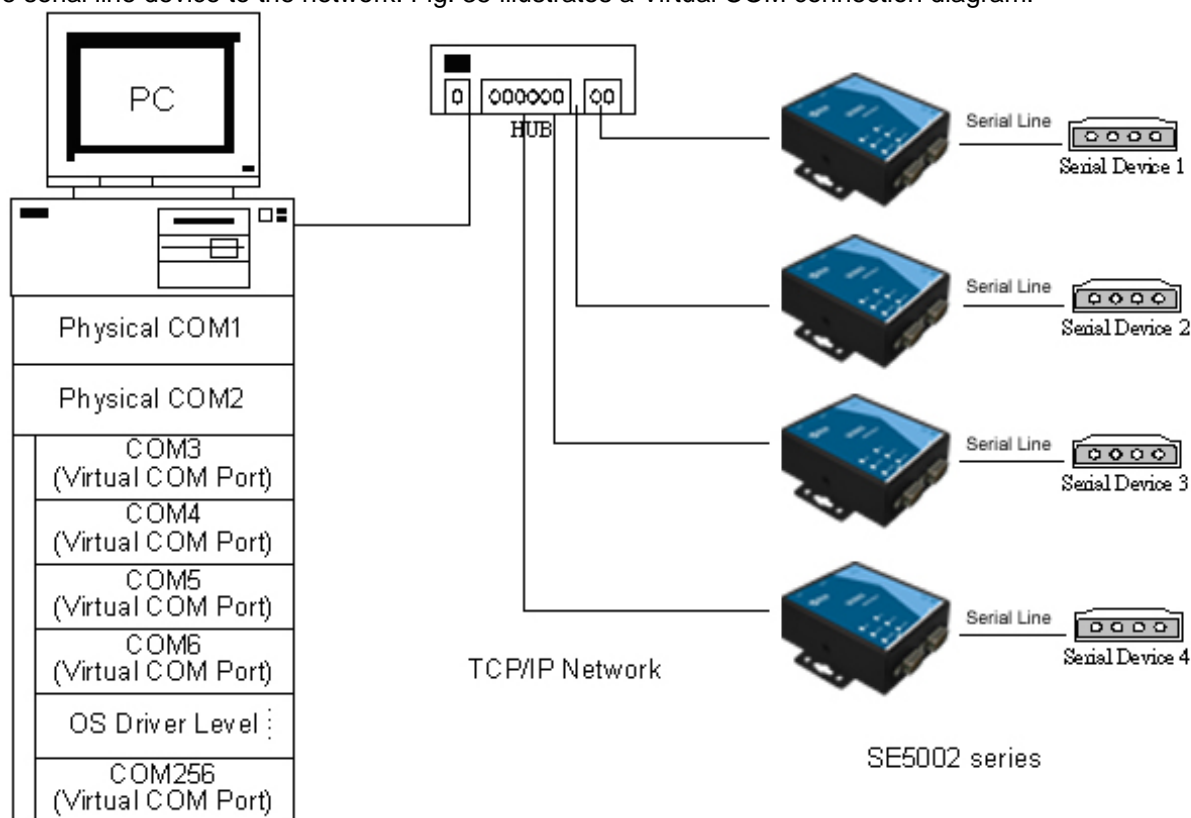


Fig. 35. Virtual Com connection diagram

4.1 Setup of a virtual COM driver

4.1.1 PC requirements

- Processor: Intel-compatible, Pentium class or faster
- Operation system: Windows Server 2003, Windows XP, Windows 2000, Windows NT 4.0 SP5 or later, Windows Me, Windows 98, Microsoft NT/2000 Terminal Server, Citrix Meta Frame

4.1.2 Cautions on Use

The Virtual COM driver supports firmware AP v3.0 or later for the SE5002 Ethernet Serial Server.

4.1.3 Limitation

The Virtual COM driver provides users with up to 256 Virtual COM ports. Users may select from COM1 to COM256.

4.1.4 Installation

Make sure to turn off all anti-virus software before installation. Run the Virtual COM setup file included in the CD to install Virtual COM driver.

Select one or two COM port to become the Virtual COM ports.

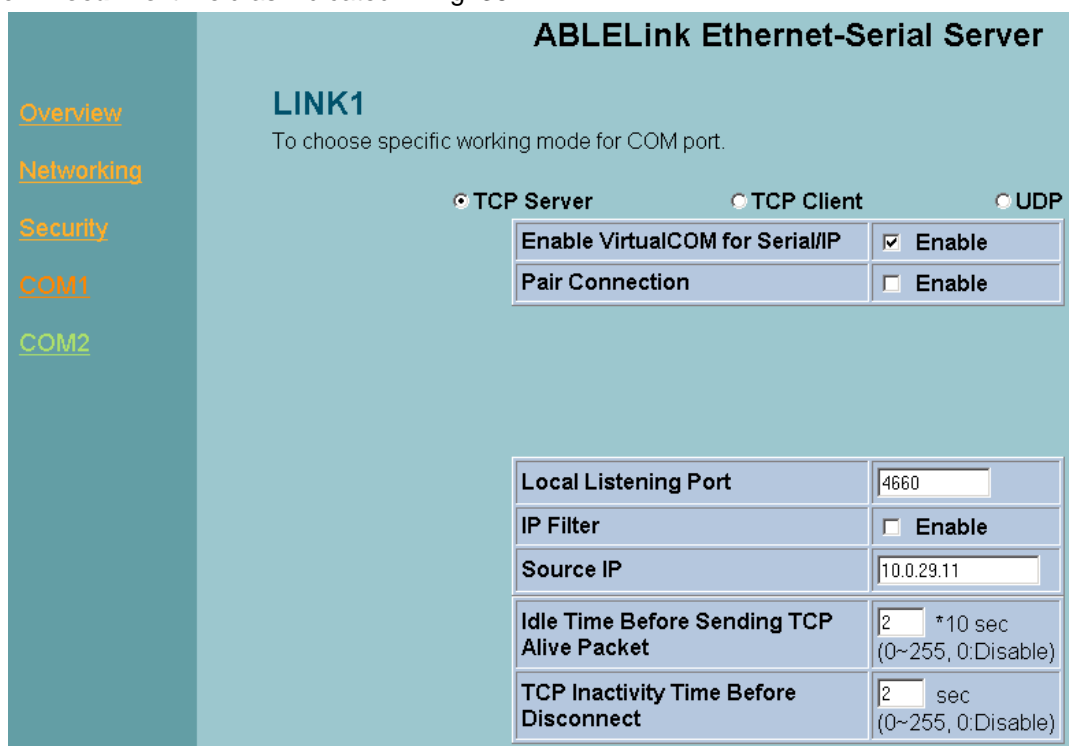
4.1.5 Uninstalling

1. From Windows Start menu select Setting, Control Panel, Add/Remove Programs.
2. Select **Serial IP** in the list of installed software.
3. Click the **Add/Remove** button to remove the program, or From Windows Start menu select Programs, Serial IP for ATOP, **Uninstall Serial IP** to remove the program.

4.2 Virtual COM communications

4.2.1 Enabling Virtual COM on SE5002

From the web browser, access SE5002 by typing its IP address. Click on **COM1** link to access COM1 window. On the window, click on "**TCP Server**" and check "**Enable**" button. Then Enter in the local port number on "**Local Port**" field as indicated in Fig. 36



ABLELink Ethernet-Serial Server

LINK1
To choose specific working mode for COM port.

☒ TCP Server
 ☐ TCP Client
 ☐ UDP

Enable VirtualCOM for Serial/IP	<input checked="" type="checkbox"/> Enable
Pair Connection	<input checked="" type="checkbox"/> Enable

Local Listening Port	4660
IP Filter	<input type="checkbox"/> Enable
Source IP	10.0.29.11
Idle Time Before Sending TCP Alive Packet	2 * 10 sec (0~255, 0:Disable)
TCP Inactivity Time Before Disconnect	2 sec (0~255, 0:Disable)

Fig. 36. Enabling Virtual COM port

One may also enable Virtual COM through Telnet by setting COM1 as a TCP server, and Enter in the local port number for COM1, then enable virtual COM as shown in Fig. 37

```

D:\WINNT\System32\cmd.exe - telnet 10.0.50.100 23

0.Exit 1.Overview 2.Networking 3.Security 4.COM1 5.COM2
Input choice and enter(0~5): 4
COM1:
1. Link Mode (TCP Server/Virtual COM Enabled/Pair Connection Disabled/Filter disabled/4660 /Alive=2*10 sec)
2. COM Port (/RS-232/115200,None,8,1/None)
3. Empty Serial Buffer When TCP connection is established( Enabled)
4. Packet Delimiter (2 ms)
5. Accept Control Command from COM port (Disabled)
Input choice and enter(1~5): 1
Link mode
1.TCP server
2.TCP client
3.UDP
4.Virtual COM(Enabled)
5.Pair Connection(Disabled)
Input choice (1 ~ 5) and enter: 4
Virtual COM
(1)Enable
(2)Disable
Please select one item:

```

Fig. 37. Enabling Virtual COM port via Telnet

4.2.2 Running Serial/IP on PC

On Window Start Menu, go to \program\serial/IP for ATOP\control panel\Select Port\, then select the serial port. Then the “Serial I/P for Atop Control Panel” window appears (Fig. 38).

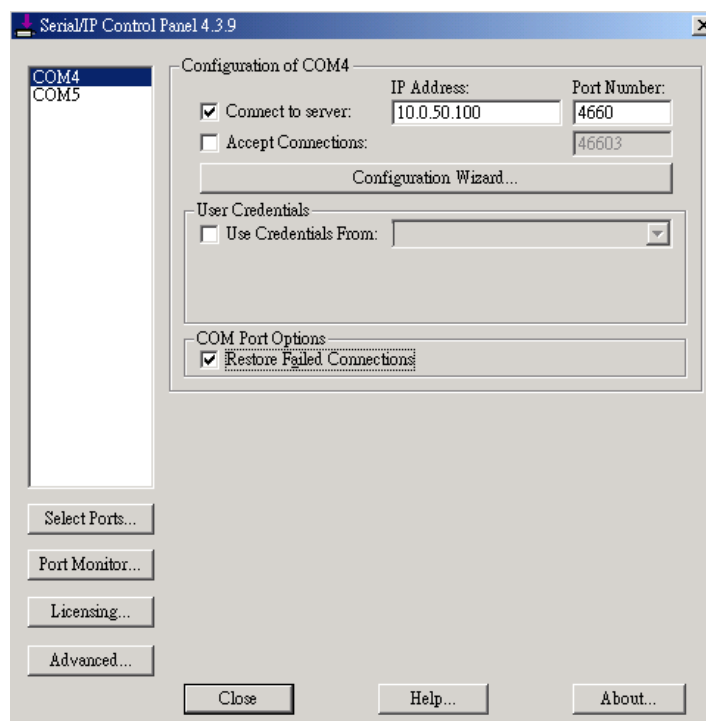


Fig. 38. Serial/IP for Atop control panel

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.

4.3 Configuring Virtual COM Ports

Serial/IP COM port can be changed as follows:(Fig. 39)

1. Select a COM port on the list.
2. On **IP Address of Server**, enter the serial server IP address.
3. On **Port Number**, enter the TCP port number of the serial server.
4. On **Server Credentials**, the default is **No Login Required**. If the serial server 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 serial server.
5. 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 serial server. If **Log** display does not show errors, click **Use Settings**, return to the Control Panel (Fig. 39)

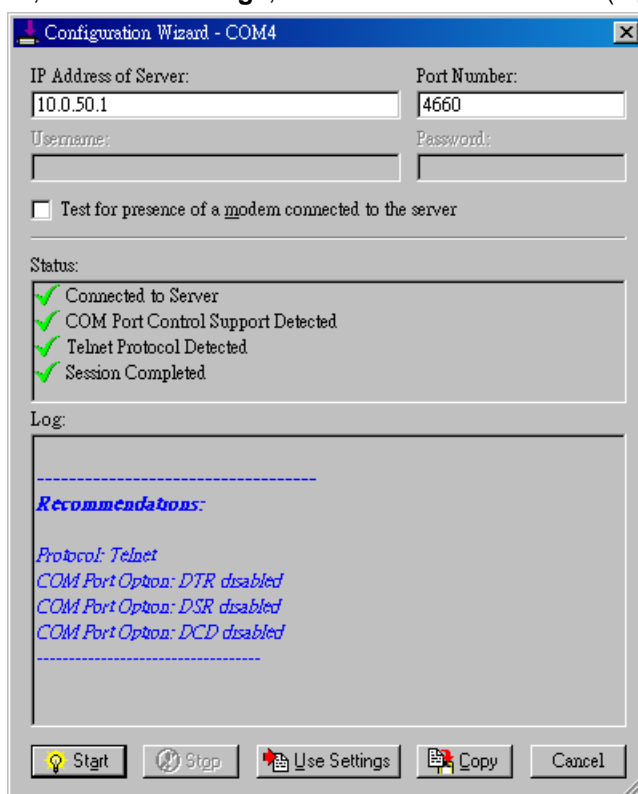


Fig. 39. Configuration Wizard

6. Settings on the **Connection Protocol** must match the TCP/IP protocol supported by the serial server. The Configuration Wizard is capable of determining the correct settings.
7. On **COM Port Options**, the settings must match the COM port behavior expected by the PC application. The Configuration Wizard will recommend such settings.

5. SNMP SETUP

5.1 SNMP Network Management Platform

SE5002 is an SNMP device that allows many popular SNMP Network management platforms such as HP Open View and Sun Net Manager, to conduct on the SerialManager.


Depending on the network management tools used, SE5002 information can be collected from running the management tools, including **IP address, DNS name, system descriptions and NIC** information.

5.2 Using NetworkView: An Example

NetworkView is a free compact network management tool from NetworkView Software, Inc.

(www.networkview.com). It discovers all TCP/IP nodes in a network using DNS, SNMP and ports information and documents with printed maps and reports for future use.

First, download and install the tool on ones PC (**Windows 2000 and Windows XP**), then start NetworkView.

1. Click on the  button to open a new file. The following screen shall appear, on **Addresses field**, Enter in the IP address range for searching (Fig. 40).

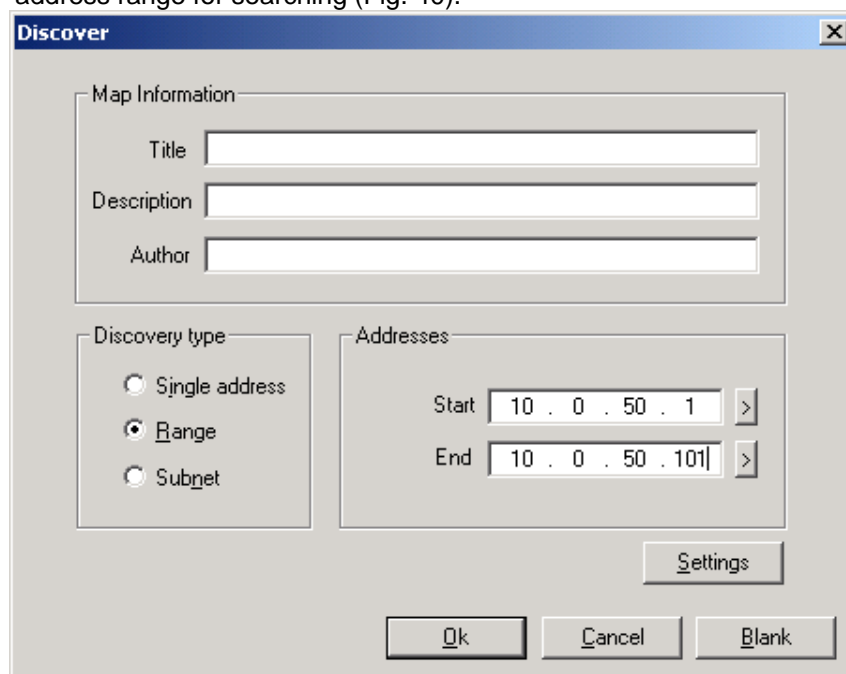


Fig. 40. IP address searching

- 2 Click on “OK” and the following dialog box shall display the searching progress (Fig. 41)

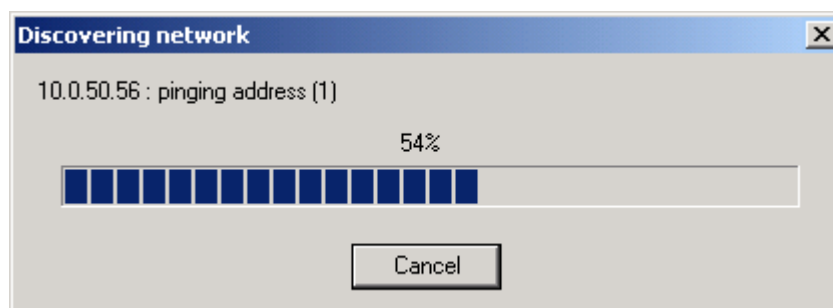


Fig. 41. Searching progress

- 3 After the search is complete, NetworkView will display the devices found on the main window, as shown below (Fig. 42)

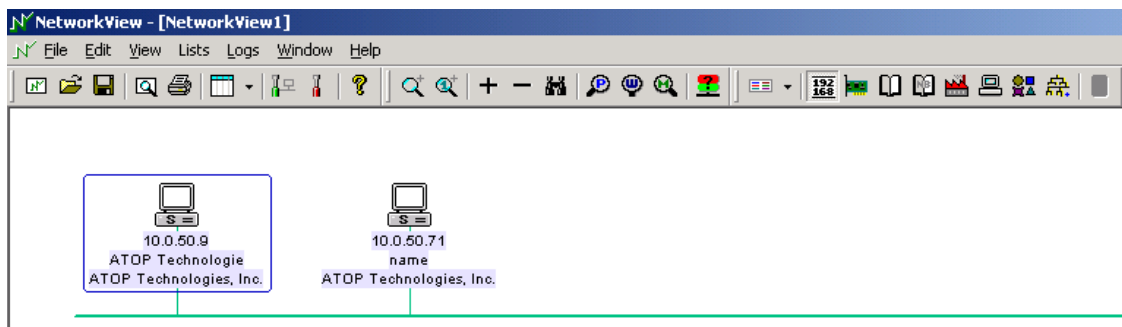


Fig. 42. NetworkView display the devices found

- 4 Double-click on the device icon to display information about the device, including IP Address, Company, SysLocation (Max 15 characters), SysName (Max 9 characters) and types etc (Fig. 43).

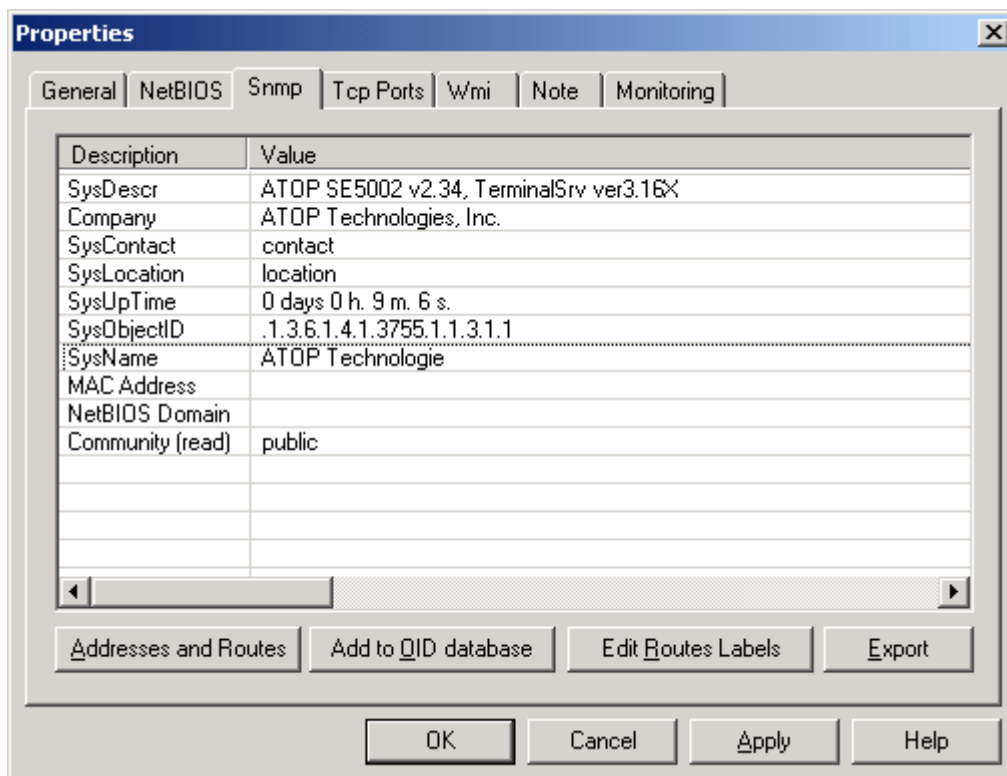


Fig. 43. NetworkView display device information

Notes:

1. NetworkView is limited to information extracting and viewing only.
2. To modify the configurations, use the web server, Telnet or SerialManager configuration utilities.

6 WRITING ONES OWN APPLICATIONS

Before writing ones own host applications or programs to interact with SE5002, make sure one have done the following.

6.1 Preparing System

1. Connect SE5002 to power, Ethernet and serial cables
2. Configure SE5002: connection type, IP address, gateway IP address, and network mask (see chapter 3 **Hardware Installation**).
3. Configure SE5002 as TCP Server, using the default TCP port number 4660.
4. The host (PC) application program must be configured as a TCP client and connected to SE5002 with designated TCP port number 4660 for COM1.
5. Check SE5002 running status through **SerialManager** configuration utility.

6.2 Running Sample Program

Sample programs written in VB and VC++ included in the package are provided for your reference; their source codes are also included. Test program can be found on the product CD in the directory of **lsamplelvc_apl** and **lsamplelvc_ap** respectively.

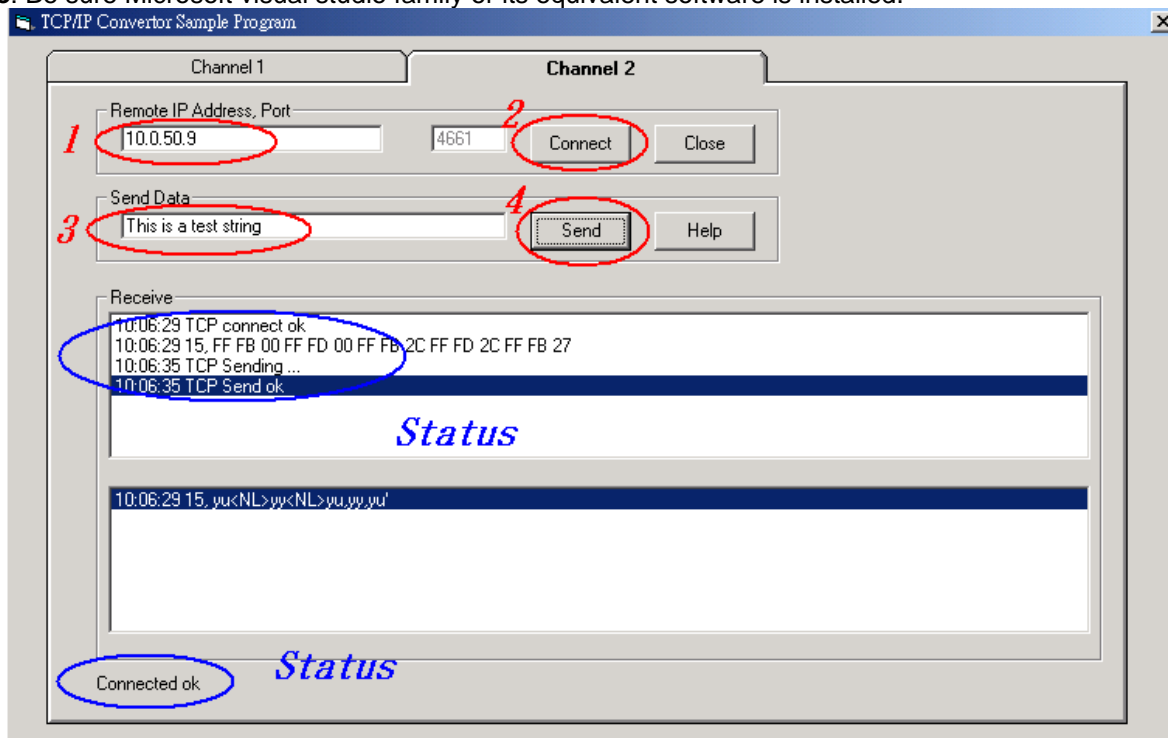
Two test programs, TCPTEST in Visual Basic and TCPTEST2 in Visual C++ are included.

6.2.1 TCPTEST in Visual Basic

This sample program(see below), written in Visual Basic 5.0 with Winsock Controls, shows how to exchange data between host (PC) and SE5002 via Ethernet in two socket ports.

One may start the sample program tcpctest.vbp to test different functions. For more information, press **Help**.

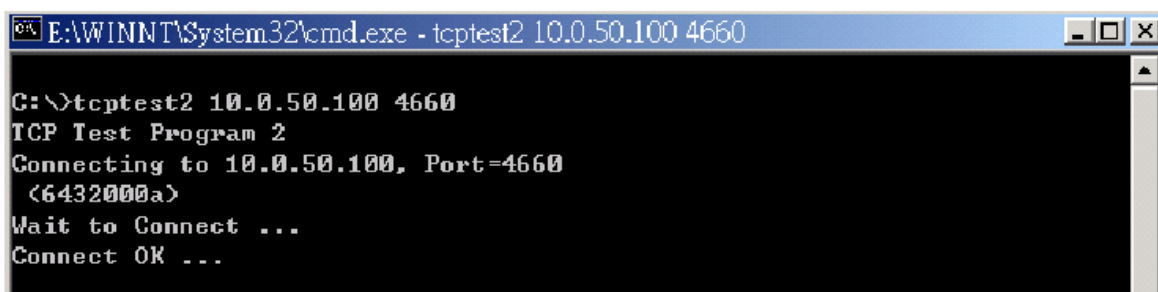
Note: Be sure Microsoft visual studio family or its equivalent software is installed.



6.2.2 TCPTTEST2 in Visual C

Enter in the following command on the command line prompt to run the program:

TCPTTEST2 IP_Address Port_Number



```
E:\WINNT\System32\cmd.exe - tcptest2 10.0.50.100 4660

G:\>tcptest2 10.0.50.100 4660
TCP Test Program 2
Connecting to 10.0.50.100, Port=4660
<6432000a>
Wait to Connect ...
Connect OK ...
```

The command **tcptest2 10.0.50.100 4660** connects a TCP server of IP address *10.0.50.100* to port number *4660*. The received data is displayed on the screen and the input data is sent to the TCP server. Binary data in hex format with a leading character "****" can also be sent. For example, "**\00**" and "**\FF**" represent ASCII code 0 and 255, respectively.

A modem can also be used to connect to the serial server. Command "**AT\Od**" sends standard AT command to the modem which in return responds with "**OK\OD\0A**" message to the host application.

Always use '=' then **Enter** key to exit the program.

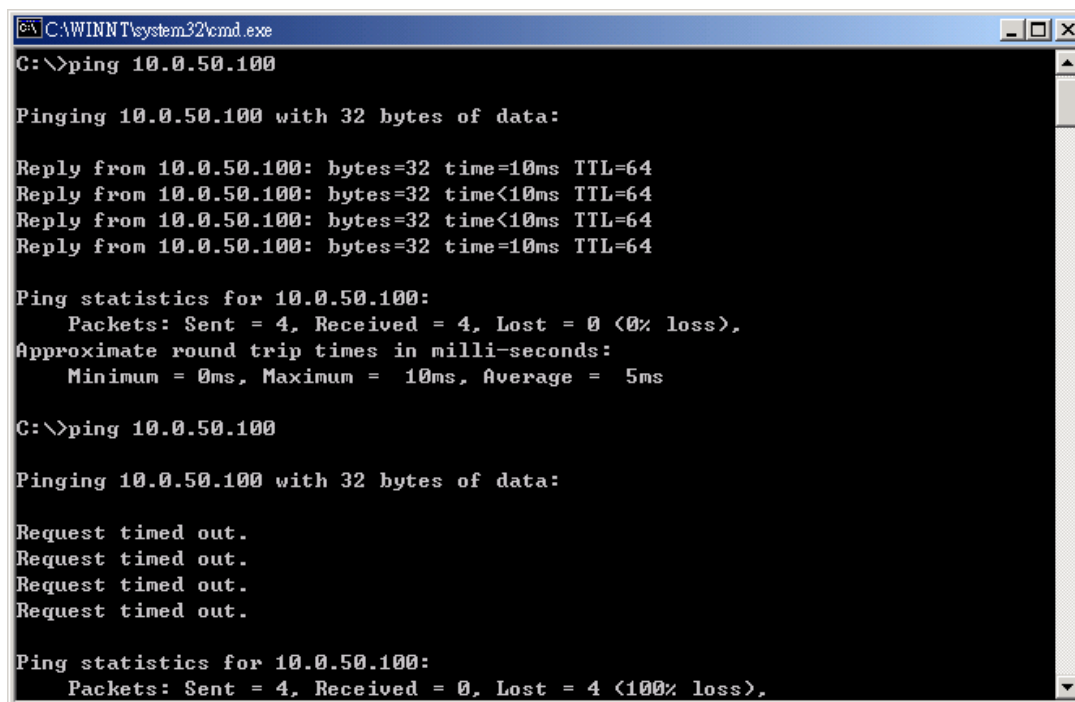
7 Diagnostics

There are several ways to check the status and availability of SE5002.

7.1 Using Standard TCP/IP Utility *ping* Command

Go to Windows **Start** menu, select **Run** and Enter in "**ping <TCP Server IP address>**".

If the connection is established, the Reply messages are displayed; otherwise it will indicate Request timed out.



```
C:\WINNT\system32\cmd.exe

C:\>ping 10.0.50.100

Pinging 10.0.50.100 with 32 bytes of data:

Reply from 10.0.50.100: bytes=32 time=10ms TTL=64
Reply from 10.0.50.100: bytes=32 time<10ms TTL=64
Reply from 10.0.50.100: bytes=32 time<10ms TTL=64
Reply from 10.0.50.100: bytes=32 time=10ms TTL=64

Ping statistics for 10.0.50.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 10ms, Average = 5ms

C:\>ping 10.0.50.100

Pinging 10.0.50.100 with 32 bytes of data:

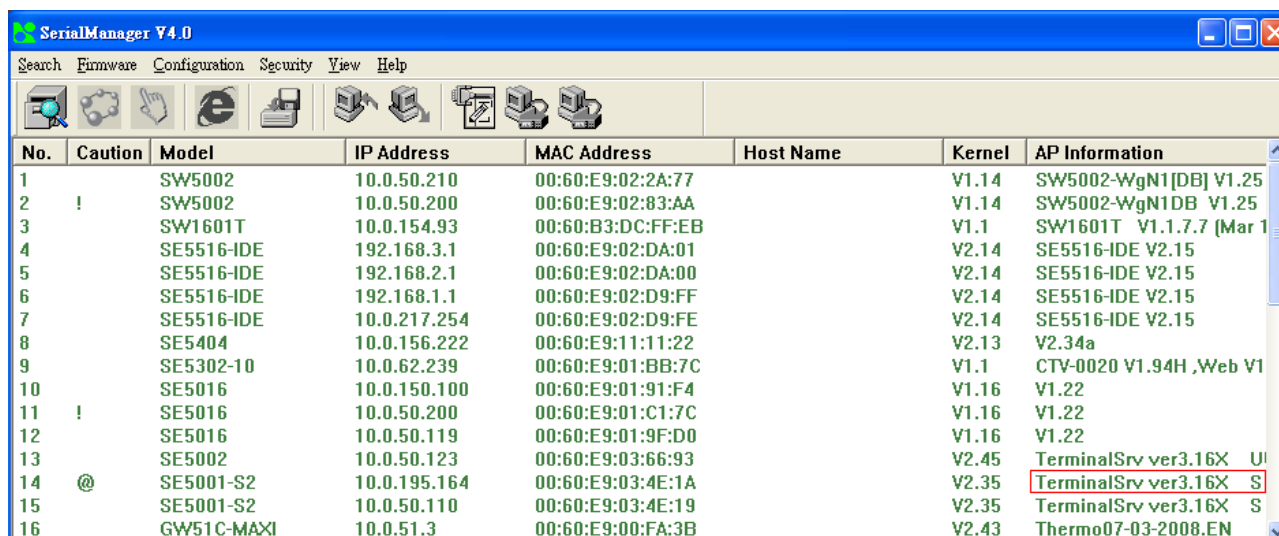
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.0.50.100:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

7.2 Using SerialManager Configuration Utility Program

Use SerialManager configuration program on the product CD to check the status of SE5002. The status and version can be read from the tool.

For example, 'S' means that COM1 is in server mode and is not connected.



No.	Caution	Model	IP Address	MAC Address	Host Name	Kernel	AP Information
1		SW5002	10.0.50.210	00:60:E9:02:2A:77		V1.14	SW5002-WgN1[DB] V1.25
2	!	SW5002	10.0.50.200	00:60:E9:02:83:AA		V1.14	SW5002-WgN1DB V1.25
3		SW1601T	10.0.154.93	00:60:B3:DC:FF:EB		V1.1	SW1601T V1.1.7.7 [Mar 1
4		SE5516-IDE	192.168.3.1	00:60:E9:02:DA:01		V2.14	SE5516-IDE V2.15
5		SE5516-IDE	192.168.2.1	00:60:E9:02:DA:00		V2.14	SE5516-IDE V2.15
6		SE5516-IDE	192.168.1.1	00:60:E9:02:D9:FF		V2.14	SE5516-IDE V2.15
7		SE5516-IDE	10.0.217.254	00:60:E9:02:D9:FE		V2.14	SE5516-IDE V2.15
8		SE5404	10.0.156.222	00:60:E9:11:11:22		V2.13	V2.34a
9		SE5302-10	10.0.62.239	00:60:E9:01:BB:7C		V1.1	CTV-0020 V1.94H ,Web V1
10		SE5016	10.0.150.100	00:60:E9:01:91:F4		V1.16	V1.22
11	!	SE5016	10.0.50.200	00:60:E9:01:C1:7C		V1.16	V1.22
12		SE5016	10.0.50.119	00:60:E9:01:9F:D0		V1.16	V1.22
13		SE5002	10.0.50.123	00:60:E9:03:66:93		V2.45	TerminalSrv ver3.16X UI
14	@	SE5001-S2	10.0.195.164	00:60:E9:03:4E:1A		V2.35	TerminalSrv ver3.16X S
15		SE5001-S2	10.0.50.110	00:60:E9:03:4E:19		V2.35	TerminalSrv ver3.16X S
16		GW51C-MAXI	10.0.51.3	00:60:E9:00:FA:3B		V2.43	Thermo07-03-2008.EN

7.3 Using TCPTTEST.EXE or TCPTTEST2.EXE Sample Program

Sample programs TCPTTEST.EXE and TCPTTEST2.EXE can be used to check the status of SE5002. Refer to chapter 6.2 for running the sample programs.

Appendix A: Specification

A.1. Hardware Specification

	Specifications
CPU	<ul style="list-style-type: none"> 16-bit Embedded CPU 100MHz
Flash Memory	<ul style="list-style-type: none"> 512K Bytes
SDRAM	<ul style="list-style-type: none"> 512K Bytes
EEPROM	<ul style="list-style-type: none"> 512 Bytes
Host Communication	<ul style="list-style-type: none"> IEEE802.3 base band TCP/IP, UDP, SNMP, HTTP, Telnet, ARP, BOOTP, DHCP, ICMP
Reset	<ul style="list-style-type: none"> Built-in default key to restore factory default settings
Watch Dog Timer	<ul style="list-style-type: none"> Software watch dog to auto reset
Serial Port Communication	<ul style="list-style-type: none"> Two RS-232 or RS-485/RS-422 selectable RS-232: EIA-RS-232C standard, Full Duplex, DB9 RS-485: 2/4 wires, Half/Full duplex, Terminal Block RS-422: 4 wires, Half/Full duplex, Terminal Block Parameters

- 1) Baud-rate: 1200 bps ~ 230400 bps
- 2) Parity: None, Even, Odd, Mark, Space
- 3) Data bits: 7,8
- 4) Stop bits: 1,2
- 5) Packet Delimiter: by inter-character timeout, by characters delin
- 6) Flow Control: None, Hardware CTS/RTS, Software Xon/Xoff

LED indication

- RUN x 1
- LAN x 1
- COM port x 4

Power Requirement

- +9~30VDC Jack or DC +9~30V Terminal Block, 2.8 Watt Max

Temperature

- Operation: 0°C to 60°C
- Storage: -20°C to 70°C

Humidity

- 20%~90% non-condensing

Housing

- 90mm(L) x 45mm(W) x 63mm(H)

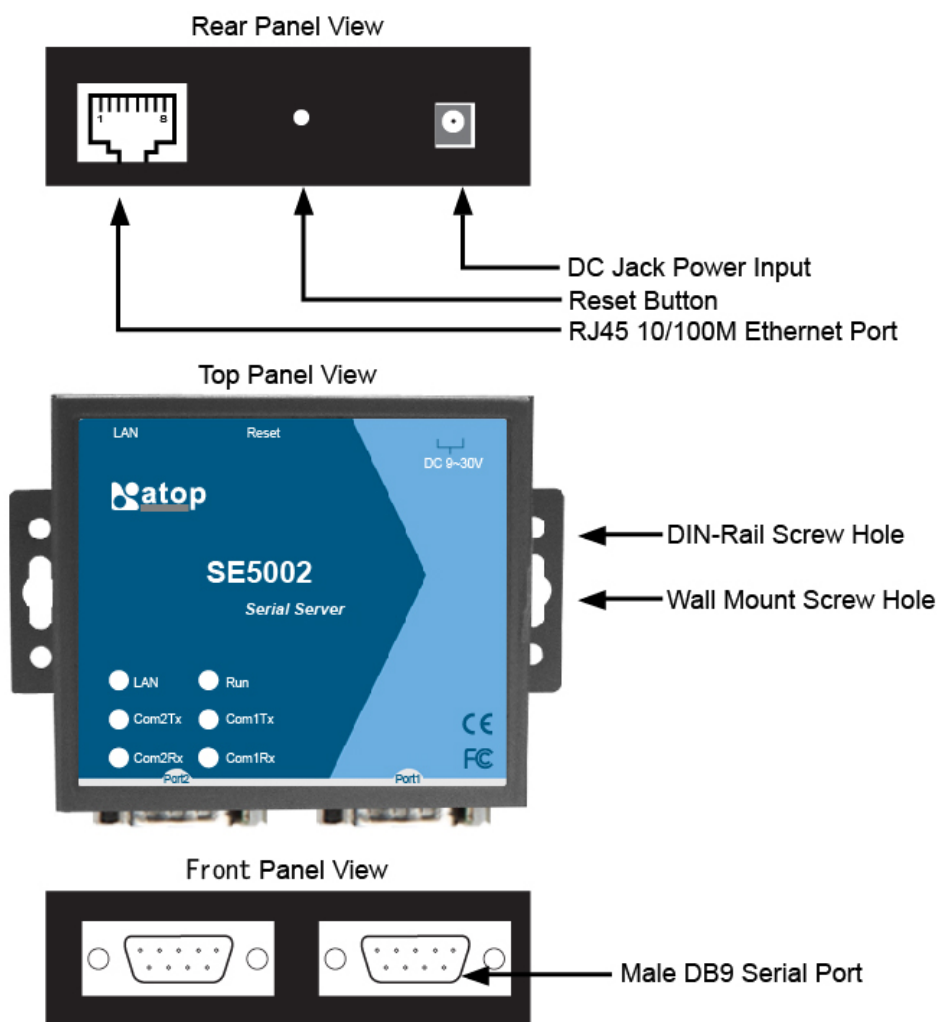
A.2. Software Specification

Item	Specifications
Protocol	TCP, UDP, ARP, ICMP, SNMP, HTTP, Telnet, BOOTP, DHCP
Configuration	<ul style="list-style-type: none"> Configuration information for both TCP/IP and serial ports is written in the EEPROM. Configuration utilities of Windows 98/2000/NT/XP/2003 are provided.
Internal Buffer Size	<ul style="list-style-type: none"> TCP receiving buffer size = 8K bytes TCP transmitting buffer size = 16K bytes RS-232 or RS-485/RS-422 receiving buffer size = 4K bytes RS-232 or RS-485/RS-422 transmitting buffer size = 4K bytes

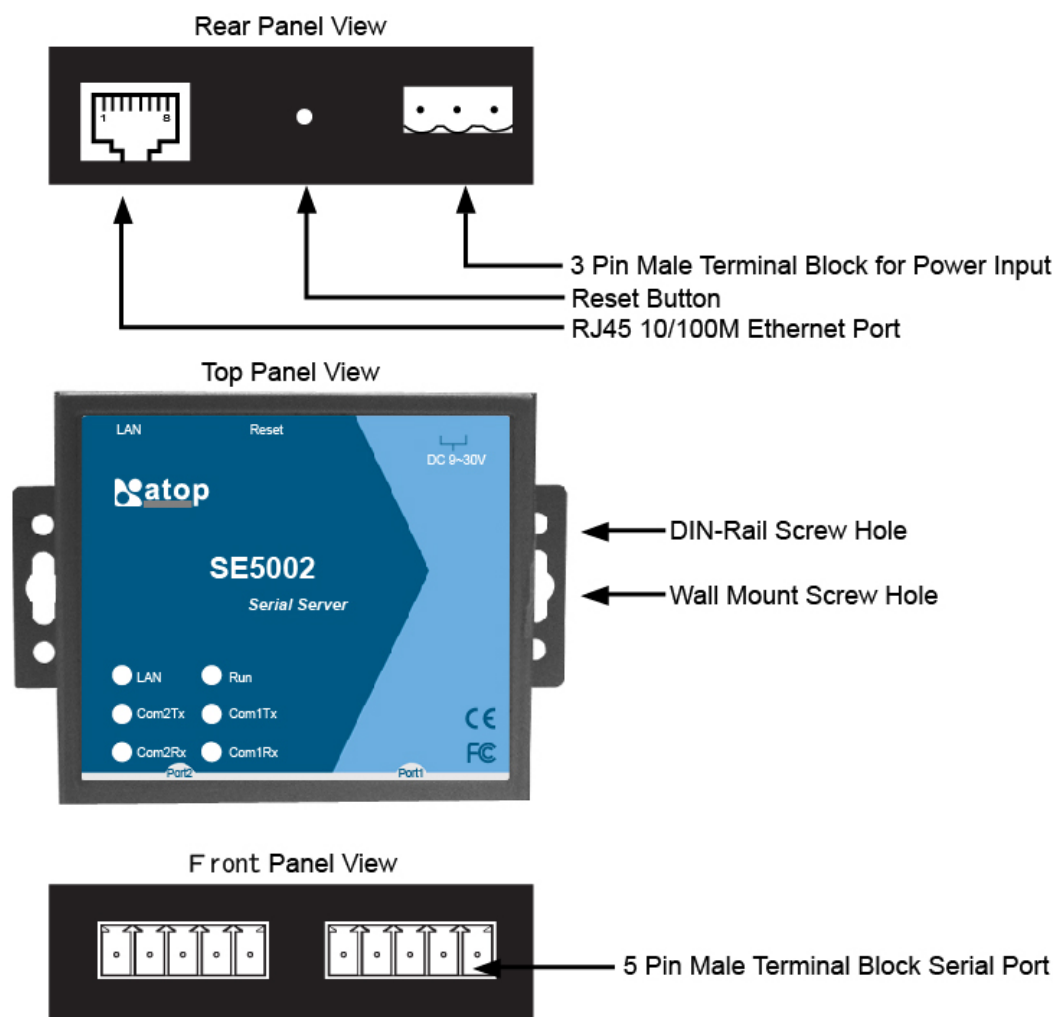
A.3 Panel Layout and Connector Pin Assignments

A.3.1. Panel Layout

A.3.1.1 DB9 for SE5002 (RS-232/RS-422/RS-485)



A.3.1.2 SE5002-S55is (RS-422/RS-485)



A.3.2.1 DB9 Pin Assignments

The pin assignments of DB9 connector on SE5002 are shown in the following table:

Pin#	RS-232 Full Duplex for SE5002 Model	RS-485/RS422 2 wire, Half Duplex for SE5002 Model	RS-485 4 wire, Full Duplex for SE5002 Model
1	DCD	N/A	N/A
2	RXD	N/A (reserved)	TXD+
3	TXD	DATA+	RXD+
4	DTR	N/A	N/A
5	SG (Signal Ground)	SG (Signal Ground)	SG (Signal Ground)
6	DSR	N/A	N/A
7	RTS	DATA-	RXD-
8	CTS	N/A (reserved)	TXD-
9	N/A	N/A	N/A

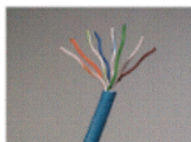
A.3.2.2 Terminal Block Pin Assignments

The pin assignments of Terminal Block connector on SE5002-S55is are shown in the following table:

Pin#	RS-485/RS-422 4 wire, Half Duplex For SE5002-S55is	RS-485 2 wire, Full Duplex For SE5002-S55is
1	T+	NC
2	T-	NC
3	R+	Data+
4	R-	Data-
5	SG (Signal Ground)	SG (Signal Ground)

A.3.3 Ethernet Port (RJ-45) Pin Assignments

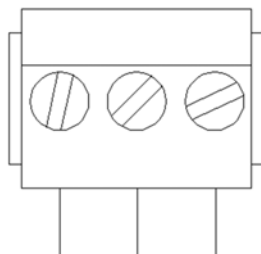
1. Category 5 UTP cable, 8 core wire.



2. RJ45 Connector.
3. RJ45 Pin Assignment

Pin Assignment	568A Definition	568B Definition
Pin1	Green-White	Orange-White
Pin2	Green	Orange
Pin3	Orange-White	Green-White
Pin4	Blue	Blue
Pin5	Blue-White	Blue-White
Pin6	Orange	Green
Pin7	Brown-White	Brown-White
Pin8	Brown	Brown

canon RJ-45, choose either 568A or 568B definition. Use 568A and 568B definition, respectively for a crossover cable,



F.G. VIN- VIN+

Note: Device will not be damage if the polarity is reverse.

A.4 Buzzer/LED Message

A.4.1 Buzzer

“ ^ “: Beep twice

“ = “: Beep off

Message	Description
^===^===^===^===^===^===^... (1sec)	Watchdog problem, return service is required
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^... ^==^=====^^ (5sec)	Memory problem, return service is required
^==^=====^^ (5sec)	Startup OK but AP firmware is disabled
^==^=====^^^ (5sec)	Startup OK and AP firmware is enabled

Table 1. Buzzer Message

A.4.2 LAN

Message	Description
LED Off	Ethernet Disconnected
LED blinking with Green	Data is transmitting on Ethernet for 100Mbps
LED blinking with Orange	Data is transmitting on Ethernet for 10Mbps

Table 2. LAN LED Message

A.4.3 COM Port

Message	Description
COM1(2) TX LED off	No data is transmitting on COM port
COM1(2) TX LED on blinking state	Data is transmitting on COM port
COM1(2) RX LED off	No data is receiving on COM port
COM1(2) RX LED on blinking state	Data is receiving on COM port

Table 3. COM Port LED Message

A.4.4 RUN

Message	Description
LED on	Jumper JP1 pin1 and pin2 are shorted to disable AP firmware in the flash memory.
LED blinking (rate: 0.5Sec)	AP firmware is running

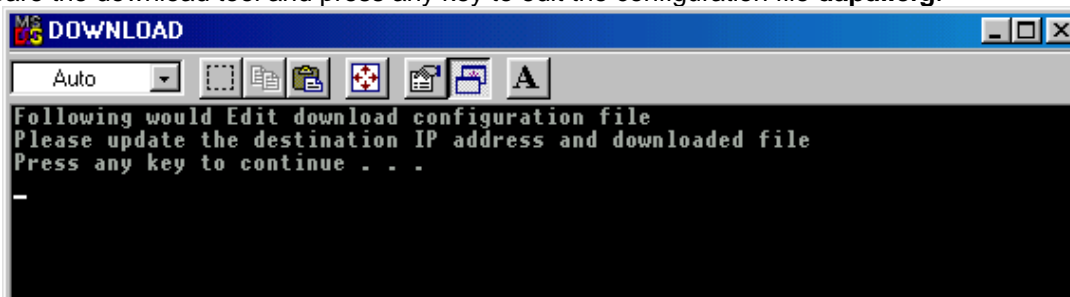
Table 4. RUN LED Message

Appendix B: Upgrade System Firmware

New version of firmware can be downloaded from www.Attop.com.tw

B.1 System Upgrade Procedure

1. Make sure the PC and the SE5002 are on the same network. Use command **ping** or **SerialManager** program to verify their availability.
2. Prepare the download tool and press any key to edit the configuration file **dapdl.cfg**.



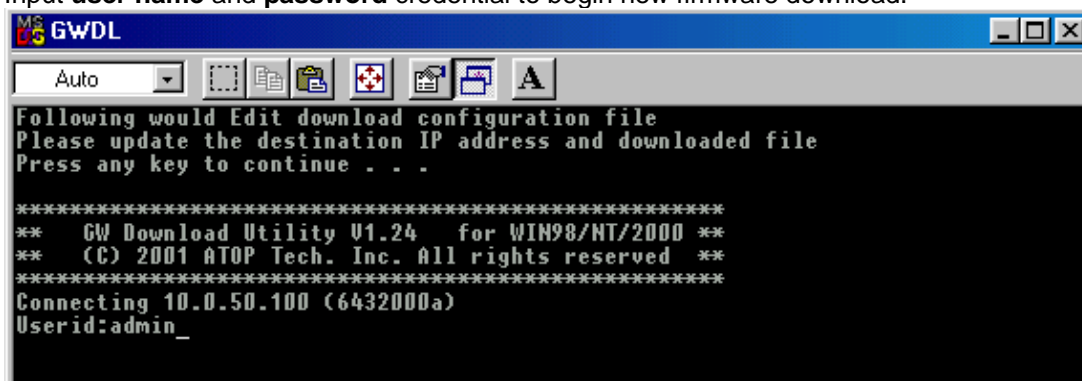
3. Edit "**dapdl.cfg**" to fit the system requirements, the contents of the file shall look like the following window. Be sure to save your modifications.

Remote_IP 10.0.50.100

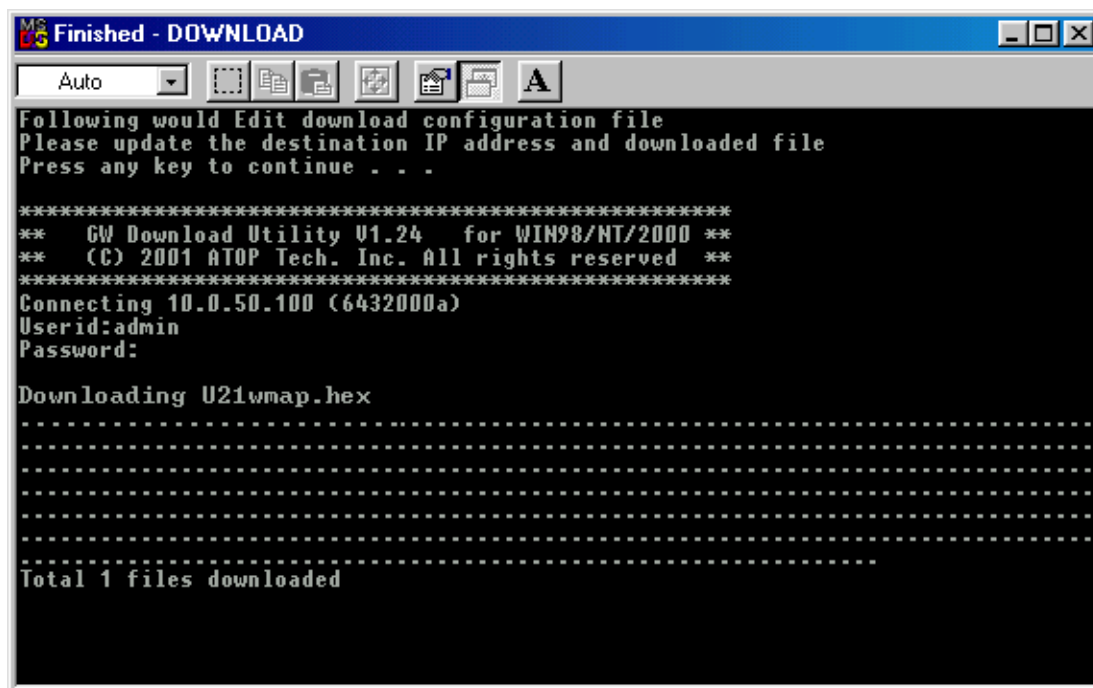
Load U5002.hex

The first line identifies the IP address of SE5002; the second line identifies the firmware (.Hex file) name to be downloaded.

4. Run **download.bat**.
5. Input **user name** and **password** credential to begin new firmware download.



6. SE5002 will automatically restart after downloading.



B.2 Critical Issues

1. The upgrading process can be aborted by pressing the <Esc> key. SE5002 will restart automatically and the system remains the same.
2. If SE5002 does not receive any upgrading data within **30 seconds**, it will restart automatically and the system remains the same.
3. After the upgrading process is done, SE5002 will program the flash memory, and the buzzer beeps 6 times before restarting. It takes around 10 seconds to complete the programming process. If an error occurs during the programming process, SE5002 will clear the corresponding memory and the system remains the same before the process.

B.3 Error Messages

Firmware upgrade may not be successful if errors occur during the process.

Error Cause	Message	Comments
Illegal Hex file format	Hex File Text Error	
	Hex File Check-Sum Error	
	Hex File Format Error	
	Hex File End of Record Error	
SE5002 handshaking problem	SE5002 ACK Start Address Error	
	SE5002 ACK Length Error	
	SE5002 Response Command Error	
Configuration file	Remote IP not found	
	Open configuration file failure	

Appendix C: Re-loading System Firmware

The AP (application program) firmware of SE5002 can be disabled. If a wrong version is downloaded. To disable the current version of firmware and re-load the correct one, do the followings:

1. Turn power off, open SE5002 case.
2. Short pin1 to pin2 on jumper JP1 (on the right-top corner of the main board) to disable the current AP firmware.
3. Turn SE5002 power on.
4. Download the correct AP firmware. .
5. Open pin1 and pin2 on jumper JP1 to enable AP firmware.
6. Close the case and continue operations.

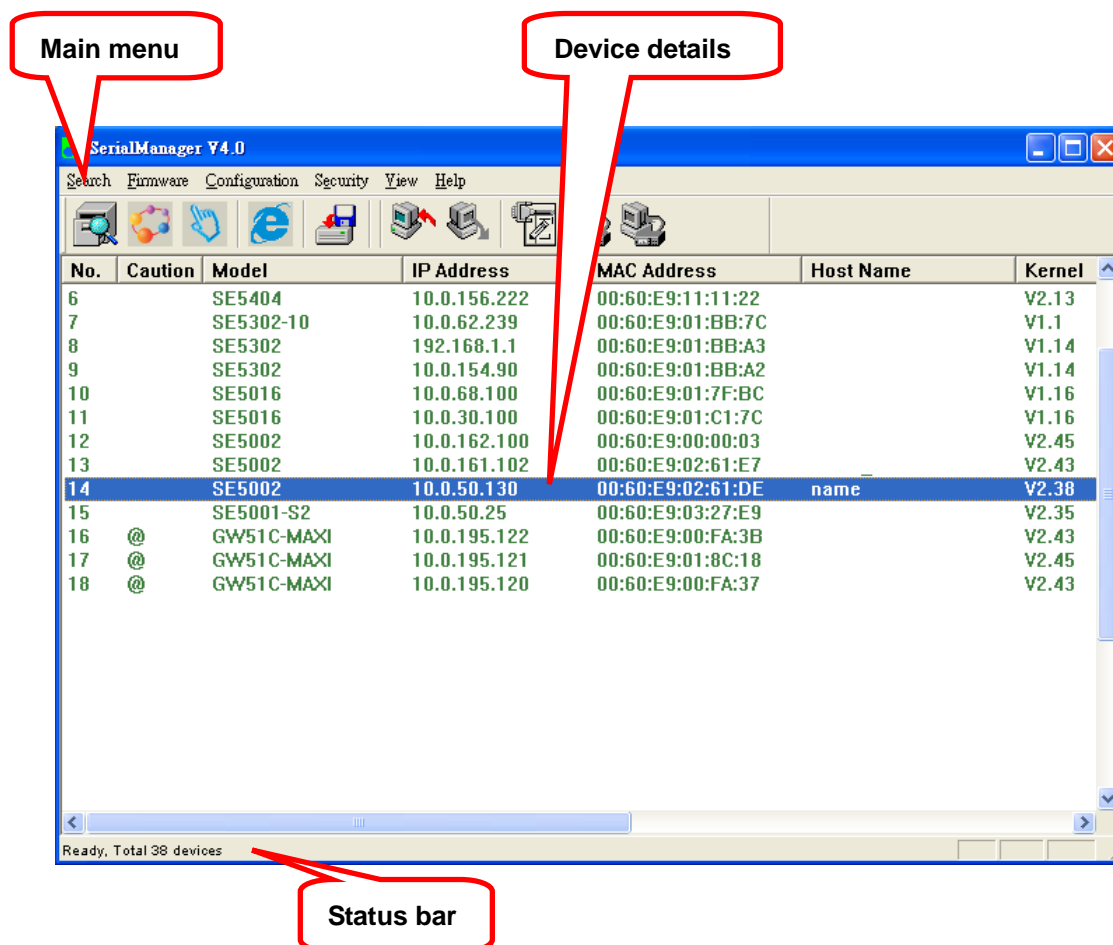
Appendix D: Using SerialManager

D.1. SerialManager Introduction

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

D.2. Interface

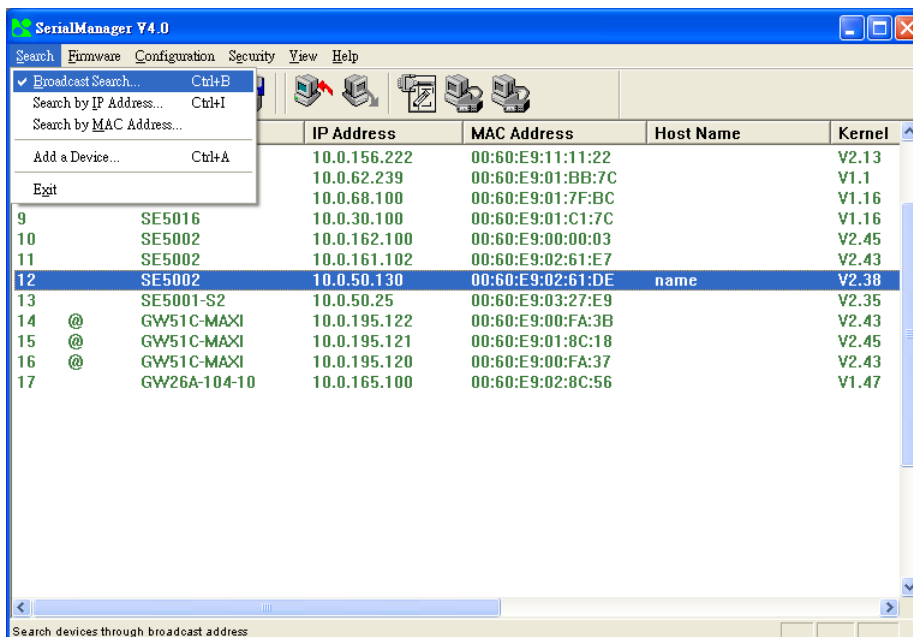
The operating interface of the **SerialManager** shown as below:



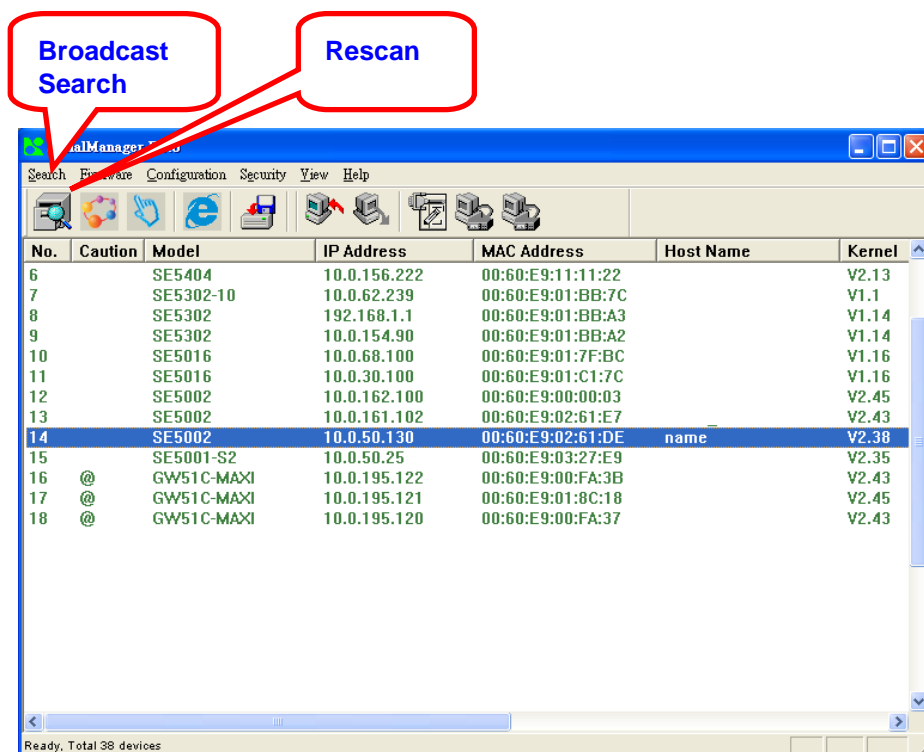
D.3. Functions

D3.1 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:

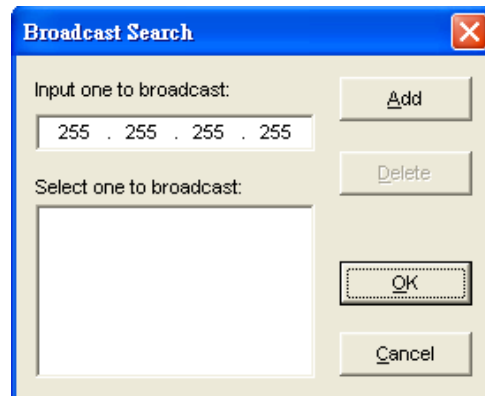


Or, select by clicking a button on the toolbar, as below:



D3.1.1 Broadcast Search

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

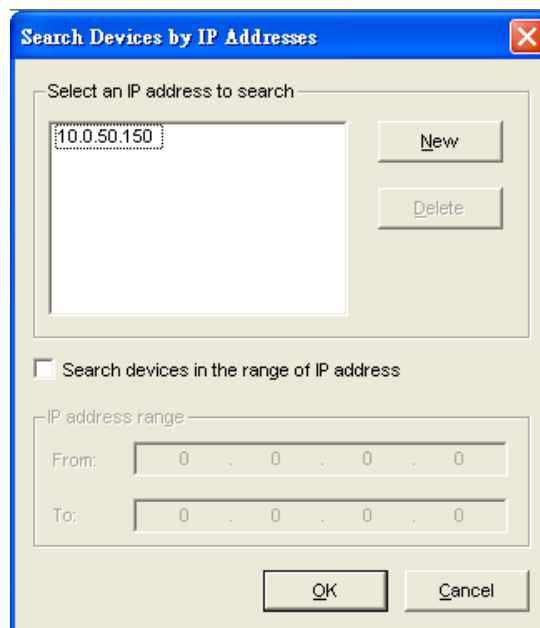


The dialog box titled "Broadcast Search" has a blue title bar with a close button. It contains two input sections. The first section, "Input one to broadcast:", has a text field containing "255 . 255 . 255 . 255" and an "Add" button. The second section, "Select one to broadcast:", has a large empty list box, a "Delete" button, and "OK" and "Cancel" buttons at the bottom right.

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

D3.1.2 Search by IP address

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



The dialog box titled "Search Devices by IP Addresses" has a blue title bar with a close button. It contains a section "Select an IP address to search" with a text field containing "10.0.50.150", a "New" button, and a "Delete" button. Below this is a checkbox labeled "Search devices in the range of IP address". Under the checkbox is a section "IP address range" with "From:" and "To:" labels, each followed by a text field containing "0 . 0 . 0 . 0". "OK" and "Cancel" buttons are at the bottom right.

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

D3.1.3 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 : 60 : E9 : 00 : 00 : 00

To: 00 : 60 : E9 : FF : FF : FF

OK Cancel

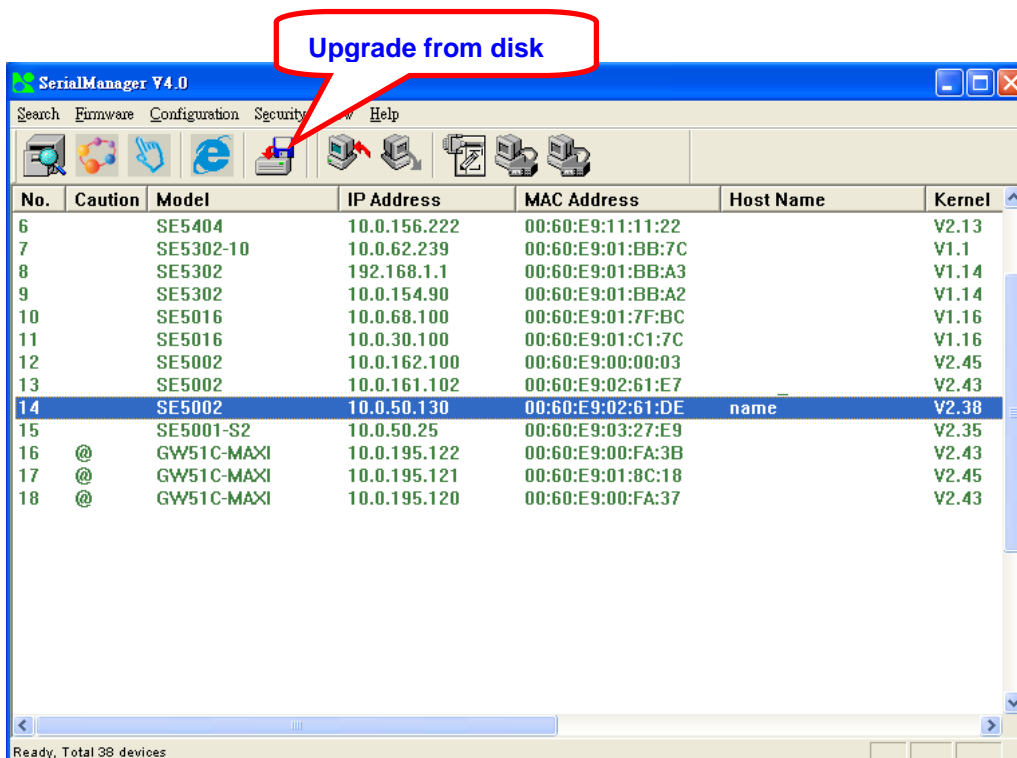
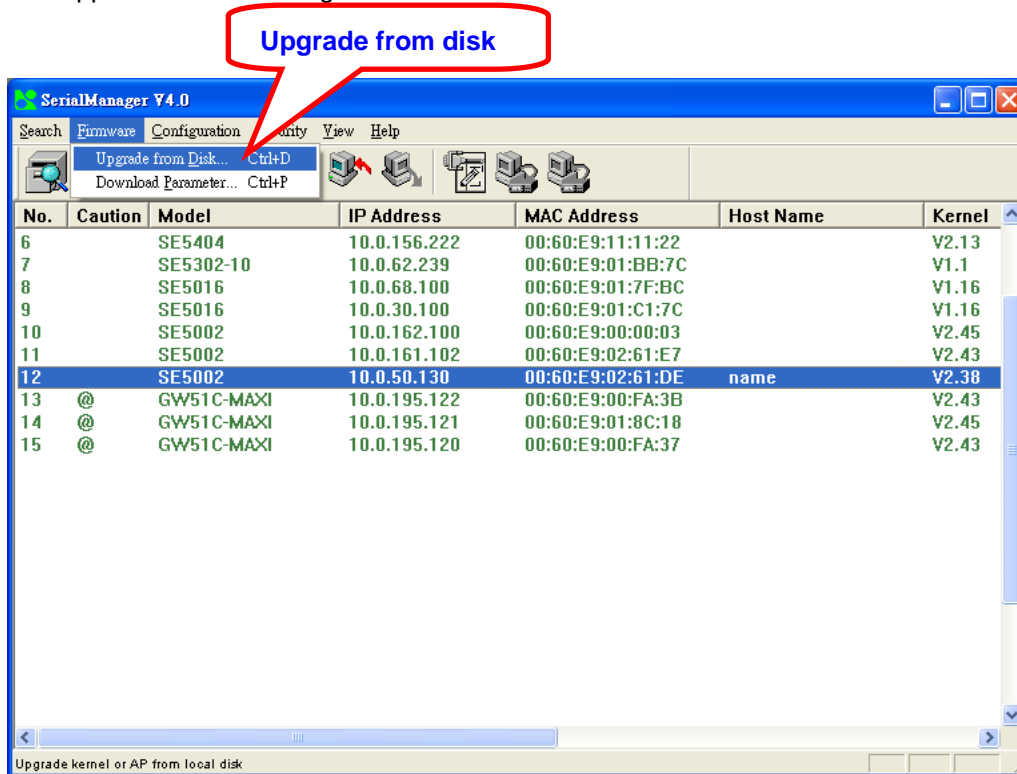
Here the user may search in two ways: **Search a MAC address to search** or **Search devices in the range of MAC address**

D3.1.4 Rescan

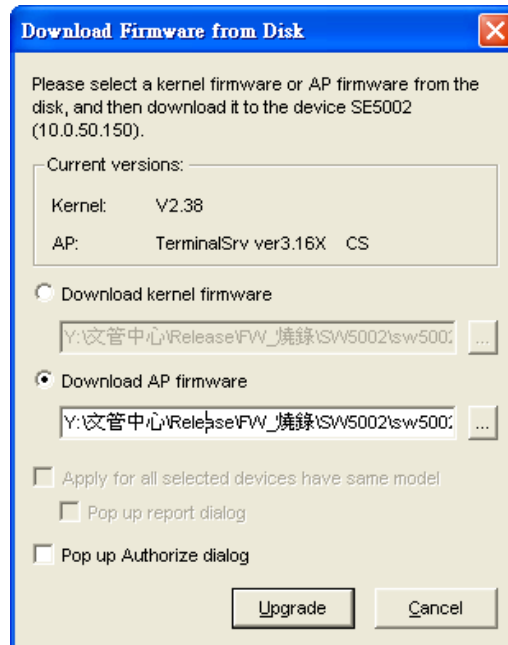
Once the user click the **Rescan** button on the toolbar, the SerialManager shall re-search devices by using the current search way.

D3.2 Firmware

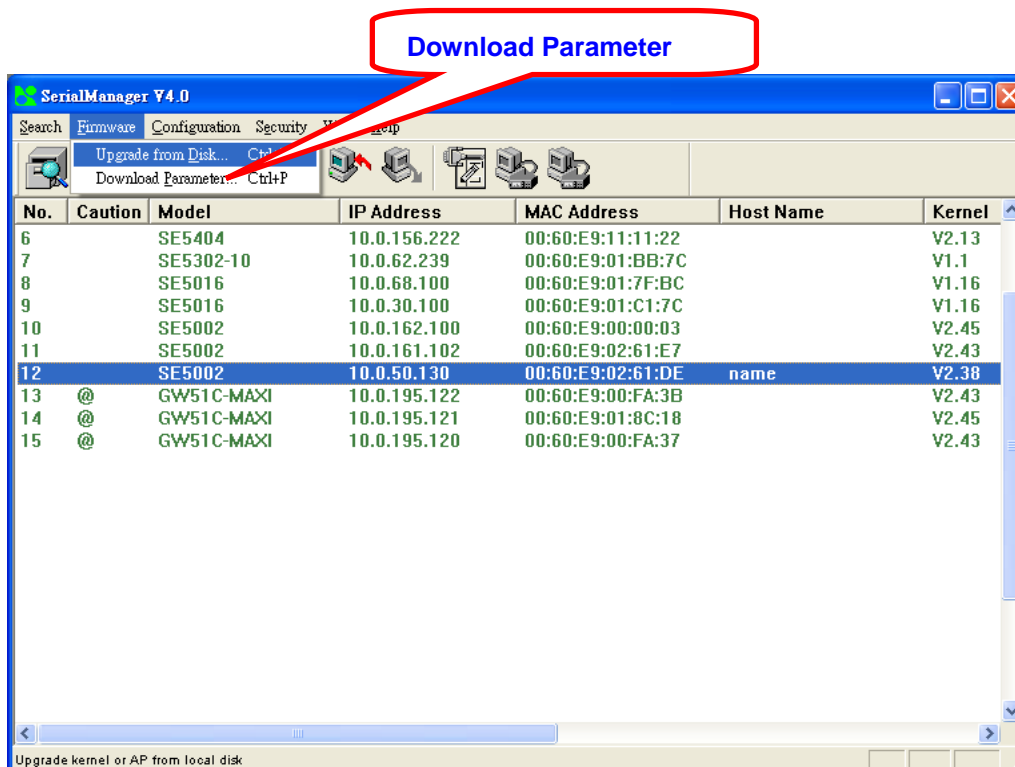
This function is applied to downloading a firmware into a selected device.



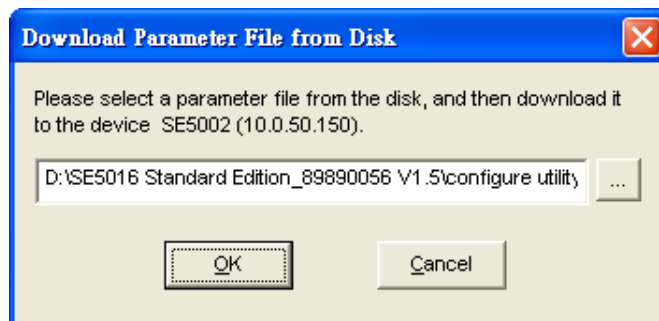
The user can enter the window for downloading by firstly clicking a designated network device, and then selecting the submenu option **Upgrade from disk** in the main menu option **Firmware**, or directly clicking the button **Upgrade from disk**. And then the user can select and download the required firmware from the disk, as shown in the figure below:



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**.



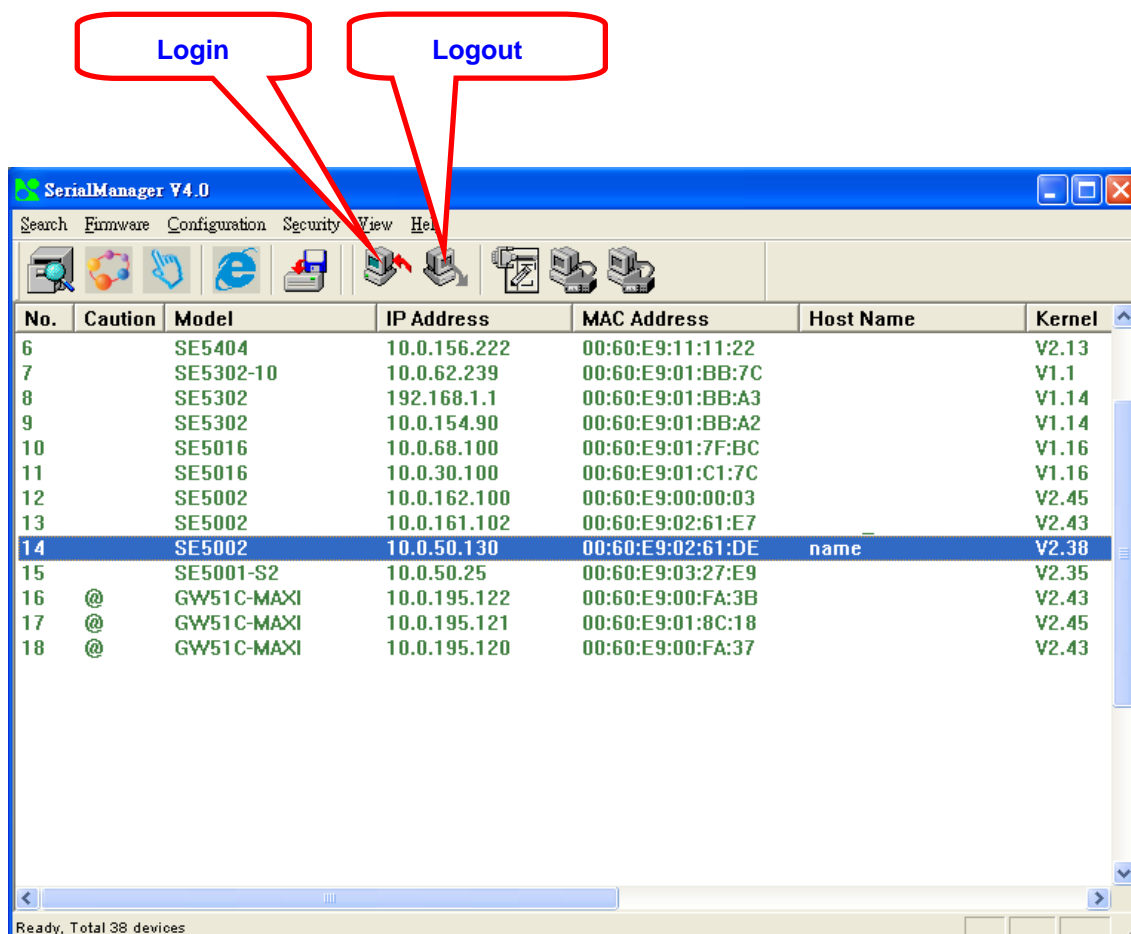
In addition for some devices with JFFS2 file system supported, the user can download the related parameter data into the device that supports the JFFS2 file system through a submenu **Download Parameter**. See details as the figure below:



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

D3.3 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:



D3.3.1 Login

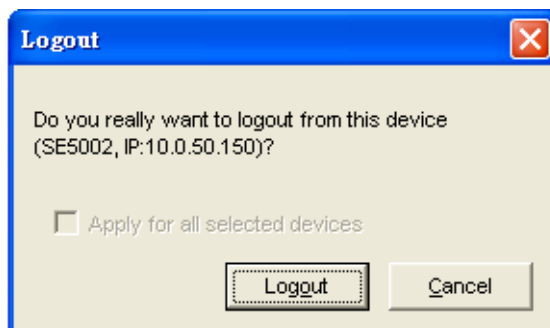
This function is applied to the login to any network device, as some important devices can only be operated after a successful login, shown as the figure below:



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**.

D3.3.2 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:



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**.

D3.3.3 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:

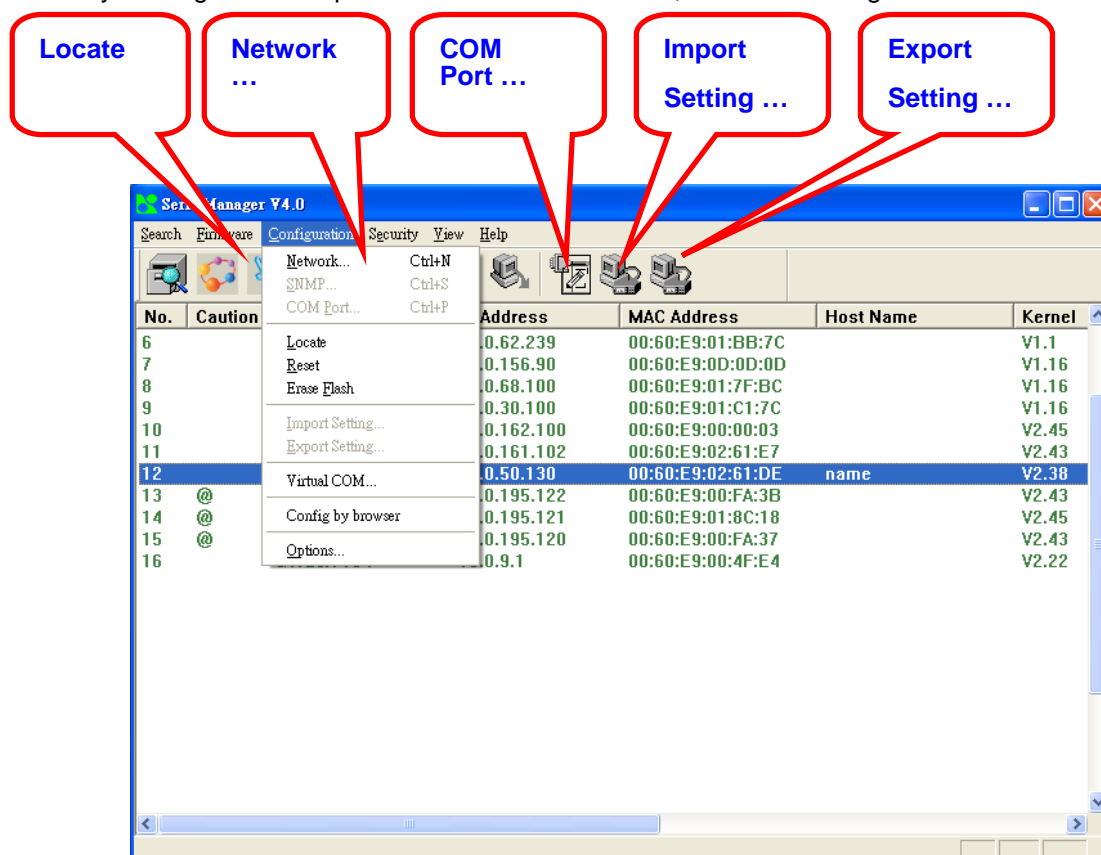


The user can also select several devices at one time, and modify their pins at the same time by selecting **Apply for all selected devices**.

D3.4 Configuration

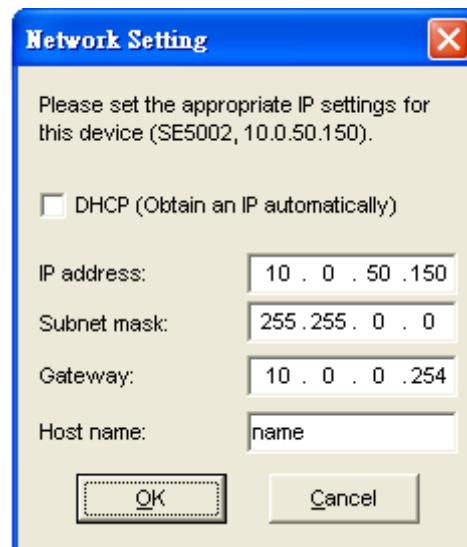
This function is applied to the configuring, import and export of work parameters for any network device, and here are mainly supplied with: 'Network ...', 'COM Port...', 'Locate', 'Reset', 'Erase Flash', 'Import Setting...', 'Export Setting...', 'Virtual COM...', 'Config by IE' and 'Options', and some 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:



D3.4.1 Network ...

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

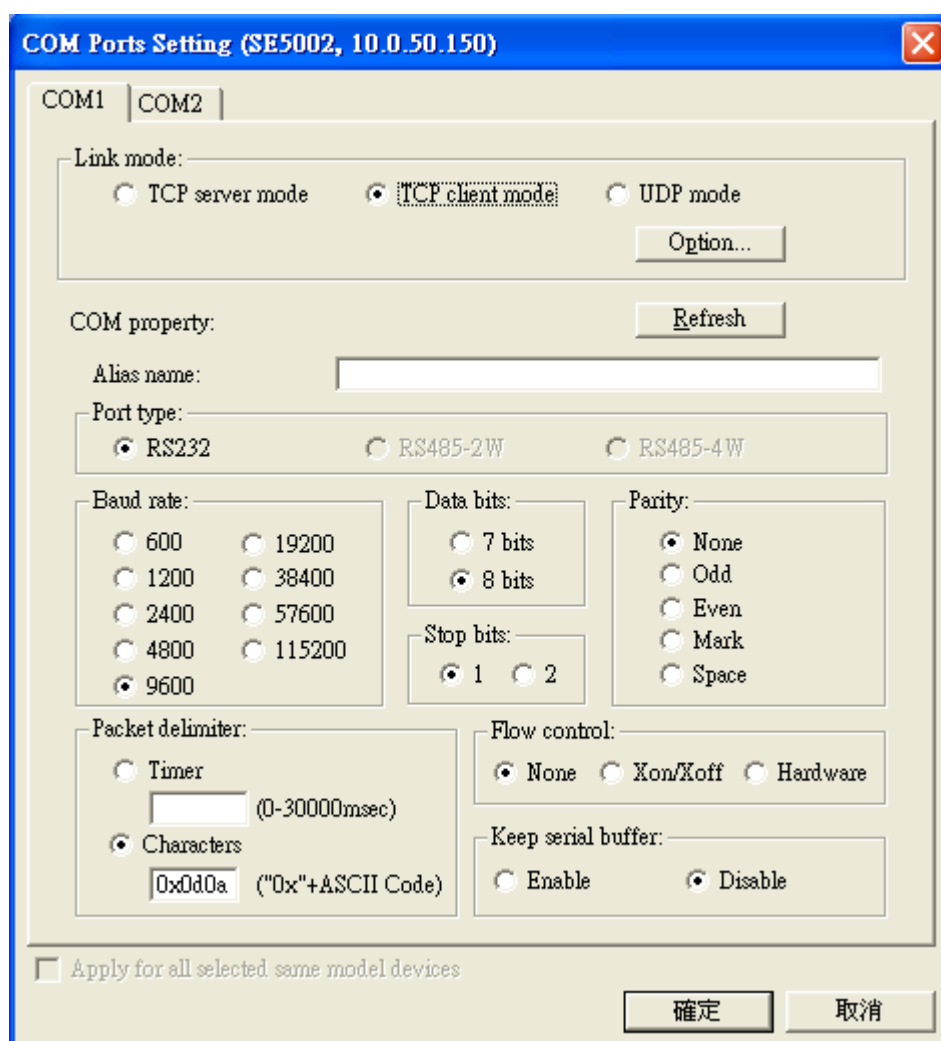


The image shows a 'Network Setting' dialog box with a blue title bar and a close button. The text inside says: 'Please set the appropriate IP settings for this device (SE5002, 10.0.50.150).' Below this is a checkbox for 'DHCP (Obtain an IP automatically)' which is currently unchecked. There are four input fields: 'IP address:' with '10 . 0 . 50 . 150', 'Subnet mask:' with '255 . 255 . 0 . 0', 'Gateway:' with '10 . 0 . 0 . 254', and 'Host name:' with 'name'. At the bottom are 'OK' and 'Cancel' buttons.

D3.4.2 COM Port ...

ATOP has developed various network products, and some of the ATOP 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 (SE5002, 10.0.50.150)

COM1 | COM2

Link mode:

☐ TCP server mode ☒ TCP client mode ☐ UDP mode

Option...

COM property:

Refresh

Alias name:

Port type:

☒ RS232 ☐ RS485-2W ☐ RS485-4W

Baud rate:

☐ 600 ☐ 19200
☐ 1200 ☐ 38400
☐ 2400 ☐ 57600
☐ 4800 ☐ 115200
☒ 9600

Data bits:

☐ 7 bits ☒ 8 bits

Parity:

☒ None ☐ Odd
☐ Even ☐ Mark
☐ Space

Stop bits:

☒ 1 ☐ 2

Packet delimiter:

☐ Timer (0-30000msec)
☒ Characters 0x0d0a ("0x"+ASCII Code)

Flow control:

☒ None ☐ Xon/Xoff ☐ Hardware

Keep serial buffer:

☐ Enable ☒ Disable

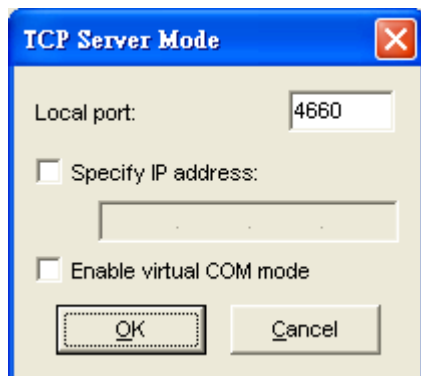
☐ Apply for all selected same model devices

確定 取消

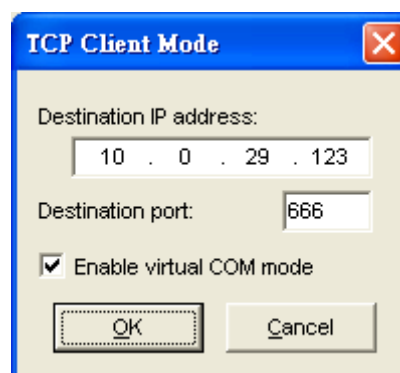
The user can also select several devices at one time, and carry out the configuration for them at the same time by selecting **Apply for all selected same model devices**

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 Server mode



TCP Client mode



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.

D3.4.3 Locate

The user can apply this function to locate a device when he knows its 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.

D3.4.4 Reset

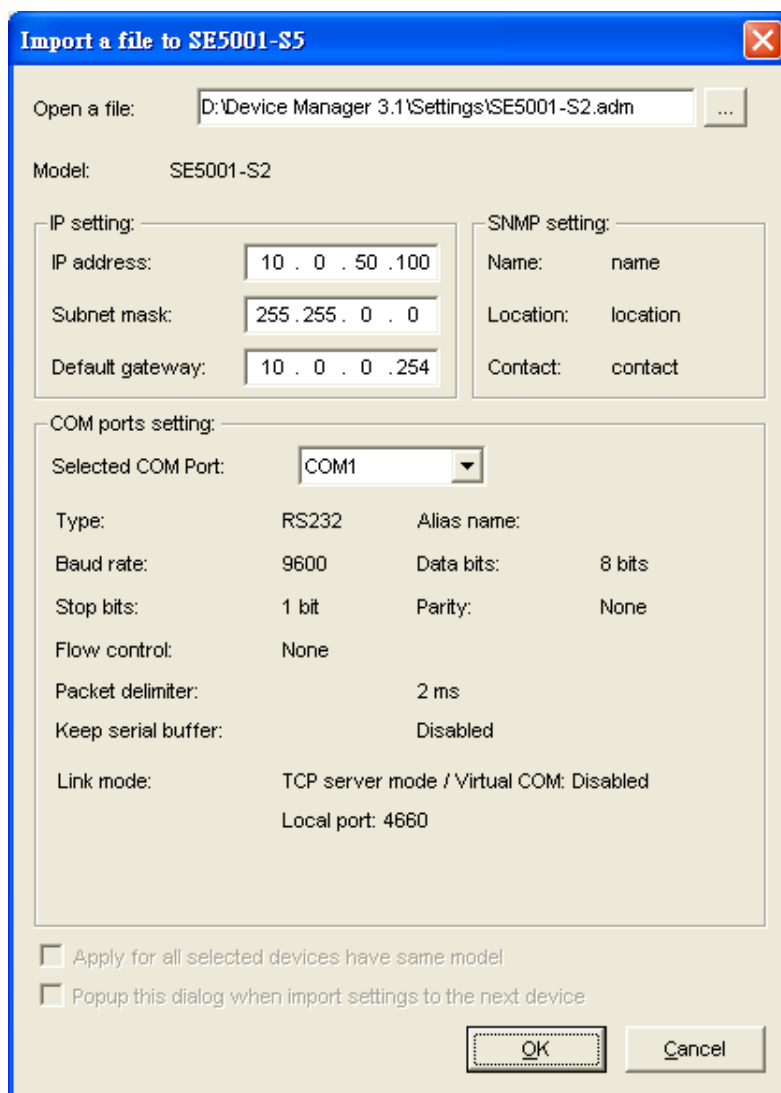
The device should be restarted after a successful modification of parameter configuration. And the user can carry out a restart through the submenu option **Reset**.

D3.4.5 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.

D3.4.6 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 SE5001-S5

Open a file: D:\Device Manager 3.1\Settings\SE5001-S2.adm

Model: SE5001-S2

IP setting:
IP address: 10 . 0 . 50 . 100
Subnet mask: 255 . 255 . 0 . 0
Default gateway: 10 . 0 . 0 . 254

SNMP setting:
Name: name
Location: location
Contact: contact

COM ports setting:
Selected COM Port: COM1
Type: RS232 Alias name:
Baud rate: 9600 Data bits: 8 bits
Stop bits: 1 bit Parity: None
Flow control: None
Packet delimiter: 2 ms
Keep serial buffer: Disabled
Link mode: TCP server mode / Virtual COM: Disabled
Local port: 4660

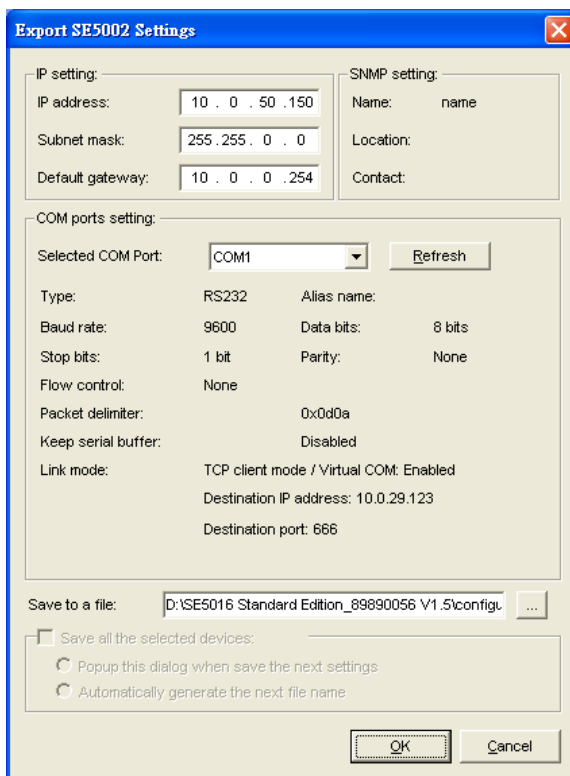
☐ Apply for all selected devices have same model
☐ Popup this dialog when import settings to the next device

OK Cancel

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**.

D3.4.7 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:



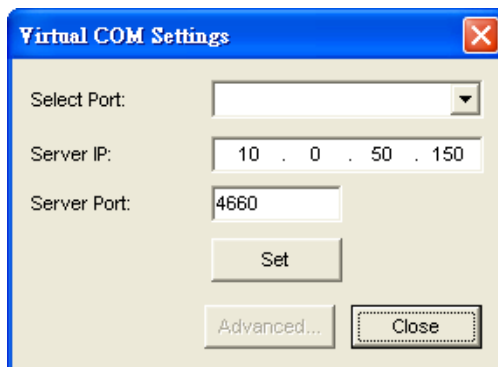
The dialog box titled "Export SE5002 Settings" contains the following sections:

- IP setting:** IP address: 10 . 0 . 50 . 150, Subnet mask: 255 . 255 . 0 . 0, Default gateway: 10 . 0 . 0 . 254.
- SNMP setting:** Name: name, Location: , Contact: .
- COM ports setting:** Selected COM Port: COM1 (dropdown), Refresh button.
- Serial parameters:** Type: RS232, Alias name: , Baud rate: 9600, Data bits: 8 bits, Stop bits: 1 bit, Parity: None, Flow control: None, Packet delimiter: 0x0d0a, Keep serial buffer: Disabled.
- Link mode:** TCP client mode / Virtual COM: Enabled, Destination IP address: 10.0.29.123, Destination port: 666.
- Save to a file:** D:\SE5016 Standard Edition_89890056 V1.5\config (text field), Save button.
- Options:** ☐ Save all the selected devices: ☐ Popup this dialog when save the next settings, ☐ Automatically generate the next file name.
- Buttons:** OK, Cancel.

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".

D3.4.8 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:

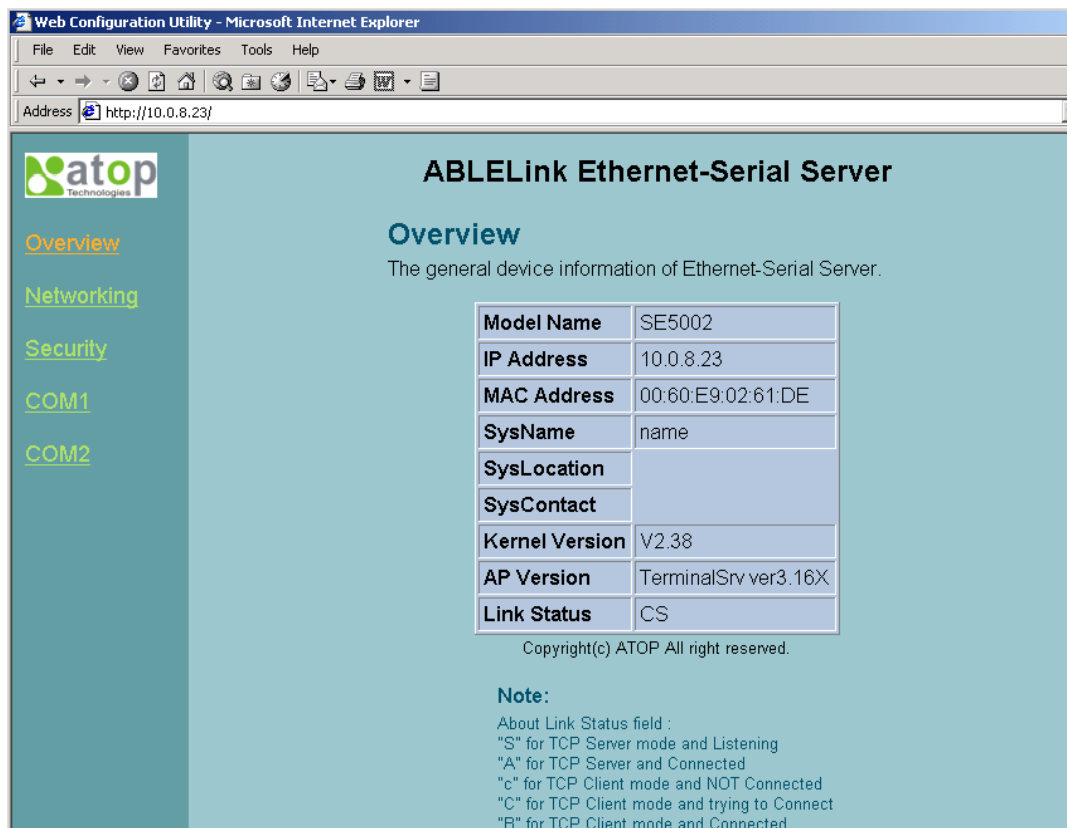


The dialog box titled "Virtual COM Settings" contains the following fields and buttons:

- Select Port:** (dropdown menu)
- Server IP:** 10 . 0 . 50 . 150
- Server Port:** 4660
- Buttons:** Set, Advanced..., Close.

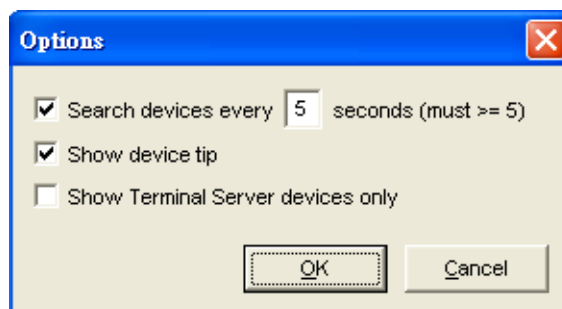
D3.4.9 Configure by IE

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:



D3.4.10 Option

The option is mainly applied to setting some common work rules of SerialManager, 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:



D3.5 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:

SerialManager V4.0

Search Firmware Configuration Security View Help

No.	Caution	Model	IP Address	MAC Address	Host Name	Kernel
6		SE5404	10.0.156.222	00:60:E9:11:11:22		V2.13
7		SE5302-10	10.0.62.239	00:60:E9:01:BB:7C		V1.1
8		SE5302	192.168.1.1	00:60:E9:01:BB:A3		V1.14
9		SE5302	10.0.154.90	00:60:E9:01:BB:A2		V1.14
10		SE5016	10.0.68.100	00:60:E9:01:7F:BC		V1.16
11		SE5016	10.0.30.100	00:60:E9:01:C1:7C		V1.16
12		SE5002	10.0.162.100	00:60:E9:00:00:03		V2.45
13		SE5002	10.0.161.102	00:60:E9:02:61:E7		V2.43
14		SE5002	10.0.50.130	00:60:E9:02:61:DE	name	V2.38
15		SE5001-S2	10.0.50.25	00:60:E9:03:27:E9		V2.35
16	@	GW51C-MAXI	10.0.195.122	00:60:E9:00:FA:3B		V2.43
17	@	GW51C-MAXI	10.0.195.121	00:60:E9:01:8C:18		V2.45
18	@	GW51C-MAXI	10.0.195.120	00:60:E9:00:FA:37		V2.43

Ready, Total 38 devices

D3.6 Help

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

