ABLELink®

SE5008/5016 Multi-port Serial Server

User Manual

Version 1.2

Updated on May, 2007

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IMPORTANT ANNOUNCEMENT

Published by

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FCC WARNING

Class A for Ethernet Serial Server (Model SE5008/SE5016)

This equipment has been tested and found to comply with the limits for 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 under commercial environment. This equipment generates, uses and radiates radio frequency energy and, while 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 owned expenses. A shielded-type power cord is required in order to meet the FCC emission limitation 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 other devices to this equipment by RS-232/RS-422/RS-485 ports. Be cautious that any changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

Contents

1. Introduction

Many industrial(computer integration manufacturing or industrial automation area) 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 SE5008/5016 Multi-port Serial Server. The SE series family is designed to transmit data between one-or-more serial device and one-or-more TCP/UDP device through Ethernet via a single or multiple application programs, and hence enhance the accessibility of the serial device through the ubiquitous TCP/IP based Ethernet. It is possible to communicate with many remote devices in Intranet or even in Internet and thus, increases the communication distance dramatically.

Of the SE series, the SE5008/5016 is for RS 232/RS 422/RS 485 with isolation protection built-in, while the SE 5008 is 8-port serial server and SE5016 is 16-port serial server.

Flexible configuration options enable SE series to be setup remotely over Ethernet by Telnet, Web browser, or Window utility. SE series Multi-port Serial Server is an ideal choice for industrial and manufacturing automation.

Packaging

- SE series Multi-port Serial Server
- AC Power cord x 1 (US Plug or EU Plug)
- Ethernet Cross-over Cable x 1
- RJ-45 to DB9 Male cable x 1
- Quick Start Guide x 1
- Product CD x 1
- RS-232/RS-422 cross over cable x 1
- RS-485 Loop back cable x 1
- Rack mounting L type ears x 2 (include screws x 4)
- Product Warranty

Optional Accessories

- RJ-45 to DB9 Male cable (90cm)

2. TCP & UDP Protocols

SE series can be operated in various Internet Protocol Transport services–including two most common TCP and UDP modes and Tunneling modeetc

Transmission Control Protocol (TCP)

TCP is a complicated, yet providing a connection and byte oriented stream which is almost error free, with some parameters such as flow control, multiple ports, and same order delivery. By using TCP, programs on networked computers can create *connections* to one another, After the connection is established, data can transmit in both directions. The protocol guarantees that data sent by one endpoint will be received in the same order by the other, and without any pieces missing. It also distinguishes data for different applications (such as a Web server and an email server) on the same computer.

For a redundant or dual-network connectivity purpose, SE series offers two *TCP operation Modes* for users to easily configure their needs by proper applications. TCP operation Modes are divided into **TCP Server Mode** and **TCP Client Mode**.

User Datagram Protocol (UDP)

UDP is a faster but non-guaranteed datagram delivery protocol .One can configure in a UDP mode on TCP/IP network to establish a connection,using unicast or broadcast data to and from a serial device to one or multiple host computers. UDP does not provide the reliability and ordering guarantees that TCP does; datagrams may arrive out of order or go missing without notice. However, as a result, UDP is faster and more efficient for many lightweight or time-sensitive purposes.

3. Application Connectivity

SE Series Ethernet Serial Server is also provided Tunneling and Virtual COM operation mode. The SE series 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. 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 series Ethernet Serial Servers (Fig 1).

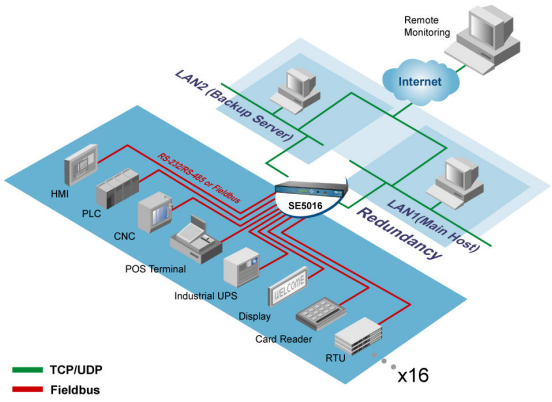


Fig 1. Topology of SE5008/5016 Multi-application Connectivity

Virtual COM Mode

Virtual Com software can emulate real serial ports for equipment that use serial dataflow in reliable Internet or LAN connection instead of regular serial port. Virtual COM driver mode for windows converts COM data to Ethernet LAN data for control of the COM port on SE series via Ethernet 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 SE series that connects the serial line device to the network. Figure as shown below illustrates a Virtual COM connection diagram, for more detail (Fig 2)

TCP Server of Virtual COM Mode

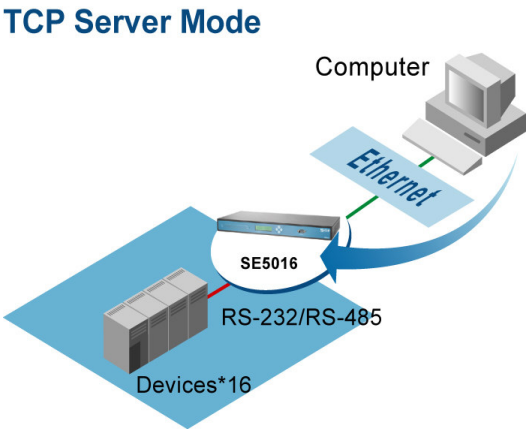


Fig 2. TCP Server of Virtual COM Mode's Connectivity

Configuration SE series as TCP server

Using one of the four configuration methods to configure SE series as TCP Server (Fig 3)

Note：

1. IP filter is disabled by default.
2. Default port number of SE series is 4660
3. If IP filter is enabled, only the source IP assigned can be connected to SE series.

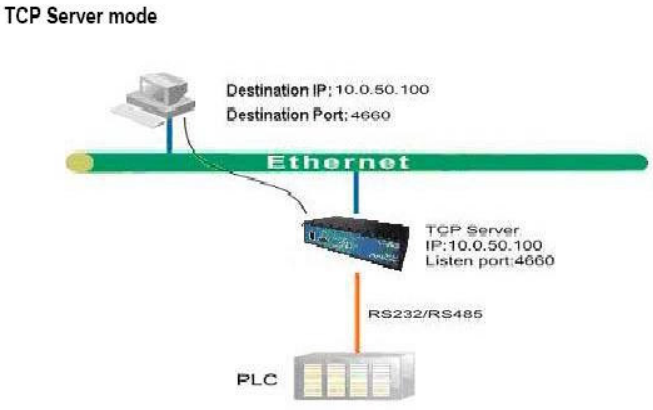


Fig 3. TCP Server of Virtual COM Operation Mode

TCP Client of Virtual COM Mode

SE5008/5016 can be configured in a TCP client mode on a TCP Network to actively establish a TCP connection with an applications server-the pre-defined host computer. SE series is actively connected to the host computer, and after the connection is successful, multiple hosts of SE series can transmit data to several devices/ equipments in both directions at the same time (Fig 4).

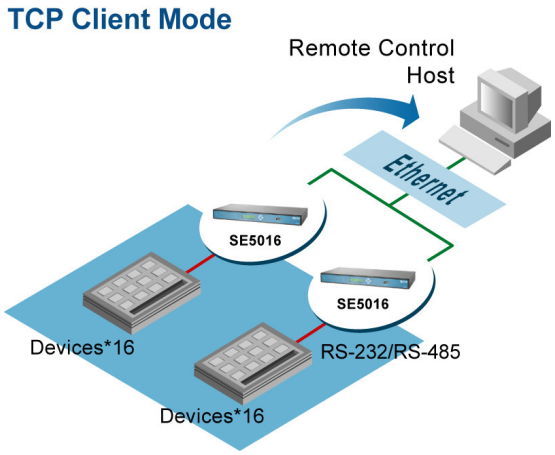


Fig 4. TCP Client of Virtual COM Mode's Connectivity

Configuration SE series as TCP client

Using one of the four configuration methods to configure SE series as TCP Client, for example the destination IP is 10.0.0.100 and the destination port is 1000(Fig 5).

Note： IP filter is disabled by default.

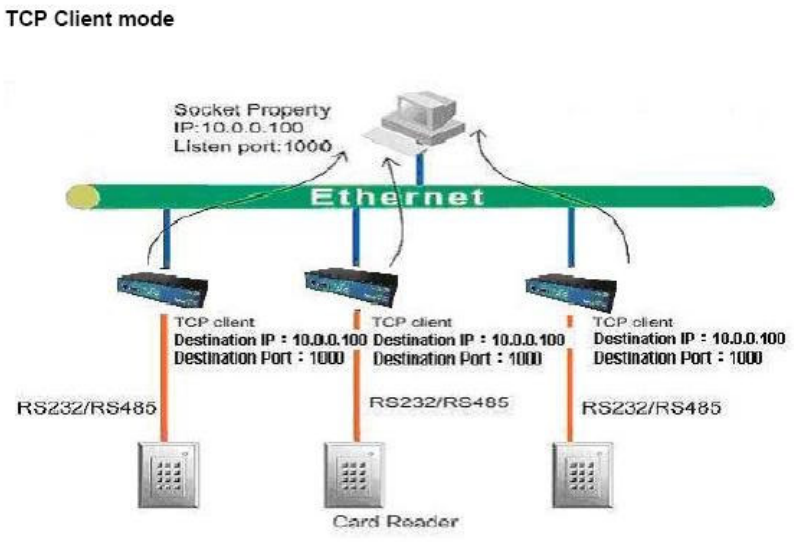


Fig 5. TCP Client of Virtual COM Operation Mode

Tunneling Mode

The tunneling mode is used for multiple serial devices to "talk" to each other through SE5008/5016's and their Ethernet connections. This mode is particularly useful when two or more serial devices are far away, because their communication distance is limited to 15 m (RS-232 connections).

SE series can also 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, for more detail see section.4.2SE series provides a unique operation mode for users to connect two or more serial connections with their own SE5008/5016's to send data over Ethernet network to communicate with each other

TCP –Server & Client

For example, One may establish a TCP connection between TCP Server and TCP client for Master /Slave PLCs (Fig 6)

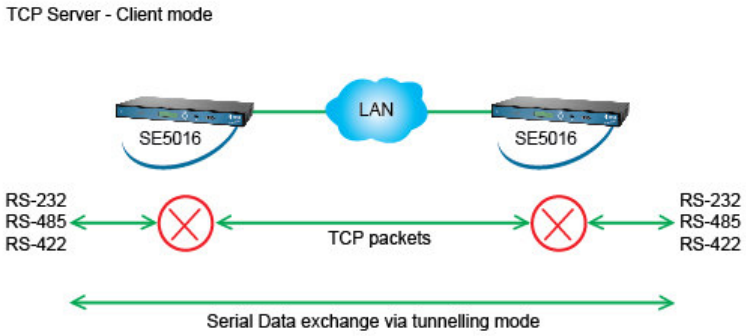


Fig 6. UDP mode for Tunneling Mode

Configuration SE series as Tunneling Mode

Using one of the four configuration methods to configure SE series as TCP Server mode by listening 4660 port (or any available port number assigned by users), and the other serial servers configure as TCP Client (Fig 7)

Note : TCP server shall assign the destination IP and the destination port which depend on TCP client's listening port (ex. TCP 4660 port).

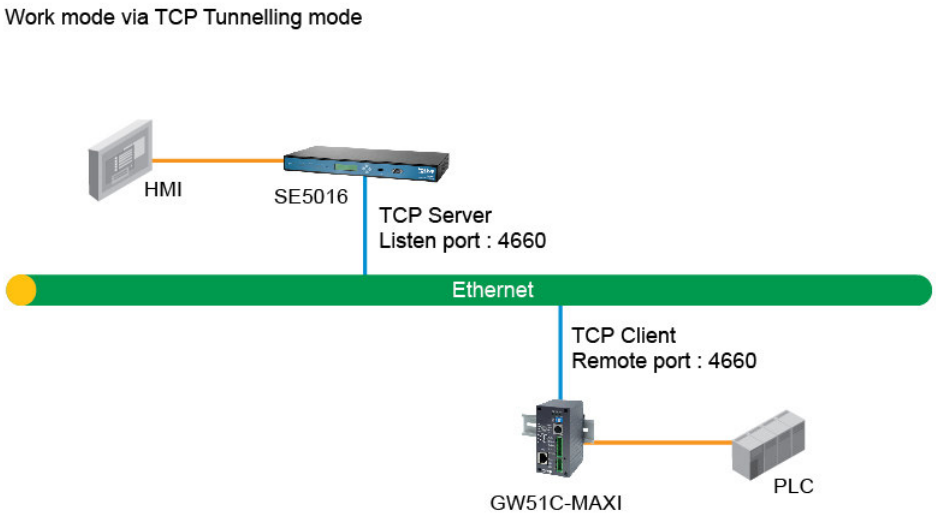


Fig 7. Work mode by TCP Connections

UDP

In UDP mode, one may use unicast or broadcast data from SE series to one or multiple SE series or other ATOP's Serial servers, Vice versa is also true. For example, it can apply to multiple PLCs' network with RS485 connections(Fig 8).

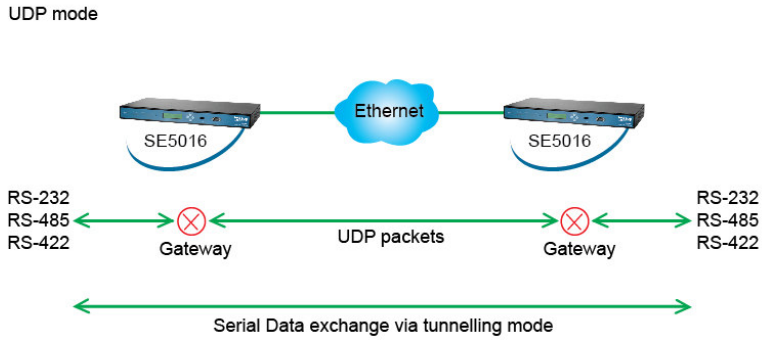


Fig 8. UDP mode for Tunneling mode

Configuration SE series as UDP Mode

Using one of the four configuration methods to configure SE series or other ATOP's serial server as UDP mode.(Fig 9)

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 is of 255.255.255.0, one may configure the broadcast IP address to be 192.168.1.255

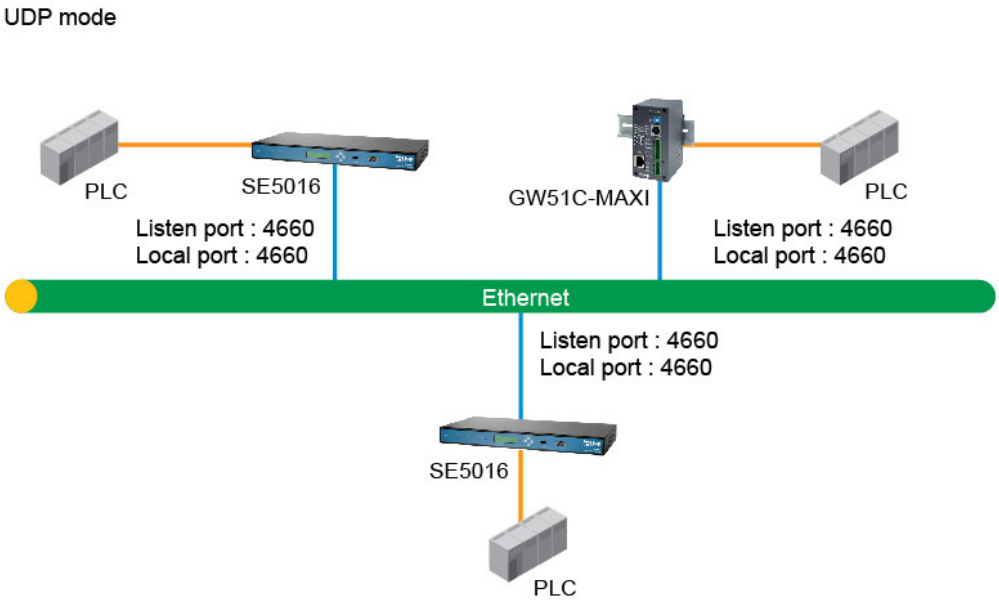
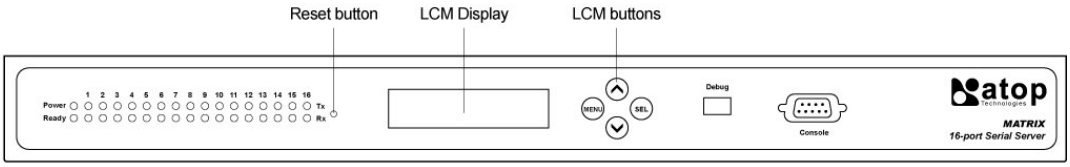


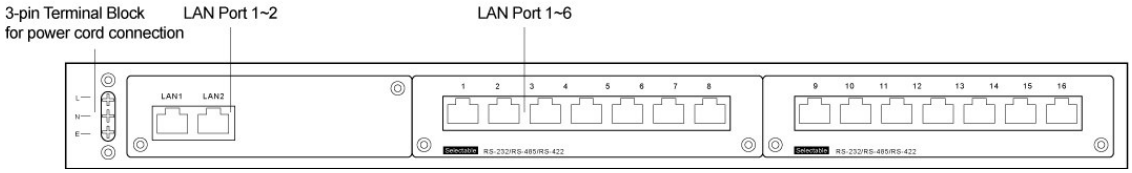
Fig 9. Work mode by UDP Connections

4. Hardware Description

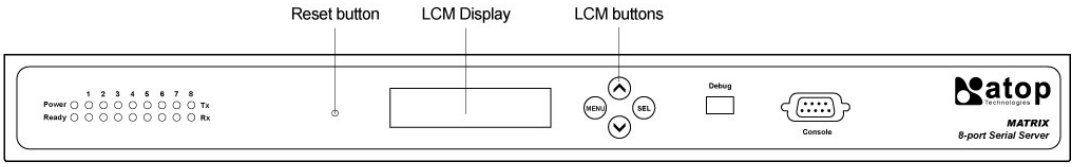
Interface

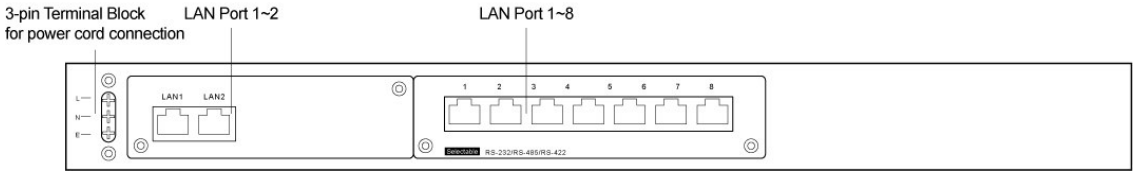
SE5016's Front & Rear Panel





SE5008's Front & Rear Panel





LED Indicator

Name	Color	Description
Power	Green	Steady on->Power On
Ready	Green	Steady on-> SE series is booting up.
		Blinking-> SE series is activated
TX/RX (1-16)	Green	TX blinking-> Serial port is transmitting data
		RX blinking->Serial port is receiving data
	Off	No data is being transmitting or receiving
LAN1/2	Orange	Steady on->100Mbps Ethernet connection
	Off	10Mbps Ethernet connection or Ethernet cable is disconnected
	Green	Blinking->Ethernet port is transmitting or receiving data

5. Hardware Installation

- Prepare necessary Ethernet UTP or STP cables, Switch/ Hub, power cord.
- Plug in the AC power cord's cable ring to the serial server by connecting the cable to the L, N, E pins.

Note：Make sure both side of letter L,N,E matching properly.

- After power on 1 minute later, the buzzer should beep, and the LCM should display "SE5016" on the front panel .
- Connect SE series' LAN1 to the Ethernet Network. via Hub/Switch by a straight-through or to a PC directly through a cross over cable

Note：Default LAN1 IP address is 10.0.50.100 and Default LAN2 IP address is 192.168.1.1

- Connect a serial device to any serial port of SE series.

Note：Make sure the cable which one selected is properly meeting the connection of RS-232 or RS-485

Using **monitor.exe** configuration utility in product CD to configure SE5008/5016. If it started up successfully, one shall find the IP and MAC addresses of SE series. One also may change the network parameters of Serial to connect to Local Area Network by changing IP address, gateway IP address and subnet mask.

Default Settings

The SE series' default setting are shown in the following table:

Default settings of SE5008/5016

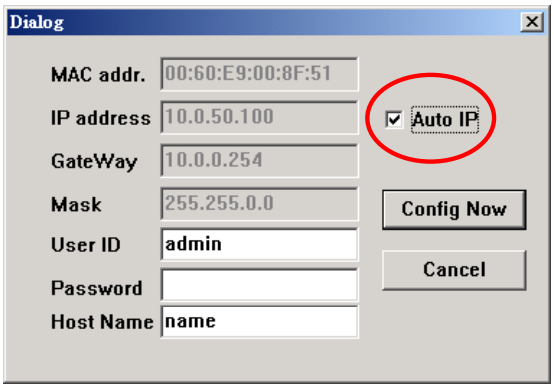
Property	Default Value
LAN 1, IP Address 1	10.0.50.100
LAN 2, IP Address 2	192.168.1.1
Gateway	10.0.0.254
Subnet Mask	255.255.0.0
User Name	admin
Password	0000 (Four digits of ZERO value without space)
COM 1 – COM16	9600,None, 8, 1, No flow control, buffer disabled, packet delimiter timer 1ms (SE5008 is limited to COM1 – COM8)
LINK 1 – LINK 16	Type: TCP Server, Listening port 4660, Filter=0.0.0.0, Virtual COM disabled (SE5008 is limited to LINK1 – LINK8)
SysName of SNMP	Name
SysLocation of SNMP	Location
SysContact of SNMP	Contact

Note: One may press the reset button to restore all the system settings list in the table .

Using a pointed object such as a needle or a straightened paper clip to press the reset button. Holding the reset button for 5 seconds, SE series shall beep and reboot the system automatically.

Auto IP for DHCP Server

A DHCP server can automatically assign the IP address and all the network settings. SE5008/5016 supports DHCP client function. One may use **Monitor.exe** to activate the DHCP client function by check **"Auto IP"** in Dialog window.



Monitor.exe's IP Settings by Auto-IP

TCP/IP Port Number

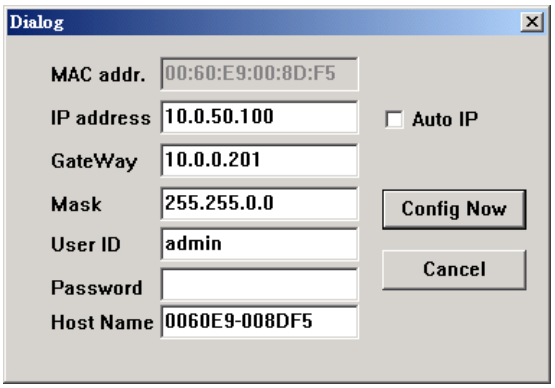
Default Com port number 1 of SE series is 4660 and it is associated with serial port. After the application program being connected to the TCP port 4660 of SE series, data of ones application program are transparent to both COM and SE series. Vice versa is also true.

6. Methods of Configuration

Configuration by Monitor.exe Utility

Install and open **monitor.exe** utility that comes with the product CD to configure the SE5008/SE5016 network parameters.

One may change the default settings of IP address, gateway address, subnet mask, user ID and password of SE series. For more detail refer to 0 **Configuration Utility.**



Monitor.exe's IP Settings by Addresses

Configuration by Telnet Console

One may use Telnet program to change the configuration settings of SE5008/5016 by following the steps below:

Log in to SE5016's Telnet console

Log in

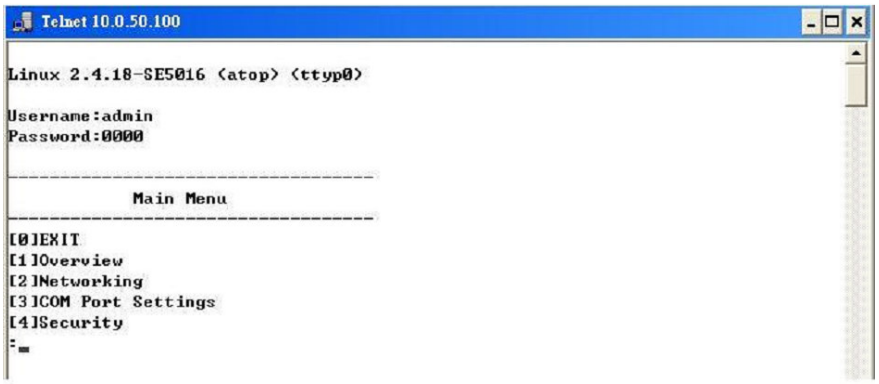
- On Window Start Menu, select **Run.**
- Enter in the command "**Telnet IP_address**".

- The system then prompts for a password, the default password is **0000**

Note：

- For the first time log in by default setting, –Enter in : **Telnet 10.0.50.100**
- One may press the reset button to reset the password

Then the following main menu shall appear



Main Menu of Telnet Console

Note:

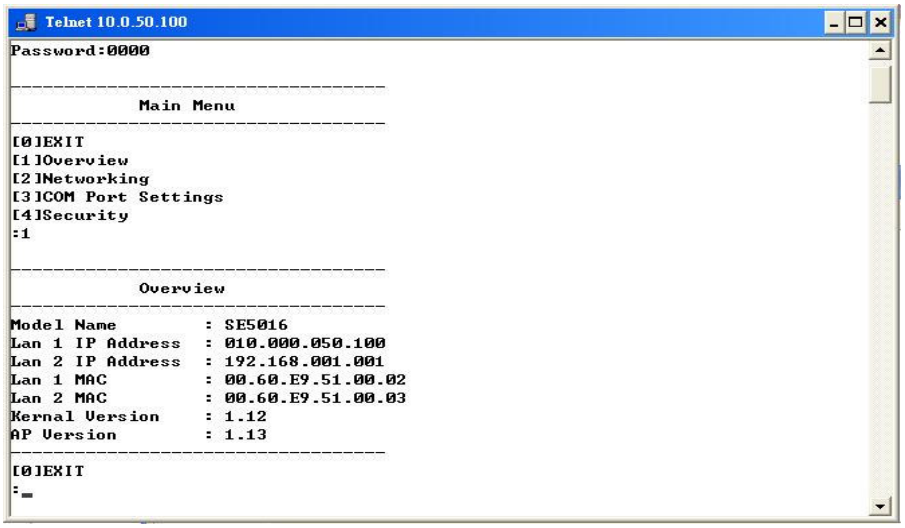
- If SE series does not receive any command within 1 minute, Telnet will be terminated automatically.
- The changes of networking parameters will take effect ONLY after the SE series is exited and restarted

Overview

Operation: [1] Overview

Overview The system overview window gives the general information on IP address, MAC address, Kernel version, and Application version,.

☞ Input “1” from “Main Menu” to Enter “Overview”



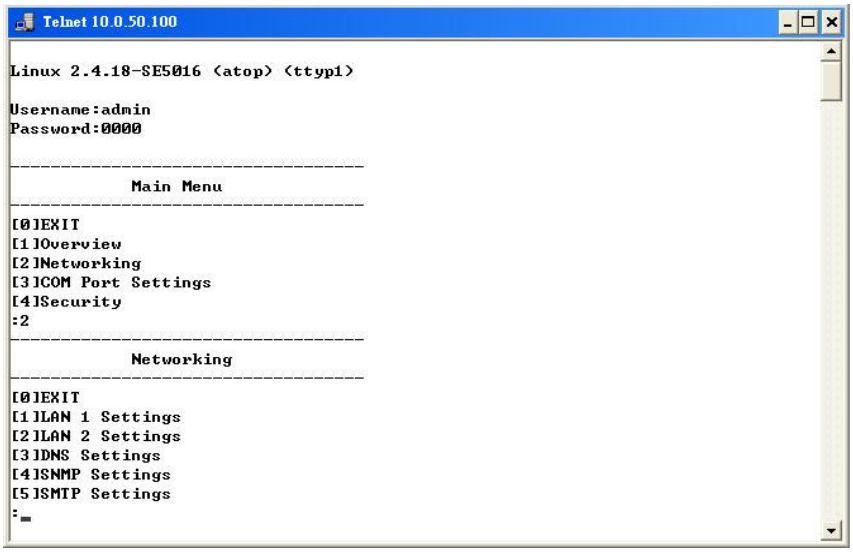
Overview information from Telnet

Networking

Operation: [2] Networking

SE series allow one to change the networking settings including IP addresses within LAN settings, DNS Settings, SNMP Settings, SMTP Settings and the connection status of the SE5008/5016 serial server.

☞ Input "2" from "Main Menu" to Enter "Networking"(0), then press "Enter" key.



Networking settings by Telnet

Note**:** Press reset button for 5 seconds to the default settings.

LAN1 / LAN2 Setting

☞Input "**1**" or **"2"**from "Networking" to Enter " **[1] LAN ([2] LAN)** Settings" then press "**Enter" key**

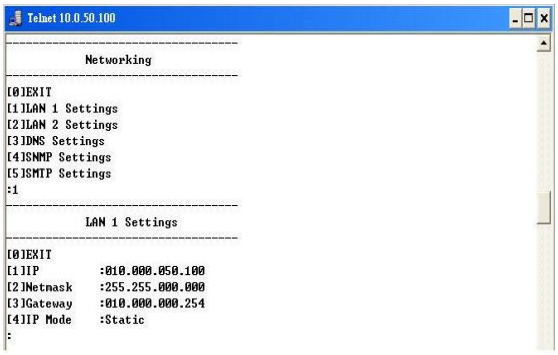
The following items allow users to changes

[1] IP address

[2] Netmask

[3] Gateway

[4] IP Mode



LAN Setting by Telnet

Note：The change of settings will take effect only after the SE series is restarted.

COM Port Setting

Operation: [3]COM Port Setting

SE series allow one to configure the parameters of COM port including COM working mode, port parameters, enabling or disabling serial buffer's data and packet delimiter setting.

☞ Input "3" from "Main Menu" to Enter "[3]COM Port Settings"(0) and press "Enter" key.

COM Port Setting of Telnet Console

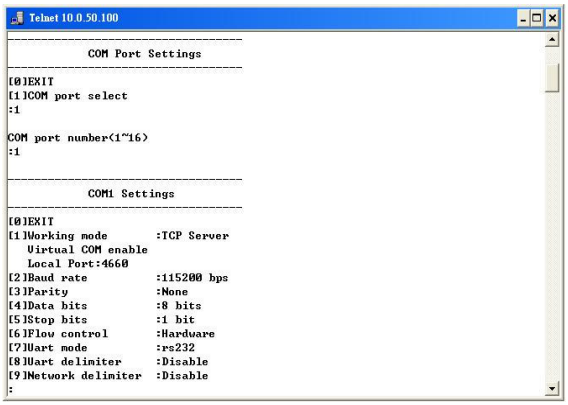
COM Port Setting

☞Input "**1**" from "**COM Port Settings**" to Enter "**[1]COM port select" then** press "**Enter" key.**

☞Input '1' (users may select from COM1 to COM16) from" COM Port Settings" to Enter "**COM port number<1~16>"**

(SE5008 only has 8-port)

☞For example, Input "**1**" to select the COM1 port of SE series, then press "**Enter**" key.



COM Port Settings by Telnet

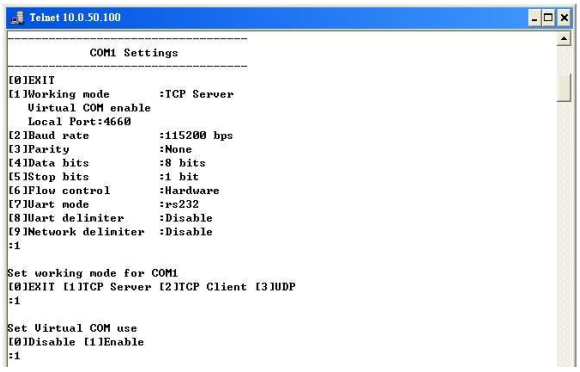
One may configure COM1~COM16 parameters following the step below：

Note: One shall configure the Baud rate, Parity value, Data bits and Stop bits to match the equipments and devices that SE series is going to connect with.

COM1 Setting

☞Input "1" from "COM1 Setting" to Enter "**[1]Working Mode"** then press "Enter" key

Note : One shall choose a proper Working Mode first. (Refer to Chapter 1. 2 Application Connectivity for more detail)



COM1 Settings by Telnet

TCP Server

*Enable **TCP Server Mode***

Input "1" from "Working Mode" to Enter "[1] TCP Server", and press "Enter" key

*Enable **Virtual COM Mode***

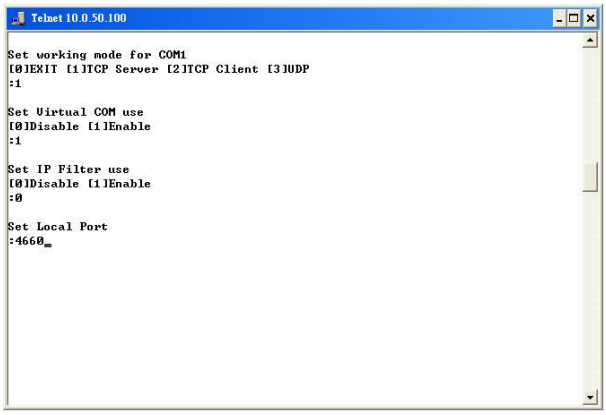
☞Input "1" from "Working Mode" to Enter "Virtual COM", and press "Enter" key.

*Disable **IP Filter***

☞Input "0" from "Working Mode" to Disable "IP Filter", then press "Enter" key.

*Input **Local (listening) port***

☞For example input " 4660', and press "Enter" key



TCP Server Mode by Telnet

Note :

1.The default port number of SE5016 is from 4660 to 4676.

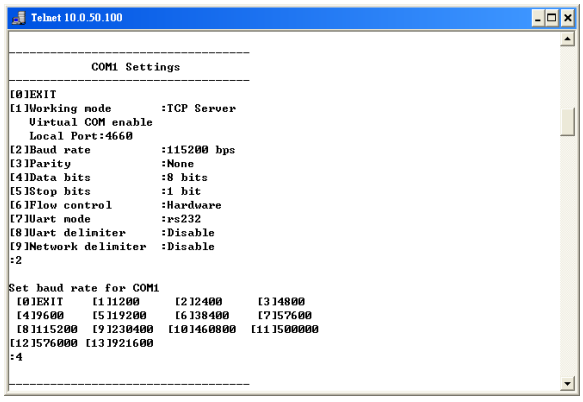
2.The default port number of SE5008 is from 4660 to 4668.

[2]Baud rate

☞Input "**2**" from "COM1 Settings" to Enter "**Baud rate",** and press "**Enter"** key

*Configure **Baud rate** to 9600*

☞Input "**4**" from "COM1 Settings" to Enter "baud rate" for COM1 to **9600**, then press "**Enter**" key.



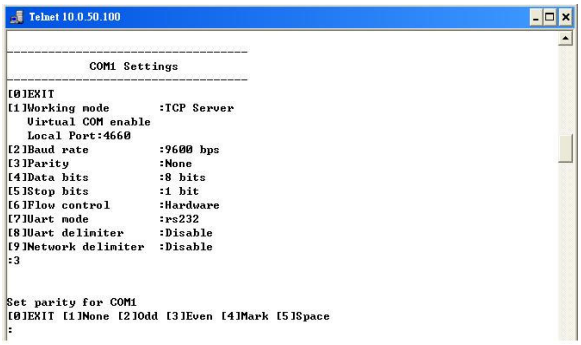
Baud rate by Telnet

.

[3]Parity

☞Input "3" from "COM1 Settings" to Enter "**Parity**", and press "Enter" key

☞Select one of **Parity** value to match the equipments and devices that SE series connected with, then press "**Enter**" key.

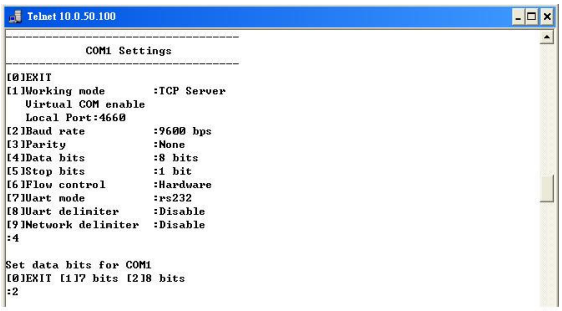


Parity setting by Telnet

[4]Data bits

☞Input "**4**" from "COM1 Settings" to Enter "**Data bits**", then press "**Enter**" key

☞Select one of **Data bits** to match the equipments and devices that SE series is connected with, then press "**Enter**" key.

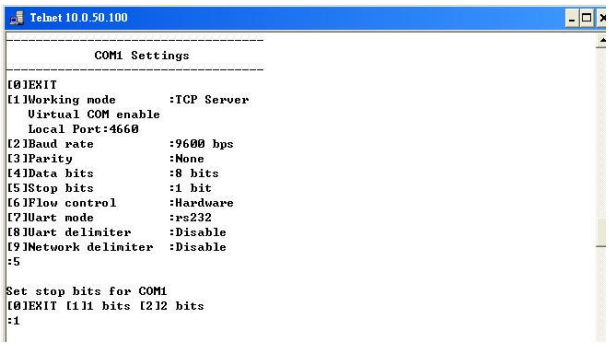


Data bits setting by Telnet

[5]Stop bits

☞Input "5" from "COM1 Settings" to Enter "**Stop bits**", then press "Enter" key

☞ Select one of **Stop bits** to match the equipments and devices that SE series is connected with **,** then press "**Enter**" key.

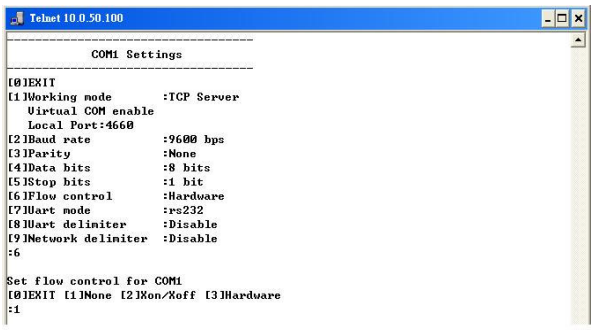


Stop bit setting by Telnet

[6]Flow Control

☞Input "6" from "COM1 Settings" to Enter "**Flow Control**", then press "**Enter**" key

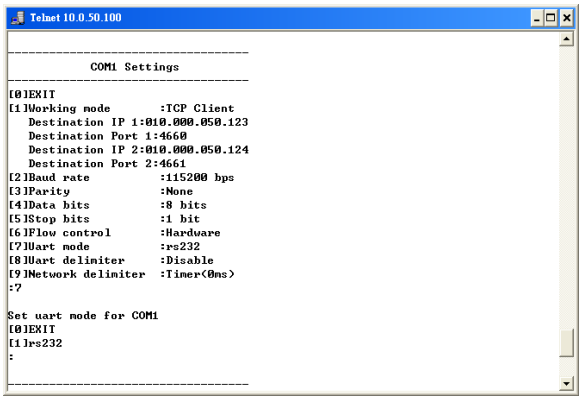
☞ Select one of **Flow control** to match the equipments and devices that SE series is connect with, then press "**Enter**" key.



Flow Control setting by Telnet

[7]UART Mode

☞Input “6” to see **UART Mode** of SE series’ connection, and press “**Enter**” key



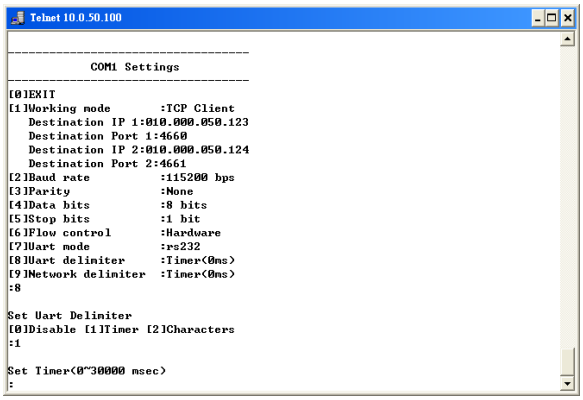
UART Mode setting by Telnet

[8]UART delimiter- Timer

☞Input “8” from “COM1 Settings” to Enter “**Uart delimiter”**, then press “**Enter**” key

☞Input “1” to Enable the Uart delimiter Timer, or “0” to disable the function, then press “**Enter**” key.

☞ Packet delimiter is a way of controlling the number of packets within a serial communication. It can is designed to keep packets from being cut thus keep the packets complete intack. SE series provides two ways of in parameter setting as :
1. Packet delimiter timer and
2. Character pattern terminator.
By default packet delimiter timer is 1 ms, one can change the range of packet delimiter timer is 0 to 30,000 mSec, as shown in Figure.



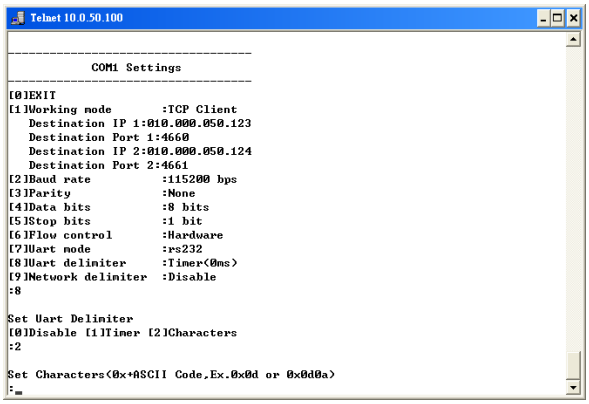
UART delimiter (Timer) setting by Telnet

[8]UART delimiter- Character

☞Input “8” from “COM1 settings” to Enter “**Uart** delimiter”, then press “Enter” key

☞Input “2” to Enable delimiter Characters pattern, or “0” to disable the function, then press “**Enter**” key.

☞If “character pattern is selected, for a data stream ended with “0x0a04”, then the entire data buffer of the serial device is transmitted.



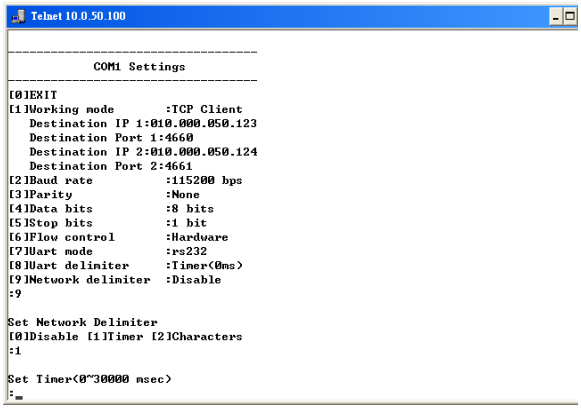
UART delimiter (Character) setting by Telnet

[9]Network delimiter- Timer

☞Input "9" from "COM1 Settings" to Enter "**Network delimiter"**, then press "**Enter" key**

☞Input "1" to Enable UART Delimiter Timer, or "0" to disable the function, then press "**Enter**" key.

☞ Packet delimiter is a way of controlling the number of packets within a serial communication. It can is designed to keep packets from being cut thus keep the packets complete intack. SE series provides two ways of in parameter setting as :1. Packet delimiter timer and 2. Character pattern terminator. By default packet delimiter timer is 1 ms, one can change the range of packet delimiter timer is 0 to 30,000 mSec, as shown in Figure.



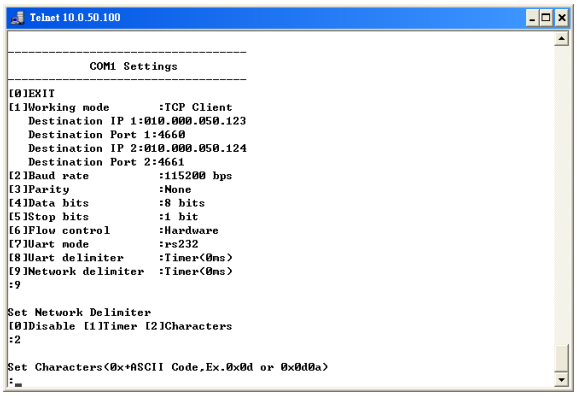
Network delimiter (Timer)setting by Telnet

[9]Network delimiter- Character

☞Input "9" from "COM1 Settings" to Enter "**Network delimiter"**, then press "**Enter**" key

☞Input "2" Enable Delimiter **Character pattern**, or "0" to disable he function, then press "**Enter**" key.

☞ If "character pattern is selected, for a data stream ended with "0x0a04", then the entire data buffer of the serial device is transmitted.



Network delimiter (Character) setting by Telnet

Note: The changes of networking parameters will take effect ONLY after SE series is exited and restarted.

Security

Operation: [4] Security

SE series allows one to change the password.

☞ Select “4” from “Main Menu” to Enter “Security”, then press Enter key

Security settings by Telnet

Security

☞ Input “1” from “Security” to **Enter** “**Username**”

☞ Input a new **Username**, then press “**Enter**” key.

Chang Username by Telnet

Security -Password

Input “**2**” from “Security “ to **Enter Password**

☞ Input a new Password, then press “**Enter**” key.

Chang Password by Telnet

Note:

- The changes of networking parameters will take effect ONLY after is exited and restarted.
- One may press the reset button on SE series to reset password

Configuration by Hyper Terminal Console utility

- Turn off SE5008/5016's power.
- Connect ones PC to the SE series in console mode with RS-232 cross over cable.
- Confirm ones LAN connection setting is properly
- Turn on the SE series power.
- Open Hyper Terminal program.

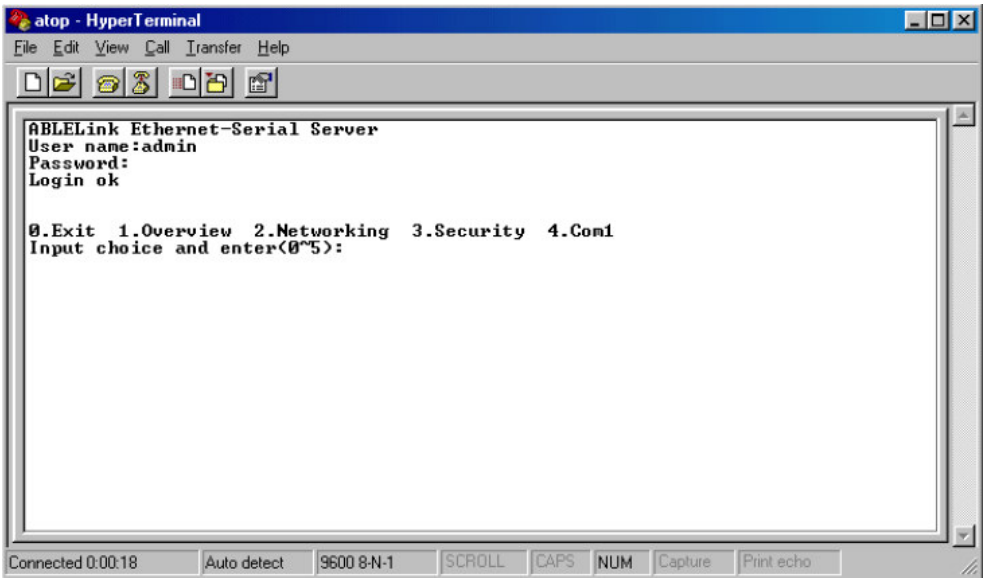
Note:

On Windows Start menu, go to Programs\Accessories \Communication\ Hyper Terminal, then set COM parameters in suitable port number (ex. COM1) as shown below.

Baud rate	9600 bps
Data bit	8 bits
Parity	None
Stop bit	1bit
Flow control	None

Note: SE series console port baud rate is fixed at 9600, 8, n, 1, without flow control, Always make sure your computer is on the same RS232C parameters as the SE series.

After Hyper Terminal is connected, enter in username and password. The following Hyper Terminal screen shall appear,



Configurations via Console mode with Hyper terminal

Configuration by Web Browser is the same as configuration by Telnet.

Configuration by Web Browser

Please Make sure the PC is on the same network as SE series

Log in the system

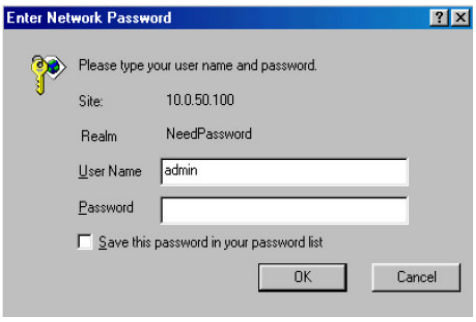
Open a web browser, then input the same IP address as SE5008/5016 in the URL, and press **Enter. For example : http://10.0.50.100**

Then the following authentication screen shall appear. Enter in desired **User Name** and **Password** then click on **OK**

Note:

Default Port number of SE series is 10.0.50.100

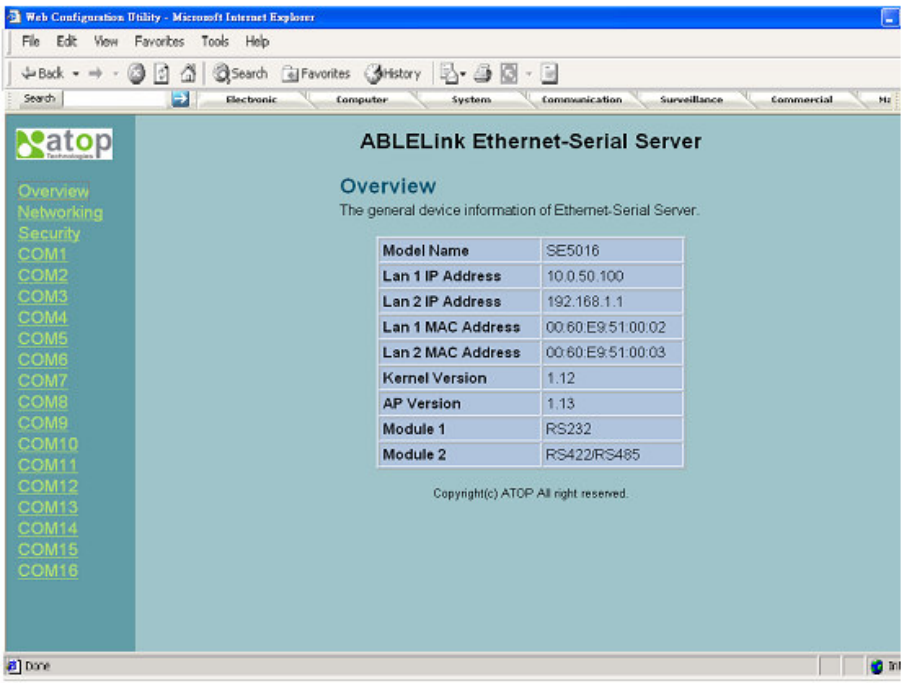
Default user name is **admin** and password is **0000**.



Popup windows for Authorization

Overview

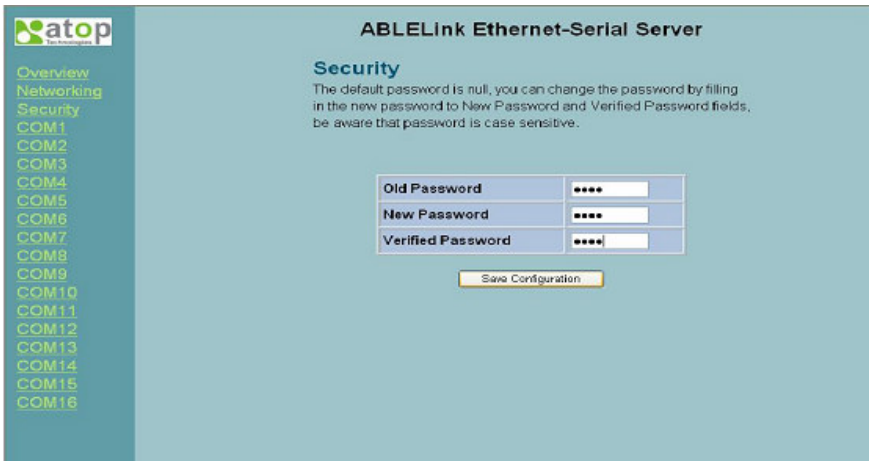
Then the following **Overview** screen shall appear



Overview Information from web page

Security

Click on the "Security" link and the following screen shall appear



Security Settings from web page

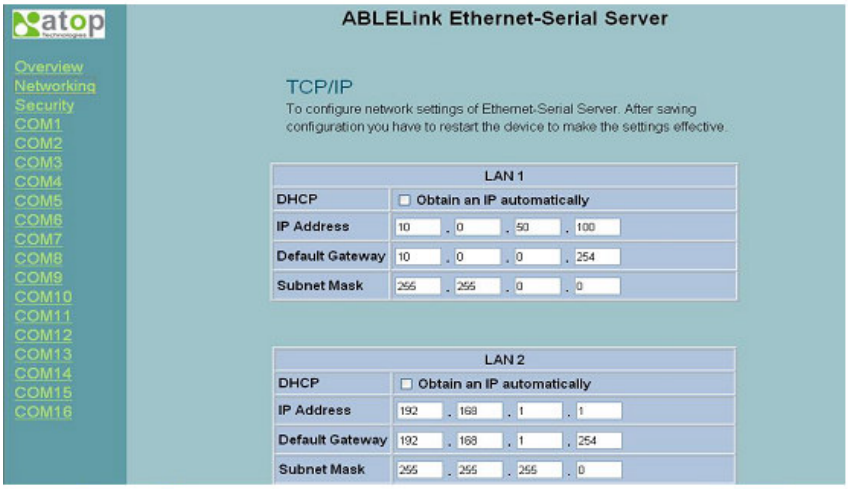
Input the old password on "Old Password" field. Input the new password on "**New Password**" and the "**Verified Password**" fields, and then click on "**Save Configuration**" to update the password.

Note: The default username is **admin** and password is **0000**. One may press the reset button on SE series to reset to the default value

Networking

Click on *"*Networking*"* link and the following screen shall appear. Fill in IP information on TCP/IP field. Alternatively, check 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 SE5008/5016 is restarted.

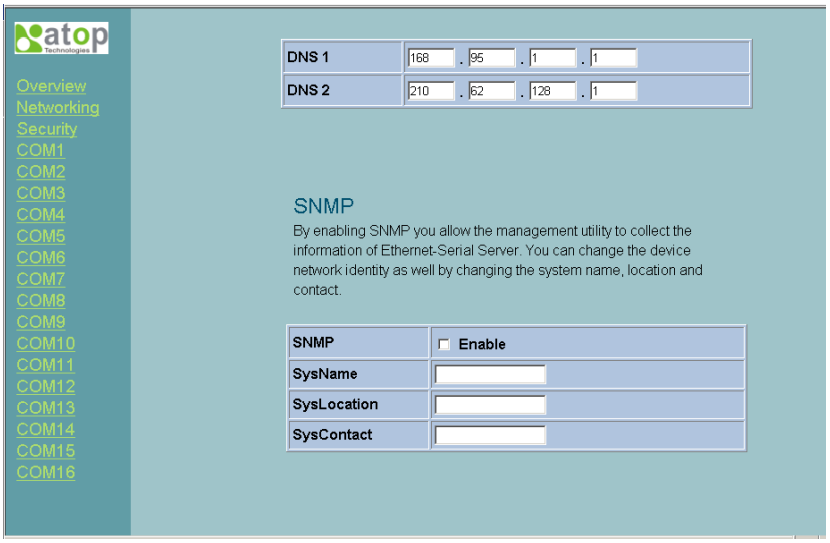


LAN 1 and LAN 2 setting

There are LAN1 and LAN2 on "**TCP/IP**". Fill in the IP information in both of the LAN information. Alternatively, Check on DHCP to obtain auto IP address, Gateway and Subnet Mask information.

DNS1 and DNS 2 Setting

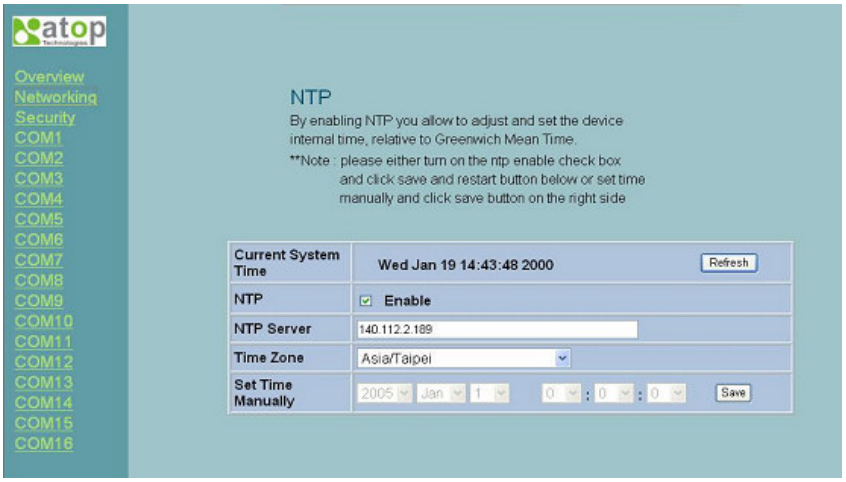
One may activate SNMP for SNMP management utility to collect SE series system information. One may also change SE series' network identity, system name, system location and system contact .



DNS Settings from Web Page

NTP Settings

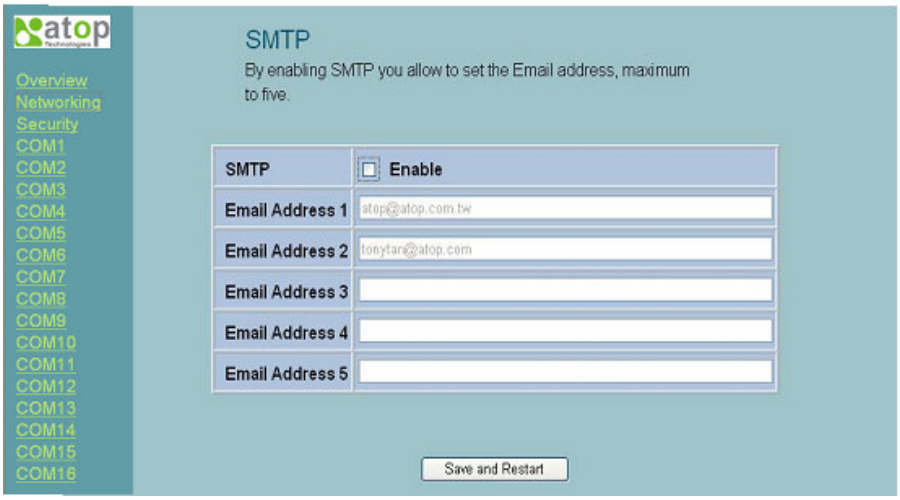
NTP settings allow SE series to obtain internal time from NTP server after assigned proper NTP server's IP address. In addition, one can assign a time zone to match where ones location is



NTP Settings from Web Page

SMTP Settings

SE series Administrator can obtain SE series' system warning message by e-mail after Enable SMTP function and input proper e-mailing addresses.

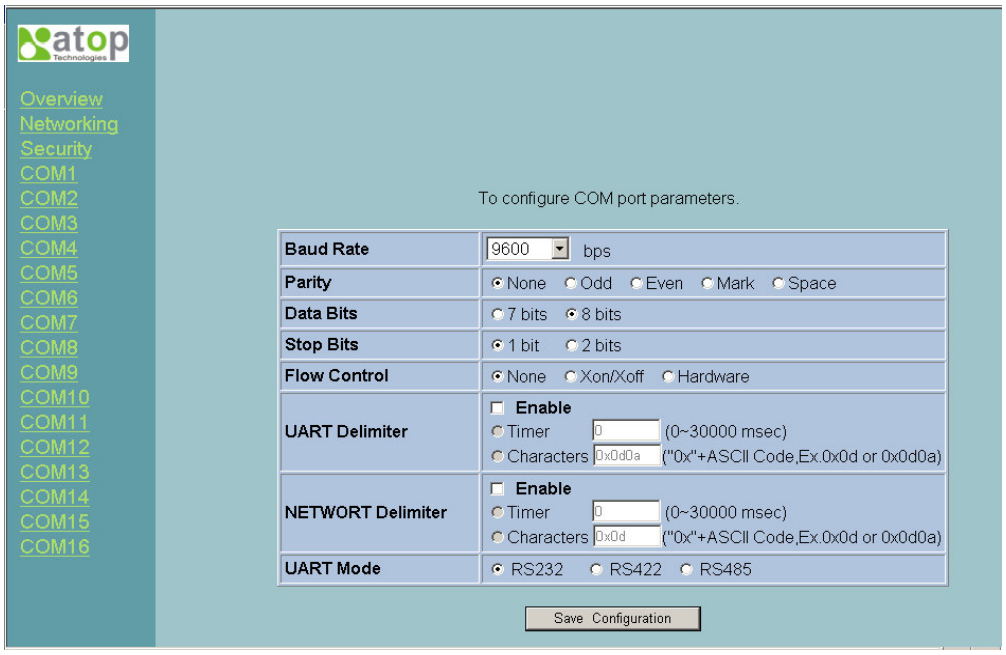


SMTP Settings from Web Page

Note: The changes of settings will take effect only after click "**Save and Restart**" button and restart

COM Setup

Choose one of the COM ports one desired to configure, the following screen shall appear. Fill in the COM port parameters then click "**Save Configuration**" button to save the changes



COM Port Settings from Web Page

LINK Setup

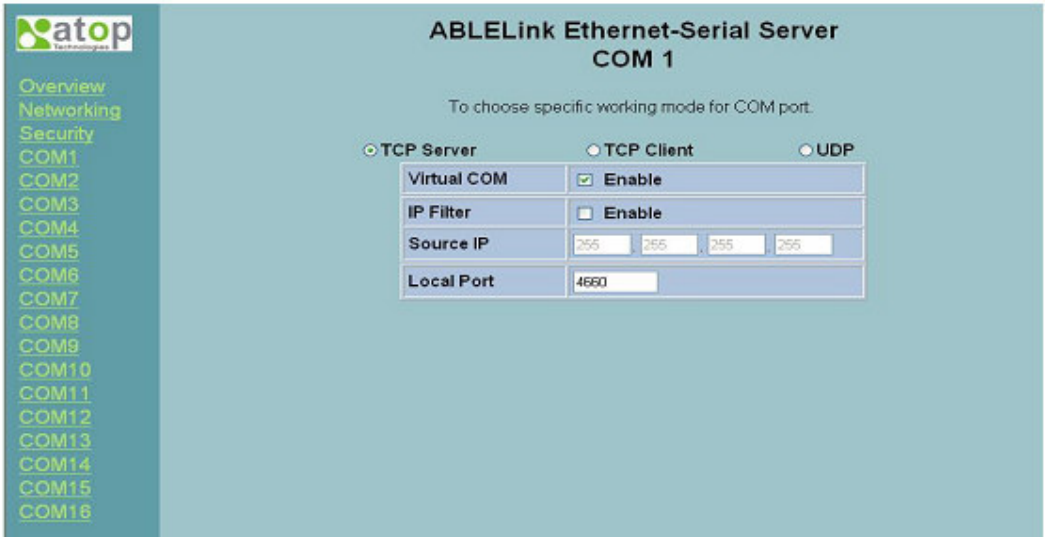
Click on the ***"COM1"*** link and the following screen shall appear. One may configure SE series as transparent mode by default.

- Configuring SE series as TCP Server – Using Web browser

Configure SE series as TCP server and set the local port to 4660

Note：

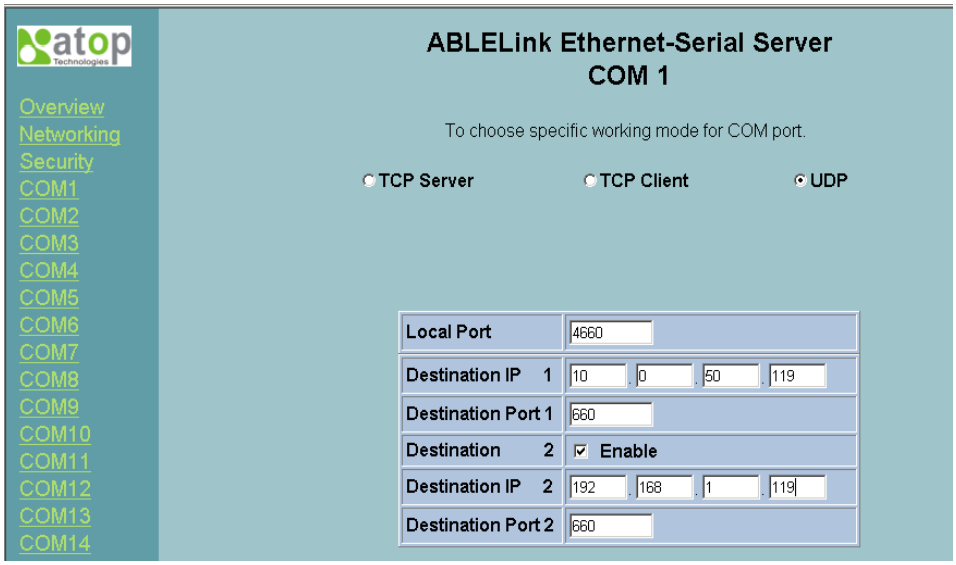
- IP filter function is disabling by default.
- IP filter is enabled; only source IP assigned is connected to SE series.



TCP Server Settings from Web Page

- Configuring SE series as UDP Mode – Using Web browser

SE series can be configured in a UDP mode to establish connection using uni-cast data from the serial device to one or multiple host computer. Vice versa is also true. For example, set local port to 4660, Input host PC's destination IP address and destination port at 4660..



UDP Mode Settings from Web Page

Click "**Save Configuration**" to save the changes.

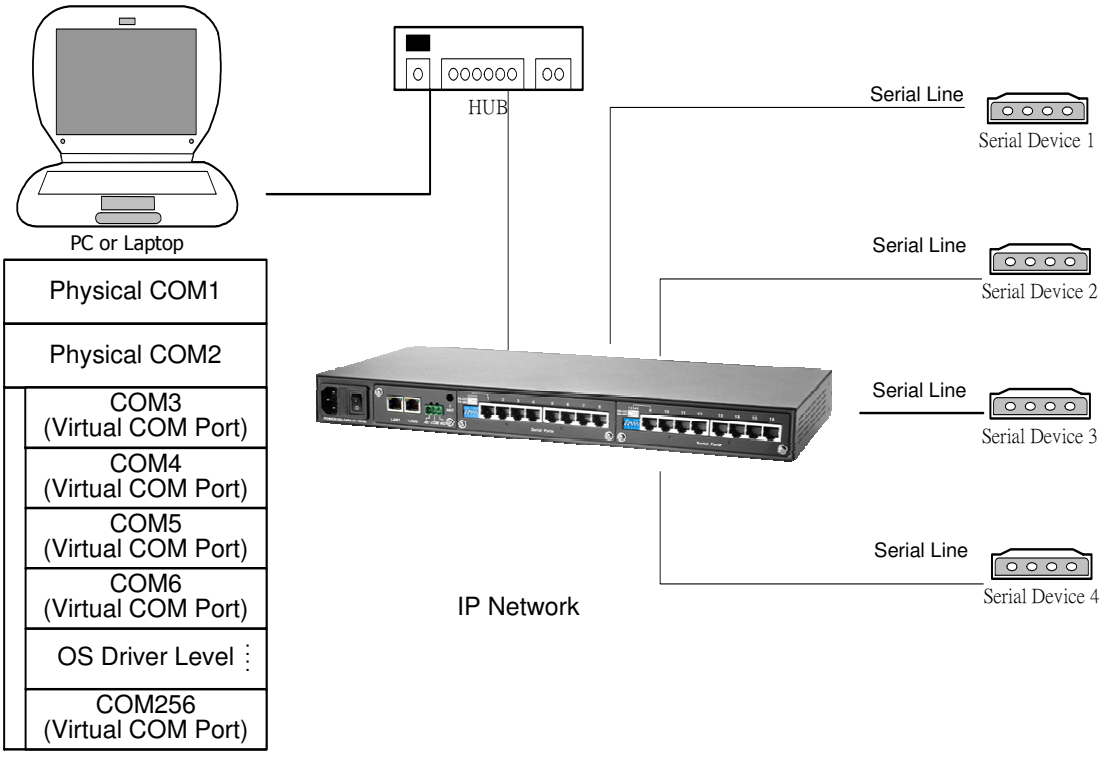
Note : One may enable both Destination IP1 and Destination IP 2 on different subnet at the same time after input the Destination IP2 & Port2

If the update is successful, the following screen shall appear

Pop-up windows after save successfully

Appendix A. Using Virtual COM Mode

Virtual COM driver mode for windows converts COM data to Ethernet data of the COM port on a SE series via Ethernet. By creating Virtual COM ports on the PC, Atop Virtual COM redirects the communications from the Virtual COM ports to an IP address and port number on a SE series that connects the serial line device to the network. The following figure illustrates a Virtual COM connection diagram



Network information by Web page

Setup of a Virtual COM driver

PC 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, Microsoft NT/2000 Terminal Server, Citrix Meta Frame
- Windows Installer 2.0
- Network: Microsoft TCP/IP networking software

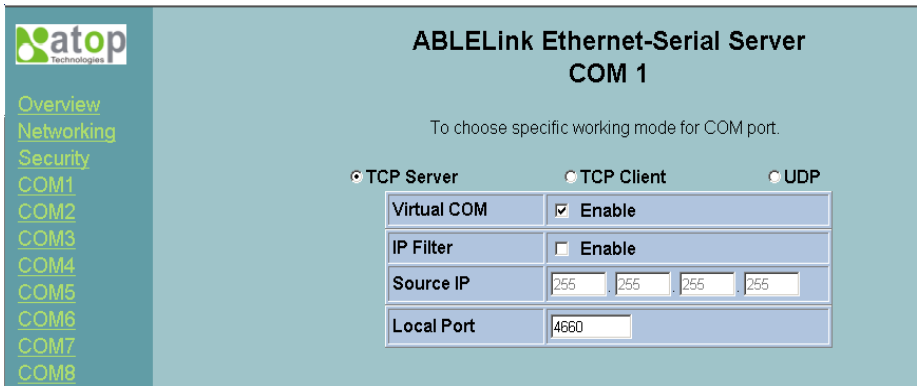
Cautions on Use: Virtual COM supports firmware AP v3.4 or later for the SE series Serial Servers.

Limitation: Virtual COM driver provides users up to **256 Virtual COM ports**. Users may select from COM1 to COM256.

Virtual COM communication

Enabling Virtual COM on SE5008/5016

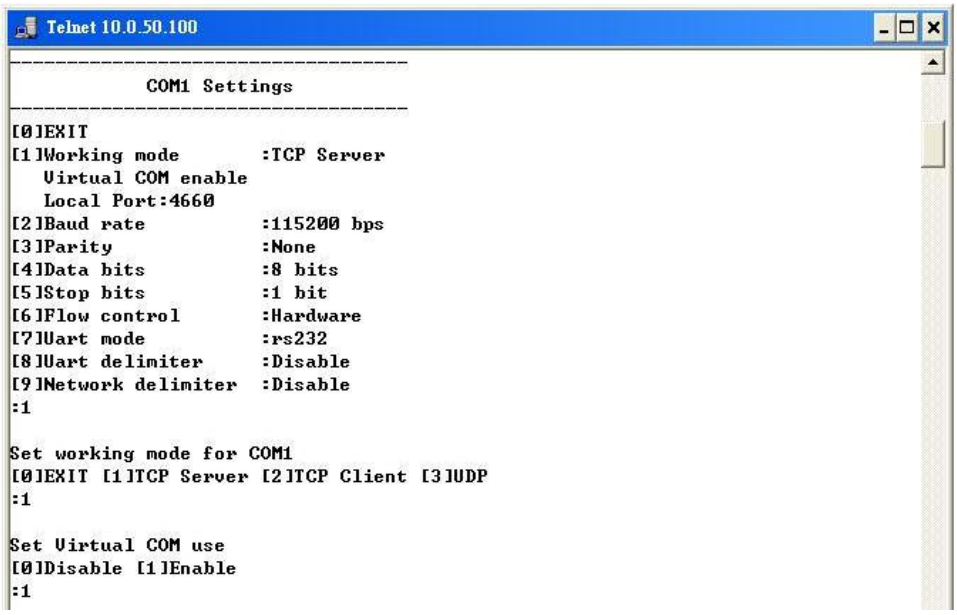
From web browser, access SE5008/5016 by typing its IP address, click on "*COM1*" link to access COM1 window, click on "*TCP Server*" and check "enable" Virtual COM button, then Enter in the local port number on "*Local Port*" field as indicated in the following screen



Enable Virtual COM via Web Page

One 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 steps:

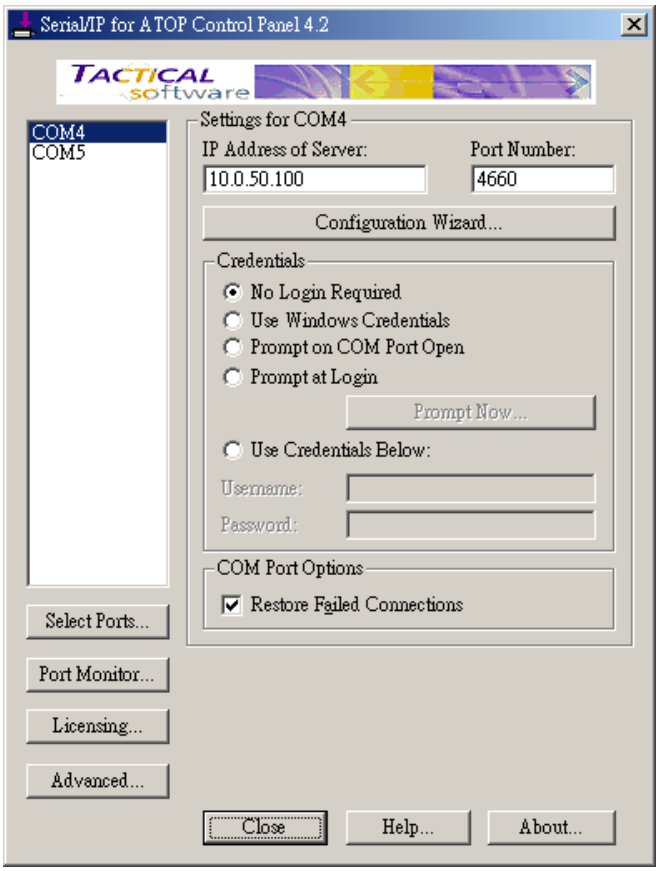
1. Login SE5008/E5016 via Telnet
2. COM Setting: Input "1" from COM Settings to Enter **[1] Working Mode** then press "Enter" key.
3. Enable **TCP Server Mode:** Input "1" from COM Settings to Enter [1] TCP Server, then press "Enter" key.
4. Enable **Virtual COM Mode:** Input "1" from COM Settings to Enable Virtual COM, then press "Enter" key.



Enable Virtual COM Mode via Telnet

Running Serial/IP on monitoring PC

On Window Start Menu, go to\program\Serial/IP for ATOP\Control panel\ select port \then select the serial port. Then the "**Serial/IP for ATOP Control Panel**" window appear.



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.

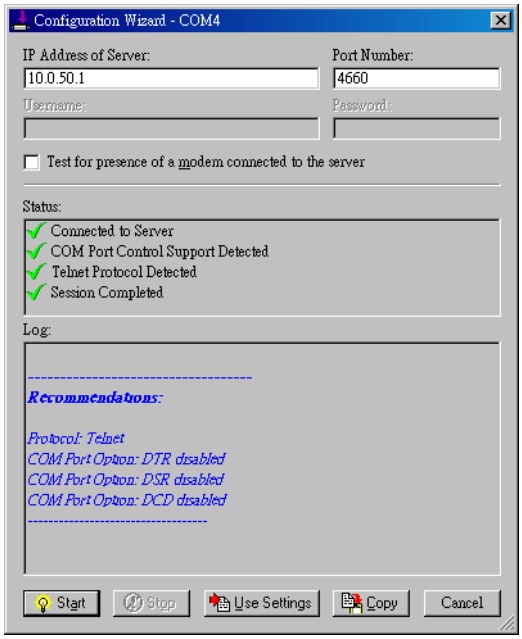
Each COM port has its own settings. When click on a COM port, the Control Panel changes to reflect that the selected port.

Configuring 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 serial server IP address.
- On **Port Number**, enter the TCP port number of the serial server.
- 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.
- 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
- 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.

- On **COM Port Options**, the settings must match the COM port behavior expected by the PC application. The Configuration Wizard will recommend such settings



Appendix B. SNMP Setup

SNMP Network Management Platform

Atop SE5008/5016 is an SNMP device that allows many popular SNMP network management platforms such as HP OpenView and SunNet Manager to conduct monitoring on the device.

Depending on the network management tools you are using, device (SE5008/SE5016) information can be collected from running the management tools including IP address, DNS name, system descriptions and NIC information etc

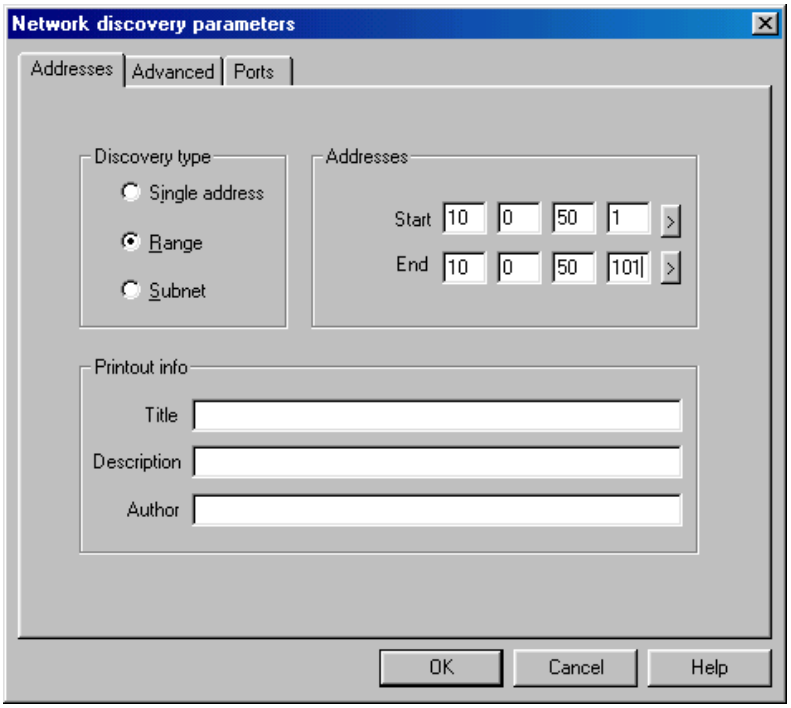
Using NetworkView As An Example

The NetworkView is a 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. One may visit their web sites and get a free download.

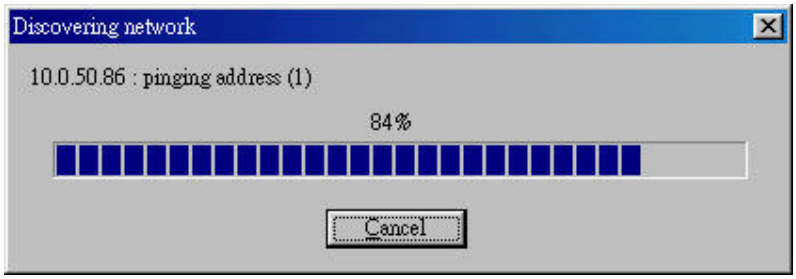
To use NetworkView, you will need to download and install the tool on your PC (**Windows NT and Windows 9x only**). Please refer to the installation instructions that come with the tool.

After you have done the NetworkView installation, start NetworkView.

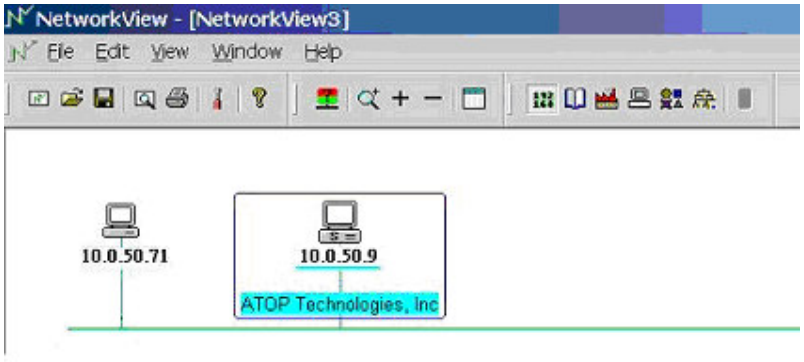
Click on the  button to open a new file. The following screen appears, in the Addresses field, type in the IP address range to search.



Click "**OK**" and the following dialog box appears. It displays the searching progress.]



After the search is completed, NetworkView will display the devices found in the main window, as shown below.



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.

Note:

- NetworkView is limited to information extracting and viewing only.
- To modify the configurations use the web server, Telnet or monitor.exe configuration utilities.

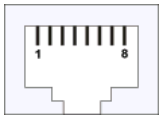
Appendix C. Specifications

Hardware Specifications

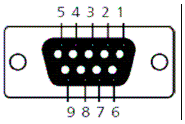
	Specifications
CPU	IDT 79R32438 –266, MIP32 Core 266MHz
Flash Memory	8M Bytes
SDRAM	32M Bytes
EEPROM	8K Bytes
Network Interface	Dual 10/100Mbps Fast Ethernet auto-detection
Networking Protection	Built-in 2.0KV magnetic isolation
Network Protocol	TCP/IP, UDP, SNMP, HTTP, Telnet, BOOTP, DHCP, WEP, SMTP, NTP
Reset	Built-in default key to restore factory default settings
Watch Dog Timer	0.7 second hardware auto reset Power failure threshold: 2.96V
Serial Interface	RS232/422/485 software selectable. The default setting is RS232
Serial Protection	Gas Discharge Tube protection
Serial Connector	RJ-45 (8 pin) SE5016---16 serial ports/ connectors SE5008--- 8 serial ports/ connectors
Serial Port Communication	Baud-rate: 1200 bps ~ 921600 bps Parity: None, Even, Odd, Mark, Space Data bits: 7 or 8 Stop bits: 1 or 2 Packet Delimiter: by inter-character timeout, by characters pattern delimiter Flow Control: None, Hardware CTS/RTS, Software Xon/Xoff
LED indication	Power x 1 Ready x 1 COM port Tx x 16 (SE5016), x 8 (SE5008) COM port Rx x 16 (SE5016), x 8 (SE5008)
Power Requirement	90~240V AC, 1700mA@5V
Temperature	Operation: 0℃ to 60℃ Storage: -20℃ to 85℃
Humidity	20%~70% non-condensing
Housing	436mm(W) x 42.6mm(H) x 200mm(D)

Pin Assignments

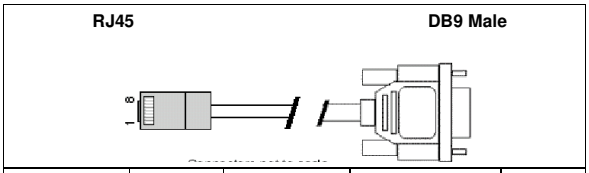
RJ45 Phone Jack

		Ethernet	RS-232	RS-422	RS-485
	**Pin 1**	Tx+	RTS	-	-
	Pin 2	Tx-	DTR	TX-	-
	Pin 3	Rx+	TXD	TX+	-
	Pin 4		SG	SG	SG
	Pin 5		SG	SG	SG
	Pin 6	Rx-	RXD	RX+	Data+
	Pin 7		DSR	RX-	Data-
	Pin 8		CTS	-	-

D-type 9 pin Connector for RS-232/RS-485/RS-422

		RS-232	RS-485	RS-422
	**Pin 1**			
	Pin 2	RXD	Data+	RX+
	Pin 3	TXD		TX+
	Pin 4	DTR		TX-
	Pin 5	SG	SG	SG
	Pin 6	DSR	Data-	RX-
	Pin 7	RTS		
	Pin 8	CTS		
	Pin 9			

RJ-45 to-DB9 Male Cable



RTS	**Pin 1**	←→	**Pin 7**	RTS
DTR	**Pin 2**	←→	**Pin 4**	DTR
TXD	**Pin 3**	←→	**Pin 3**	TXD
SG	**Pin 4**	←→	**Pin 5**	GND
SG	**Pin 5**	←→		
RXD	**Pin 6**	←→	**Pin 2**	RXD
DSR	**Pin 7**	←→	**Pin 6**	DSR
CTS	**Pin 8**	←→	**Pin 8**	CTS

RS232/RS422 Cross Cable by RJ45

RJ45 A				**RJ45 B**		
RS422	**RS232**				**RS232**	**RS422**
	RTS	**Pin 1**	←→	**Pin 8**	CTS	
TX-	DTR	**Pin 2**	←→	**Pin 7**	DSR	RX-
TX+	TXD	**Pin 3**	←→	**Pin 6**	RXD	RX+
	SG	**Pin 4**	←→	**Pin 5**	SG	
	SG	**Pin 5**	←→	**Pin 4**	SG	
RX+	RXD	**Pin 6**	←→	**Pin 3**	TXD	TX+
RX-	DSR	**Pin 7**	←→	**Pin 2**	DTR	TX-
	CTS	**Pin 8**	←→	**Pin 1**	RTS	

RS485 Loop back Cable by RJ45

RJ45 A			RJ45 B	
RS485			RS485	
	Pin 1	↔	Pin 1	
	Pin 2	↔	Pin 2	
	Pin 3	↔	Pin 3	
	Pin 4	↔	Pin 4	
	Pin 5	↔	Pin 5	
Data+	Pin 6	↔	Pin 6	Data+
Data-	Pin 7	↔	Pin 7	Data-
	Pin 8	↔	Pin 8	

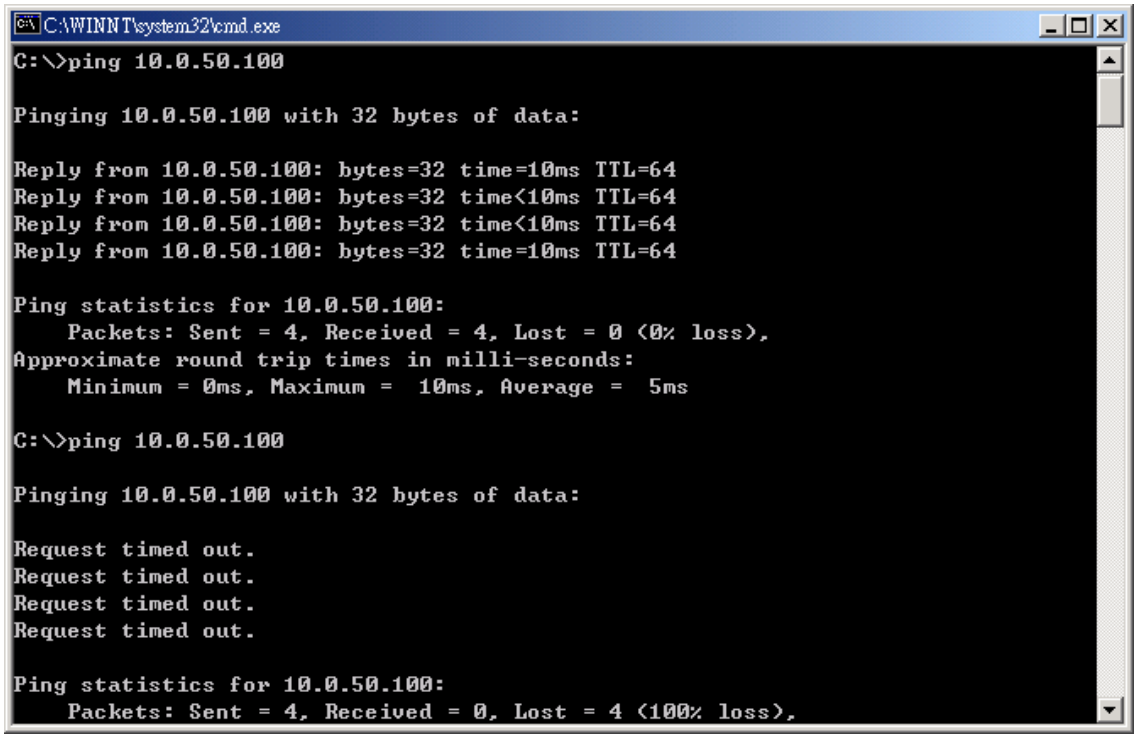
Appendix D. Diagnostics

There are several ways to check the status and availability of SE5008/5016.

Using Standard TCP/IP Utility *ping* Command

From Windows **Start** menu, select **Run** then type "**ping <*TCP Server IP address*>**".

If the connection is established, the Reply messages will be displayed. Otherwise it will indicate Request timed out.



Using Monitor.exe Configuration Utility

Use monitor25.exe configuration program on the product CD to check the status of SE5008/5016. The status can be read from "***AP version***" column of the tool.

Status	Descriptions
S	The system is configured as a TCP Server and Listening.
C	The system is configured as a TCP Client and trying to connect.
U	The system is configured as an UDP.
A	The TCP Server is connected.
B	The TCP Client is connected.

Upgrading System Software

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

System Upgrading Procedures

Follow the upgrading procedures below to upgrade the latest new version of firmware:

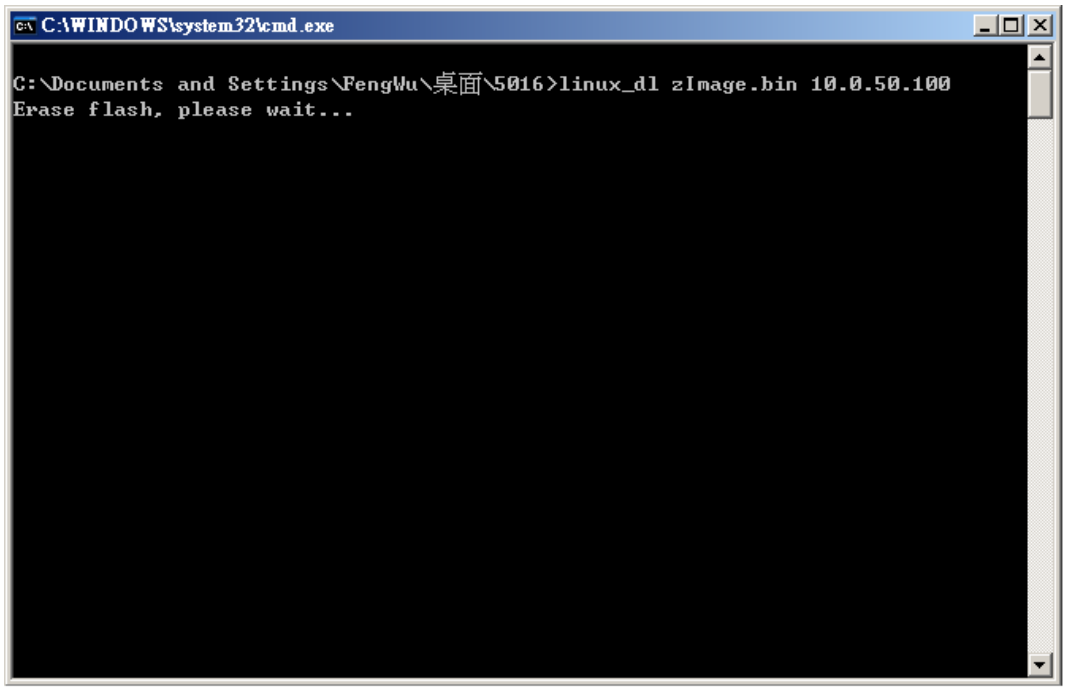
Make sure the PC and the SE5008/5016 on the same network. Use command **ping** or **monitor.exe** utility program to verify their availability.

Edit "dll.bat " to fit the system requirements, Be sure to save ones modification

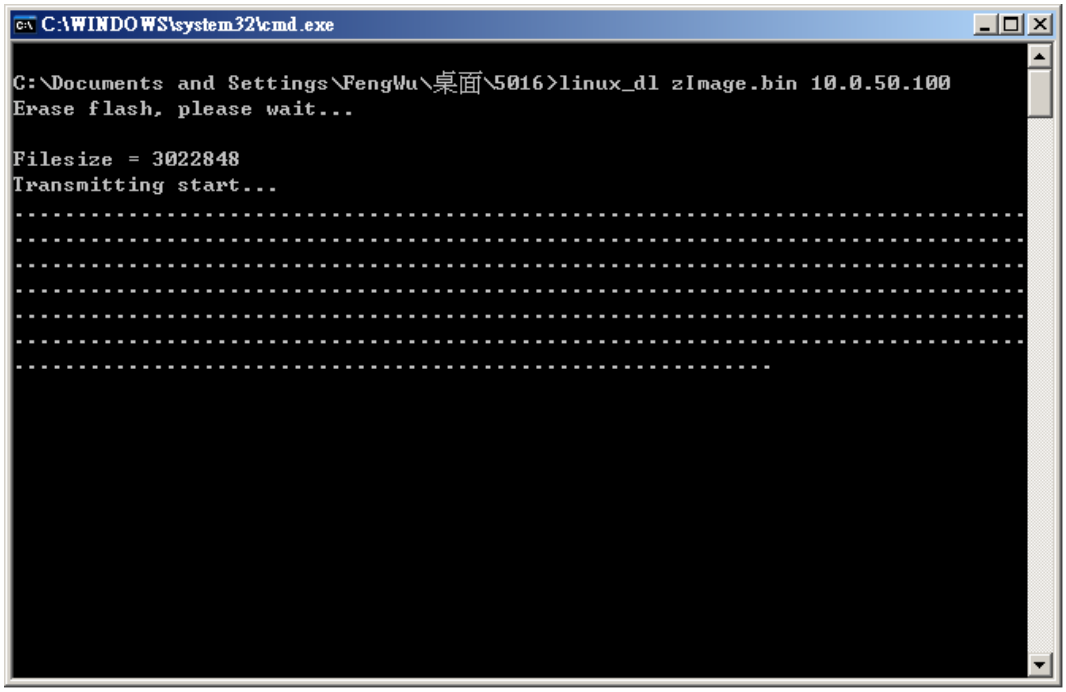
Run linux_dl the following screen shall appear.

For example：**linux_dl zImage.bin 10.0.50.100**

Note: **"linux_dl"** is the upgraded executing file and **zImage.bin** is the firmware file name;
xxx.xxx.xxx.xxx is the IP address of SE5008/5016



SE series shall automatically perform the download and restart after downloading, if the upgrade is successful.



Critical Issues in Upgrading Process

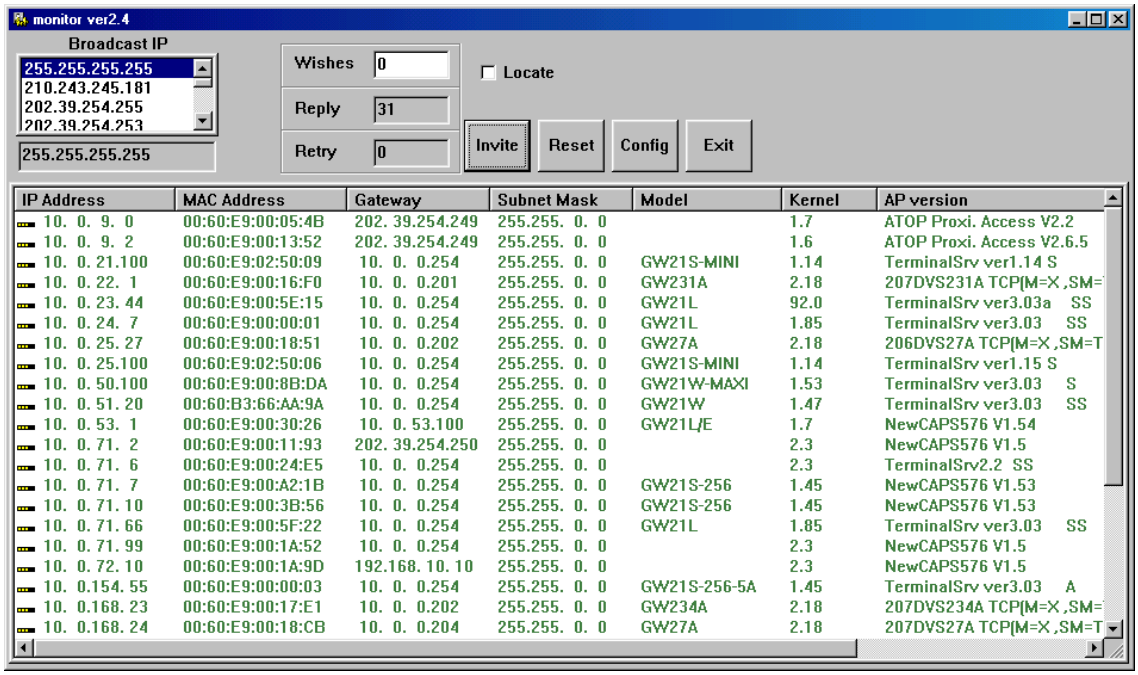
If the upgrade is successful, SE series shall program the flash memory and the buzzer will beep 1 time before restarting. It takes around 5 seconds to complete the programming process. If an error occurs during the programming process, SE series will clear the corresponding memory and the system remains the same before the process.

Running Configuration Utility

The configuration utility **monitor.exe** is the main utility program used to display and to configure SE series' settings.

Running Monitor.exe Utility

Double click to start the program under Windows 98/NT/2000 environment and the following window shall appear.



Detecting Operational Devices

Follow steps below to detect all devices available on the network.

1. Start **monitor.exe** utility program.
2. Select an item from the **Broadcast IP** list.
3. Specify a number in the **Wishes** box.

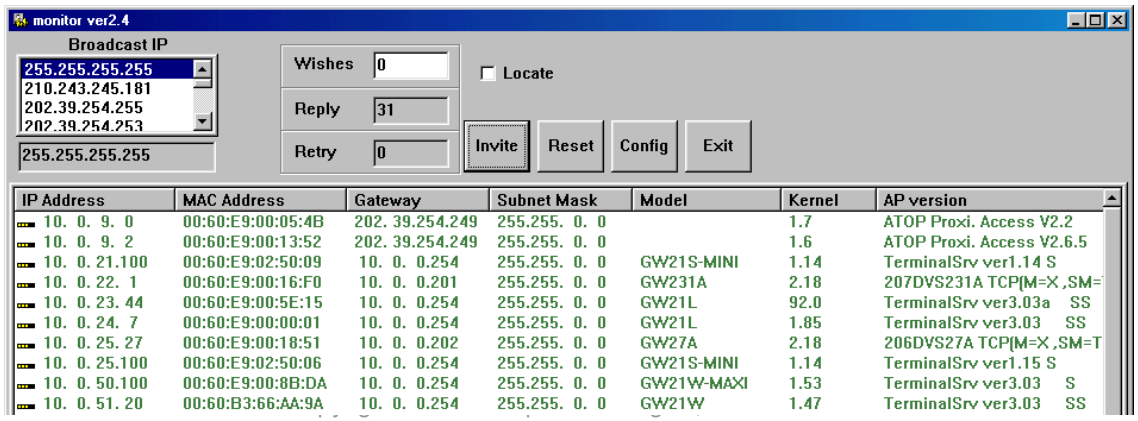
Click on the **Invite** button. This will display all the devices requested.

Configuring Device Setting

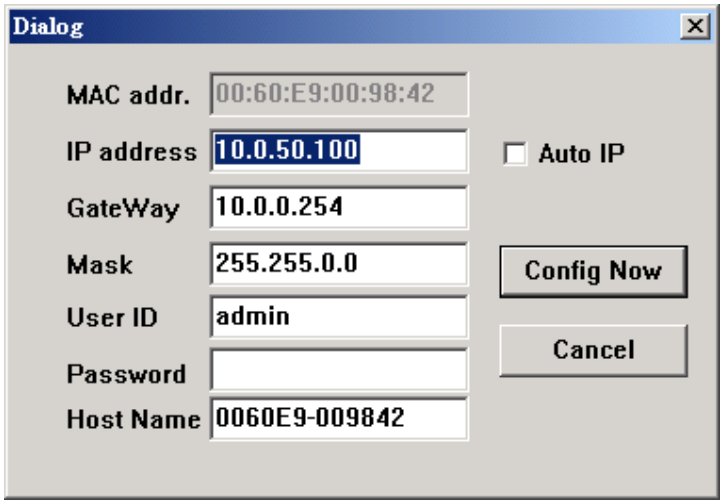
Use **monitor.exe** to configure the settings of devices on the network.

1. Repeat the steps in **C.2** to bring up devices information.

Select the device to be configured from **IP Address**. Click on the **Config** button, a configuration dialog box shall popup as shown below.



One may change all the information to proper settings.



After clicking on the "**Config Now**" button, the target device Returns an "ACK" message, indicating the modification is successful as shown as follows.

The following table lists the functional descriptions of the fields names.

Field Name	Field Descriptions
Broadcast IP	Except for the default IP 255.255.255.255, other items (IPs) are read from the file "seg.cfg". This field specifies a detecting IP range. It may be a designated IP or a broadcast IP.
Wishes	Specifies minimum number of the devices you wish to get reply from after sending an Invite request. If there is not as many as devices responding to your invitation, the system repeatedly sends invitation until your request is fulfilled.
Reply	Indicates the actual number of devices this utility program detected.
Retry	Specify the number of times that an Invite request is re-sent.
Locate	Locate the specified device.
Reset	Reset the selected device.
Config	Configure the selected device.
Exit	Exit this utility.
IP Address	Indicate the IP address of the device that replied to ones request. Leading tag "!" stands for IP address collision, possibly caused by duplicated IP addresses on the network. Leading tag "?" stands for Mac address collision, possibly caused by duplicated Mac addresses on the network.
MAC Address	Indicates the MAC address of responding device.
Gateway	Indicates the IP address of the gateway.
Subnet Mask	Indicates the TCP/IP network mask.
OS	Indicates the OS version of the responding device.
AP Version	Indicates the AP version of the responding device.
Model	Indicates the model number of the responding device. This field is only available for monitor.exe version 2.0 and above.

Configuration by LCM Display

One may use LCM and 4 push button on SE series nameplate to easily configure SE series without any PC and cable.
Those 4 buttons located on the right side of LCM display, the LCM functions follow the table below:

Function list of LCM Buttons

Buttons	Button Description
Menu <Menu>	To activate the Main Menu, or to return to the previous selected Menu
<Up>	To scroll up through a list of Menu shown on the LCM Display Panel
<Down>	To scroll down through a list of Menu shown on the LCM Display Panel
SEL <SEL>	To select the options shown on the LCM Display Panel

- **Software Configurations**
  Example：Change IP Address (Use LCM Controller)
- Push **<Menu>** button to enter Main Menu
- Push **<Down>** button to scroll down to 2. Network Set
- Push **<SEL>** to enter Network setting and then push **<Up>/<Down>** to scroll up or down to *1.* LAN1 or 2. LAN2
- Push **<SEL>** to enter LAN1 and then push **<Down>** to scroll down to 2. IP Config
- Push **<SEL>** to enter LAN1 IP Config and then push **<Down>** to scroll down to 1. Static, and push **<SEL>** to save the selection.
- Push **<SEL><Down>** to enter 3. IP Address, Use **<Up>/<Down>** to increase or decrease the Digital of IP Address and then push **<Menu>** to return one level if setting completed
- To enter: 4. Netmask：Use **<Up>/<Down>** to increase or decrease the Digital of subnet mask and then push **<Menu>** to return one level if setting completed
- To enter: 5. Gateway. Use **<Up>/<Down>** to increase the Digital of default gateway and Use **<Menu>** to return one level if setting completed
- Push **<Menu>** to return to upper level and SE series should displaySystem message Save & Restart message, push **<SEL>** to 2. Yes, and push <SEL> again if the Setting completed ,SE series should restart and change the setting.after system being restarted

One may also refer to following tree map and Use the 4 push buttons to enter proper settings.

1st layer	2nd layer	3rd Layer	Descriptions
[1]Server state	[1] Model name		Display or Change Model Name
[2]Network set	[1]Lan 1	[1] Mac	Display MAC address of LAN1
		[2] IP config	Display or Change IP to static or dynamic mode for LAN1
		[3] IP address	Display or Change IP address of LAN1
		[4] Net mask	Display or Change Net Mask of LAN1
		[5] Gateway	Display or Change Gateway of LAN1
	[2]Lan 2	[1] Mac	Display MAC address of LAN2
		[2] IP config	Display or Change IP to static or dynamic mode of LAN2
		[3] IP address	Display or Change IP address of LAN2
		[4] Net mask	Display or Change Net Mask of LAN2
		[5] Gateway	Display or Change Gateway of LAN2
	[3]DNS server1		Display & Select 1st DNS IP address
	[4]DNS server2		Display & Select 2nd DNS IP address
[1]Serial set	[1]Select port		Select COM Port: SE5016: [1]~[16] / SE5008: [1]~[8]
	[2]Baud Rate	[1] 1200	Display & Select baud rate
		[2] 2400	
		[3] 4800	
		[4] 9600	
		[5] 19200	
		[6] 38400	

		[7] 57600	
		[8] 115200	
		[9] 230400	
		[10] 460800	
		[11] 500000	
		[12] 576000	
		[13] 921600	
	[2]Parity	[1] None	Display or Change Parity mode
		[2] Odd	
		[3] Even	
		[4] Mark	
		[5] Space	
	[3]Data bits	[1] 7 bits	Display or Change Data length
		[2] 8 bits	
	[4]Stop bits	[1] 1 bits	Display or Change Stop Length
		[2] 2 bits	
	[5]Flow control	[1]None	Display or Change Flow Control mode
		[2]Xon/Xoff	
		[3]Hardware	
	[6]UART mode	[1] 232	Display or Change UART mode among RS232/422/485
		[2] 422	
		[3] 485	
	[7]OpMode set	[1]TCP server	Display or Change Operation Mode among TCP Server/Client or UDP
		[2]TCP client	
		[3]UDP	
	[8]TCP server	[1]Virtual COM	Enable/Disable Virtual COM Mode
		[2]Local port	Display or Change Local Port for Listening port
	[8]TCP client	[1] Dest IP	Display or Change Destination IP for Counter-pair
		[2] Dest Port	Display or Change Destination IP for Counter-pair
	[8]UDP	[1] Dest IP	Display or Change Destination IP for Counter-pair
		[2] Dest Port	Display or Change Destination IP for Counter-pair
		[3] Local port	Display or Change Local Port for Listening port
	[9]Restart	[1] No	Cancel Restart command
		[2] Yes	Enable Restart procedure