Table of Contents

Appendix A

Appendix B

Appendix C

Chapter 1 Introduction

Welcome to the NPort W2250/2150 Products of advanced serial device servers that make it easy to control your serial devices. NPort W2150 include 1 port for RS-232/422/485, and NPort W2250 include 2 port for RS-232/422/485. The Wireless Serial Device Server is designed to easily integrate any RS-232/422/485 serial device to a WLAN. It is ideal for use in environments where LAN are not available and where serial devices are moved frequently.

The following topics are covered in this chapter:

- **Overview**
- **Package Checklist**
- **Product Features**
- **Product Specifications**

Overview

NPort W2250/2150 wireless serial device servers are designed to make your industrial serial

devices Internet ready instantly. The NPort W2250/2150 device servers makes them the ideal choice for connecting your RS-232/422/485 serial devices—such as PLCs, meters, and sensors—to an Wired Ethernet LAN and Wireless LAN, making it possible for your software to access serial devices anywhere over a local LAN ’WLAN or the Internet. It is also useful ,when serial devices are frequently moved

NPort W2250/2150 wireless serial device servers support automatic IP configuration protocols (DHCP, BOOTP) and manual configuration via the handy web browser console. Both methods ensure quick and effective installation. And with NPort Windows Driver Manager Utility, Port Mapping is very convenient to configure.

An external antenna can increases the range of the wireless TCP/IP connection. Users can move the adjustable antenna for maximum signal strength or can replace the antenna with their own for additional flexibility and scalability. When a serial device is connected in a high interference area, this feature is useful. Besides, we offer signal strength indicator on the front label for your reference.

NPort W2250/2150 wireless serial device servers ensure the compatibility of network software that uses a standard network API by providing TCP Server Mode, TCP Client Mode, and UDP Mode. And the Real COM/TTY drivers, software that works with COM/TTY ports can be set up to work over a TCP/IP network in no time. This excellent feature preserves your software investment and lets you enjoy the benefits of networking your serial devices instantly.

The NPort W2250/2150 also provide additional features such as authentication ’IP filter ’WEP supporting 64-bit and 128-bit encryption and SNMP support. It will make your management easily

Package Checklist

NPort W2250/2150 are shipped with the following items:

Standard Accessories

- NPort W2250 or W2150 x 1
- Documentation & Software CD
- RJ-45 to RJ-45 Ethernet cross cable
- RJ-45 to DB9 male cable
- Power adapter
- Warranty booklet
- Quick Installation Guide

Optional Accessories

- DK-35A DIN-Rail Mounting Kit (35 mm)
- CBL-RJ45M9-150 RJ45 (8-pin) to DB9 (M) cable, 150 cm
- CBL-RJ45F9-150 RJ45 (8-pin) to DB9 (F) cable, 150 cm
- CBL-RJ45M25-150 RJ45 (8-pin) to DB25 (M) cable, 150 cm
- CBL-RJ45F25-150 RJ45 (8-pin) to DB25 (F) cable, 150 cm

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

Product Features

•Bring serial device to Wireless LAN network
•802.11b Wireless LAN, Compatible with 802.11g
• WEP supporting 64-bit and 128-bit encryption
• Password authentication and IP filter
• Ad-Hoc mode
•10/100M Ethernet for console
• 2/1 ports with RS-232/422/485, up to 230.4 Kbps
•Versatile socket operation modes, including TCP Server, TCP Client, and UDP
• Easy-to-use Windows Utility for mass installation
•Supports Windows, Linux Real COM driver
•LED for link power, and wireless bandwidth

Product Specifications

WLAN
Standard Compliance: 802.11b
Radio Frequency Type: DSSS
Tx Power: 15 dBm ± 2 (CH1~Ch13), 12dBm ± 2(CH14)
Rx Sensitivity: -84 dBm @11 Mbps, -87 dBm @5.5 Mbps,
-89 dBm @2 Mbps , -91 dBm @1 Mbps
Transmission Rate: 11 Mbps(max.) with auto fallback
(11, 5.5, 2, 1 Mbps)
Transmission distance: Up to 100 meters (@11 Mbps, in
open areas)
Security: WEP 64bit/128bit data encryption
Antenna Connector: Reverse SMA
Network Mode: Infrastructure mode, Ad-Hoc mode

LAN
Ethernet: 10/100Mbps, RJ45
Protection: Built-in 1.5KV magnetic isolation

Serial
No. of ports: 2 ports (NPort W2250), 1 port (NPort W2150)
Interface: RS-232/422/485, RJ45 8 pins

Serial Communication Parameters
Parity: None, Even, Odd, Space, Mark
Data bits: 5, 6, 7, 8
Stop bits: 1, 1.5, 2
Flow control: RTS/CTS, XON/XOFF
Speed: 100bps to 230.4kbps

Console Ports
Ethernet x1, RS-232 console x1(Port 1)

Software Features
Protocol: ICMP, IP, TCP, UDP, DHCP, BOOTP, Telnet, DNS, SNMP, HTTP, SMTP
Utilities: Windows utility for Windows98/ME/2000/XP/2003

Configuration: Web browser, serial/telnet console, or Windows utility

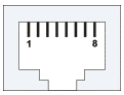
Power Requirements
Power input: 12-48VDC
Power consumption: 250 mA @12V, 138 mA @24V

Mechanical Specifications
Material: Aluminum sheet metal (1mm)

Environmental
Operating Temperature: 0 to 55˚C (32 to 131˚F),
5 to 95% RH
Storage Temperature: -20 to 85˚C (-4 to 185˚F),
5 to 95% RH

Regulatory Approvals
EMC: FCC Class A, CE Class A
Safety: UL, CUL, TUV

RJ45 RS-232/422/485 port pin assignment
Dimensions



Pin	RS-232	RS-422	RS-485
1	DSR	---	---
2	RTS	TxD+	---
3	GND	GND	GND
4	TxD	TxD-	---
5	RxD	RxD+	Data+
6	DCD	RxD-	Data-
7	CTS	---	---
8	DTR	---	---

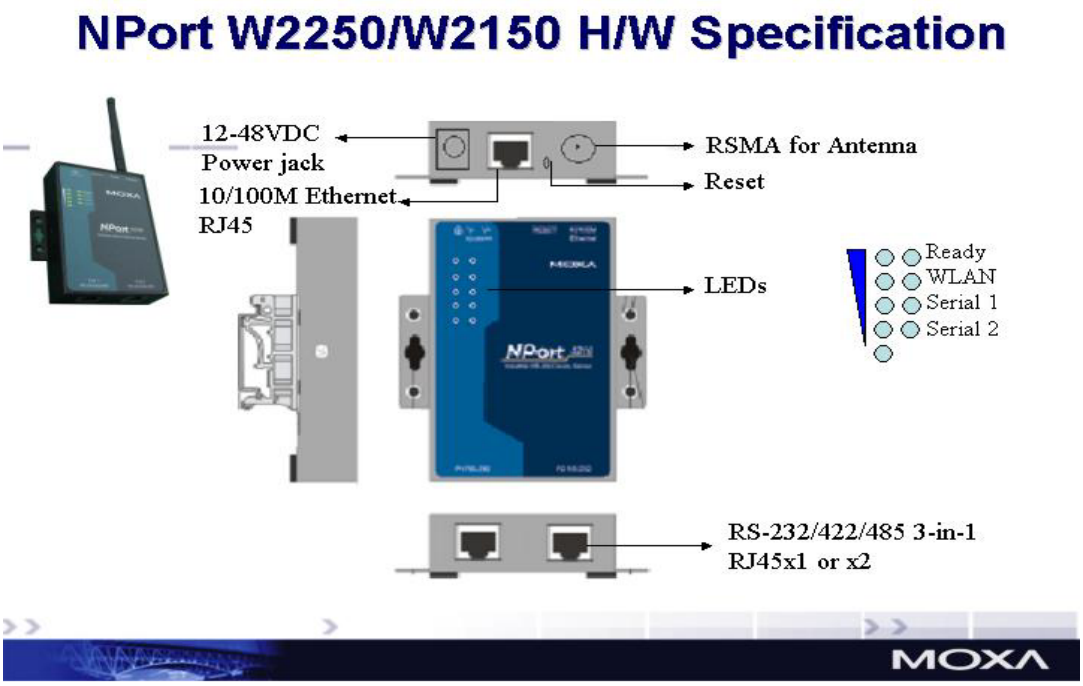
Chapter 2 Getting Started

This chapter includes information about installing NPort W2250/2150. The following topics are covered:

- **Panel Layout**
- **Connecting the Hardware**
  - Wiring Requirements
  - Connecting the Power

- Connecting to the Network
- Connecting to a Serial Device
- LED Indicators

Panel Layout



Connecting the Hardware

This section describes how to connect NPort W2250/2150 Series to serial devices for first time testing purposes. We cover Wiring Requirements, Connecting the Power, Connecting to the Network, Connecting to a Serial Device, and LED Indicators.

Wiring Requirements

ATTENTION

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your device.

Wiring Caution!

ATTENTION

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.

If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

ATTENTION

Temperature Caution!

Please take care when handling device. When plugged in, device's internal components generate heat, and consequently the casing may feel hot to the touch.

You should also pay attention to the following items:

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.

  NOTE: Do not run signal or communication wiring and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.

- You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separate.

Where necessary, it is strongly advised that you label wiring to all devices in the system

Connecting the Power

Connect the 12-48 VDC power line with NPort W2250/2150's terminal block. If the power is properly supplied, the "Ready" LED will show a solid red color until the system is ready, at which time the "Ready" LED will change to a green color.

Connecting to the Network

Connect one end of the Ethernet cable to NPort W2250/2150's 10/100M Ethernet port and the other end of the cable to the Ethernet network. If the cable is properly connected, NPort W2250/2150 will indicate a valid connection to the Ethernet in the following ways:

- The Ethernet LED maintains a solid green color when connected to a 100 Mbps Ethernet network.
- The Ethernet LED maintains a solid orange color when connected to a 10 Mbps Ethernet network.
- The Ethernet LED will flash when Ethernet packets are being transmitted or received.

Connecting to a Serial Device

Connect the serial data cable between NPort W2250/2150 and the serial device. Serial data cables are optional accessories for NPort W2250/2150. Refer to Chapter 1 under Optional Accessories for information on the RJ45-to-DB25 and RJ45-to-DB9 cables.

LED Indicators

Type	Color	Meaning

Type	Color	Meaning
Ready	Red	Steady On: Power is on and NPort is booting up. Blinking: Indicates an LAN IP conflict, or DHCP or BOOTP server did not respond properly.
	Green	Steady On: Power is on and NPort is functioning normally. Blinking: The device server has been located by Administrator's Location function.
	Off	Power is off, or power error condition exists.
WLAN	Green	On: Wireless Enable Blinking: Indicates an WLAN IP conflict, or DHCP or BOOTP server did not respond properly
10/100M Ethernet	Yellow	10M Ethernet connection.
	Green	100M Ethernet connection.
	Off	Ethernet cable is disconnected, or has a short.
P1, P2(W2250)	Yellow	Serial port is receiving data.
	Green	Serial port is transmitting data.
	Off	No data is being transmitted or received through the serial port.
Signal Strength	Green	Five LEDs represent WLAN signal strength of 20%~100%, in 20% scale. When WLAN link to the access point, the last LED is on

Chapter 3 Initial IP Address Configuration

When setting up your NPort W2250/2150 for the first time, the first thing you should do is configure the IP address. This chapter introduces the method to configure the device server's IP address. ***Select one of the initial IP Address configuration methods to configure NPort W2250/2150's IP Address.*** For more details about network settings, see the ***Network Settings*** section from Chapter 5, ***Web Console Configuration.***
This chapter includes the following sections:

- **Installation Procedure for First Time User**
- **Factory Default IP Address**
- **ARP**
- **Telnet Console**
- **Serial Console (19200, n, 8, 1)**

Installation Procedure for First Time User

STEP 1: After removing NPort W2250 from the box, the first thing using a cross-over Ethernet cable connect directly to your computer's Ethernet port.

STEP 2: Attaching the power adaptor

STEP 3: Connect NPort W2250's serial port to a serial device.

STEP 4: Use Web console to configure the NPort W2250 via Ethernet port.

Note: Recommend to use web console for configuration. About how to use web console ,please

refer to Chapter 5.

Note: Only one Network Interface work at the same time.
If Ethernet Link up, Disable WLAN, Only Ethernet port can be used.
If Ethernet Link down, Disable Ethernet, Only WLAN can be used.

Factory Default IP Address

NPort W2250 products are configured with the following default IP address:

LAN: Default setting is static IP, 192.168.126.254/255.255.255.0, If Ethernet port cant' get IP from DHCP, IP address return to 192.168.126.254/255.255.255.0

WLAN: Default setting is static IP, 192.168.127.254/255.255.255.0, If WLAN port cant' get IP from DHCP, IP address return to
192.168.127.254/255.255.255.0

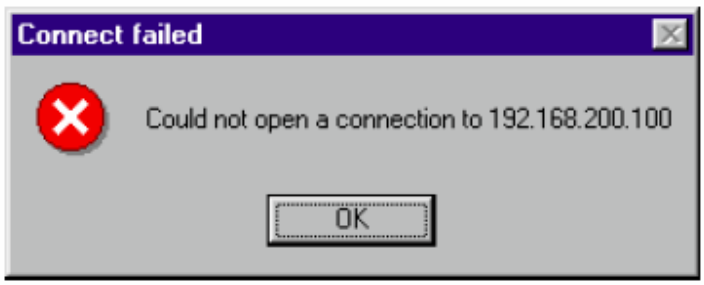
Only one interface allow to use DHCP settings

Note: If you have changed the IP address and forget it later. You can push the reset button of the W2250 hardware, the IP will return to the default IP address.

ARP

You can make use of the ARP (Address Resolution Protocol) command to set up an IP address for your NPort W2250/W2150. The ARP command tells your computer to associate the NPort W2250/W2150's MAC address with the intended IP address. You must then use Telnet to access the NPort W2250/W2150, at which point the device server's IP address will be reconfigured.
This function only apply to Ethernet port.
Take the following steps to use ARP to configure the IP address:

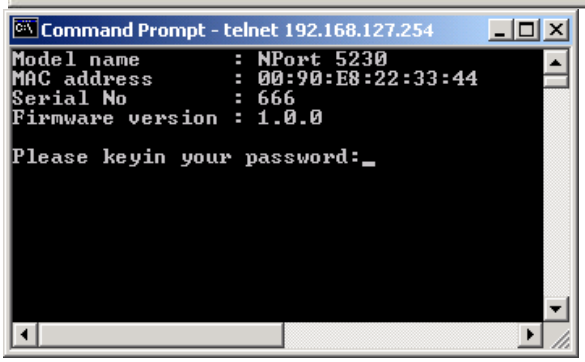
1. Obtain a valid IP address for your NPort W2250/W2150 from your network administrator.
2. Obtain NPort W2250/W2150's MAC address from the label on its bottom panel.
3. Execute the 'arp -s' command from your computer's MS-DOS prompt by typing:
   arp –s 192.168.200.100 00-90-E8-xx-xx-xx
   This is where 192.168.200.100 is the new IP address and 00-90-E8-xx-xx-xx is the MAC address for your NPort W2250/W2150. You will need to change both numbers, as described above in items 1 and 2.
4. Next, execute a special Telnet command by typing: telnet 192.168.200.100 6000 After issuing this command, a **Connect failed** message will appear, as shown here. After the NPort W2250/W2150 reboots, its IP address should be updated to the new address, and you can reconnect using either Telnet, Web, or Administrator to check that the update was successful.



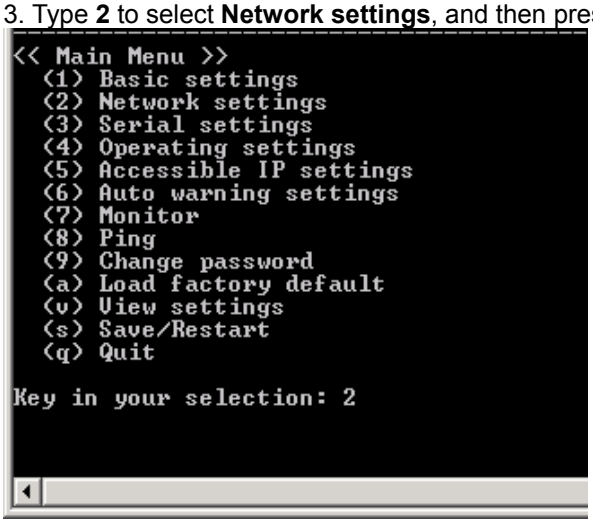
Telnet Console

1. From the Windows desktop, click on **Start** and then select **Run**
2. Type telnet 192.168.126.254 (Default IP) in the **Open** text input box, and then click **OK.**

   When the Telnet window opens, if you are prompted to input the **Console password**, input the password and then press **Enter**.Note that this page will only appear if the NPort W2250 is password protected.



3. Type **2** to select **Network settings**, and then press **Enter**



4. Type **1** to select **IP address** and then press **Enter**

```
<< Main Menu->Network settings >>
  (1) IP address
  (2) Netmask
  (3) Gateway
  (4) IP configuration
  (5) DNS server 1
  (6) DNS server 2
  (7) SNMP
  (8) SNMP community name
  (9) SNMP contact
  (a) SNMP location
  (b) Auto IP report to IP
  (c) Auto IP report to TCP port
  (d) Auto IP report period
  (v) View settings
  (m) Back to main menu
  (q) Quit

Key in your selection: 1_
```

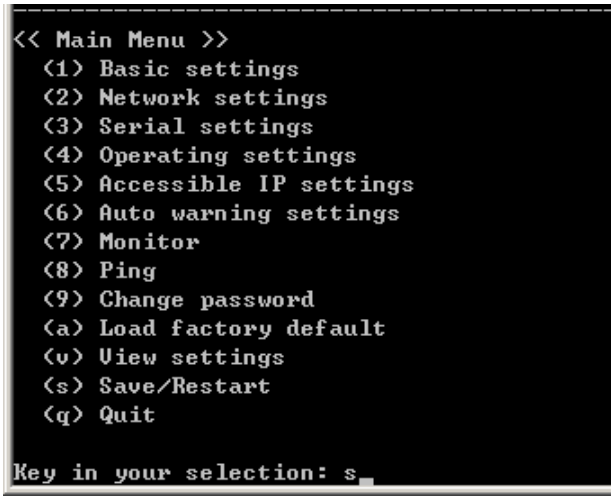
5. Use the **Backspace** key to erase the current IP address, type in the new IP address, and then press **Enter**.

```
<< Main Menu->Network settings >>
  (1) IP address
  (2) Netmask
  (3) Gateway
  (4) IP configuration
  (5) DNS server 1
  (6) DNS server 2
  (7) SNMP
  (8) SNMP community name
  (9) SNMP contact
  (a) SNMP location
  (b) Auto IP report to IP
  (c) Auto IP report to TCP port
  (d) Auto IP report period
  (v) View settings
  (m) Back to main menu
  (q) Quit

Key in your selection: 1
IP address: 192.168.127.253_
```

6. Type **m** and then press **Enter** to return to the main menu.

```
<< Main Menu->Network settings >>
  (1) IP address
  (2) Netmask
  (3) Gateway
  (4) IP configuration
  (5) DNS server 1
  (6) DNS server 2
  (7) SNMP
  (8) SNMP community name
  (9) SNMP contact
  (a) SNMP location
  (b) Auto IP report to IP
  (c) Auto IP report to TCP port
  (d) Auto IP report period
  (v) View settings
  (m) Back to main menu
  (q) Quit

Key in your selection: m_
```

7. Type **s** and then press **Enter** to **Save/Restart** the system



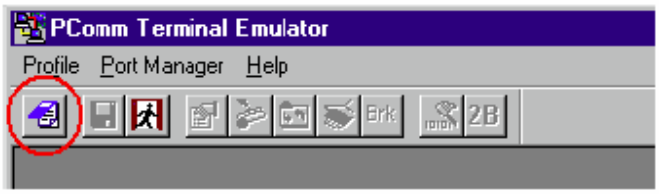
8. Type **y** and then press **Enter** to save the new IP address and restart NPort W2250/W2150.

Serial Console (19200, n, 8, 1)

You may use the RS-232 console port to set up the IP address for NPort W2250/W2150. We suggest using PComm Terminal Emulator, which is available free of charge as part of the PComm Lite program suite (found on the Software CD that comes with the product), to carry out the installation procedure, although other similar utilities may also be used.

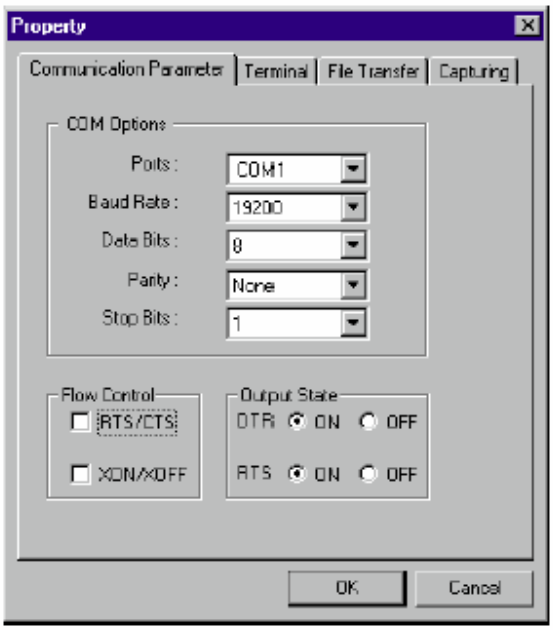
Before you start to configure the NPort W2250/W2150 via serial console, turn off the power and connect the serial cable from NPort W2250/W2150 to your computer's serial port.

1. Connect NPort W2250/W2150's serial port 1 directly to your computer's male RS-232 serial port.
2. From the Windows desktop click on **Start → Programs → PComm Lite → Terminal Emulator**.
3. When the **PComm Terminal Emulator** window opens, first click on the **Port Manager** menu item and select **Open**, or simply click on the **Open** icon.



4. The **Property** window opens automatically. From the **Communication Parameter** page, select the appropriate COM port for the connection, **COM1** in this example, and **19200** for **Baud Rate**, **8** for **Data Bits**, **None** for **Parity**, and **1** for **Stop Bits**.
5. From the Property window's **Termina**l page, select **ANSI** or **VT100** for **Terminal Type** and

then click **OK**. If you select **Dumb Terminal** as the terminal type, some of the console functions—especially the “Monitor” function—may not work properly.



6. Press the “ ` ” key continuously and then power on the NPort W2250/W2150.

7. NPort W2250/W2150 will receive the “ ` ” string continuously and then auto switch from data mode to console mode.

8. Input the password when prompted. Note that this page will only appear when the NPort W2250/W2150 has been set up for password protection.

9.Start configuring the IP address under **Network Settings**. Refer to the **Telnet Console** section for the rest of the IP settings.

Chapter 4 Choosing the Proper Operation Mode

In this section, we describe the various NPort 5200 operation modes. The options include an operation mode that uses a driver installed on the host computer, and operation modes that rely on TCP/IP socket programming concepts. After choosing the proper operation mode in this chapter, refer to Chapter 5 for detailed configuration parameter definitions.

- **Overview**
- **TCP Server Mode**
- **TCP Client Mode**
- **UDP Mode**
- **Real COM Mode**

Overview

NPort 5200 Serial Device Servers network-enable traditional RS-232/422/485 devices, in which a Serial Device Server is a tiny computer equipped with a CPU, real-time OS, and TCP/IP protocols that can bi-directionally translate data between the serial and Ethernet formats. Your computer can access, manage, and configure remote facilities and equipment over the Internet from anywhere in the world.

Traditional SCADA and data collection systems rely on serial ports (RS-232/422/485) to collect data from various kinds of instruments. Since NPort 5200 Serial Device Servers network-enable instruments equipped with an RS-232/422/485 communication port, your SCADA and data collection system will be able to access all instruments connected to a standard TCP/IP network, regardless of whether the devices are used locally or at a remote site.

NPort 5200 is an external IP-based network device that allows you to expand the number of serial ports for a host computer on demand. As long as your host computer supports the TCP/IP protocol, you won't be limited by the host computer's bus limitation (such as ISA or PCI), or lack of drivers for various operating systems.

In addition to providing socket access, NPort 5200 also comes with a Real COM/TTY driver that transmits all serial signals intact. This means that your existing COM/TTY-based software can be preserved, without needing to invest in additional software.

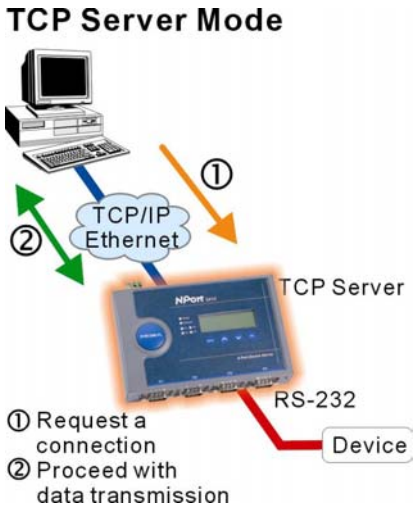
Three different Socket Modes are available: TCP Server, TCP Client, and UDP Server/Client. The main difference between the TCP and UDP protocols is that TCP guarantees delivery of data by requiring the recipient to send an acknowledgement to the sender. UDP does not require this type of verification, making it possible to offer speedier delivery. UDP also allows unicast or multicast of data to only one IP or groups of IP addresses.

ATTENTION

Pictures in this Chapter will use NPort 5400 series as an example.

TCP Server Mode

In TCP Server mode, NPort 5200 is configured with a unique IP:Port address on a TCP/IP network. NPort 5200 waits passively to be contacted by the host computer, allowing the host computer to establish a connection with and get data from the serial device. This operation mode also supports up to 4 simultaneous connections, so that multiple hosts can collect data from the same serial device—at the same time.



As illustrated in the figure, data transmission proceeds as follows:

1. The host requests a connection from the NPort 5200 configured for TCP Server Mode.
2. Once the connection is established, data can be transmitted in both directions—from the host to the NPort 5200, and from the NPort 5200 to the host.

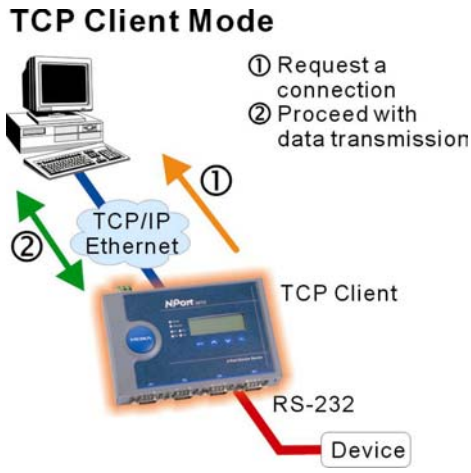
TCP Client Mode

In **TCP Client mode**, NPort 5200 can actively establish a TCP connection to a pre-defined host computer when serial data arrives.

After the data has been transferred, NPort 5200 can automatically disconnect from the host computer by using the **TCP alive check time** or **Inactivity time** settings. Refer to Chapter 5 for more details.

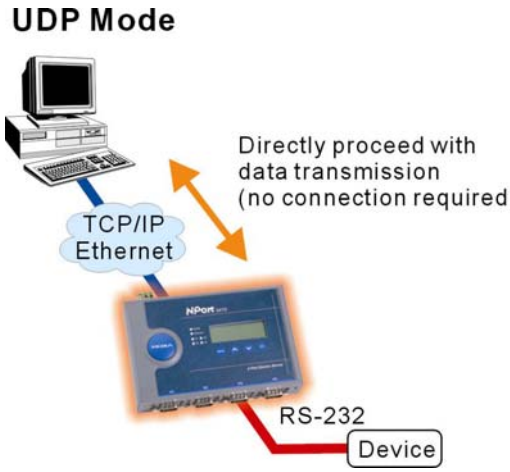
As illustrated in the figure, data transmission proceeds as follows:

1. The NPort 5200 configured for TCP Client Mode requests a connection from the host.
2. Once the connection is established, data can be transmitted in both directions—from the host to the NPort 5200, and from the NPort 5200 to the host.



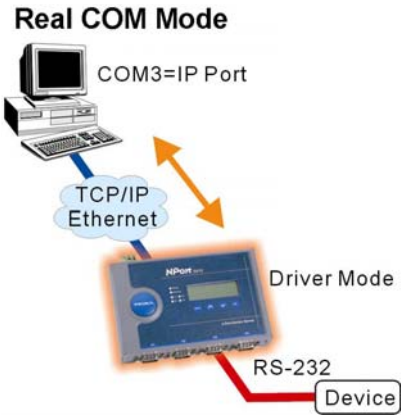
UDP Mode

Compared to TCP communication, UDP is faster and more efficient. In UDP mode, you can unicast or multicast data from the serial device to one or multiple host computers, and the serial device can also receive data from one or multiple host computers, making this mode ideal for message display applications.



Real COM Mode

NPort 5200 comes equipped with COM drivers that work with Windows 95/98/ME/NT/2000/XP systems, and also TTY drivers for Linux systems. The driver establishes a transparent connection between host and serial device by mapping the IP:Port of the NPort 5200's serial port to a local COM/TTY port on the host computer.



One of the major conveniences of using Real COM Mode is that Real COM Mode allows users to continue using RS-232/422/485 serial communications software that was written for pure serial communications applications. The driver intercepts data sent to the host's COM port, packs it into a TCP/IP packet, and then redirects it through the host's Ethernet card. At the other end of the connection, the NPort 5200 accepts the Ethernet frame, unpacks the TCP/IP packet, and then transparently sends it to the appropriate serial device attached to one of the NPort 5200's serial ports.

ATTENTION

Real COM Mode allows several hosts to have access control of the same NPort 5200. The driver that comes with your NPort 5200 controls host access to attached serial devices by checking the host's IP address. Refer to **Accessible IP Settings** in Chapter 5 for more details.

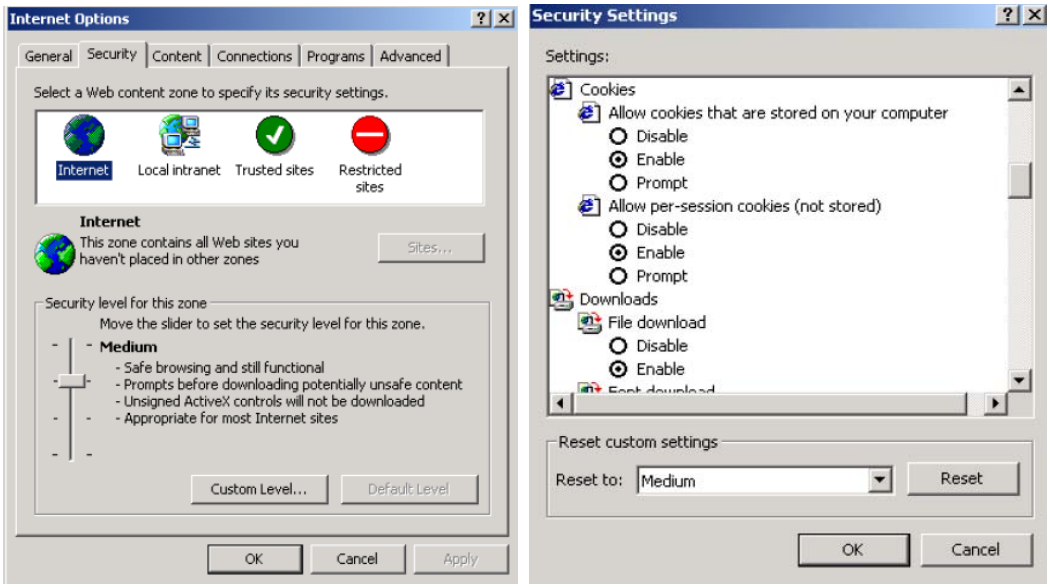
Chapter 5 Web Console Configuration

The Web Console is the most user-friendly method available to configure NPort 5200 Series. This chapter introduces the Web Console function groups and function definitions.

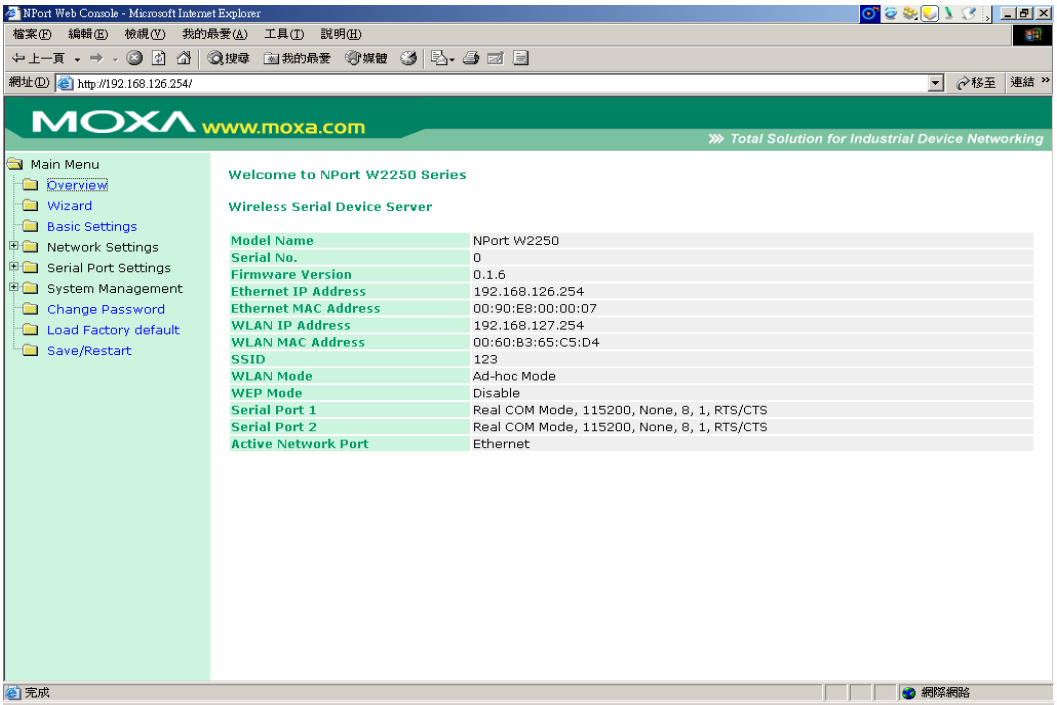
- **Opening Your Browser**
- **Basic Settings**
- **Network Settings**
  - WLAN Configuration
- **Serial Port Settings**
- **System Management**
- **Change Password**
- **Load Factory Default**
- **Save/Restart**

Opening Your Browser

1. Open your browser with the cookie function enabled. (To enable your browser for cookies, right click on your desktop Internet Explorer icon, select Properties, click on the Security tab, and then select the three Enable options as shown in the figure below.)



2. Type 192.168.126.254(Default IP) in the **Address** input box (use the correct IP address if different from the default), and then press **Enter**.
3. Input the password if prompted. The password will be transmitted with MD5 encryption over the Ethernet. Note that you will not be prompted to enter the password if the NPort 5200 is not currently password protected.
4. The NPort 5200 homepage will open. On this page, you can see a brief description of the Web Console's nine function groups.



ATTENTION

If you can't remember the password, the ONLY way to start configuring NPort 5200 is to load factory defaults by using the Reset button located near the NPort 5200's RJ45 Ethernet port.

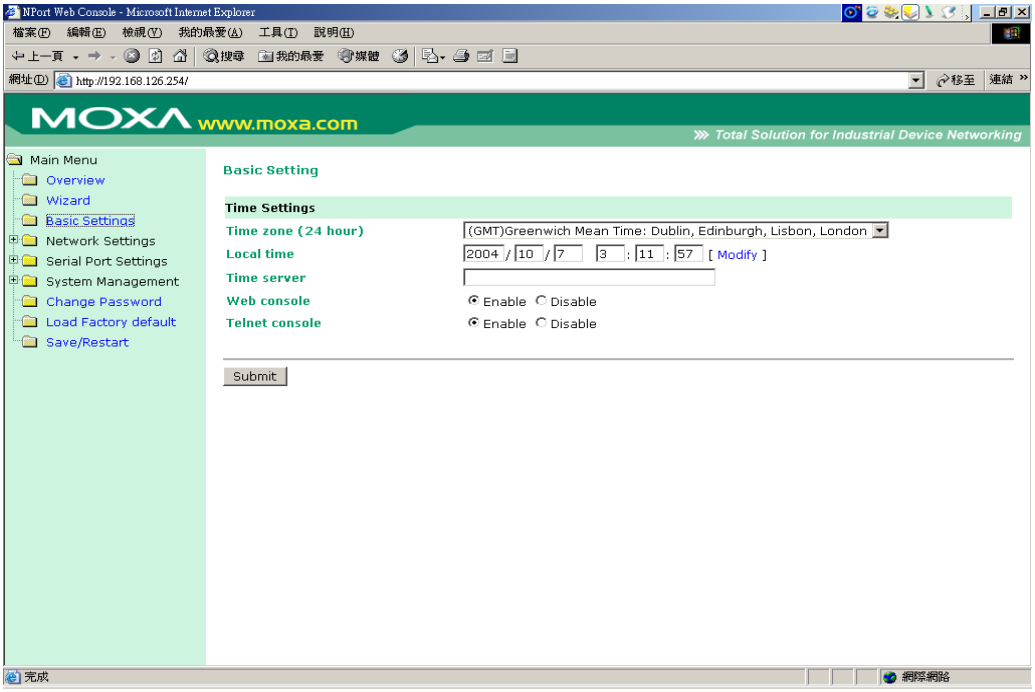
Remember to use Windows Administrator to export the configuration file when you have finished the configuration. After using the Reset button to load factory defaults, your configuration can be easily reloaded into NPort 5200 by using the Windows Administrator Import function.

ATTENTION

If you use other web browsers, remember to Enable the functions to "allow cookies that are stored on your computer" or "allow per-session cookies."

NPort 5200 uses cookies only for "password" transmission.

Basic Settings



Time

NPort 5200 has a built-in Real-Time Clock for time calibration functions. Functions such as Auto warning "Email" or "SNMP Trap" can add real-time information to their messages.

ATTENTION

First time users should select the time zone first. The Console will display the "real time" according to the time zone compared to GMT.
If you would like to modify the real time clock, select "Local time." NPort 5200's firmware will modify the GMT time according to the Time Zone.

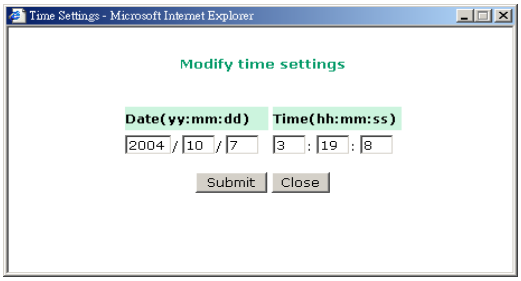
Time zone

Setting	Factory Default	Necessity
User selectable time zone	GMT (Greenwich Mean Time)	Optional

Local time

Setting	Factory Default	Necessity
User adjustable time (1900/1/1-2037/12/31)	GMT (Greenwich Mean Time)	Optional

Click on the **Modify** button to open the **Modify time settings** window to input the correct local time.



Time server

Setting	Factory Default	Necessity
IP Address or Domain Name (E.g., 192.168.1.1, time.stdtime.gov.tw, or time.nist.gov)	None	Optional

NPort 5200 uses SNTP (RFC-1769) for auto time calibration.

Input the correct "Time server" IP address or domain name. Once NPort 5200 is configured with the correct Time server address, NPort 5200 will request time information from the "Time server" every 10 minutes.

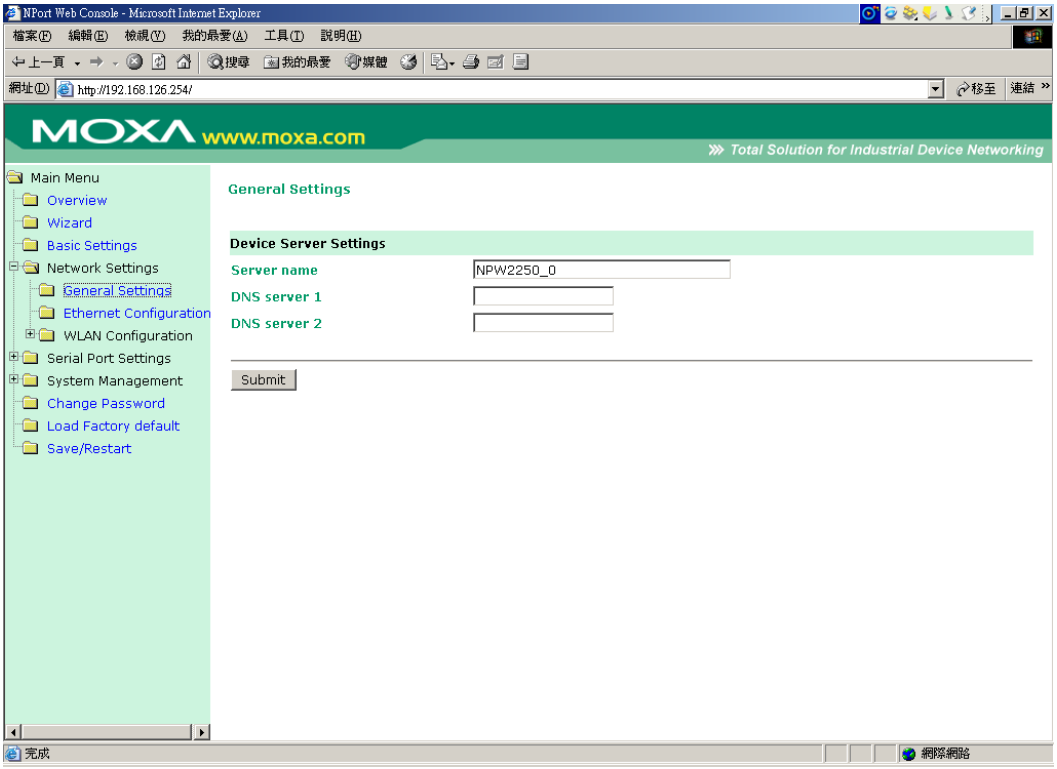
Web/Telnet Console

The "Disable" option for "Web Console" and "Telnet Console" is included for security reasons. In some cases, you may want to Disable one or both of these console utilities as an extra precaution to prevent unauthorized users from accessing your NPort 5200. The factory default for both Web console and Telnet console is **Enable**.

Setting	Factory Default	Necessity
Enable or Disable	Enable	Required

Network Settings

General Setting



Click “General Setting” option ,you can entry the server name and DNS server .

When the user wants to visit a particular website, the computer asks a Domain Name System (DNS) server for the website’s correct IP address, and then the computer uses the response to connect to the web server. DNS is the way that Internet domain names are identified and translated into IP addresses. A domain name is an alphanumeric name, such as moxa.com, that it is usually easier to remember. A DNS server is a host that translates this kind of text-based domain name into the numeric IP address used to establish a TCP/IP connection.

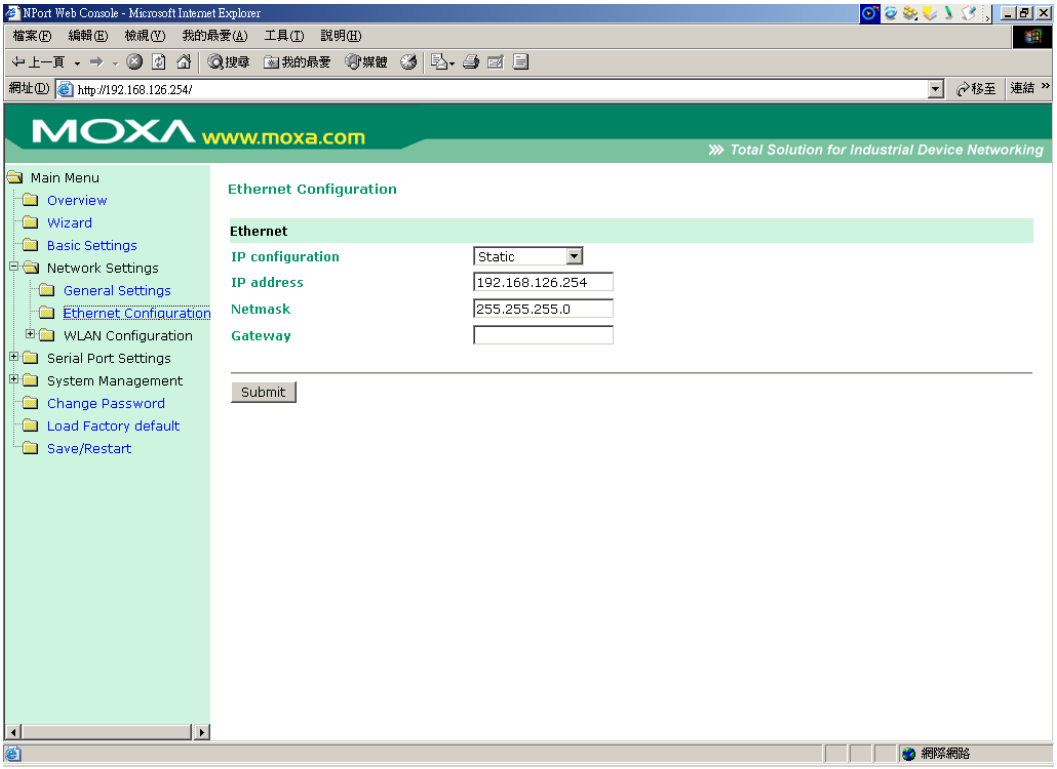
In order to use NPort 5200’s DNS feature, you need to configure the DNS server. Doing so allows NPort 5200 to use a host’s domain name to access the host. NPort 5200 provides **DNS server 1** and **DNS server 2** configuration items to configure the IP address of the DNS server. DNS Server 2 is included for use when DNS sever 1 is unavailable.

.

DNS server 1 / DNS server 2

Setting	Factory Default	Necessity
E.g., 192.168.1.1 (IP addresses of the form *x.x.x*.0 and *x.x.x*.255 are invalid.)	None	Optional

Ethernet Configuration



You must assign a valid IP address to NPort 5200 before it will work in your network environment. Your network system administrator should provide you with an IP address and related settings for your network. The IP address must be unique within the network (otherwise, NPort 5200 will not have a valid connection to the network). First time users can refer to Chapter 3, "Initial IP Address Configuration," for more information.

You can choose from four possible "IP configuration" modes—**Static**, **DHCP**, **DHCP/BOOTP**, and **BOOTP**—located under the web console screen's IP configuration drop-down box.

Method	Function Definition
Static	**User defined** IP address, Netmask, Gateway.
DHCP	DHCP Server assigned IP address, Netmask, Gateway, DNS, and Time Server
DHCP/BOOTP	DHCP Server assigned IP address, Netmask, Gateway, DNS, and Time Server, or BOOTP Server assigned IP address (if the DHCP Server does not respond)
BOOTP	BOOTP Server assigns IP address

IP Address

Setting	Factory Default	Necessity
E.g., 192.168.1.1 (IP addresses of the form *x.x.x*.0 and *x.x.x*.255 are invalid.)	192.168.126.254	Required

An IP address is a number assigned to a network device (such as a computer) as a permanent

address on the network. Computers use the IP address to identify and talk to each other over the network. Choose a proper IP address which is unique and valid in your network environment.

Netmask

Setting	Factory Default	Necessity
E.g., 255.255.255.0	255.255.255.0	Required

A subnet mask represents all of the network hosts at one geographic location, in one building, or on the same local area network. When a packet is sent out over the network, the NPort 5200 will use the subnet mask to check whether the desired TCP/IP host specified in the packet is on the local network segment. If the address is on the same network segment as the NPort 5200, a connection is established directly from the NPort 5200. Otherwise, the connection is established through the given default gateway.

Gateway

Setting	Factory Default	Necessity
E.g., 192.168.1.1	None	Optional

A gateway is a network gateway that acts as an entrance to another network. Usually, the computers that control traffic within the network or at the local Internet service provider are gateway nodes. NPort 5200 needs to know the IP address of the default gateway computer in order to communicate with the hosts outside the local network environment. For correct gateway IP address information, consult the network administrator.

IP configuration

Setting	Factory Default	Necessity
Static DHCP DHCP/BOOTP BOOTP	Static	Required

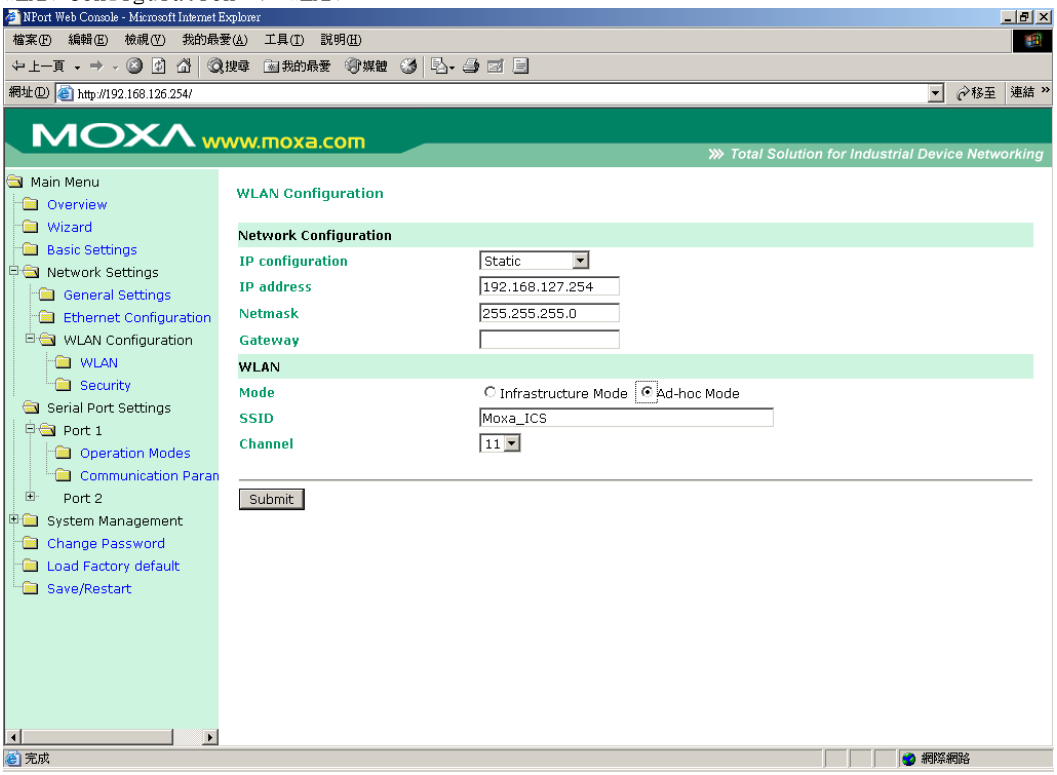
ATTENTION

In Dynamic IP environments, the firmware will retry 3 times every 30 seconds until network settings are assigned by the DHCP or BOOTP server. The Timeout for each try increases from 1 second, to 3 seconds, to 5 seconds.

If the DHCP/BOOTP Server is unavailable, the firmware will use the default IP address (192.168.126.254), Netmask, and Gateway for IP settings.

WLAN Configuration

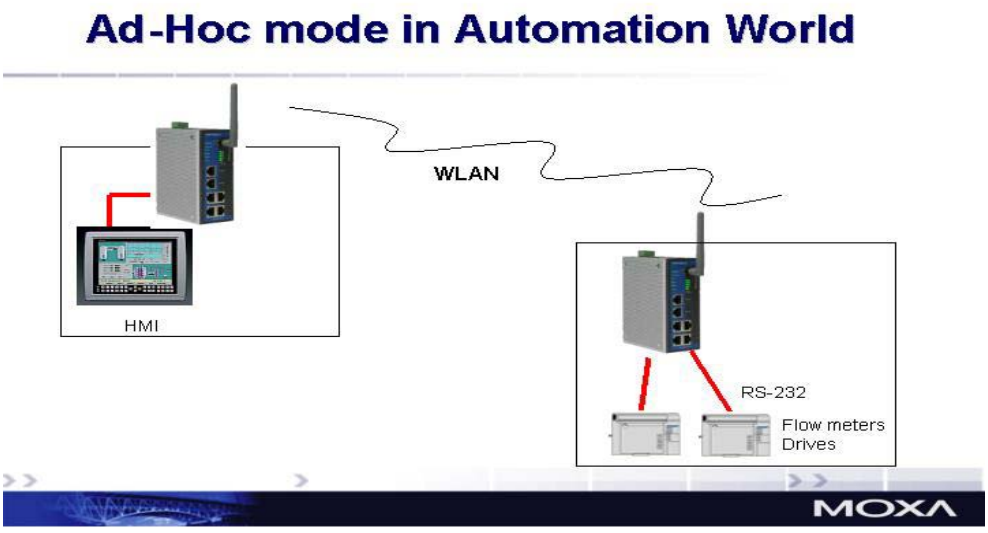
WLAN Configuration -> WLAN



The NPort supports IEEE 802.11b wireless network interface.
The supported IP configurations are static and dynamic (BOOTP , DHCP or BOOTP+DHCP), depending on users' network environment. Users can setup the IP configuration via the serial console, or the Web/Telnet consoles through Ethernet interface.

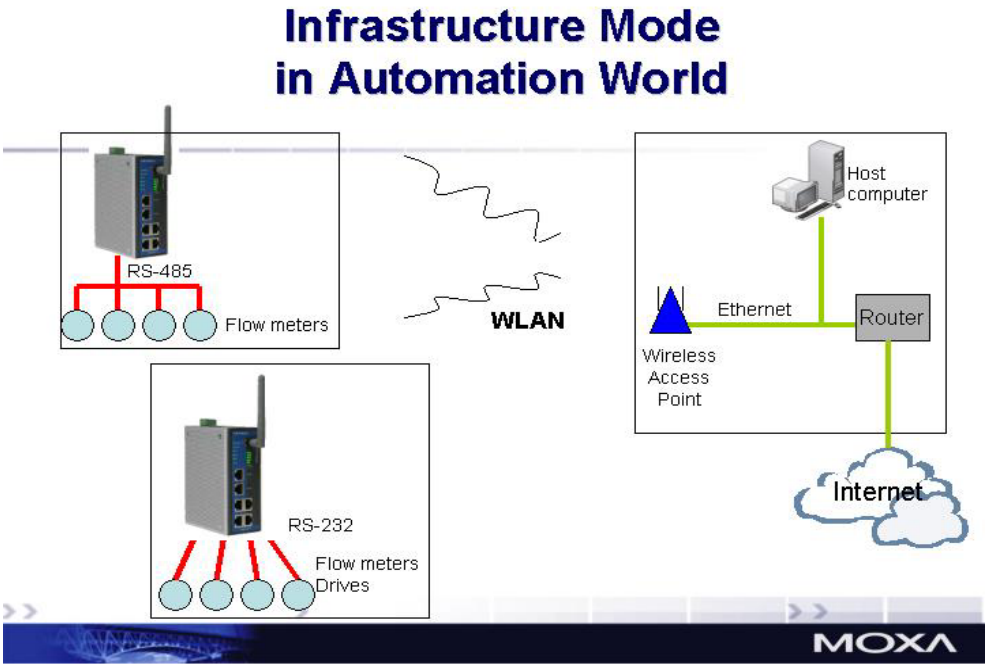
WLAN Mode :

<Ad-Hoc Mode>



In the above example, two NPort device have established an Ad-Hoc peer-to-peer relationship. They communicate directly to each other's serial devices without AP.

<Infrastructure Mode>



In the above example, the NPort device communicates with host computer via the AP. The host computer is connected via an Ethernet connection to the AP. As such, the NPort device and the host computer communicate directly and can transfer information to serial devices.

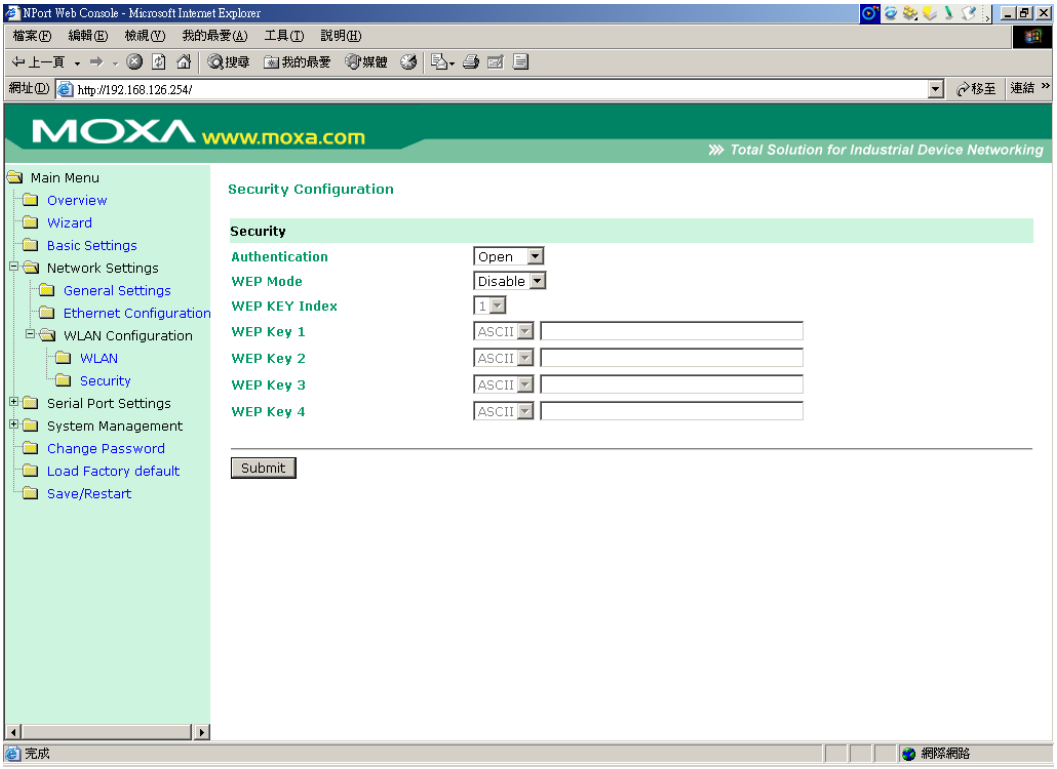
SSID:
Enter the name of the wireless network (SSID). The W2250/2150 connects to this wireless network.

Channel:
Select from the pull down menu the radio channel for wireless network. In infrastructure mode, AP will specify channel automatically. In Ad-hoc mode, user can specify channel by self.

ATTENTION

If you want to change the WLAN IP address quickly, you can click the Wizard to configure.

WLAN Configuration -> Security



The wireless network interface supports data encryption (WEP, 64 or 128 bits) and authentication (Open or Shared authentication).

Autherntication: Select an authentication scheme from the pull down menu: **Open** or **Shared**. Selecting **Shared** requires manually entering the authentication key.

WEP Mode: enable WEP ,data packet will be encrypted before send .you can select 64 bit or 128 bit .By default, WEP Mode is disabled.

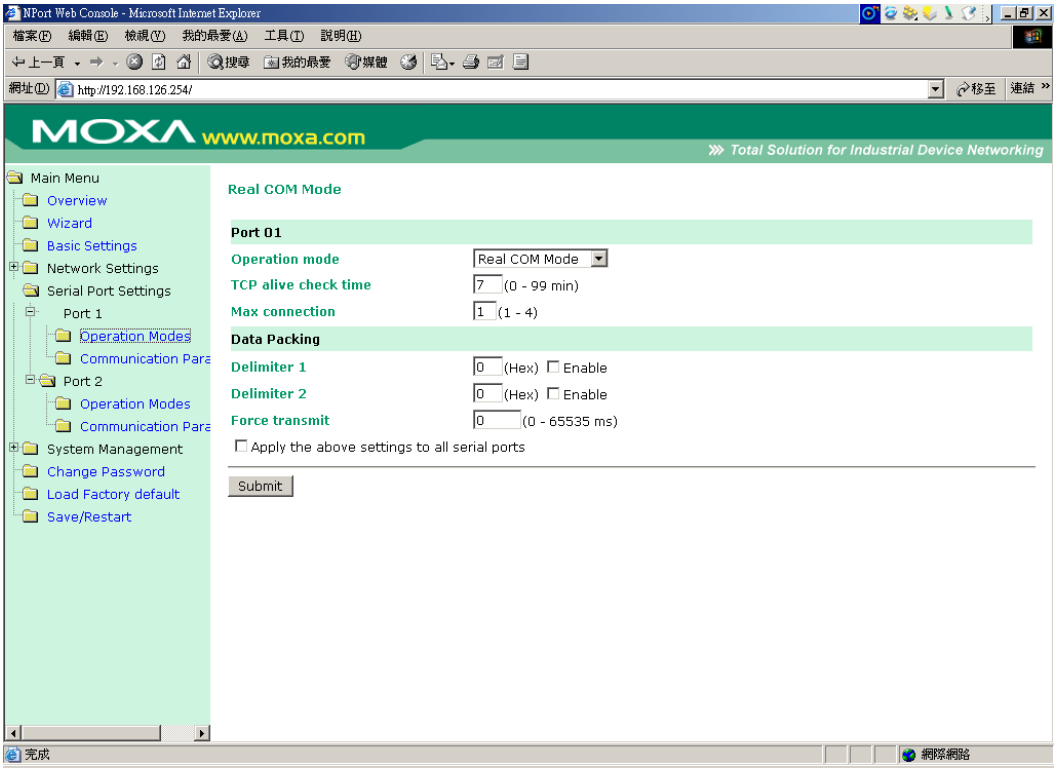
WEP Key format: There are two formats for selection, ASCII or HEX。

WEP Key1~ WEP Key4：There are four WEP Key to prevent data from steal.The setting of WEP Key must be the same as AP.

Serial Port Settings

Serial Port Settings -> Operation Mode

Real COM Mode



TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	7 min	Optional

0 min: TCP connection is not closed due to an idle TCP connection.

1 to 99 min: NPort 5200 automatically closes the TCP connection if there is no TCP activity for the given time. After the connection is closed, NPort 5200 starts listening for another Real COM driver connection from another host.

Max connection

Setting	Factory Default	Necessity
1, 2, 3, 4	1	Required

Max connection is usually used when the user needs to receive data from different hosts simultaneously. The factory default is 1. In this case, only one specific host can access this port of the NPort 5200, and the Real COM driver on that host will have full control over the port.

Max. connection 1:
Allows only 1 host's Real COM driver to open the specific NPort 5200 serial port.

Max connection 2 to 4:
Allows 2 to 4 host's Real COM drivers to open the specific NPort 5200 serial port, at the same time. When multiple hosts' Real COM drivers open the serial port at the same time, the COM driver only provides a pure data tunnel without control ability.

Application software that is based on the COM driver will receive a driver response of "success" when the software uses any of the Win32 API functions. The firmware will only send the data back to the driver on the host.

Data will be sent first-in-first-out when data comes into the NPort 5200 from the Ethernet interface.

When Max connection is set to 2, 3, or 4, this means that NPort 5200 will be using a "multi connection application" (i.e., 2, 3, or 4 hosts are allowed access to the port at the same time). When using a multi connection application, NPort 5200 will use the serial communication parameters set in the console. All of the hosts connected to that port must use the same serial settings. If one of the hosts opens the COM port with parameters that are different from NPort 5200's console setting, data communication may not work properly.

Delimiter 1

Setting	Factory Default	Necessity
00 to FF (hex)	None	Optional

Delimiter 2

Setting	Factory Default	Necessity
00 to FF (hex)	None	Optional

Once the NPort 5200 receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the NPort 5200's Ethernet port.

Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. If the size of the serial data received is greater than 1 KB, the NPort 5200 will automatically pack the data and send it to the Ethernet. However, to use the delimiter function, you must at least enable Delimiter 1. If Delimiter 1 is left blank and Delimiter 2 is enabled, the delimiter function will not work properly.

Force transmit

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0: Disable the force transmit timeout.

1 to 65535: Forces the NPort 5200's TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame.

This parameter defines the time interval during which NPort 5200 fetches the serial data from its internal buffer. If data is incoming through the serial port, NPort 5200 stores the data in the internal buffer. NPort 5200 transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the Force transmit time interval reaches the time specified under Force transmit timeout.

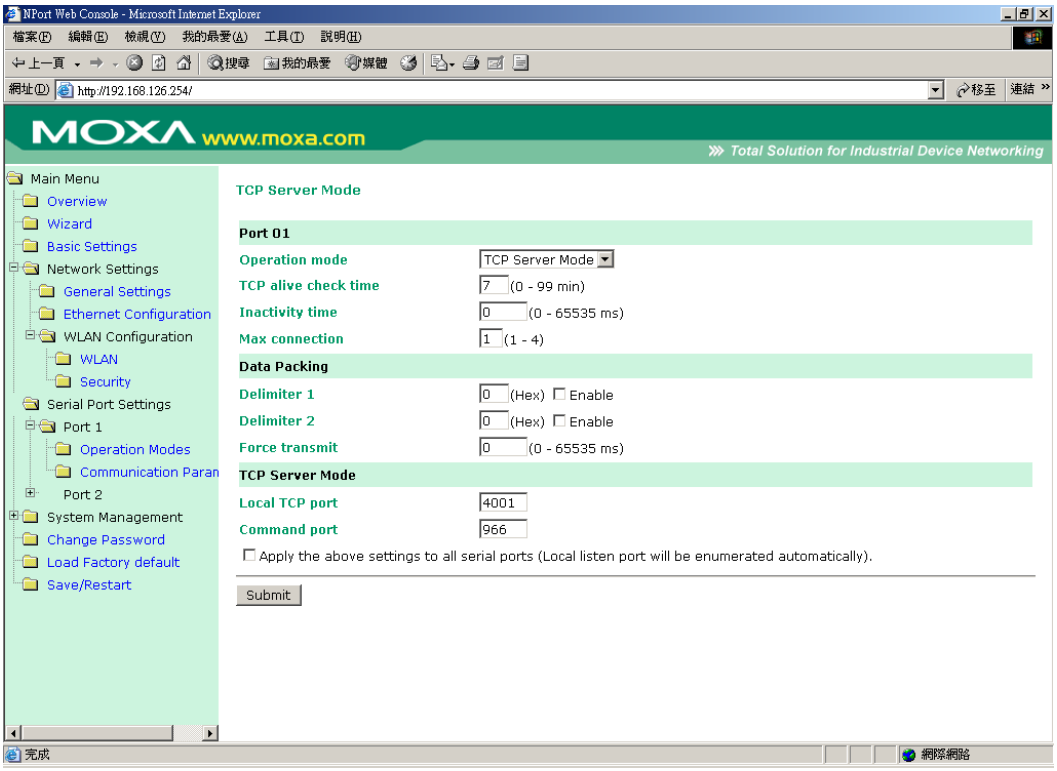
The optimal Force transmit timeout depends on your application, but it must be at least larger than one character interval within the specified baud rate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

(10 (bits) / 1200 (bits/s)) * 1000 (ms/s) = 8.3 ms.

Therefore, you should set Force transmit timeout to be larger than 8.3 ms, so in this case, it must be greater than or equal to 10 ms.

If the user wants to send a series of characters in the same packet, the serial device attached to NPort 5200 should send that series of characters during a time interval less than the Force transmit timeout for NPort 5200, and the total length of data must be less than or equal to NPort 5200's internal buffer size. The serial communication buffer size for NPort 5200 is 1 KB per port.

TCP Server Mode



TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	7 min	Optional

0 min: TCP connection is not closed due to an idle TCP connection.

1 to 99 min: NPort 5200 automatically closes the TCP connection if there is no TCP activity for the given time. After the connection is closed, NPort 5200 starts listening for another host's TCP connection.

Inactivity time

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0 ms: TCP connection is not closed due to an idle serial line.

0-65535 ms: NPort 5200 automatically closes the TCP connection if there is no serial data activity for the given time. After the connection is closed, NPort 5200 starts listening for another host's TCP connection.

This parameter defines the maintenance status as Closed or Listen for the TCP connection. The connection is closed if there is no incoming or outgoing data through the serial port during the specific Inactivity time.

If the Inactivity time is set to 0, the current TCP connection is kept active until a connection close request is received. Although Inactivity time is disabled, the NPort 5200 will check the connection status between the NPort 5200 and remote host by sending "keep alive" packets periodically. If the remote host does not respond to the packet, NPort 5200 assumes that the

connection was closed down unintentionally. NPort 5200 will then force the existing TCP connection to close.

The Inactivity time should at least be set larger than that of Force transmit timeout. To prevent the unintended loss of data due to the session being disconnected, it is highly recommended that this value is set large enough so that the intended data transfer is completed.

Max connection

Setting	Factory Default	Necessity
1, 2, 3, 4	1	Required

Max connection is usually used when the user needs to receive data from different hosts simultaneously. The factory default only allows 1 connection at a time.

Max. Connection 1:
NPort 5200 only allows 1 host to open the TCP connection to the specific serial port.

Max Connection 2 to 4:
Allows 2 to 4 host's TCP connection request to open this NPort 5200 serial port, at the same time. When multiple hosts establish a TCP connection to the specific serial port at the same time, NPort 5200 will duplicate the serial data and transmit to all of the hosts. Ethernet data is sent on a first-in-first-out basis to the serial port when data comes into NPort 5200 from the Ethernet interface.

Delimiter 1

Setting	Factory Default	Necessity
00 to FF	None	Optional

Delimiter 2

Setting	Factory Default	Necessity
00 to FF	None	Optional

Once the NPort 5200 receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it out the NPort 5200's Ethernet port.

Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. If the size of the serial data received is greater than 1 KB, the NPort 5200 will automatically pack the data and send it to the Ethernet. However, to use the delimiter function, you must at least enable Delimiter 1. If Delimiter 1 is left blank and Delimiter 2 is enabled, the delimiter function will not work properly.

Force transmit

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0: Disable the force transmit timeout.

1 to 65535: Forces the NPort 5200's TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame.

This parameter defines the time interval during which NPort 5200 fetches the serial data from its internal buffer. If data is incoming through the serial port, NPort 5200 stores the data in

the internal buffer. NPort 5200 transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the Force transmit time interval reaches the time specified under Force transmit timeout.

The optimal Force transmit timeout depends on your application, but it must be at least larger than one character interval within the specified baud rate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

(10 (bits) / 1200 (bits/s)) * 1000 (ms/s) = 8.3 ms.

Therefore, you should set Force transmit timeout to be larger than 8.3 ms, so in this case, it must be greater than or equal to 10 ms.

If the user wants to send a series of characters in the same packet, the serial device attached to NPort 5200 should send that series of characters during a time interval less than the Force transmit timeout for NPort 5200, and the total length of data must be less than or equal to NPort 5200's internal buffer size. The serial communication buffer size for NPort 5200 is 1 KB per port.

Local TCP port

Setting	Factory Default	Necessity
1 to 65535	4001	Required

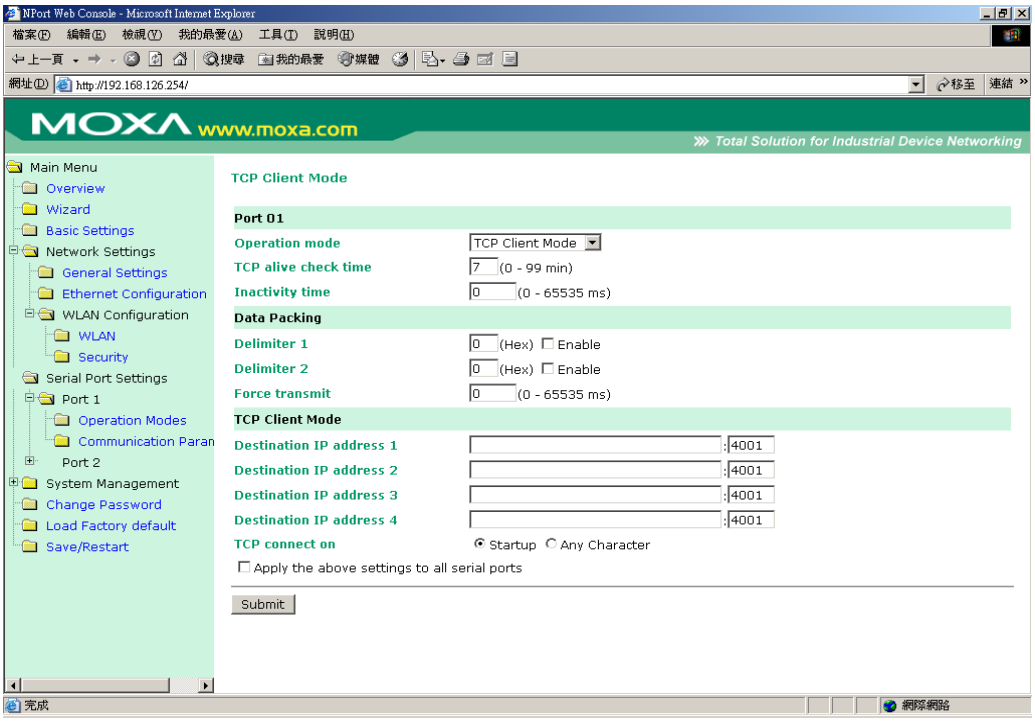
The"Local TCP port" is the TCP port that NPort 5200 uses to listen to connections, and that other devices must use to contact NPort 5200. To avoid conflicts with well known TCP ports, the default is set to 4001.

Command port

Setting	Factory Default	Necessity
1 to 65535	966	Optional

The "Command port" is a listen TCP port for IP-Serial Lib commands from the host. In order to prevent a TCP port conflict with other applications, the user can set the Command port to another port if needed. IP-Serial Lib will automatically check the Command Port on NPort 5200 so that the user does not need to configure the program.

TCP Client Mode



TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	7 min	Optional

0 min: TCP connection is not closed due to an idle TCP connection.

1 to 99 min: NPort 5200 automatically closes the TCP connection if there is no TCP activity for the given time.

Inactivity time

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0 ms: TCP connection is not closed due to an idle serial line.

0-65535 ms: NPort 5200 automatically closes the TCP connection if there is no serial data activity for the given time.

This parameter defines the maintenance status as Closed or Listen for the TCP connection. The connection is closed if there is no incoming or outgoing data through the serial port during the specific Inactivity time.

If the Inactivity time is set to 0, the current TCP connection is kept active until a connection close request is received. Although Inactivity time is disabled, the NPort 5200 will check the connection status between the NPort 5200 and remote host by sending “keep alive” packets periodically. If the remote host does not respond to the packet, NPort 5200 assumes that the connection was closed down unintentionally. NPort 5200 will then force the existing TCP connection to close.

ATTENTION

The Inactivity time should at least be set larger than that of Force transmit timeout. To prevent the unintended loss of data due to the session being disconnected, it is highly recommended that this value is set large enough so that the intended data transfer is completed.

ATTENTION

Inactivity time is ONLY active when "TCP connect on" is set to "Any character."

Delimiter 1

Setting	Factory Default	Necessity
00 to FF (hex)	None	Optional

Delimiter 2

Setting	Factory Default	Necessity
00 to FF (hex)	None	Optional

Once the NPort 5200 receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the NPort 5200's Ethernet port.

ATTENTION

Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. If the size of the serial data received is greater than 1 KB, the NPort 5200 will automatically pack the data and send it to the Ethernet. However, to use the delimiter function, you must at least enable Delimiter 1. If Delimiter 1 is left blank and Delimiter 2 is enabled, the delimiter function will not work properly.

Force transmit

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0: Disable the force transmit timeout.

1 to 65535: Forces the NPort 5200's TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame.

This parameter defines the time interval during which NPort 5200 fetches the serial data from its internal buffer. If data is incoming through the serial port, NPort 5200 stores the data in the internal buffer. NPort 5200 transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the Force transmit time interval reaches the time specified under Force transmit timeout.

The optimal Force transmit timeout depends on your application, but it must be at least larger than one character interval within the specified baud rate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

(10 (bits) / 1200 (bits/s)) * 1000 (ms/s) = 8.3 ms.

Therefore, you should set Force transmit timeout to be larger than 8.3 ms, so in this case, it must be greater than or equal to 10 ms.

If the user wants to send a series of characters in the same packet, the serial device attached to NPort 5200 should send that series of characters during a time interval less than the Force transmit timeout for NPort 5200, and the total length of data must be less than or equal to NPort 5200's internal buffer size. The serial communication buffer size for NPort 5200 is 1

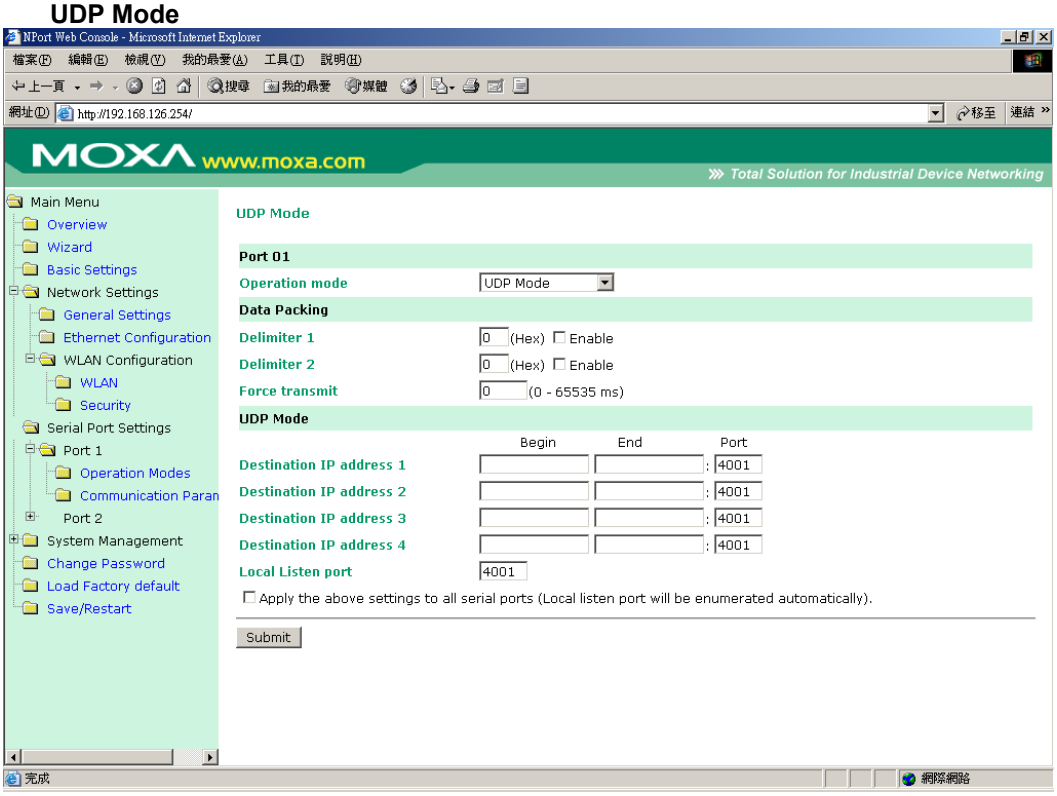
KB per port.

Destination IP address 1

Setting	Factory Default	Necessity
IP address or Domain Name (E.g., 192.168.1.1)	None	Required

Allows NPort 5200 to connect actively to the remote host whose IP address is set by this parameter.

UDP Mode



Delimiter 1

Setting	Factory Default	Necessity
00 to FF	None	Optional

Delimiter 2

Setting	Factory Default	Necessity
00 to FF	None	Optional

Once the NPort 5200 receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it out the NPort 5200's Ethernet port.

ATTENTION

Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. If the size of the serial data received is greater than 1 KB, the NPort 5200 will automatically pack the data and send it to the Ethernet. However, to use the delimiter function, you must at least enable Delimiter 1. If Delimiter 1 is left blank and Delimiter 2 is enabled, the delimiter function will not work properly.

Force transmit

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0: Disable the force transmit timeout.

1 to 65535: Forces the NPort 5200's TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame.

This parameter defines the time interval during which NPort 5200 fetches the serial data from its internal buffer. If data is incoming through the serial port, NPort 5200 stores the data in the internal buffer. NPort 5200 transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the Force transmit time interval reaches the time specified under Force transmit timeout.

The optimal Force transmit timeout depends on your application, but it must be at least larger than one character interval within the specified baud rate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

(10 (bits) / 1200 (bits/s)) * 1000 (ms/s) = 8.3 ms.

Therefore, you should set Force transmit timeout to be larger than 8.3 ms, so in this case, it must be greater than or equal to 10 ms.

If the user wants to send a series of characters in the same packet, the serial device attached to NPort 5200 should send that series of characters during a time interval less than the Force transmit timeout for NPort 5200, and the total length of data must be less than or equal to NPort 5200's internal buffer size. The serial communication buffer size for NPort 5200 is 1 KB per port.

Destination IP address 1

Setting	Factory Default	Necessity
IP address range E.g., Begin: 192.168.1.1 End: 192.168.1.10	Begin: Empty End: Empty Port: 4001	Required

Destination IP address 2/3/4

Setting	Factory Default	Necessity
IP address range E.g., Begin: 192.168.1.11 End: 192.168.1.20	Begin: Empty End: Empty Port: 4001	Optional

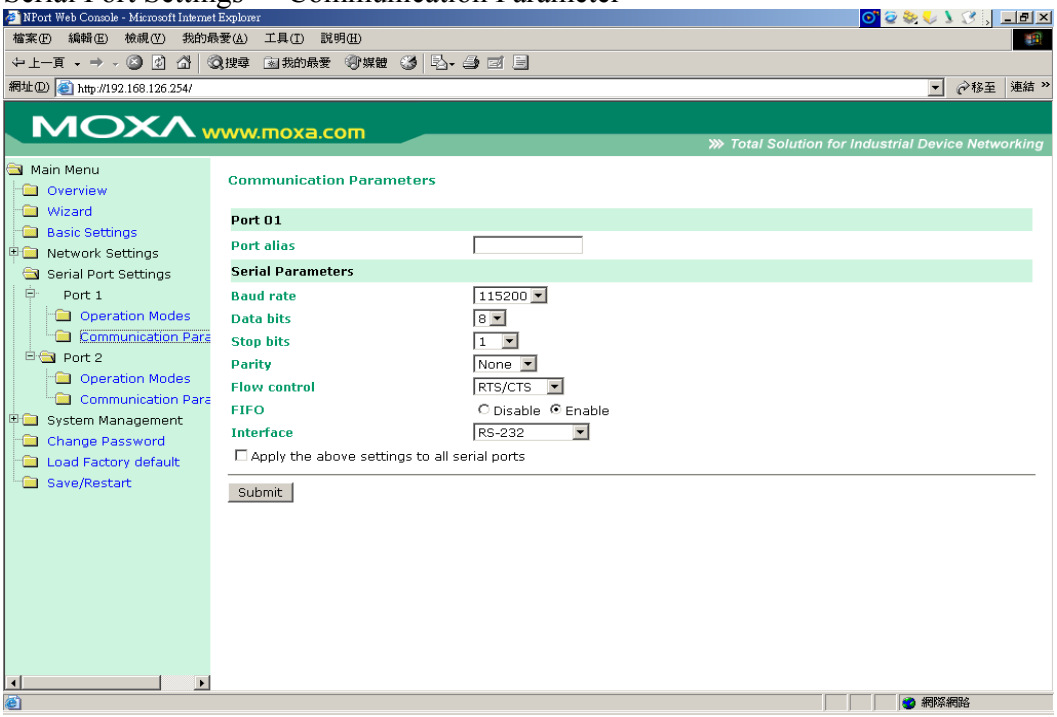
Local listen port

Setting	Factory Default	Necessity

1 to 65535	4001	Required

The UDP port that NPort 5200 listens to, and that other devices must use to contact NPort 5200. To avoid conflicts with well known UDP ports, the default is set to 4001.

Serial Port Settings -> Communication Parameter



Port alias

Setting	Factory Default	Necessity
1 to 15 characters (E.g., PLC-No.1)	None	Optional

"Port alias" is included to allow easy identification of the serial devices that are connected to NPort 5200's serial port.

Serial Parameters

ATTENTION

Check the serial communication parameters in your Serial Device's user's manual. You should set up NPort 5200's serial parameters with the same communication parameters used by your serial devices.

Baud rate

Setting	Factory Default	Necessity
50 bps to 115.2 Kbps	115.2 Kbps	Required

Data bits

Setting	Factory Default	Necessity
5, 6, 7, 8	8	Required

When the user sets Data bits to 5 bits, the Stop bits setting will automatically change to 1.5 bits.

Stop bits

Setting	Factory Default	Necessity
1, 2	1	Required

Stop bits will be set to 1.5 when Data bits is set to 5 bits.

Parity

Setting	Factory Default	Necessity
None, Even, Odd, Space, Mark	None	Required

Flow control

Setting	Factory Default	Necessity
None, RTS/CTS, DTR/DSR, Xon/Xoff	RTS/CTS	Required

FIFO

Setting	Factory Default	Necessity
Enable, Disable	Enable	Required

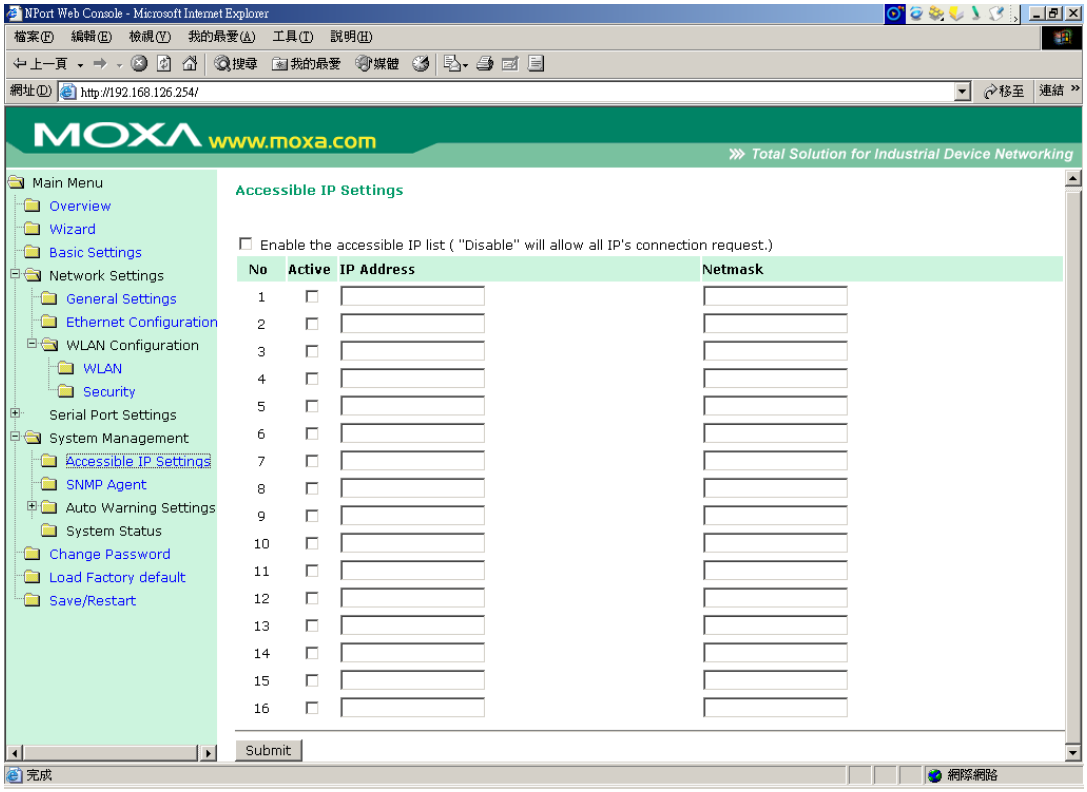
NPort 5200's serial ports provide a 16-byte FIFO both in the Tx and Rx directions. To prevent data loss during communication, disable the FIFO setting when your serial device does not have a FIFO.

Interface

Model	Port	Settings	Factory Default	Necessity
NPort W2250	2	RS-232/422/485	RS-232	Required
NPort W2150	1	RS-232/422/485	RS-232	Required

System Management

System Management -> Accessible IP Settings



NPort 5200 uses an IP address based filtering method to control access to itself.

Accessible IP Settings allows you to add or block remote host IP addresses to prevent unauthorized access. Access to NPort 5200 is controlled by IP address. That is, if a host's IP address is in the accessible IP table, then the host will be allowed to access the NPort 5200. You can allow one of the following cases by setting the parameter.

- **Only one host with a specific IP address can access the NPort 5200**

  Enter "IP address/255.255.255.255" (e.g., "192.168.1.1/255.255.255.255").

- **Hosts on a specific subnet can access the NPort 5200**

  Enter "IP address/255.255.255.0" (e.g., "192.168.1.0/255.255.255.0").

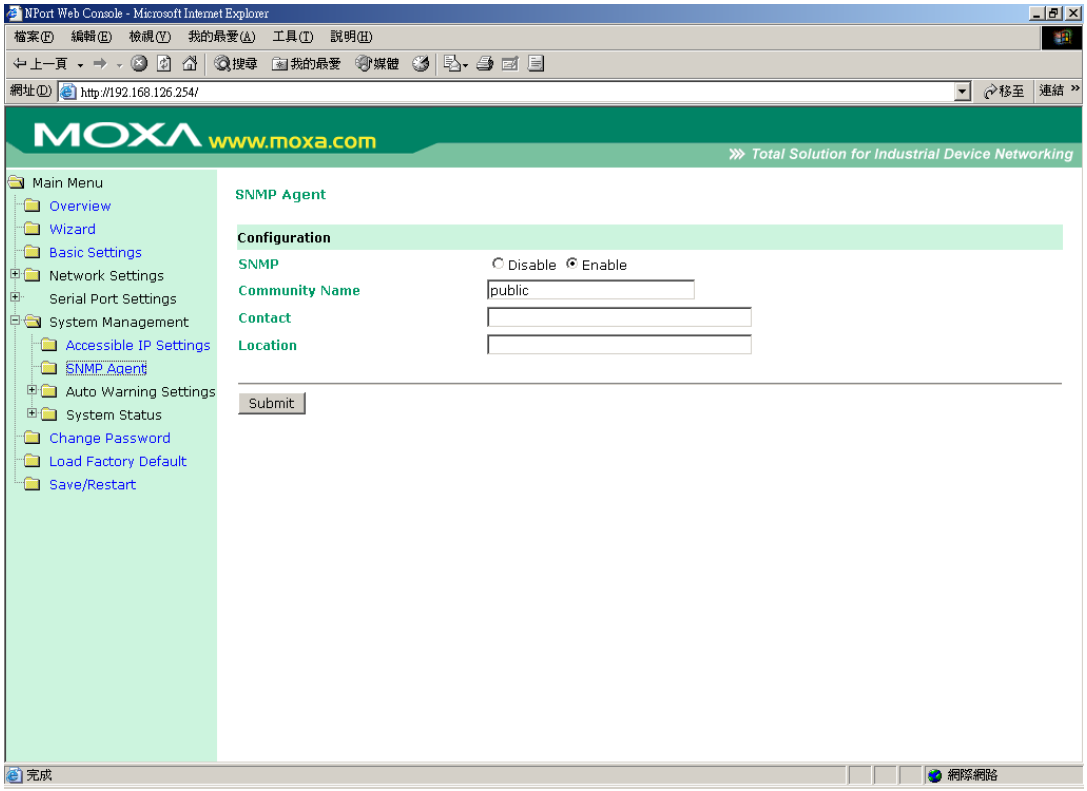
- **Any host can access the NPort 5200**

  Disable this function by un-checking the "Enable the accessible IP list" checkbox. Refer to the following table for more configuration examples.

Allowable Hosts	Input format

Any host	Disable
192.168.1.120	192.168.1.120 / 255.255.255.255
192.168.1.1 to 192.168.1.254	192.168.1.0 / 255.255.255.0
192.168.0.1 to 192.168.255.254	192.168.0.0 / 255.255.0.0
192.168.1.1 to 192.168.1.126	192.168.1.0 / 255.255.255.128
192.168.1.129 to 192.168.1.254	192.168.1.128 / 255.255.255.128

System Management -> SNMP Agent



If you want to enable SNMP Agent function , please select enable option. And entry Community Name ,ex. ”public”.

Community name

Setting	Factory Default	Necessity
1 to 39 characters (E.g., Support, 886-89191230 #300)	public	Optional

A community name is a plain-text password mechanism that is used to weakly authenticate queries to agents of managed network devices.

Contact

Setting	Factory Default	Necessity

1 to 39 characters (E.g., Support, 886-89191230 #300)	None	Optional

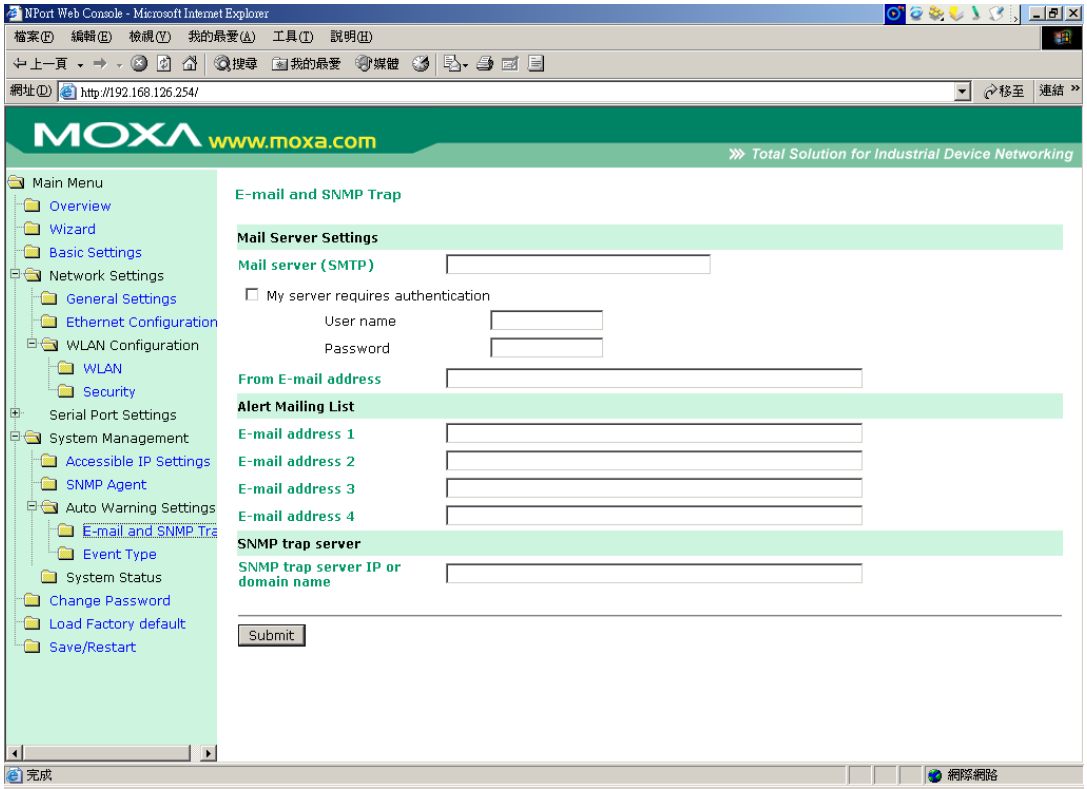
The SNMP contact information usually includes an emergency contact name and telephone or pager number.

Location

Setting	Factory Default	Necessity
1 to 39 characters (E.g., Floor 1, office 2)	None	Optional

Specify the location string for SNMP agents such as NPort 5200. This string is usually set to the street address where the NPort 5200 is physically located.

System Management -> Auto Warning Settings -> E-mail and SNMP Trap



Mail Server

Mail server

Setting	Factory Default	Necessity
IP Address or Domain Name	None	Optional

User name

Setting	Factory Default	Necessity

1 to 15 characters	None	Optional

Password

Setting	Factory Default	Necessity
1 to 15 characters	None	Optional

From E-mail address

Setting	Factory Default	Necessity
1 to 63 characters	None	Optional

E-mail address 1/2/3/4

Setting	Factory Default	Necessity
1 to 63 characters	None	Optional

ATTENTION

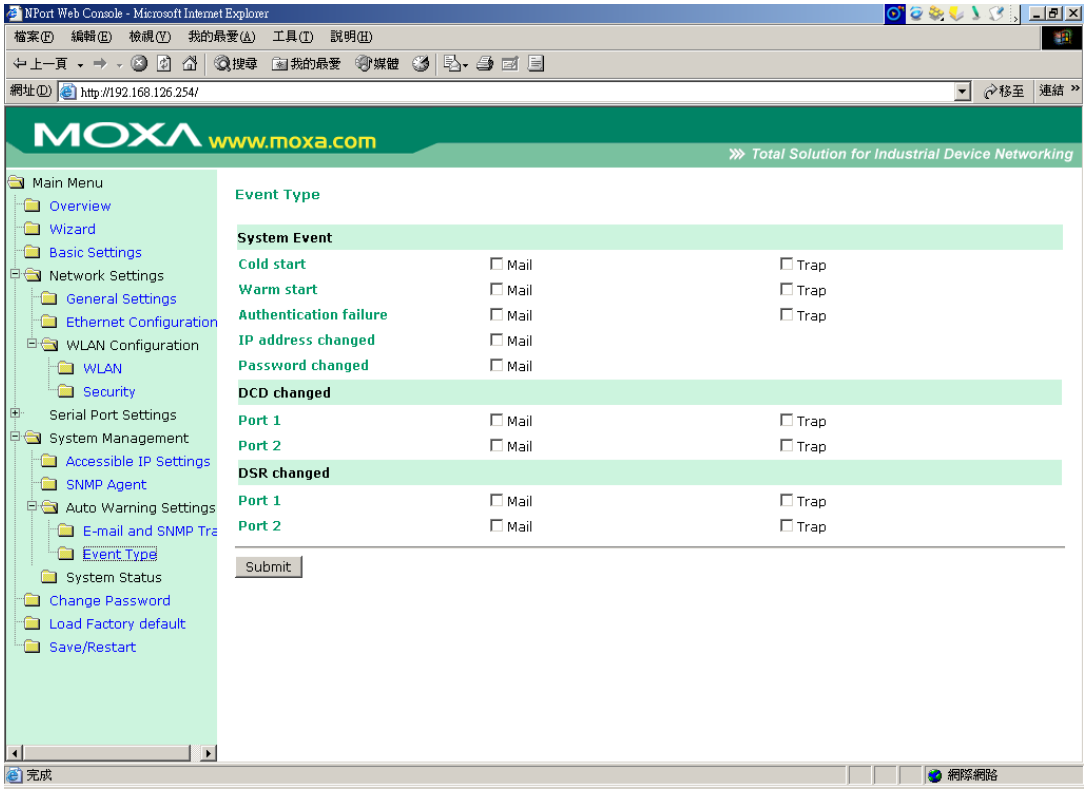
Consult your Network Administrator or ISP for the proper mail server settings. The Auto warning function may not work properly if it is not configured correctly. NPort W2250/W2150 SMTP AUTH supports LOGIN, PLAIN, CRAM-MD5 (RFC 2554).

SNMP Trap Server

SNMP trap server IP or domain name

Setting	Factory Default	Necessity
IP address or Domain Name	None	Optional

System Management -> Auto Warning Settings -> Event Type



Cold start

This refers to starting the system from power off (contrast this with warm start). When performing a cold start, NPort W2250/W2150 will automatically issue an Auto warning message by e-mail, or send an SNMP trap after booting up.

Warm start

This refers to restarting the computer without turning the power off. When performing a warm start, NPort W2250/W2150 will automatically send an e-mail, or send an SNMP trap after rebooting.

Authentication failure

The user inputs a wrong password from the Console or Administrator. When authentication failure occurs, NPort W2250/W2150 will immediately send an e-mail or send an SNMP trap.

IP address changed

The user has changed NPort W2250/W2150's IP address. When the IP address changes, NPort W2250/W2150 will send an e-mail with the new IP address before NPort W2250/W2150 reboots. If the NPort W2250/W2150 is unable to send an e-mail message to the mail server within 15 seconds, NPort W2250/W2150 will reboot anyway, and abort the e-mail auto warning.

Password changed

The user has changed NPort W2250/W2150's password. When the password changes,

NPort W2250/W2150 will send an e-mail with the password changed notice before NPort W2250/W2150 reboots. If the NPort W2250/W2150 is unable to send an e-mail message to the mail server within 15 seconds, NPort W2250/W2150 will reboot anyway, and abort the e-mail auto warning.

DCD changed

The DCD (Data Carrier Detect) signal has changed, also indicating that the modem connection status has changed. For example, a DCD change to high also means "Connected" between local modem and remote modem. If the DCD signal changes to low, it also means that the connection line is down.

When the DCD changes, NPort W2250/2150 will immediately send an e-mail or send an SNMP trap.

DSR changed

The DSR (Data Set Ready) signal has changed, also indicating that the data communication equipment's power is off. For example, a DSR change to high also means that the DCE is powered ON. If the DSR signal changes to low, it also means that the DCE is powered off.

When the DSR changes, NPort W2250/2150 will immediately send an e-mail or send an SNMP trap.

Mail

Setting	Factory Default	Necessity
Enable, Disable	Disable	Optional

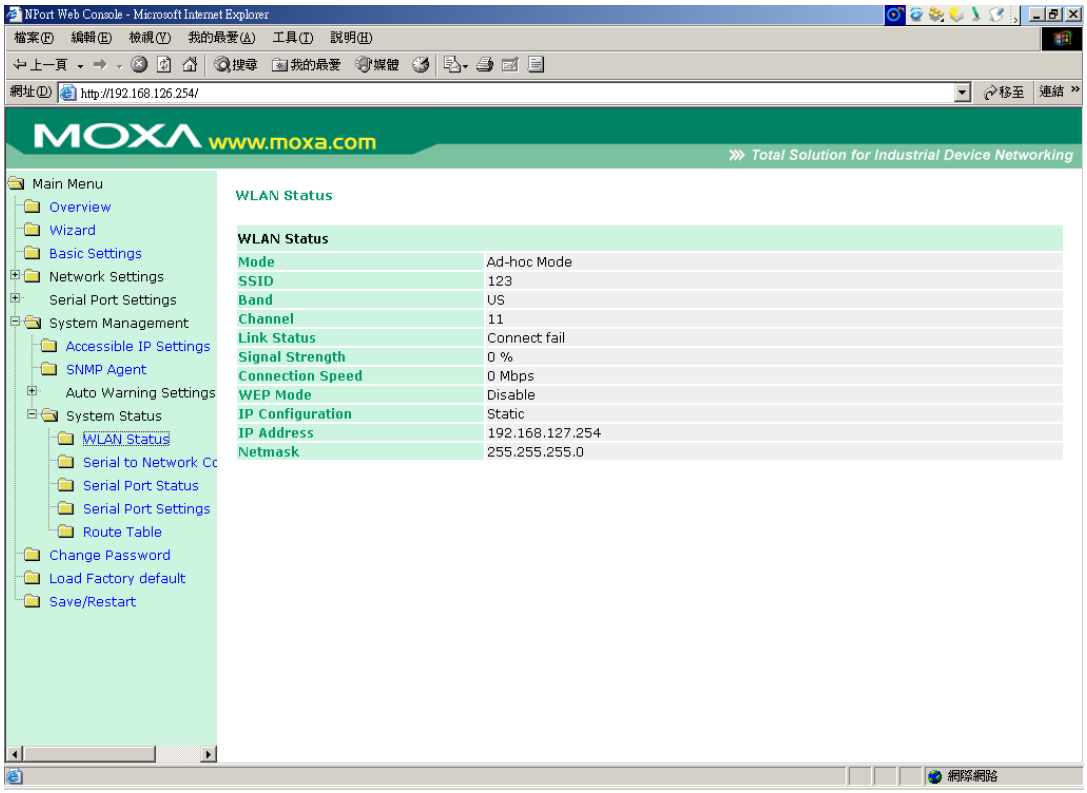
This feature helps the administrator manage how the NPort W2250/W2150 sends e-mail to pre-defined e-mail boxes when the enabled events—such as Cold start, Warm start, Authentication failure, etc.—occur. To configure this feature, click on the Event Type Mail checkbox.

Trap

Setting	Factory Default	Necessity
Enable, Disable	Disable	Optional

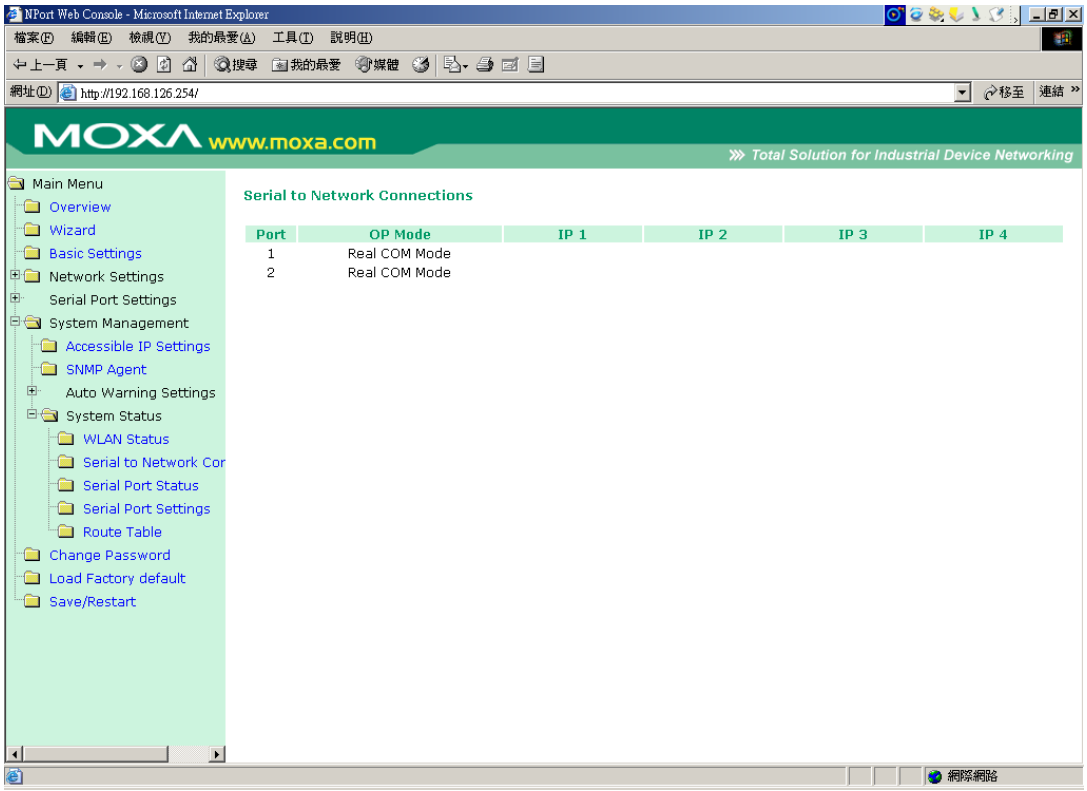
This feature helps the administrator manage how the NPort W2250/W2150 sends SNMP Trap to a pre-defined SNMP Trap server when the enabled events—such as Cold start, Warm start, Authentication failure, etc.—occur. To configure this feature, click on the Event Type Trap checkbox.

System Management -> System Status -> WLAN Status



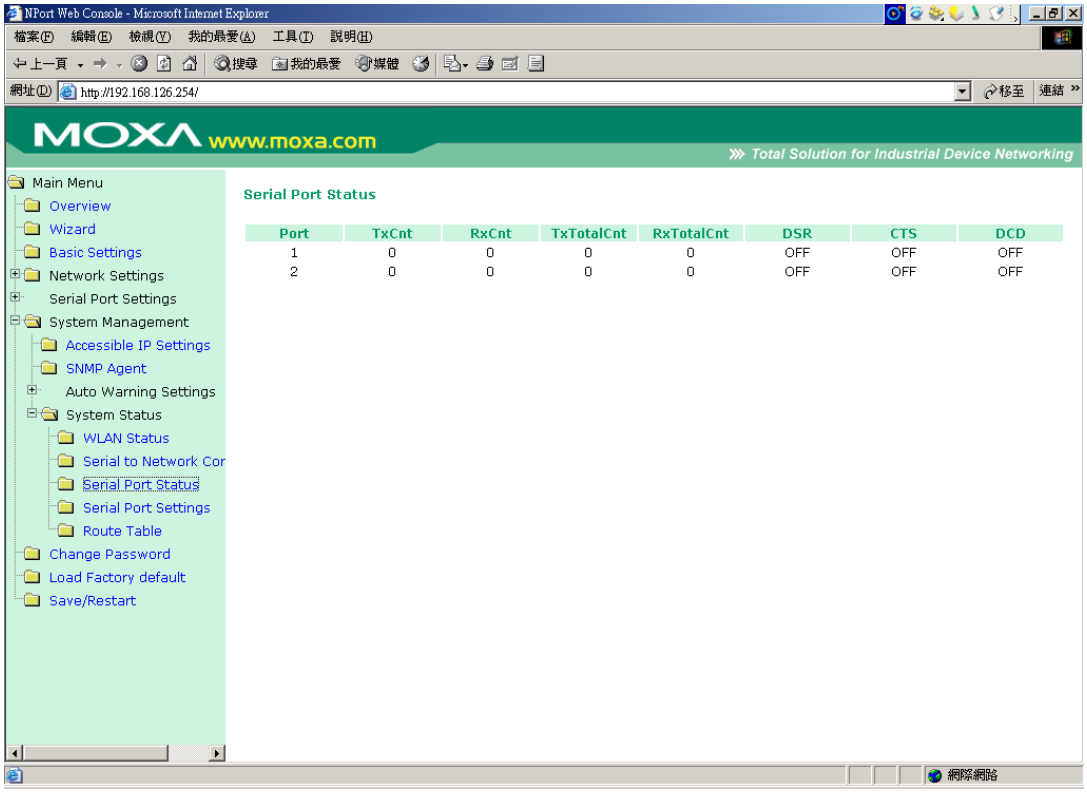
You can check WLAN Mode,SSID,Channel,WEP Mode…etc.status.

System Management -> System Status -> Serial to Network Connections



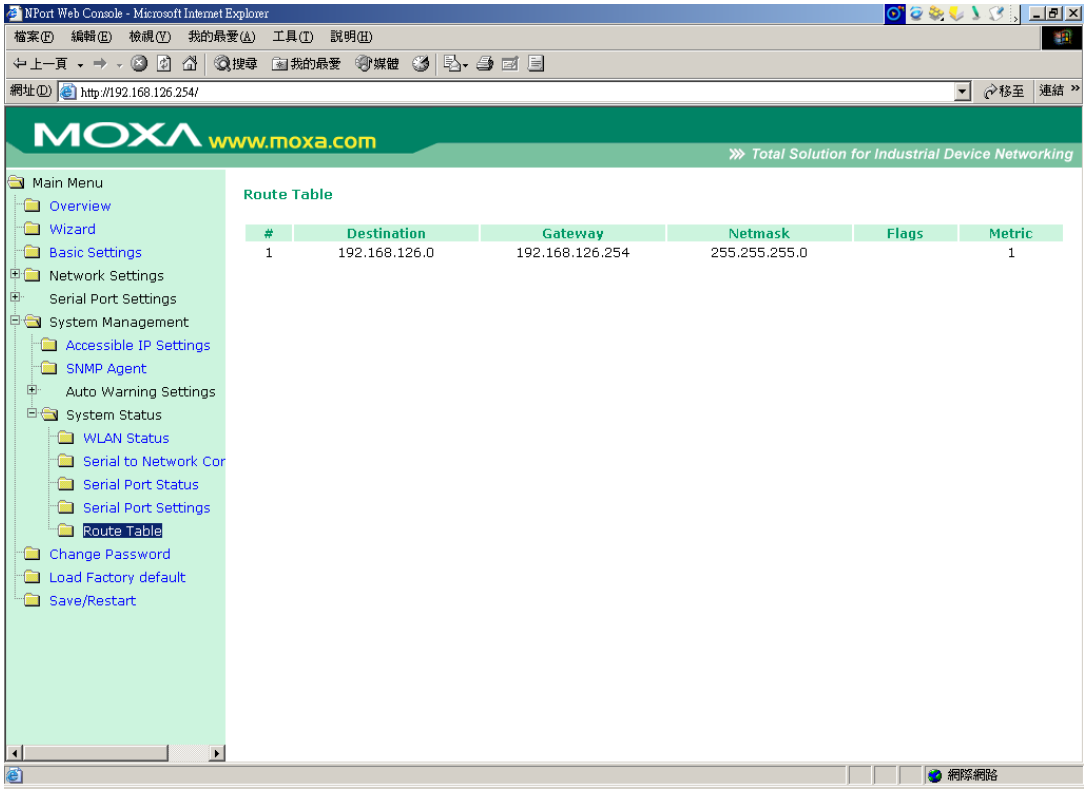
You can check Network Operation Mode…etc.

System Management -> System Status -> Serial Port Status



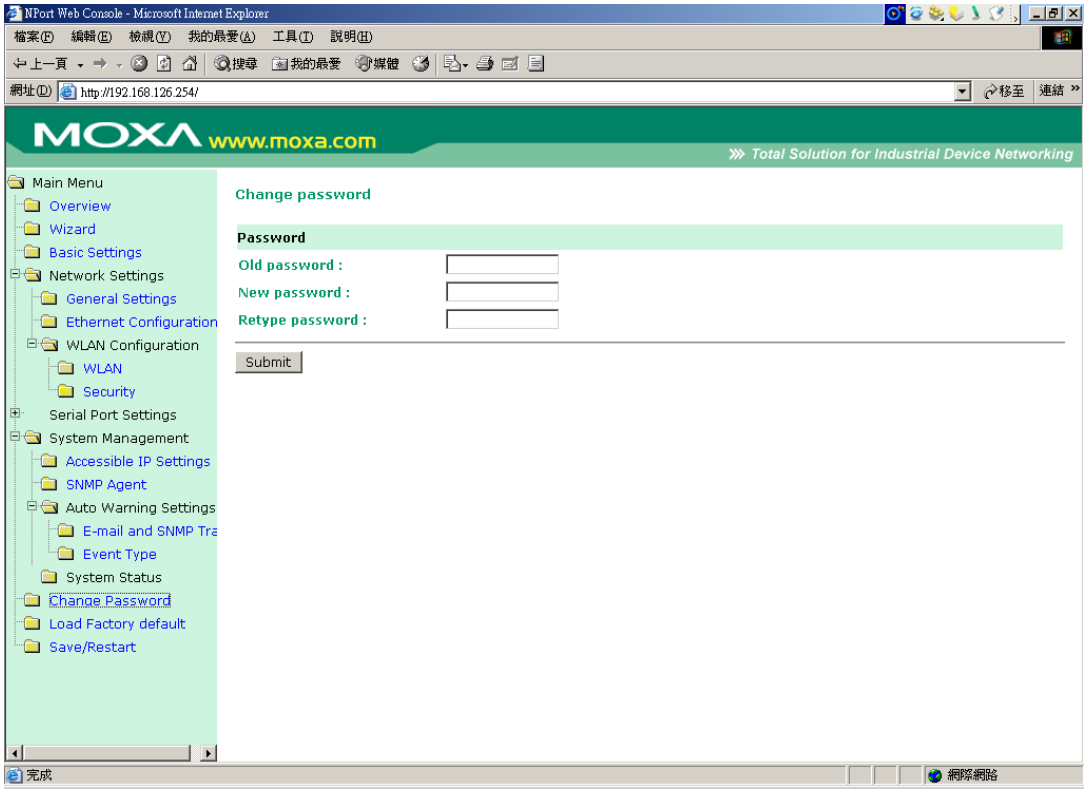
You can check Serial Port ,Tx ,Rx ,DSRCTS,DCD…etc.status.

System Management -> System Status -> Route Table



You can check Route Table status.

Change Password

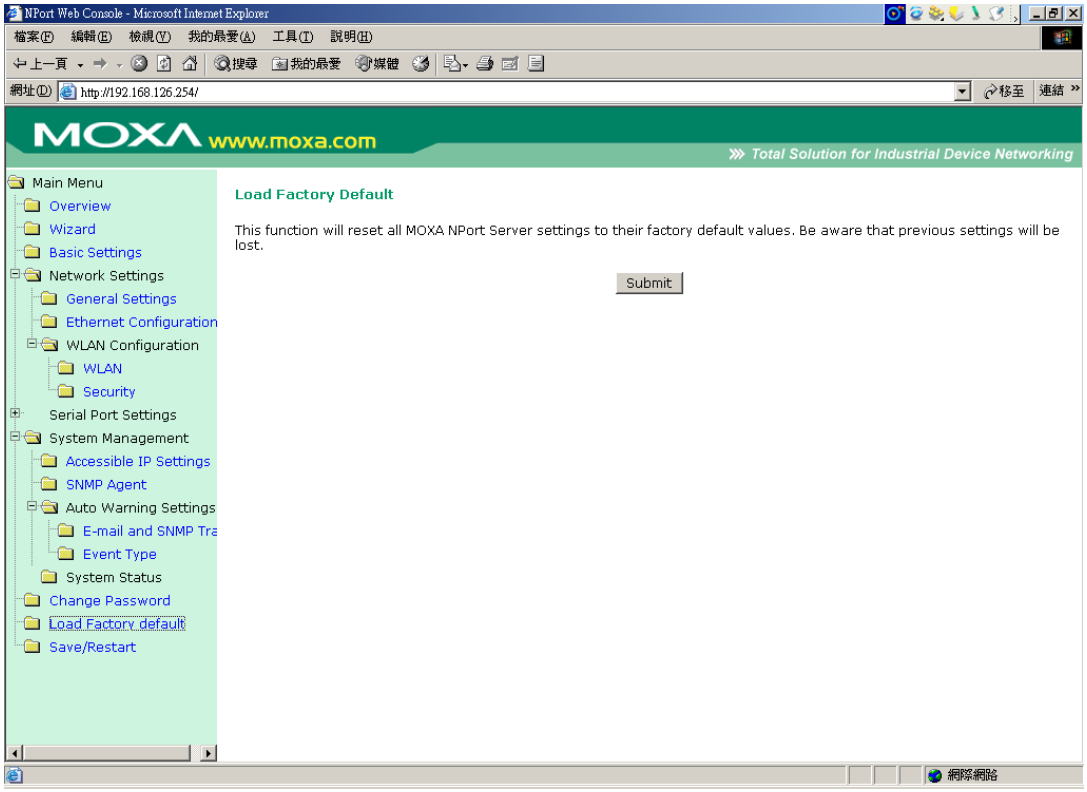


Input the “Old password” and “New password” to change the password. Leave the password boxes blank to erase the password. If the password is erased, then NPort W2250/W2150 will not have password protection.

ATTENTION

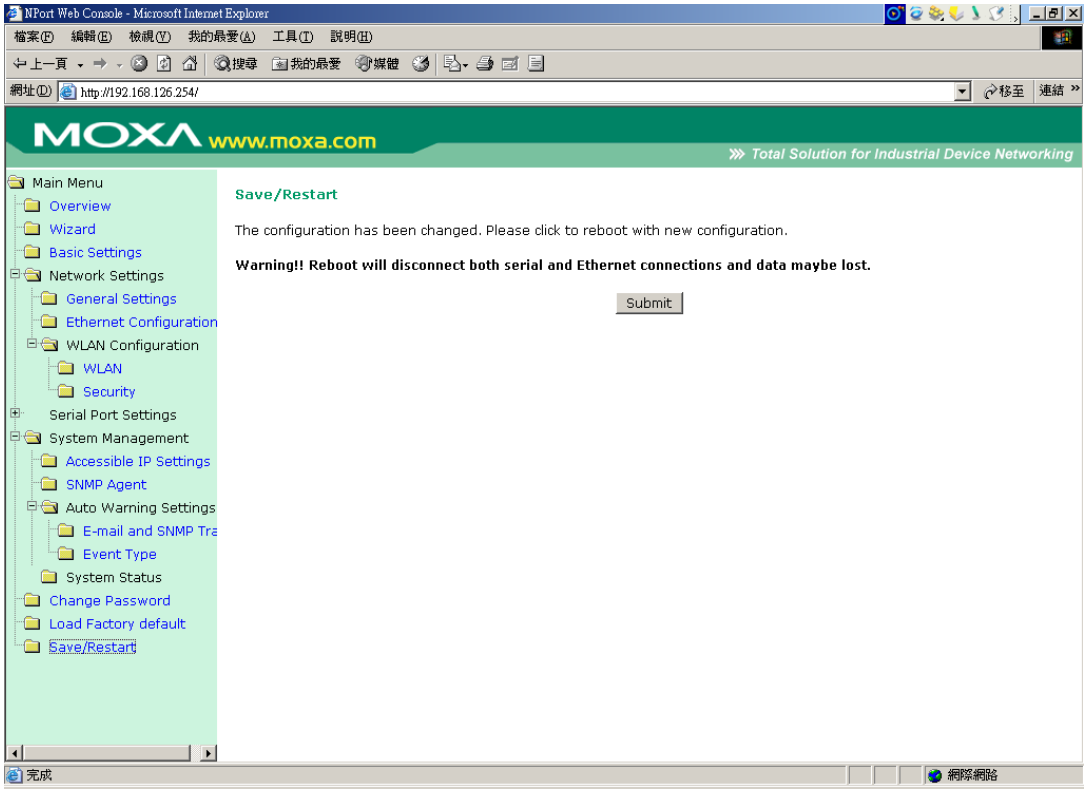
If you forget the password, the ONLY way to configure NPort W2250/W2150 is by using the Reset button on NPort W2250/W2150’s casing to “Load Factory Default.”
Remember to export the configuration file using Windows Administrator when you finish the configuration. By using the Import function of Windows Administrator, your configuration can be re-loaded into NPort W2250/W2150 after using “Load Factory Default.” Refer to Chapter 6 for more details about the Export and Import function.

Load Factory Default



This function will reset all of NPort W2250/W2150’s settings to the factory default values. Be aware that previous settings will be lost.

Save/Restart



After changed configuration ,you have to save and reboot with new configuration.

Chapter 6 Install and Configure Software

The following topics are covered in this chapter:

- **Overview**
- **Install NPort COM Driver**
- **Install NPort Search Utility**
- **Configuration NPort COM Driver**
- **Configuration NPort Search Utility**
- **Installation for Real TTY and Fixed TTY**
- **Upgrade Firmware**

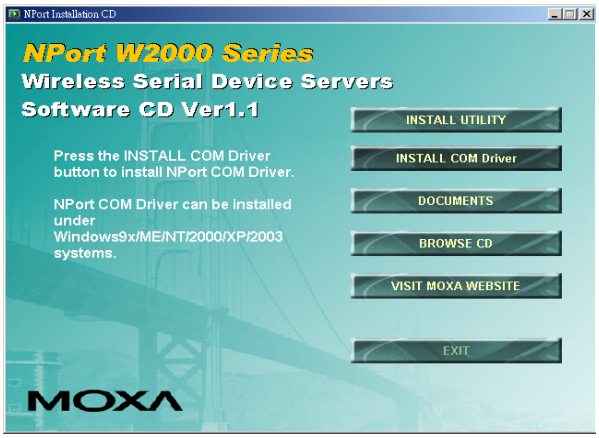
Overview

We understand the importance of software as the foundation of your application, and with this in mind, we provide auto-run CD to let you easily install and configure your NPort W 2250/2150 products . The auto-run CD include NPort COM Driver , NPort Search Utility and Manual, allows COM mapping, and provides broadcast search and firmware upgrade.

Install NPort COM Driver

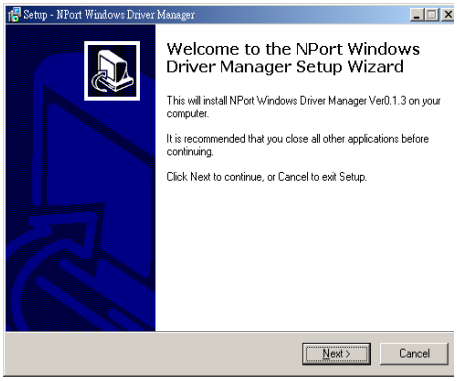
Installing NPort COM Driver

1. After insert the CD , screen will show auto-run screen , then click the Installing NPort COM Driver item.

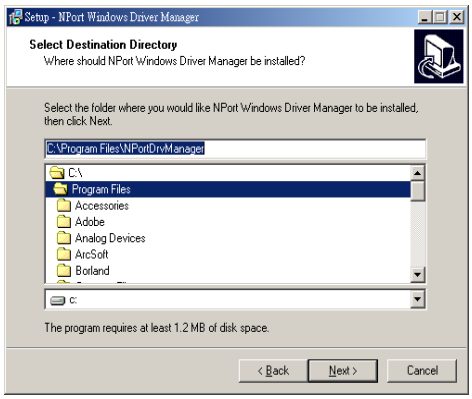


2. Once the program starts running, click on **Yes** to proceed.

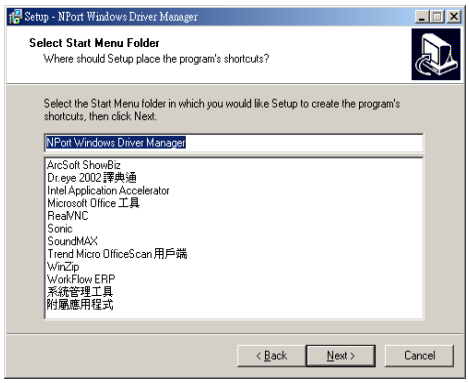
3. Click on **Next** when the **Welcome** window opens to proceed with the installation.



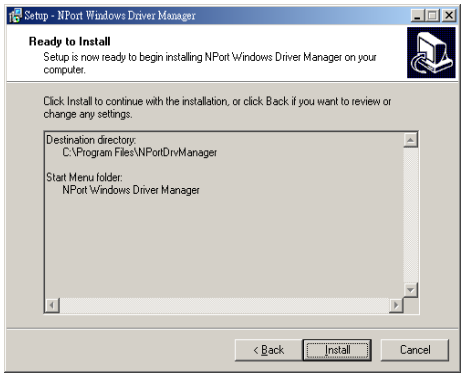
4. Click on **Next** to install program files in the default directory, or select an alternative location.



5. Click on **Next** to install the program using the default program name, or select a different name.

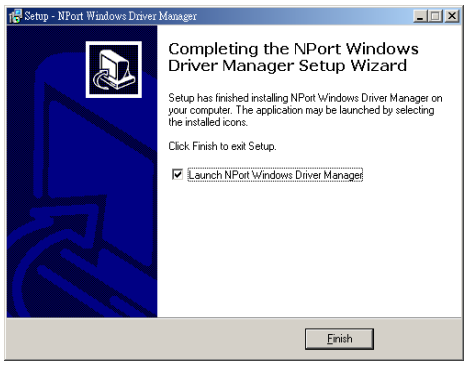


6. Click on **Install** to proceed with the installation.



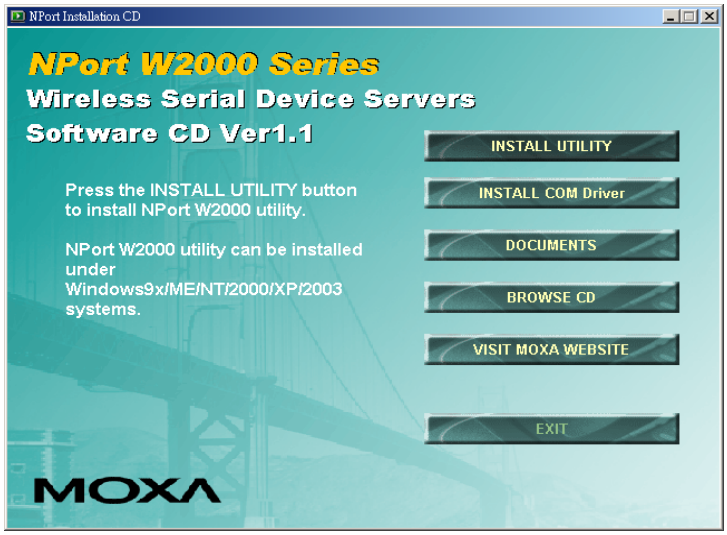
7. The **Installing** window reports the progress of the installation.

8. Click on **Finish** to complete the installation of NPort W2250/W2150 NPort COM MappingUtility.

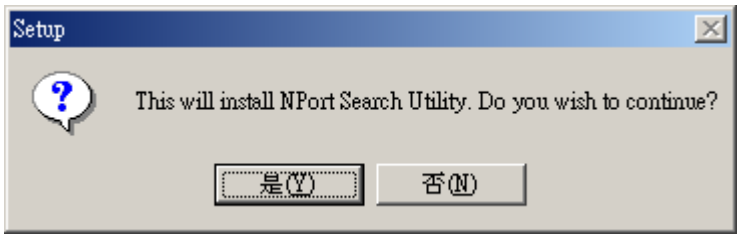


Install NPort Search Utility

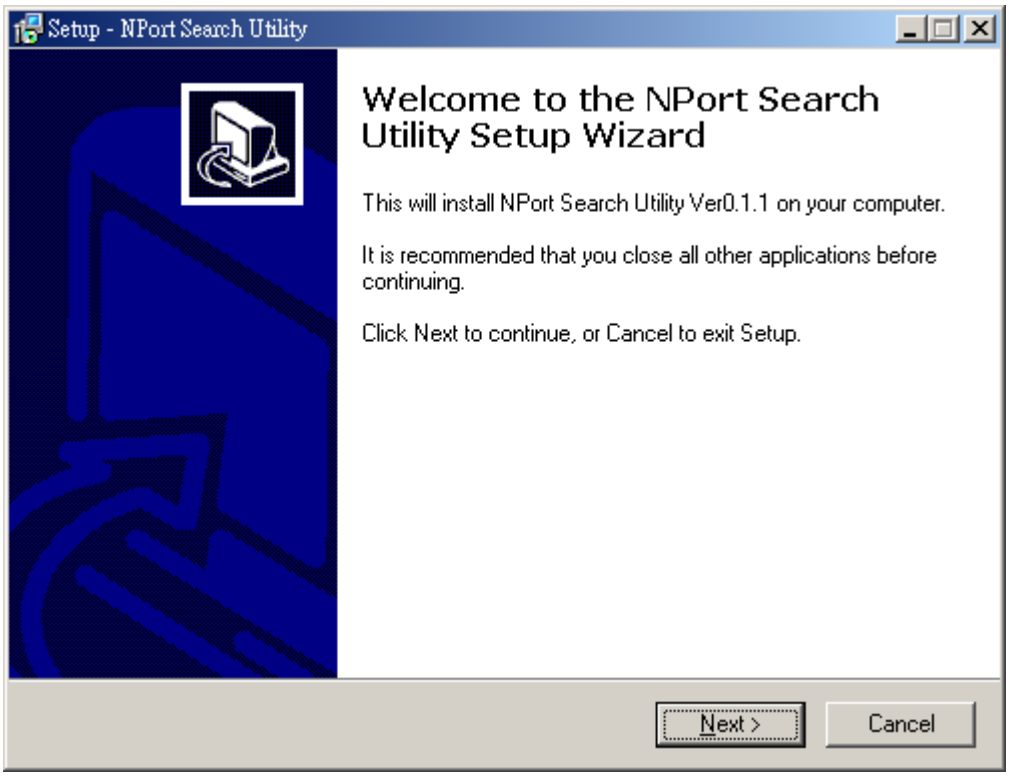
1. After insert the CD , screen will show auto-run , then click the Installing NPort Search Utility item.



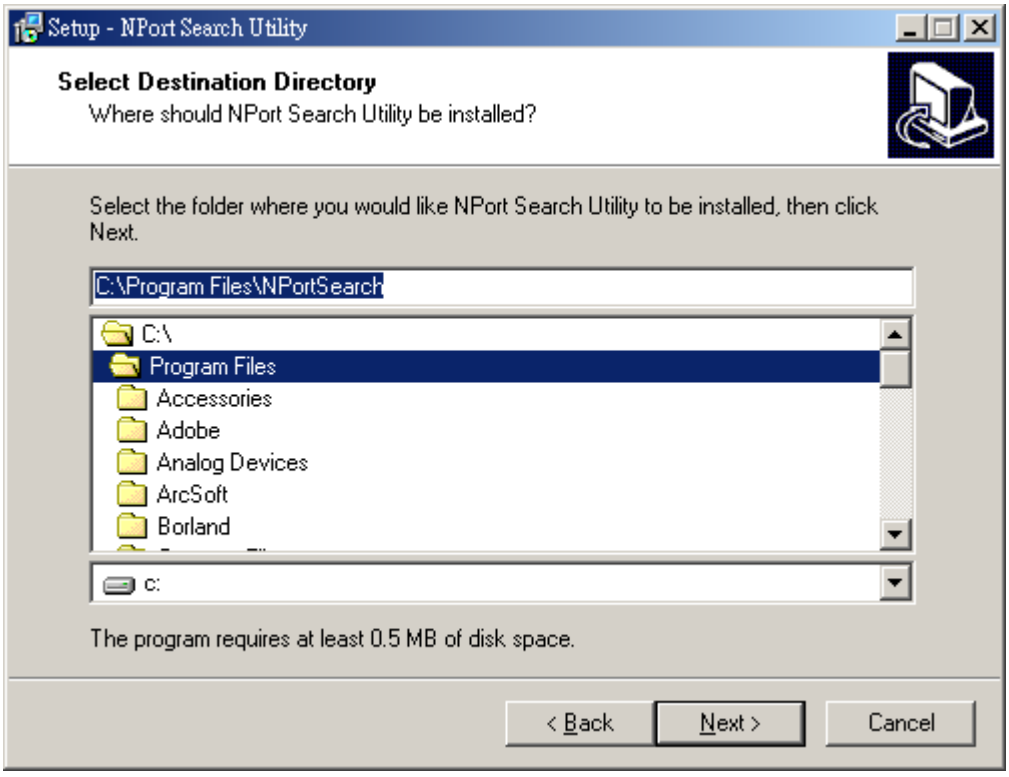
2. Once the program starts running, click on **Yes** to proceed.



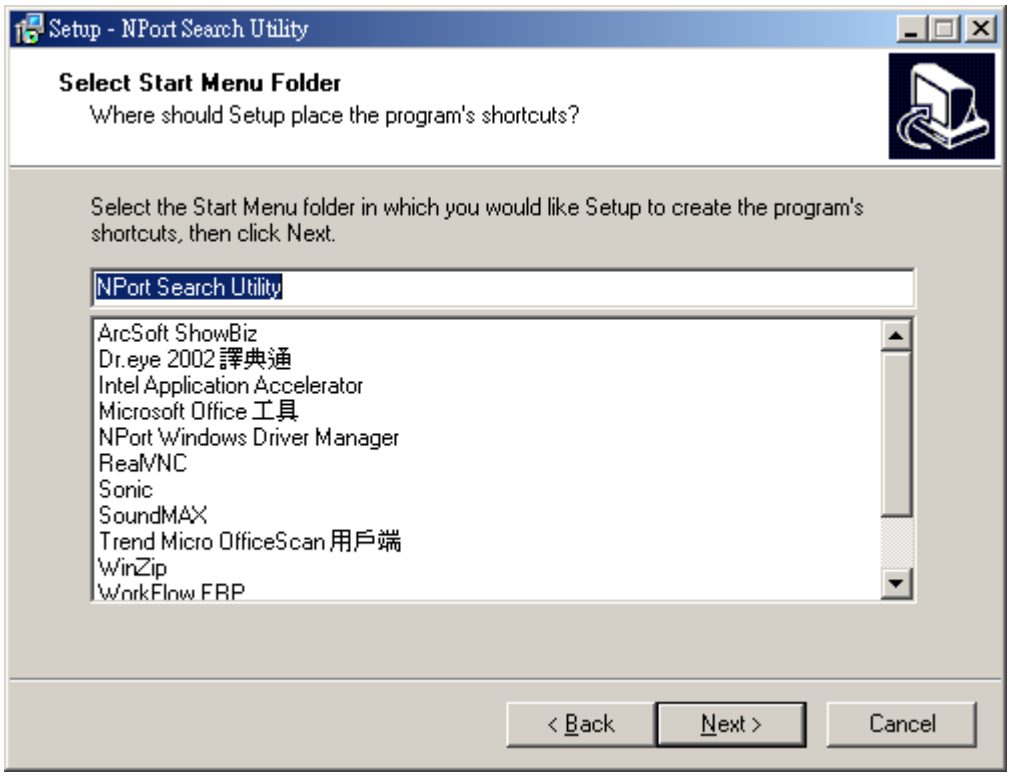
3. Click on **Next** when the **Welcome** window opens to proceed with the installation.



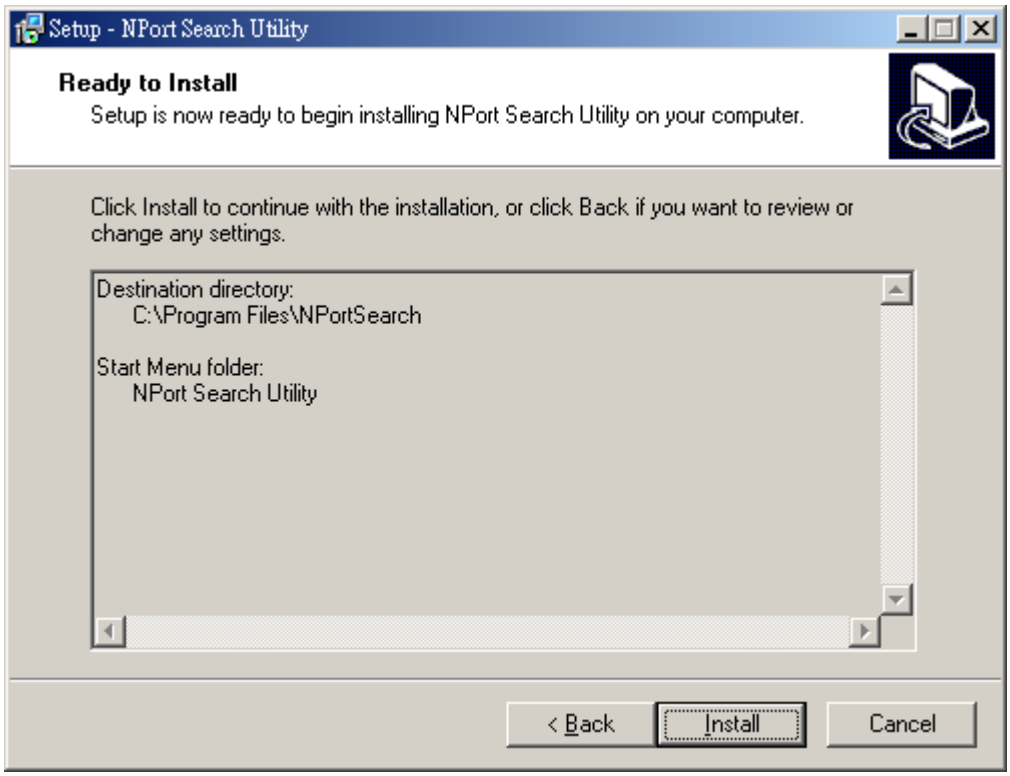
4. Click on **Next** to install program files in the default directory, or select an alternative location.



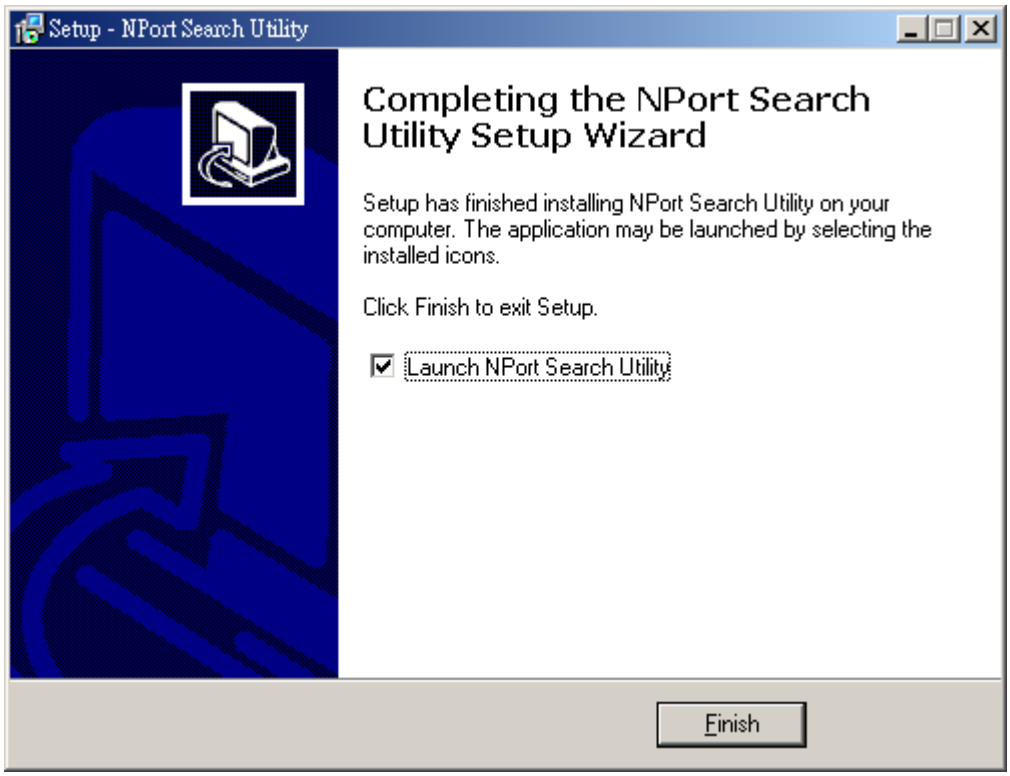
5. Click on **Next** to install the program using the default program name, or select a different name.



6. Click on **Install** to proceed with the installation.



7. The **Installing** window reports the progress of the installation.
8. Click on **Finish** to complete the installation of NPort W2250/W2150 NPort Search Utility.



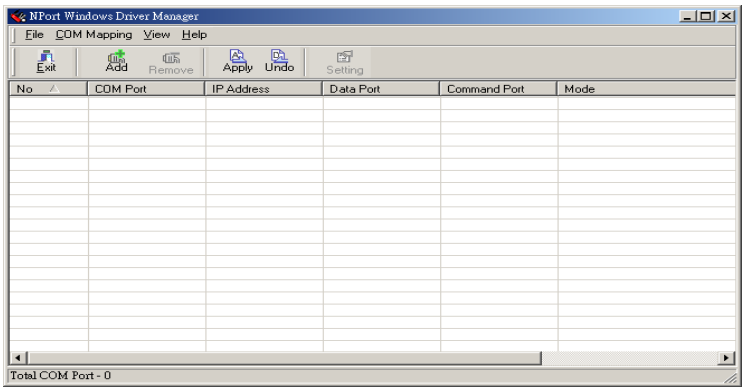
Configuration COM Mapping

NPort COM Driver comes with Windows 98/ME/2000/XP/2003 Real COM drivers. After you install NPort COM Driver, then you can set up the NPort W2250/W2150's serial port as your host's remote COM port.

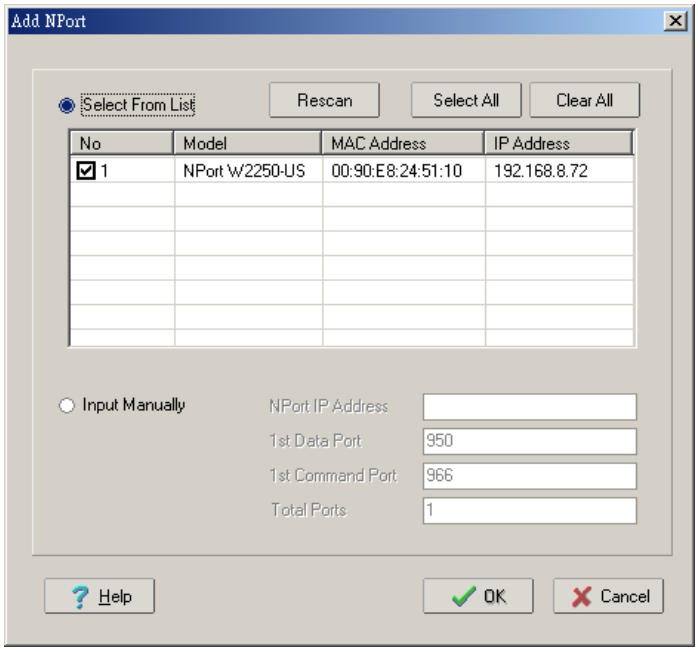
Use the following step to map COM ports:

1. Open the **COM Mapping** utility.

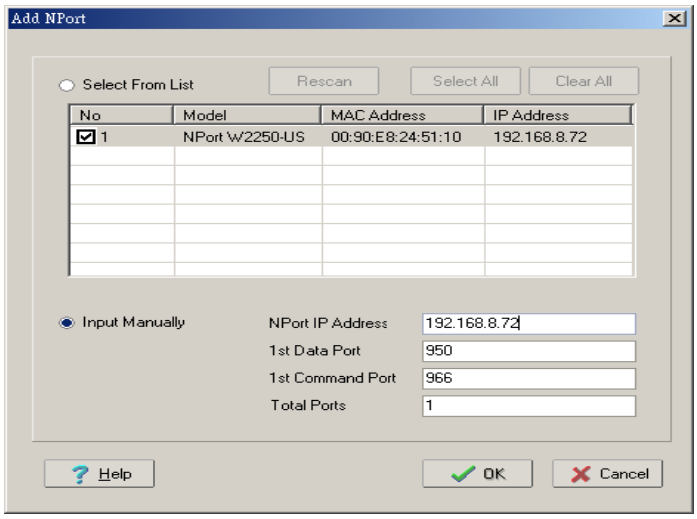
2.click "add" icon



click “Rescan” for search NPort device .

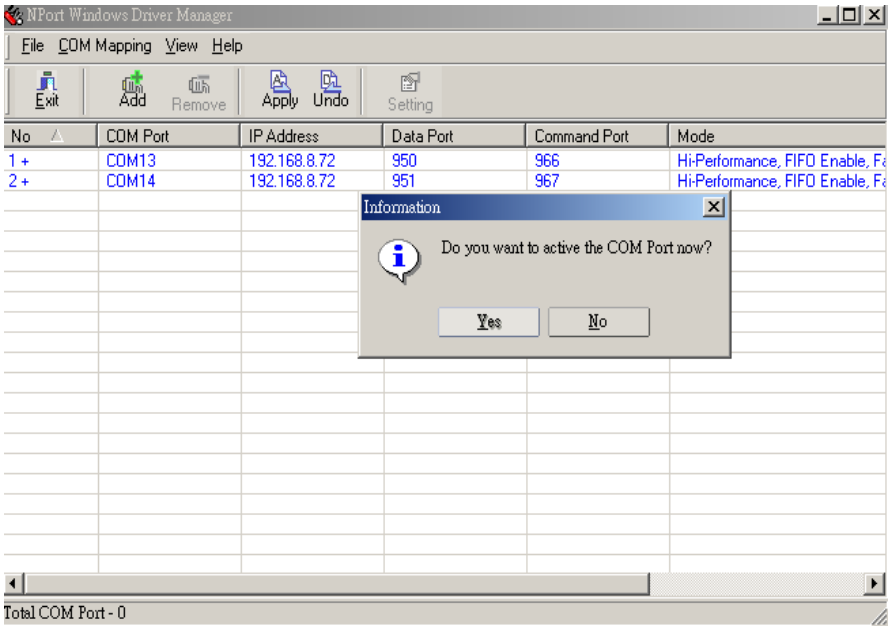


3. you can also select “input manually” . Add the target to which you would like to map COM ports.

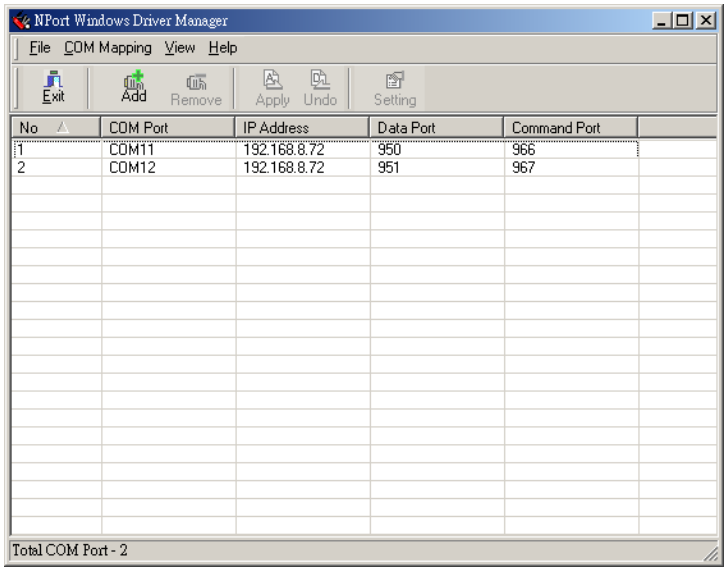


4. Click “yes” to active the COM port, or you can select “apply”

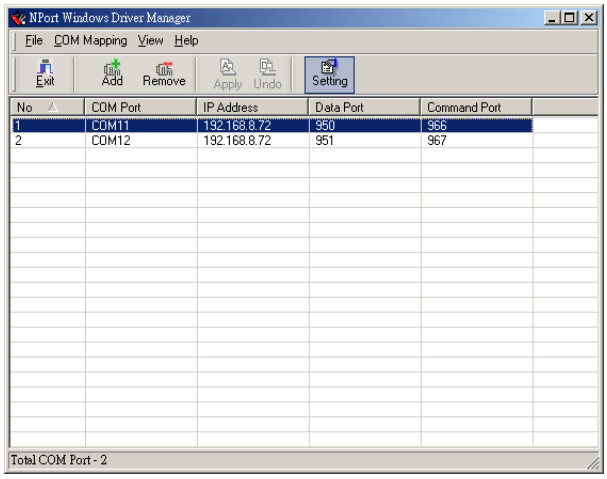
to active the COM port later. Active the COM port to save the information in the host system registry. The host computer will not have the ability to use the COM port until after Apply Change is selected.



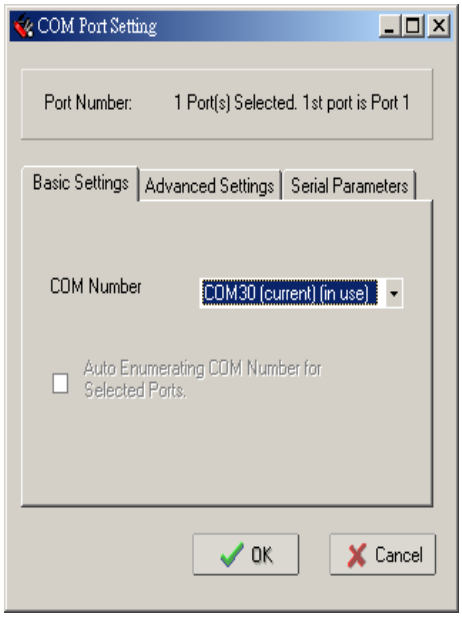
5. The word will be turned blue into black



6. Select “COM Setting” to modify COM No., default setting, etc.



7. Select the COM No.
COM ports that are “In use” or “Assigned” will also be indicated in this drop-down list.
If you select multiple serial ports or multiple NPort W2250/W2150s, remember to check the “Auto Enumerating” function to use the COM No.



8. Advanced Setting

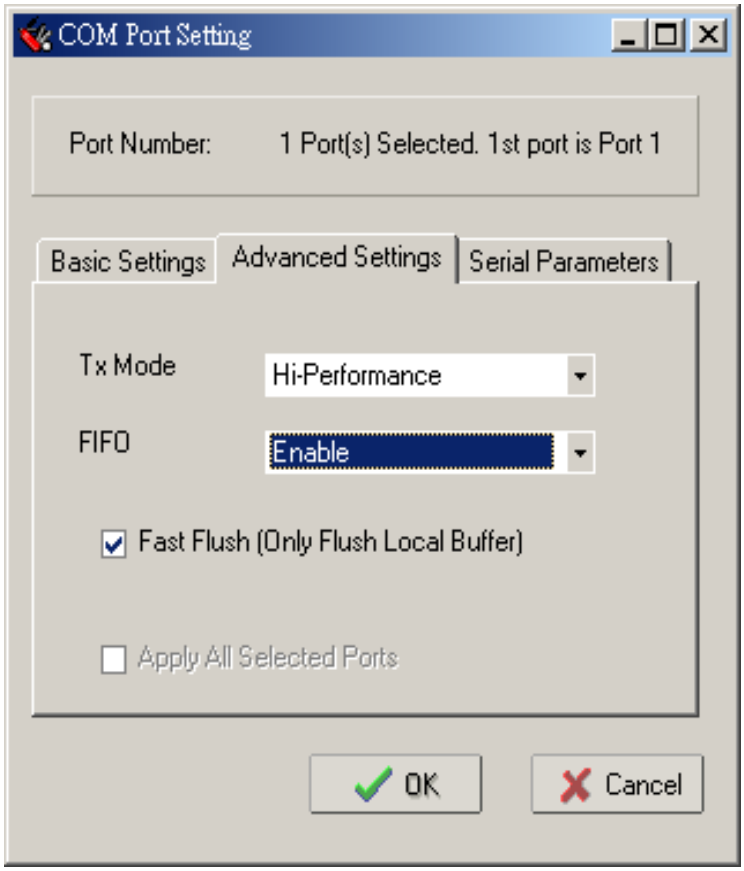
Tx Mode

Hi-performance mode is the default for Tx mode. If the driver completes sending data out to the NPort W2250/W2150, the driver will respond “Tx Empty” to the program.

Under **classical mode**, the driver will not notify the user’s program that Tx is completed until all Tx data has been sent out from the NPort W2250/W2150; this mode will cause lower throughput. If you want to ensure that all data is sent out before further processing, classical mode is recommended.

Enable/Disable Tx/Rx FIFO.

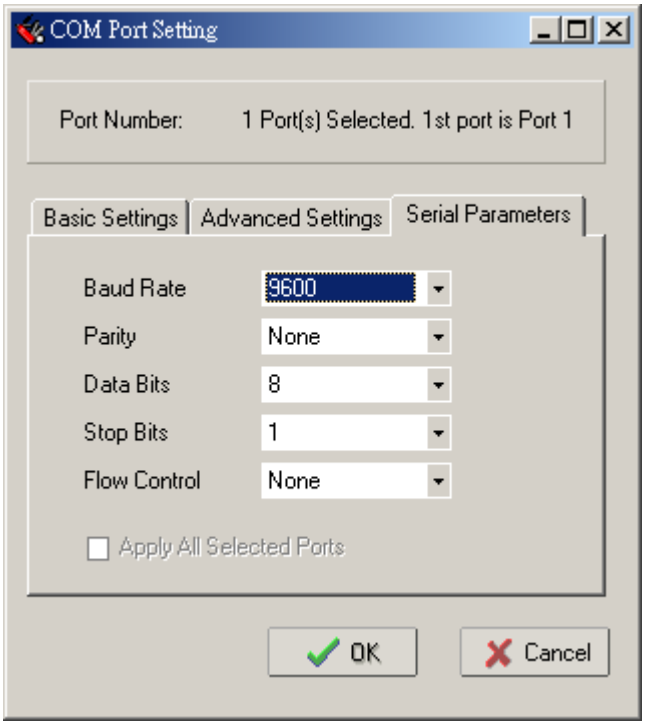
If disabled, NPort W2250/W2150 will send one byte each time the Tx FIFO becomes empty; and an Rx interrupt will be generated for each incoming byte. This will result in a faster response and lower throughput. If you want to use XON/XOFF flow control, we recommend setting FIFO to Disable.



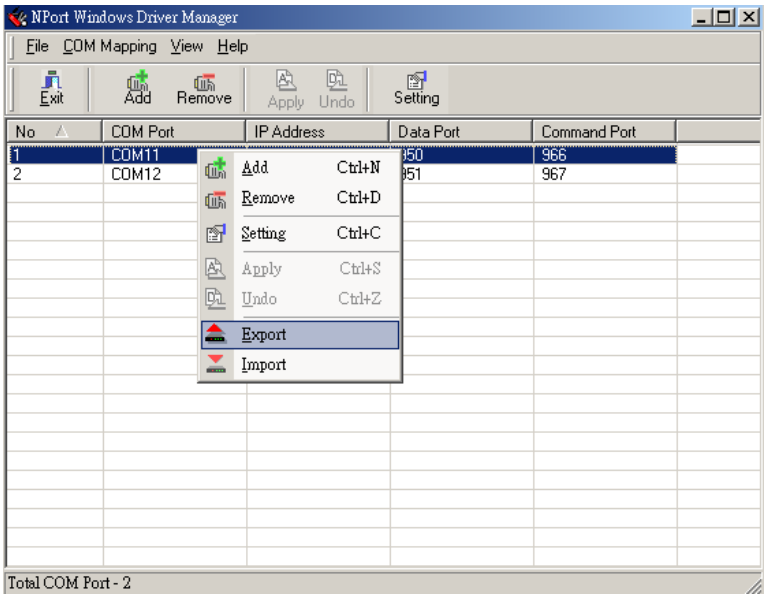
Fast Flush (only flush local buffer)

1. We have added one optional Fast Flush function to Moxa new NPort Real COM driver.
2. For some applications, the user's program will use the Win32 "PurgeComm()" function before it reads or writes data. With our design, after the program uses this Purge Comm() function, the NPort driver will keep querying NPort's firmware several times to make sure there is really no data queued in the NPort firmware buffer, rather than just flushing the local buffer. This kind of design is used because of some special considerations. However, it might take more time (about several hundred milliseconds) than a native COM1, because it needs to work via Ethernet. That's why the native COM ports on the motherboard can work fast with this function call, but NPort requires much more time. In order to accommodate other applications that require a faster response time, the new NPort driver implements a new "Fast Flush" option. Note that by default, this function is disabled.
3. To begin with, make sure there are some "PurgeComm()" functions being used in your application program. In this kind of situation, you might find that your NPort exhibits a much poorer operation performance than when using the native COM1 port. Once you have enabled the "Fast Flush" function, you can check to see if there has been an improvement in performance.
4. By default, the optional "Fast Flush" function is disabled. If you would like to enable this function, double click on the COM ports that are mapped to the NPort, and then select the "Fast Flush" checkbox. You should find that when "Fast Flush" is enabled, the NPort driver will work faster with "PurgeComm()."

9. The Serial Parameter settings shown here are the default settings when the NPort W2250/W2150 is powered on. However, the program can redefine the serial parameters to different values after the program opens the port via Win 32 API.



10. To save the configuration to a text file, select **Export COM Mapping**. You will then be able to import this configuration file to another host and use the same COM Mapping settings in the other host.

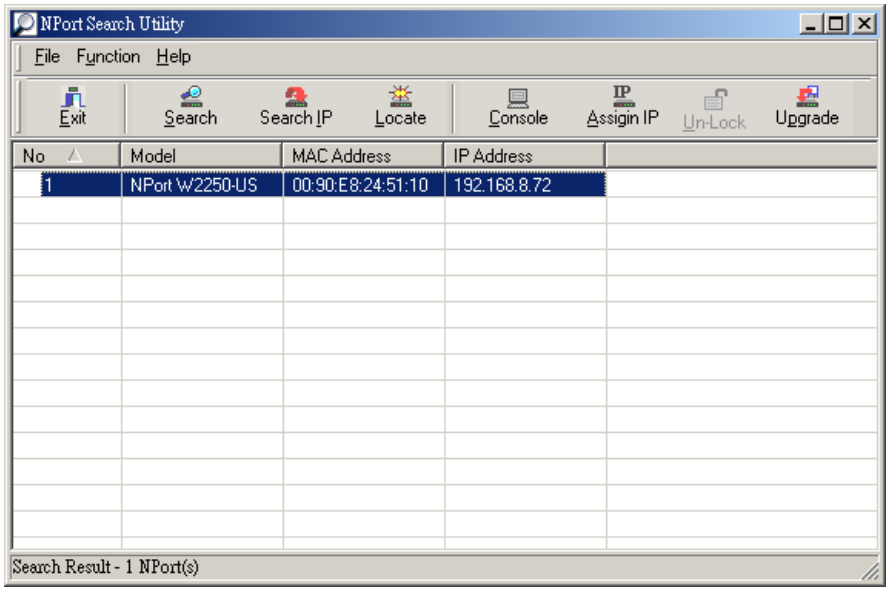


Configuration NPort Search Utility

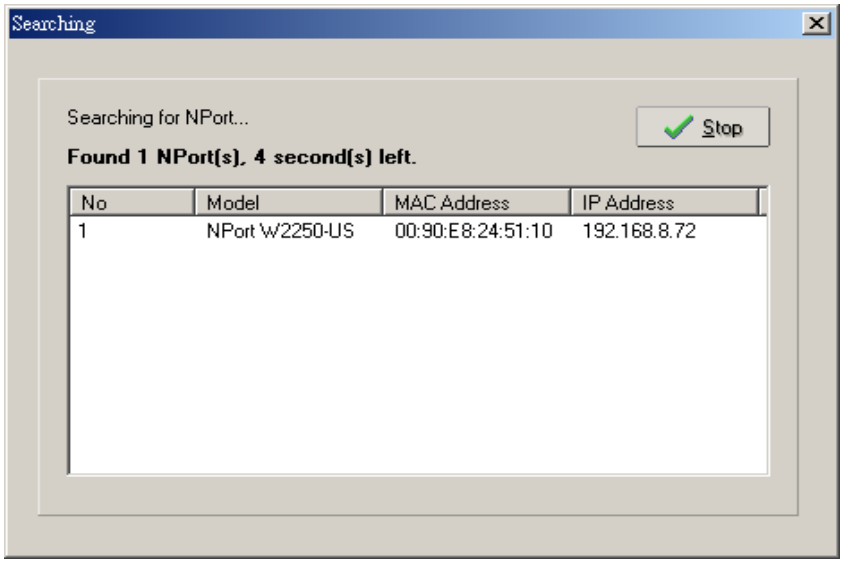
The Broadcast Search function is used to locate all NPort W2250/W2150s that are connected to the same LAN as your computer. After locate NPort W2250/W2150s, you can also change the IP address.

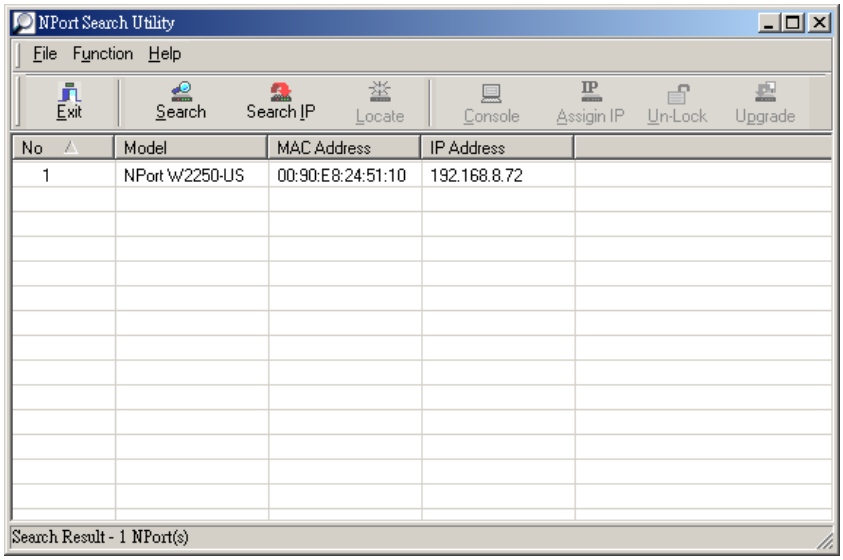
Since the Broadcast Search function searches by MAC address and not IP address, all NPort W2250/W2150s connected to the LAN will be located, regardless of whether or not they are part of the same subnet as the host.

1. Open NPort Search Utility ,click" search"

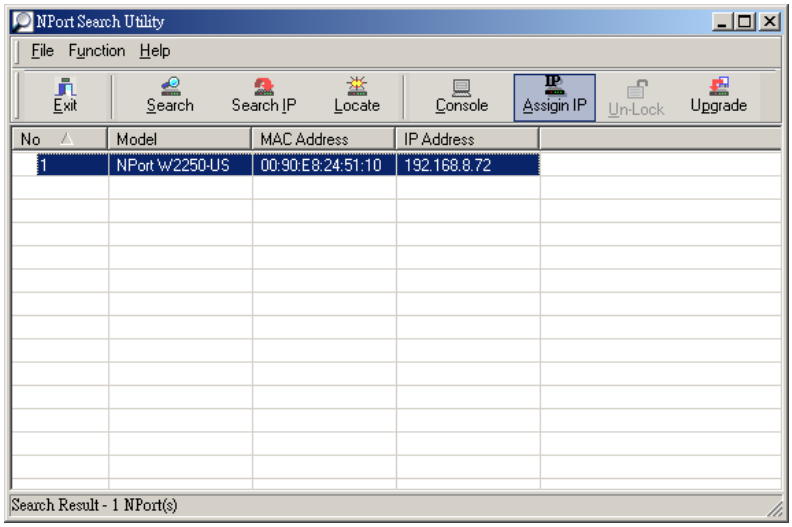


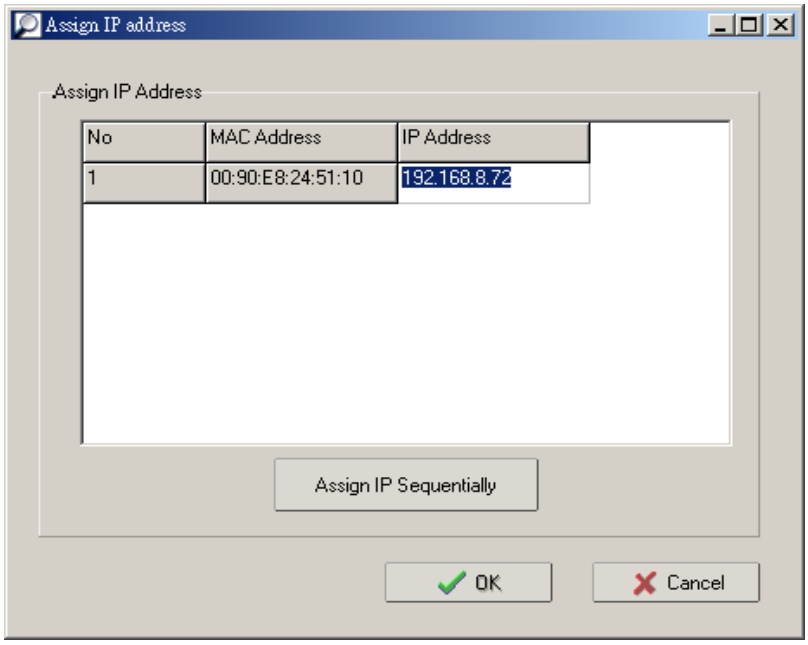
2. When the search is complete, the Broadcast Search window closes, and the NPort W2250/W2150s that were located are displayed in the window.





3. You can click “assign IP” to change the IP if you need.




Assign IP address
Assign IP Address
No
MAC Address
IP Address
1
00:90:E8:24:51:10
192.168.8.72
Assign IP Sequentially
OK
Cancel

Installation for Real TTY and Fixed TTY

<Install real TTY driver >

1. Procedure

To map NPort serial port to host tty port, you need to:

(1). Setup NPort.

Make sure the IP configuration is ok and you can access the NPort (ping, telnet...) seccussfully. Then you MUST configure the NPort serial port to "Real COM Mode".

(2). Install driver files into the host.

Refer to "3.Driver Files Installation"

(3). Map NPort serial to host tty port.

Refer to "4.Mapping TTY Ports"

2. Hardware Installation

Prior to proceed to software installation, please make sure the hardware installation is completed as user's manual illustrated. The default IP address for NPort Server is 192.168.127.254.

!!!!!!!!!!!!!!!!!!!!!! NOTE !!!!!!!!!!!!!!!!!!!!!!!!!!!!

After hardware installation, you MUST configure the NPort operating mode to "Real COM Mode".

!!!!!!!!!!!!!!!!!!!!!! NOTE !!!!!!!!!!!!!!!!!!!!!!!!!!!!

3. Driver Files Installation

a. Get the driver file from product CD-ROM or web site.

b. Login into the console as a super user (root).

c. Execute 'cd /' to go to root directory.

d. Copy the driver file npreal2xx.tgz into '/' directory.

e. Execute 'tar xvfz npreal2xx.tgz' to copy all files into the system.

f. Execute '/tmp/moxa/mxinst'.

!!!!!!!!!!!!!!!!!!!!!! NOTE !!!!!!!!!!!!!!!!!!!!!!!!!!

For RedHat AS/ES/WS and Fedora Core1, extra
argument is needed:

/tmp/moxa/mxinst SP1

!!!!!!!!!!!!!!!!!!!!!! NOTE !!!!!!!!!!!!!!!!!!!!!!!!!!

g. The shell script will install the driver files automatically.

After installing driver successfully, you can see the
several files in /usr/lib/npreal2/driver, inlcuding

- mxaddsvr (Add Server, mapping tty port)
- mxdelsvr (Delete Server, un-mapping tty port)
- mxloadsvr (Reload Server)
- mxmknod (Create device node/tty port)
- mxrmnod (Remove device node/tty port)
- mxuninst (Remove tty port and driver files)

Now you are ready to map NPort serial port into system tty port.
Please see "4.Mapping TTY Ports".

4. Mapping TTY Ports

Before mapping tty ports, you have to set the operation mode of
your NPort Product to "Real Com Mode". We provide two ways to map
tty ports.

Mapping tty ports automatically

After logging in as a super user, you can enter the directory
"/usr/lib/npreal2/driver" and then execute "mxaddsvr" program
to map the target NPort serial port to host tty ports.
The syntax of mxaddsvr is:

"mxaddsvr [NPort IP Address] [Total Ports] ([Data port] [Cmd port])"

For example1:

cd /usr/lib/npreal2/driver

```
# ./mxaddsvr 192.168.3.4 16
```

For example2:

```
# cd /usr/lib/npreal2/driver
# ./mxaddsvr 192.168.3.4 16 4001 966
```

In example1, 16 tty ports will be added with ip "192.168.3.4" and data port(950, 951, ...965), command port(966, 967, 968.., 981).
In example2, 16 tty ports will be added with ip "192.168.3.4" and data port(4001, 4002, ..4016), command port(966, 967, 968.., 981).

The following actions will be performed.

- Modify the "npreal2d.cf"
- Create tty ports in directory "/dev" with major & minor number configured in "npreal2d.cf".
- Stop and then restart the driver.

5. Remove Mapped TTY ports

Similar to "Mapping TTY Ports", we provide two ways:

Remove the mapped tty ports automatically

After logging in as root, you can enter the directory "/usr/lib/npreal2/driver" and then execute "mxdelsvr" program to delete a server. The syntax of mxdelsvr is "mxdelsvr [IP]", For example:

```
# cd /usr/lib/npreal2/driver
# ./mxdelsvr 192.168.3.4
```

If you don't provide the IP address in the command line, the program will list the installed servers and total ports on screen. So you can only choose the index on the installed server list to delete.
The following actions will be performed.

- Modify the "npreal2d.cf"
- Remove the relevant tty ports in directory "/dev"

- Stop and then restart the driver.

6. Driver Files Removal

Drvier Removal will remove all driver files, mapped tty ports and unload the driver. To do this, you only need to enter the directory "/usr/lib/npreal2/driver", and then execute "mxuninst" to uninstall the driver. This program will perform the following actions.

- Unload the driver.
- Delete all files and directories in "/usr/lib/npreal2"
- Delete directory "/usr/lib/npreal2".
- Modify the system initializing script file.

<Install fixed TTY driver >

1. Installation and Configuration

step 1 : login to UNIX and create a directory for MOXA TTY, for instance, /usr/etc.

```
# mkdir /usr/etc
# cd /usr/etc
```

step 2 : Extract source code from tar-file :

Type "tar xvf moxattyd.tar".

After extract, you can find the following files :

```
README          --> this file
moxattyd.c  --> source program
moxattyd.cf --> empty configuration file
Makefile     --> makefile
```

step 3 : Compile and Link :

For SCO UNIX:

```
# make sco
```

For Linux:

make linux

For UnixWare 7:

make svr5

For UnixWare 2.1.x, SVR4.2:

make svr42

For IBM AIX:

make aix

For HP-UNIX:

make hpunix

For SunOS 5.8:

make sun

For QNX6:

make qnx6

step 4 : Modify configuration :

The configuration of moxattyd program is defined on "moxattyd.cf" file at the same directory where contains program moxattyd.

User can use vi or any edit to modify it. It's a text file.

For more configuration information, please take a look at moxattyd.cf file. We put detail decription on it.

!!

Please note that the "Device Name" is depended on OS. See "E. Device Naming Rule" for more information.

!!

step 5 : Add program moxattyd into /etc/inittab and any tty name you configued at moxattyd.cf.

eg. for Linux:

ts:2:respawn:/usr/etc/moxattyd

p1:345:respawn:/etc/mingetty ttyp1

p2:345:respawn:/etc/mingetty ttyp2

finish : You have finished the installation and configuration of MOXA TTY.

2. Start moxattyd program

Run "init q" or reboot your UNIX.

3. Add additional server

Step 1: Modify "moxattyd.cf" file to add additional server.
User can use vi or any edit to modify it. It's a text file.
For more configuration information, please take a look at moxattyd.cf file. We put detail decription on it.

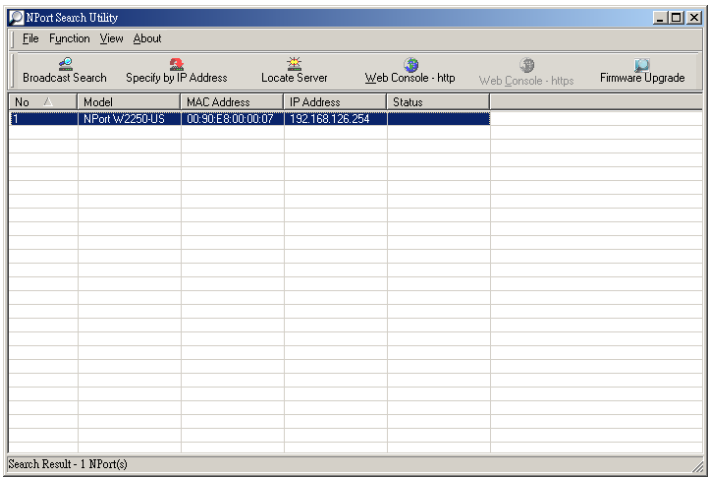
Step 2: Find the proccess id (PID) of program "moxattyd".
ps -ef | grep moxattyd

Step 3: Update configuration of moxattyd program.
kill -USR1 PID
(ex. if "moxattyd" PID = 404, "kill -USR1 404")

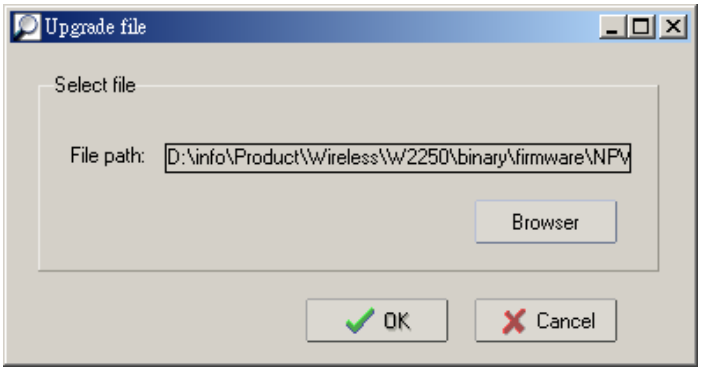
finish : You have finished to add additional server.

Upgrade Firmware

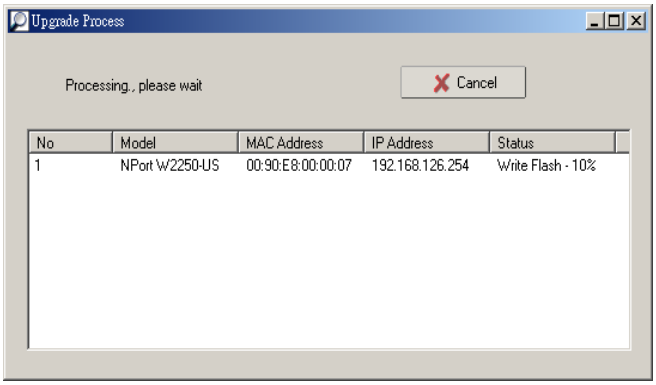
1. Open NPort Search Utility ,Right click on a specific NPort W2250/W2150 and select the Upgrade Firmware function to start upgrading the firmware.



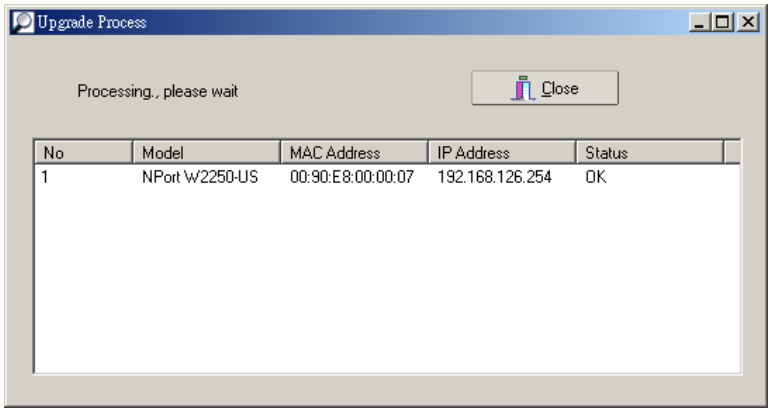
2. Select the correct ROM file to be downloaded to the NPort W2250/W2150.



3. Wait patiently while the Upgrade Firmware action is being processed.



4.click”close” to finish firmware upgrade.



ATTENTION

You can simultaneously upgrade the firmware of multiple NPort W2250/W2150s that are of the same model.

To select multiple NPort W2250/W2150s, hold down the Ctrl key when selecting an additional NPort W2250/W2150, or hold down the Shift key to select a block of NPort W2250/W2150s.

A

SNMP Agents with MIB II & RS-232 like groups

NPort has built-in SNMP (Simple Network Management Protocol) agent software that supports SNMP Trap, RFC1317 RS-232 like groups and RFC 1213 MIB-II. The following table lists the standard MIB-II groups, as well as the variable implementation for NPort .

RFC1213 MIB-II supported SNMP variables:

System	Interfaces	IP MIB	ICMP MIB
SysDescr	itNumber	ipForwarding	IcmpInMsgs
SysObjectID	ifIndex	ipDefaultTTL	IcmpInErrors
SysUpTime	ifDescr	ipInreceives	IcmpInDestUnreachs
SysContact	ifType	ipInHdrErrors	IcmpInTimeExcds
SysName	ifMtu	ipInAddrErrors	IcmpInParmProbs
SysLocation	ifSpeed	ipForwDatagrams	IcmpInSrcQuenchs
SysServices	ifPhysAddress	ipInUnknownProtos	IcmpInRedirects
	ifAdminStatus	ipInDiscards	IcmpInEchos
	ifOperStatus	ipInDelivers	IcmpInEchoReps
	ifLastChange	ipOutRequests	IcmpInTimestamps
	ifInOctets	ipOutDiscards	IcmpTimestampReps
	ifInUcastPkts	ipOutNoRoutes	IcmpInAddrMasks
	ifInNUcastPkts	ipReasmTimeout	IcmpOutMsgs
	ifInDiscards	ipReasmReqds	IcmpOutErrors
	ifInErrors	ipReasmOKs	IcmpOutDestUnreachs

System	Interfaces MIB	IP MIB	ICMP MIB
SysServices	ifInUnknownProtos	ipReasmFails	IcmpOutTimeExcds
	ifOutOctets	ipFragOKs	IcmpOutParmProbs
	ifOutUcastPkts	ipFragFails	IcmpOutSrcQuenchs
	ifOutNUcastPkts	ipFragCreates	IcmpOutRedirects
	ifOutDiscards	ipAdEntAddr	IcmpOutEchos
	ifOutErrors	ipAdEntIfIndex	IcmpOutEchoReps
	ifOutQLen	ipAdEntNetMask	IcmpOutTimestamps
	ifSpecific	ipAdEntBcastAddr	IcmpOutTimestampReps
		ipAdEntReasmMaxSize	IcmpOutAddrMasks
		IpNetToMediaIfIndex	IcmpOutAddrMaskReps
		IpNetToMediaPhysAddress	
		IpNetToMediaNetAddress	
		IpNetToMediaType	
		IpRoutingDiscards	

UDP MIB	TCP MIB	SNMP MIB
UdpInDatagrams	tcpRtoAlgorithm	snmpInPkts
UdpNoPorts	tcpRtoMin	snmpOutPkts
UdpInErrors	tcpRtoMax	snmpInBadVersions
UdpOutDatagrams	tcpMaxConn	snmpInBadCommunityNames
UdpLocalAddress	tcpActiveOpens	snmpInASNParseErrs
UdpLocalPort	tcpPassiveOpens	snmpInTooBigs
	tcpAttempFails	snmpInNoSuchNames
Address	tcpEstabResets	snmpInBadValues
AtIfIndex	tcpCurrEstab	snmpInReadOnlys
AtPhysAddress	tcpInSegs	snmpInGenErrs
AtNetAddress	tcpOutSegs	snmpInTotalReqVars

Address Translation	TCP MIB	SNMP MIB
AtNetAddress	tcpRetransSegs	snmpInTotalSetVars
	tcpConnState	snmpInGetRequests
	tcpConnLocalAddress	snmpInGetNexts
	tcpConnLocalPort	snmpInSetRequests
	tcpConnRemAddress	snmpInGetResponses
	tcpConnRemPort	snmpInTraps
	tcpInErrs	snmpOutTooBigs
	tcpOutRsts	snmpOutNoSuchNames
		snmpOutBadValues
		snmpOutGenErrs
		snmpOutGetRequests
		snmpOutGetNexts
		snmpOutSetRequests
		snmpOutGetResponses
		snmpOutTraps
		snmpEnableAuthenTraps

RFC1317: RS-232 MIB objects

Generic RS-232-like Group	RS-232-like General Port Table	RS-232-like Asynchronous Port Group
rs232Number	rs232PortTable	rs232AsyncPortTable
	rs232PortEntry	rs232AsyncPortEntry
	rs232PortIndex	rs232AsyncPortIndex
	rs232PortType	rs232AsyncPortBits
	rs232PortInSigNumber	rs232AsyncPortStopBits
	rs232PortOutSigNumber	rs232AsyncPortParity
	rs232PortInSpeed	
	rs232PortOutSpeed	

The Input Signal Table	The Output Signal Table
rs232InSigTable	rs232OutSigTable
rs232InSigEntry	rs232OutSigEntry
rs232InSigPortIndex	rs232OutSigPortIndex
rs232InSigName	rs232OutSigName
rs232InSigState	rs232OutSigState

B

Well Known Port Numbers

In this appendix, which is included for your reference, we provide a list of Well Known port numbers that may cause network problems if you set NPort 5200 to one of these ports. Refer to RFC 1700 for Well Known port numbers, or refer to the following introduction from the IANA.

The port numbers are divided into three ranges: the Well Known Ports, the Registered Ports, and the Dynamic and/or Private Ports.

The Well Known Ports range from 0 through 1023.

The Registered Ports range from 1024 through 49151.

The Dynamic and/or Private Ports range from 49152 through 65535.

The Well Known Ports are assigned by the IANA, and on most systems, can only be used by system processes or by programs executed by privileged users. The following table shows famous port numbers among the well-known port numbers. For more details, please visit the IANA website at http://www.iana.org/assignments/port-numbers.

TCP Socket	Application Service
0	reserved
1	TCP Port Service Multiplexor
2	Management Utility
7	Echo
9	Discard
11	Active Users (systat)
13	Daytime
15	Netstat
20	FTP data port
21	FTP CONTROL port
23	Telnet
25	SMTP (Simple Mail Transfer
37	Time (Time Server)
42	Host name server (names server)
43	Whois (nickname)

49	(Login Host Protocol) (Login)
53	Domain Name Server (domain)
79	Finger protocol (Finger)
TCP Socket	**Application Service**
80	World Wibe Web HTTP
119	Networld news Transfer Protocol
123	Network Time Protocol
213	IPX
160 – 223	Reserved for future use

UDP Socket	**Application Service**
0	reserved
2	Management Utility
7	Echo
9	Discard
11	Active Users (systat)
13	Daytime
35	Any private printer server
39	Resource Location Protocol
42	Host name server (names server)
43	Whois (nickname)
49	(Login Host Protocol) (Login)
53	Domain Name Server (domain)
69	Trivial Transfer Protocol (TETP)
70	Gopler Protocol
79	Finger Protocol
80	World Wide Web HTTP
107	Remote Telnet Service
111	Sun Remote Procedure Call (Sunrpc)
119	Network news Tcanster Protocol
123	Network Time protocol (nnp)
161	SNMP (Simple Network Mail
162	SNMP Traps
213	IPX (Used for IP Tunneling)

C

Service Information

This appendix shows you how to contact Moxa for information about this and other products, and how to report problems.

MOXA Internet Services

Customer satisfaction is our number one concern, and to ensure that customers receive the full benefit of our products, Moxa Internet Services has been set up to provide technical support, driver updates, product information, and user's manual updates.

The following services are provided

E-mail for technical support .....support@moxa.com.tw

World Wide Web (WWW) Site for product information:

.....http://www.moxa.com or

.....http://www.moxa.com.tw

D

Federal Communication Commission Interference Statement

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

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

CAUTION:

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

FCC RF Radiation Exposure Statement

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

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference and
(2) This device must accept any interference received, including interference that may cause undesired operation.