NPort W2004 Series User's Manual

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www.moxa.com/product

NPort W2004 Series User's Manual

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Introduction

Moxa's NPort W2004 Series of wireless serial device servers provide users with an easy means of connecting RS-232/422/485 serial devices to a WLAN. The 4-port NPort W2004 is ideal for environments where a LAN is not available, or where serial devices are moved frequently.

The following topics are covered in this chapter:

❑ **Overview**
❑ **Package Checklist**
❑ **Product Features**
❑ **Product Specifications**
❑ **Serial Port Pin Assignments**

Overview

Moxa's NPort W2004 wireless device server is the ideal choice for connecting your RS-232/422/485 serial devices—such as PLCs, meters, and sensors—to a Wired Ethernet LAN and Wireless LAN. Your communications software will be able to access the serial devices from anywhere over a local LAN, WLAN, or the Internet. Moreover, the WLAN environment offers an excellent solution for applications in which the serial devices are moved frequently from place to place.

NPort W2004 wireless serial device servers support automatic IP configuration protocols (DHCP) and manual configuration via a handy web browser console. Both IP configuration methods ensure quick and effective installation, and the NPort Windows Driver Manager Utility makes Port Mapping very convenient to configure.

An external antenna increases the range of the wireless connection. Users can position the adjustable antenna for maximum signal strength or even replace the antenna with their own for additional flexibility and scalability. This feature is particularly useful when a serial device is connected in a high interference area. As an added feature, a signal strength indicator is located on the front panel to make it easier to troubleshoot connection problems.

NPort W2004 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. The Real COM/TTY drivers allow software that works with COM/TTY ports to 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.

To make your management task easier, the NPort W2004 Series provides additional features, such as password authentication, IP filter, WEP support for 64-bit and 128-bit encryption, and SNMP support.

Package Checklist

NPort W2004 is shipped with the following items:

Standard Accessories
- NPort W2004 **x** 1
- Documentation & Software CD
- RJ45 to RJ45 Ethernet cross-over cable
- RJ45 to male DB9 cable (CBL-RJ45M9-150)
- RJ45 to female DB9 cable (CBL-RJ45F9-150)
- Warranty Booklet
- Quick Installation Guide

Optional Accessories
- DK-35A DIN-Rail Mounting Kit (35 mm)
- CBL-RJ45M9-150 (8-pin RJ45 to male DB9 cable; 150 cm)
- CBL-RJ45F9-150 (8-pin RJ45 to female DB9 cable; 150 cm)
- CBL-RJ45M25-150 (8-pin RJ45 to male DB25 cable; 150 cm)
- CBL-RJ45F25-150 (8-pin RJ45 to male DB25 cable; 150 cm)

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

Product Features

- Connect any serial device to WiFi 802.11g/b network
- 4 RS-232/422/485 ports, at up to 460.8 Kbps
- Web-based configuration via built-in Ethernet or WLAN
- Supports Windows, Unix, and Linux Real COM drivers
- Versatile socket operation modes, including TCP Client/Server and UDP
- Secure data access via standard WEP
- Enhanced remote configuration via HTTPS and SSH

Product Specifications

WLAN

Standard Compliance	802.11g/b
Radio Frequency Type	DSSS, OFDM
Tx Power 11b	Maximum 20 dBm
Tx Power 11g	Maximum 18 dBm
Rx Sensitivity	-70 dBm @ 54 Mbps, -85 dBm @ 11 Mbps
Transmission Rate	54 Mbps (max.) with auto fallback (54, 48, 36, 24, 18, 12, 11, 9, 6, 5.5, 2, 1 Mbps)
Transmission distance	Up to 300 meters (@ 12 Mbps, in open areas)
Security	WEP 64-bit/128-bit data encryption
Antenna Connector	Reverse SMA
Network Mode	Infrastructure mode, Ad-Hoc mode

LAN

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

Serial

No. of ports	4
Interface	RS-232/422/485, with 15 KV ESD for all signals
Port Type	8-pin RJ45
RS-485 Data direction	ADDC™ (patented Automatic Data Direction Control)

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
Transmission Speed	50 bps to 460.8 Kbps

Console Ports

Ethernet console x 1	10/100M LAN, 8-pin RJ45
RS-232 console x 1	8-pin, RJ45

Software Features

Protocols	ICMP, IP, TCP, UDP, DHCP, Telnet, DNS, SNMP, HTTP, SMTP, SNTP, SSH, HTTPS
Utilities	Windows utility for Windows 98/ME/2000/XP/2003
Configuration	Web browser, Serial console, Telnet console

Power Requirements

Power Input	12-48 VDC
Power Consumption	685 mA @ 12V; 184 mA @ 48V, 340 mA @ 24V

Mechanical Specifications

Material	SECC sheet metal (1 mm)

Environmental

Operating Temperature	0 to 60°C (32 to 140°F), 5 to 95%RH
Storage Temperature	-20 to 85°C (-4 to 185°F), 5 to 95%RH

Regulatory Approvals

EMC	FCC Class A, CE Class A
Safety	UL, CUL, TÜV

Serial Port Pin Assignments
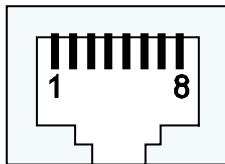
8-pin RJ45 Port   **RS-232/422/485 Pinouts**

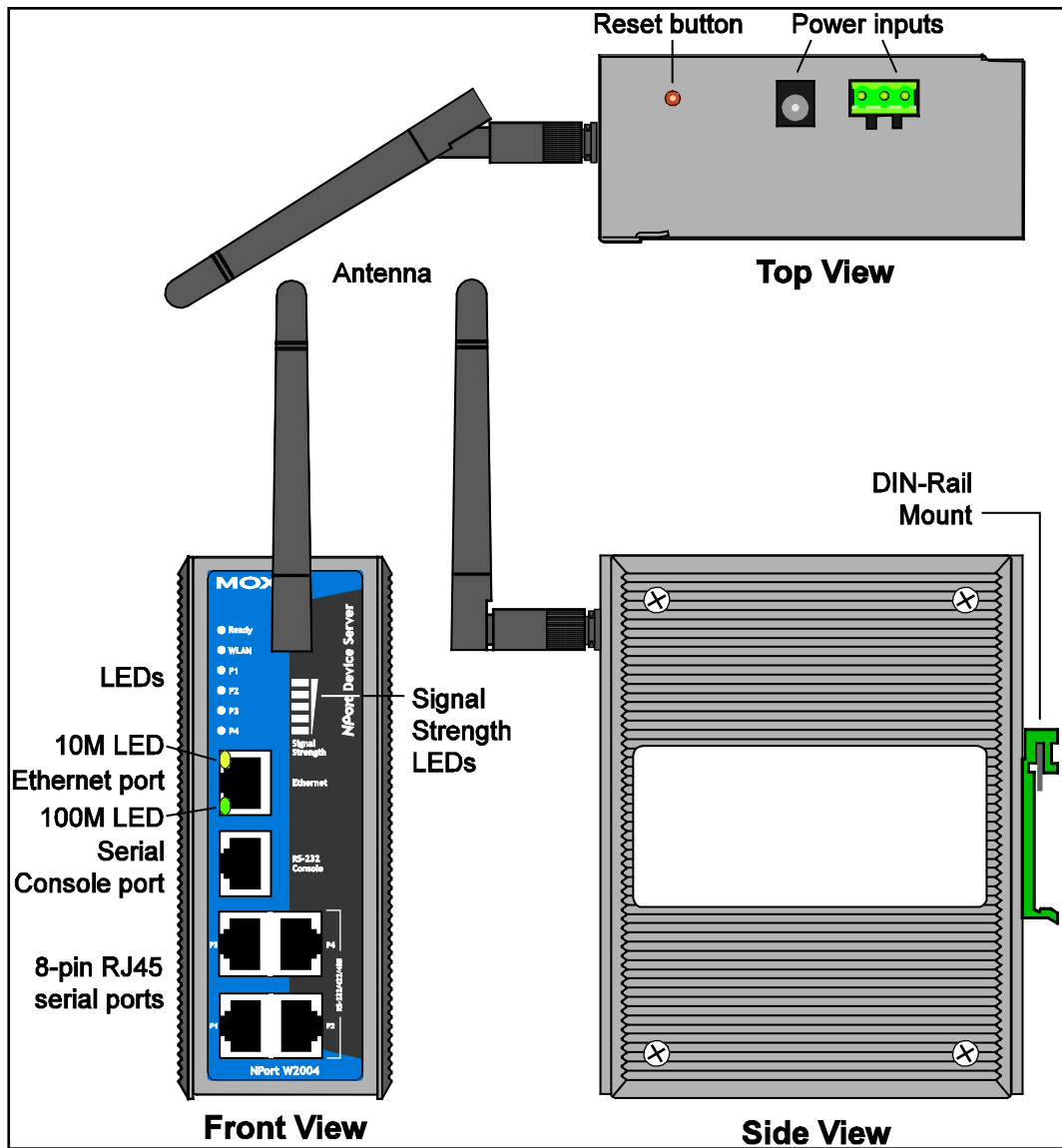| Pin	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DSR	---	---	---
2	RTS	TxD+	TxD+	---
3	GND	GND	GND	GND
4	TxD	TxD-	TxD-	---
5	RxD	RxD+	RxD+	Data+
6	DCD	RxD-	RxD-	Data-
7	CTS	---	---	---
8	DTR	---	---	---

2

Getting Started

This chapter includes information about installing NPort W2004.

The following topics are covered in this chapter:

❑ **Panel Layout**

❑ **Connecting the Hardware**
  ➢ Wiring Requirements
  ➢ Connecting the Power
  ➢ Connecting to the Network
  ➢ Connecting to a Serial Device
  ➢ LED Indicators

Panel Layout

Reset button   Power inputs

Top View

Antenna

DIN-Rail
Mount

LEDs

10M LED
Ethernet port
100M LED
Serial
Console port

8-pin RJ45
serial ports

Signal
Strength
LEDs

Front View   Side View

Connecting the Hardware

This section describes how to connect NPort W2004 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!

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.

Temperature Caution!

Be careful when handling the device. When plugged in, the 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.
- 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 advisable to label the wiring to all devices in the system.

Connecting the Power

Connect the 12-48 VDC power line with NPort W2004's power jack. When the power is supplied properly, 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 W2004's 10/100M Ethernet port and the other end of the cable to the Ethernet network. If the cable is properly connected, NPort W2004 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 W2004 and the serial device. Serial data cables are optional accessories for NPort W2004. Refer to Chapter 1 under **Optional Accessories** in the **Ordering Information** section for information about the RJ45-to-DB25 and RJ45-to-DB9 cables.

LED Indicators

LED Indicators—The front panel of NPort W2004 has eleven LED indicators, as described in the following table.

LED Name	LED Color	LED Function
Ready	red	**Steady on**—Power is on and NPort is booting up. **Blinking fast** (once every 0.5 sec)—Indicates a LAN IP conflict. **Blinking slowly** (once every sec)—Looking for an IP when no DHCP server is available.
	green	**Steady on**—Power is on and NPort is functioning normally. **Blinking fast** (once every 0.5 sec)—Loading factory default configuration after holding in the reset button for 5 seconds. **Blinking slowly** (once every sec)—The device server has been located by NPort Search utility.
	off	Power is off, or power error condition exists.
WLAN	green	**On**—Wireless enabled. **Blinking fast** (once every 0.5 sec)—Indicates a WLAN IP conflict. **Blinking slowly** (once every sec)—Looking for an IP when no DHCP server is available.
P1, P2, P3, P4	orange	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 (5 LEDs)	green	The number of lit LEDS indicates the WLAN signal strength. When [0 / 1 / 2 / 3 / 4 / 5] LEDs are lit, the corresponding WLAN status is [Connection Fail / Bad / Fair / Good / Very Good / Excellent].
10/100 M Ethernet	orange	10 Mbps Ethernet connection
	green	100 Mbps Ethernet connection
	off	Ethernet cable is disconnected, or has a short.

NOTE   If the signal strength is such that 2 or fewer signal strength LEDs are lit, communication with NPort W2004 could become unstable or even fail. If you encounter this situation, you may use one of the following two remedies:

1. Wait until the signal becomes stronger, or

2. Re-survey the site, and then restructure the WLAN components to ensure that the signal strength is always strong enough so that 2 or more signal strength LEDs are always lit.

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Initial IP Address Configuration

When setting up your NPort W2004 for the first time, the first thing you should do is configure the IP address. Select one of the initial IP Address configuration methods to configure NPort W2004's IP Address. For more details about network settings, see the **Network Settings** section from Chapter 5, **Web Console Configuration**.

This chapter covers the following topics:

- ❑ **Installation Procedure for First-time Users**
- ❑ **Factory Default IP Address**
- ❑ **Telnet Console**
- ❑ **Serial Console (19200, n, 8, 1)**

Installation Procedure for First-time Users

STEP 1:   After removing NPort W2004 from the box, use a cross-over Ethernet cable to connect directly to your computer's Ethernet port.

STEP 2:   Attach the power adaptor to the NPort W2004 and then plug the adaptor into an electrical outlet.

STEP 3:   Use the Web console to configure the NPort W2004 via the Ethernet port.

NOTE   We recommend that you use the web console to configure NPort W2004. See Chapter 5 for instructions on how to use the web console.

Factory Default IP Address

NPort W2004 is configured with the following default IP addresses:

LAN:

Setting   static IP
IP Address   192.168.126.254
Netmask   255.255.255.0

→ If the Ethernet port is unable to get an IP address from the DHCP server, then the IP address/netmask will revert to 192.168.126.254/255.255.255.0.

WLAN:

Setting   static IP
IP Address   192.168.127.254
Netmask   255.255.255.0

→ If the WLAN port is unable to get an IP address from the DHCP server, then the IP address/netmask will revert to 192.168.127.254/255.255.255.0

NOTE   If you forget the IP address, you can use the NPort Search utility (from your PC) to locate the NPort W2004 unit over the network. You will be able to view the IP address on the screen.

NOTE   Only one Network Interface can be used at the same time. If the Ethernet Link is active, then the WLAN will be disabled. If the WLAN is active, then the Ethernet Link will be disabled.

NOTE   The default login parameters are: **username = admin**, and **password = admin**.

Telnet Console

1. From the Windows desktop, click on **Start** and then select **Run**
2. Type telnet 192.168.126.254 (default IP address) in the **Open** text input box, and then click on **OK**.
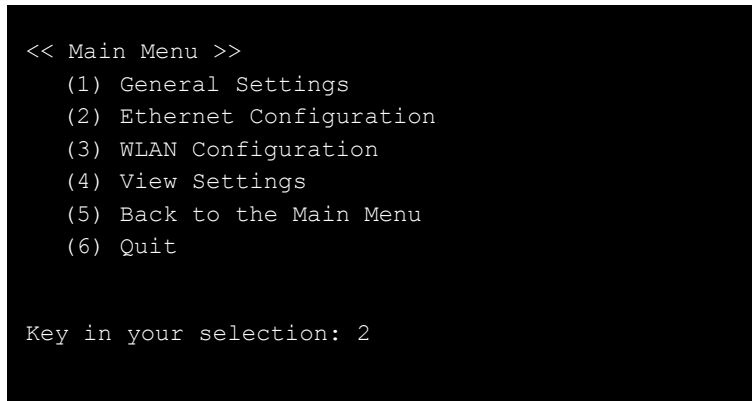
   When the Telnet window opens, input the password and then press Enter.

   ```
   ---------------------------------
   Host Name         : NPW2004_20
   Model Name        : NPort W004-US
   LAN MAC Address   : 00:90:e8:93:04:36
   WLAN MAC Address  : N/A
   Serial No         : 20
   Firmware Version  : 0.0.1.1_beta6
   ---------------------------------
   << Main Menu >>
      (1) Time Settings
      (2) Network Settings
      (3) Serial Port Settings
      (4) System Management
      (q) Quit
   ```

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

   ```
   ---------------------------------
   Host Name         : NPW2004_20
   Model Name        : NPort W004-US
   LAN MAC Address   : 00:90:e8:93:04:36
   WLAN MAC Address  : N/A
   Serial No         : 20
   Firmware Version  : 0.0.1.1_beta6
   ---------------------------------
   << Main Menu >>
      (1) Time Settings
      (2) Network Settings
      (3) Serial Port Settings
      (4) System Management
      (q) Quit


   Key in your selection: 2
   ```

4. Type **2** to select **Ethernet Configuration** and then press **Enter**.

```
<< Main Menu >>
   (1) General Settings
   (2) Ethernet Configuration
   (3) WLAN Configuration
   (4) View Settings
   (5) Back to the Main Menu
   (6) Quit


Key in your selection: 2
```

5. Type **2** to select **IP Address** and then press **Enter**, then use the **Backspace** key to erase the current IP address, type in the new IP address, and then press **Enter**.

```
<< Main Menu->Network Settings->Ethernet Configuration >>
   (1) IP Configuration
   (2) IP Address
   (3) Netmask
   (4) Gateway
   (v) View Settings
   (m) Back to Main Menu
   (q) Quit

Key in your selection: 2
IP Address : 192.168.126.254
```
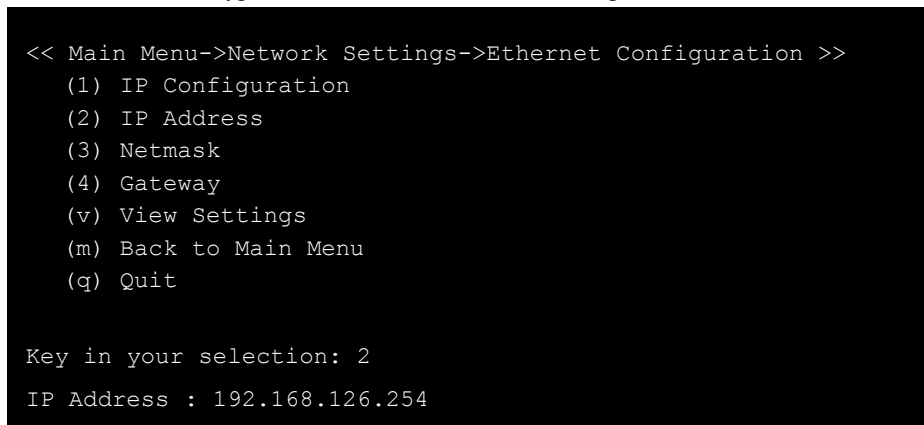
Serial Console (19200, n, 8, 1)

We suggest using Moxa PComm Terminal Emulator, which can be downloaded free of charge from www.moxa.com, to carry out the configuration procedure.

1. Connect NPort W2004's RS-232 console port 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 click on the **Open** icon.
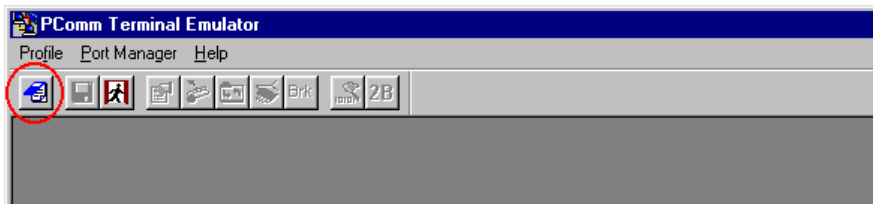
4. The **Property** window opens automatically. From the **Communication Parameter** page, select the appropriate COM port for the connection, **COM1** in this example, and **19200** for **Baud Rate**, **8** for **Data Bits**, **None** for **Parity**, and **1** for **Stop Bits**.
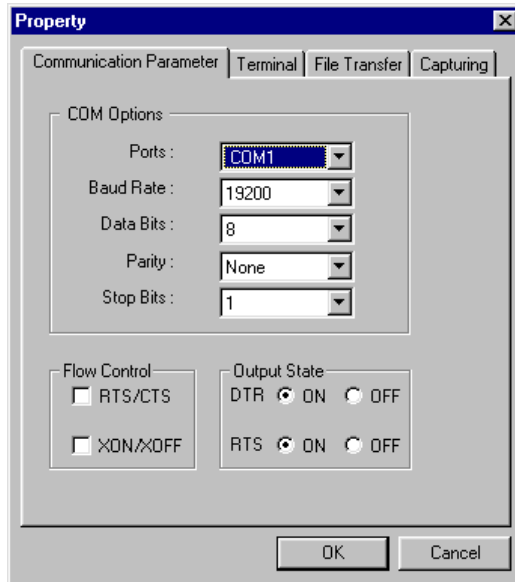
5. From the **Property** window's **Terminal** page, select **ANSI** or **VT100** for **Terminal Type**, and click on **OK**. If you select **Dumb Terminal** as the terminal type, some of the console functions—especially the "Monitor" function—may not work properly.
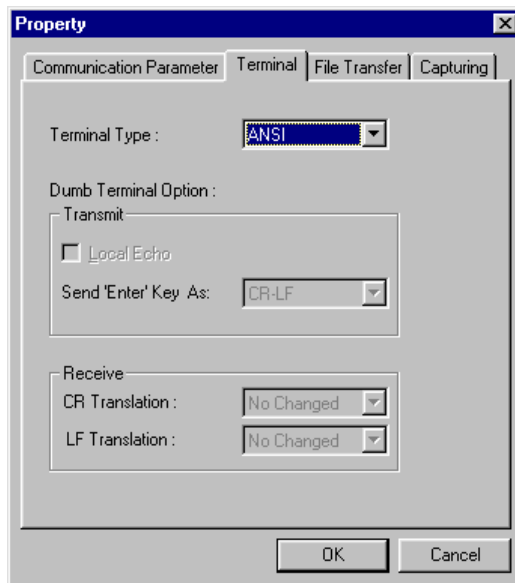
6. Input the password when prompted.

7. Start by configuring the IP address under **Network Settings**. Refer to the **Telnet Console** section for instructions on how to configure the rest of the IP settings.

4

Choosing the Proper Operation Mode

In this chapter, we describe the various NPort W2004 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.

This chapter covers the following topics:

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

Overview

NPort W2004 wireless Serial Device Servers are used to network-enable traditional RS-232/422/485 devices. 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. The Serial Device Server lets you use a computer to 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 different types of instruments. Since NPort W2004 wireless 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 W2004 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 limited number of conventional busses (such as ISA or PCI), or lack of drivers for various operating systems.

In addition to providing socket access, NPort W2004 also comes with a Real COM/TTY driver that transmits all serial signals intact. This means that you can continue using existing COM/TTY-based software, eliminating the need to invest in additional, costly 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 lets you unicast to one IP address, or multicast to groups of IP addresses.

TCP Server Mode

In TCP Server mode, NPort W2004 is configured with a unique IP:Port address on a TCP/IP network. NPort W2004 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:
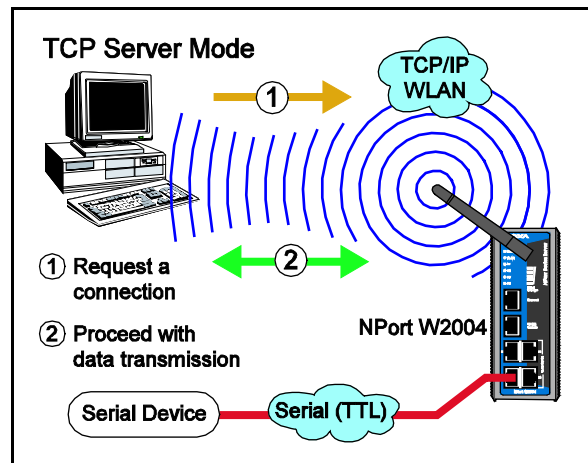
1. The host requests a connection from the NPort W2004 configured for TCP Server Mode.

2. Once the connection is established, data can be transmitted in both directions—from the host to the NPort W2004, and from the NPort W2004 to the host.

TCP Client Mode

In TCP Client mode, NPort W2004 can actively establish a TCP connection to a pre-defined host computer when serial data arrives.

After the data has been transferred, NPort W2004 can disconnect automatically 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 W2004 requests a connection to the host.

2. Once the connection is established, data can be transmitted in both directions—from the host to the NPort W2004, and from the NPort W2004 to the host.
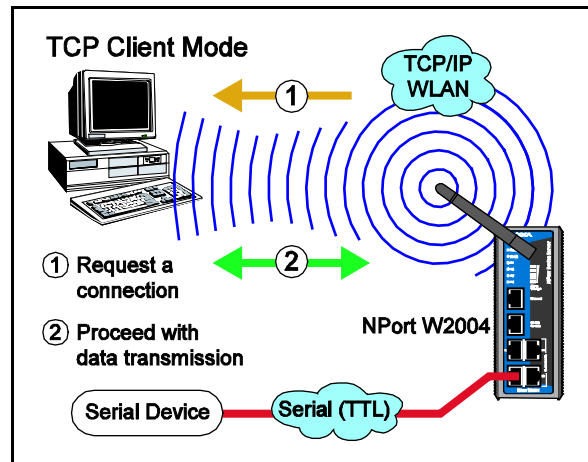
UDP Mode

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 more host computers. The serial device can also receive data from multiple host computers, making this mode ideal for message display applications.
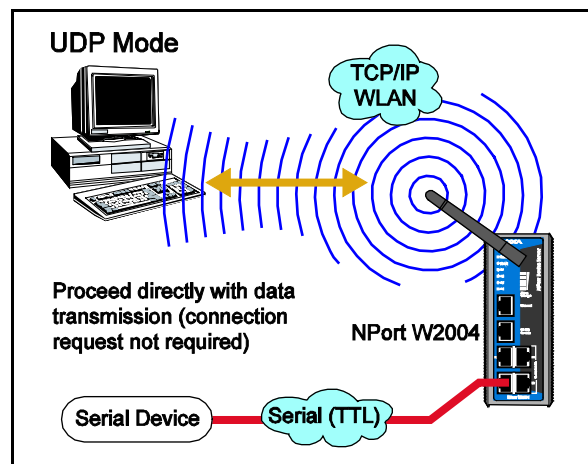
Real COM Mode

NPort W2004 comes equipped with COM drivers that work with Windows 95/98/ME/NT/2000/XP systems. The driver establishes a transparent connection between host and serial device by mapping the IP:Port of the NPort W2004's serial port to a local COM port on the host computer.

One of the main 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 W2004 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 W2004's serial ports.
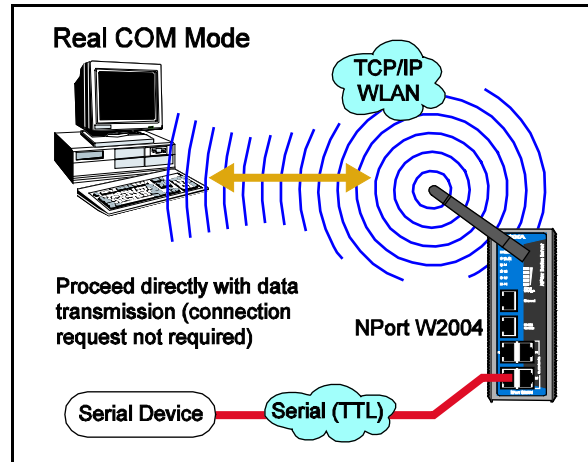
⚠️ **ATTENTION**

Real COM Mode allows several hosts to have access control of the same NPort W2004. The driver that comes with your NPort W2004 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.

5

Web Console Configuration

The Web Console is the most user-friendly method available to configure NPort W2004 Series. This chapter introduces the Web Console function groups and function definitions.

The following topics are covered in this chapter:

❑ **Overview**
  ➢ Configuring Your Browser
  ➢ Accessing NPort W2004's Homepage
  ➢ Time Settings
❑ **Network Settings**
  ➢ General Settings
  ➢ Ethernet Configuration
  ➢ WLAN Configuration
❑ **Serial Port Settings**
  ➢ Operation Modes
  ➢ Communication Parameters
❑ **System Management**
  ➢ Misc. Network Settings
  ➢ Auto Warning Settings
  ➢ System Status
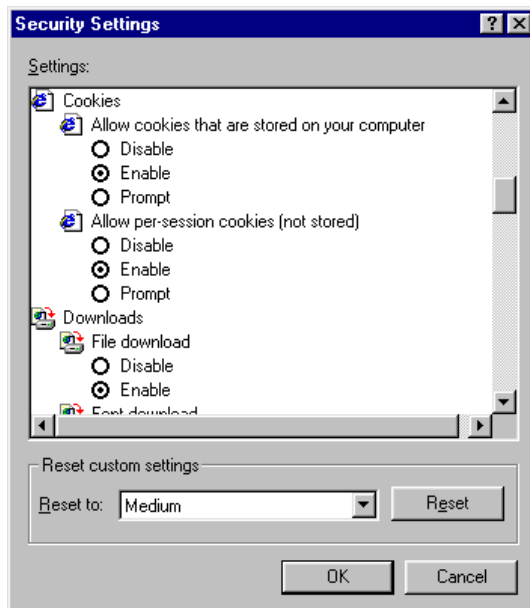 ➢ Maintenance
❑ **Logout**

Overview

Configuring Your Browser

Before opening your browser, you need to enable cookies. To enable your browser for cookies:

1. Right click on your desktop Internet Explorer icon, select **Properties**, and then click on the **Security** tab.
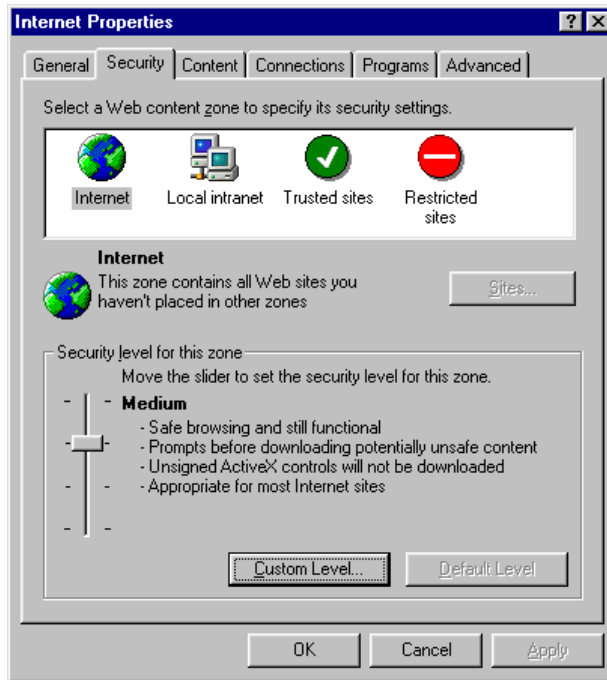
2. Enable the three options shown in the figure below, and then click on **OK**.

Accessing NPort W2004's Homepage

Use the NPort W2004's IP address to access its homepage:

1. Type 192.168.126.254 (the default IP address) in your browser's **Address** box (use the correct IP address if different from the default), and then press **Enter**.

2. Input the password. NPort W2004 allows only one user. The username is set to **admin** and the default password is also set to **admin**. You may NOT change the username, but you can change the password at any time. Note that the login function cannot be disabled.

3. The NPort W2004 homepage will open.

⚠️ **ATTENTION**

If you can't remember the password, the ONLY way to start configuring NPort W2004 is to load factory defaults by using the Reset button, which is located near the NPort W2004's power jack.
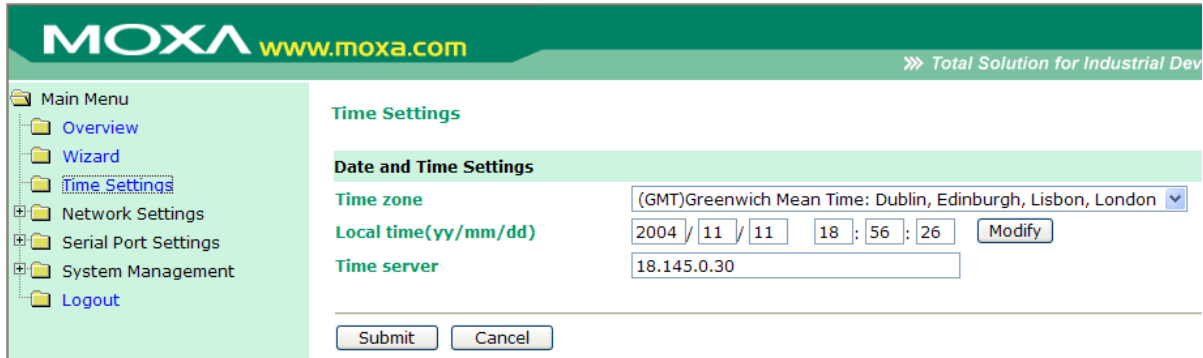

⚠️ **ATTENTION**

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

NPort W2004 uses cookies only for "password" transmission.

Time Settings

NPort W2004 has a built-in Real-Time Clock that allows you to add real-time information to functions such as Auto warning "Email" or "SNMP Trap."

⚠ **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 W2004's firmware will modify the GMT time according to the Time Zone.
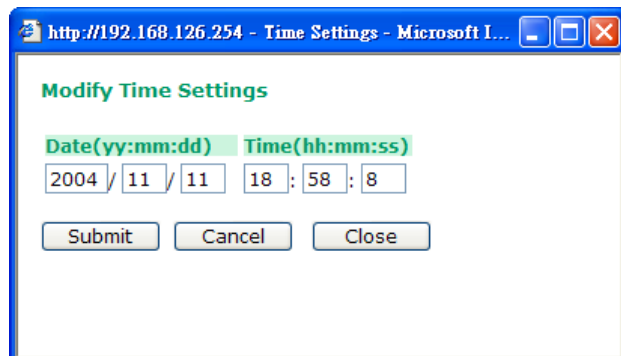

Time zone

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

Local tim (yy/mm/dd)e

Setting	Factory Default	Necessity
User adjustable time (2000/1/1-2037/12/31)	GMT (Greenwich Mean Time)	Optional

Click on the **[Modify]** button to open the Modify time settings window to input the correct local time.
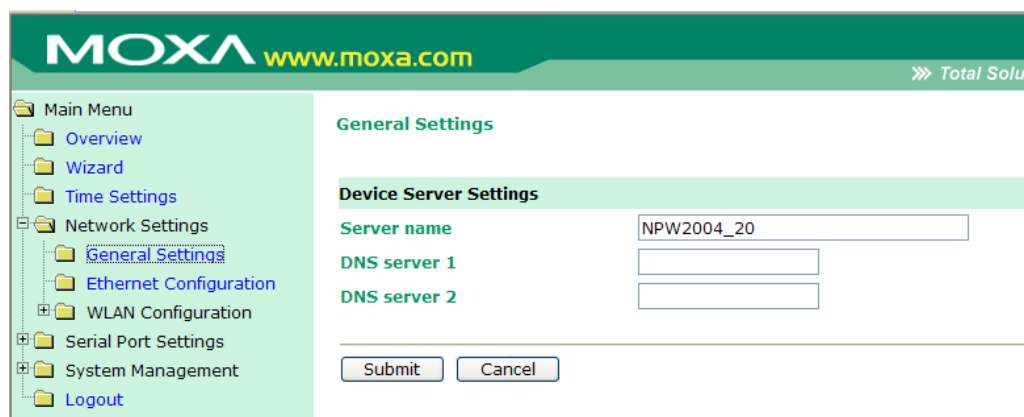
Time server

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 W2004 uses SNTP (RFC-1769) for auto time calibration.

Input the correct "Time server" IP address or domain name. Once NPort W2004 is configured with the correct Time server address, NPort W2004 will request time information from the "Time server" every hour.

Network Settings

General Settings

Click on the **General Settings** option to modify the **Server name** and **DNS server** IP addresses or domain names.

Server name

| Setting	Factory Default	Necessity
Alphanumeric	NPW2004_<Serial No.>	Optional

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

When a user wishes to visit a particular website, the computer first requests the website's correct IP address from the Domain Name System (DNS) server, and then the computer uses the response to connect to the website. DNS represents the method used to translate Internet domain names into IP addresses. A domain name is an alphanumeric name, such as moxa.com, that it is 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 W2004's DNS feature, you need to configure the DNS server. Doing so allows NPort W2004 to use a host's domain name to access the host. NPort W2004 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.

Ethernet Configuration
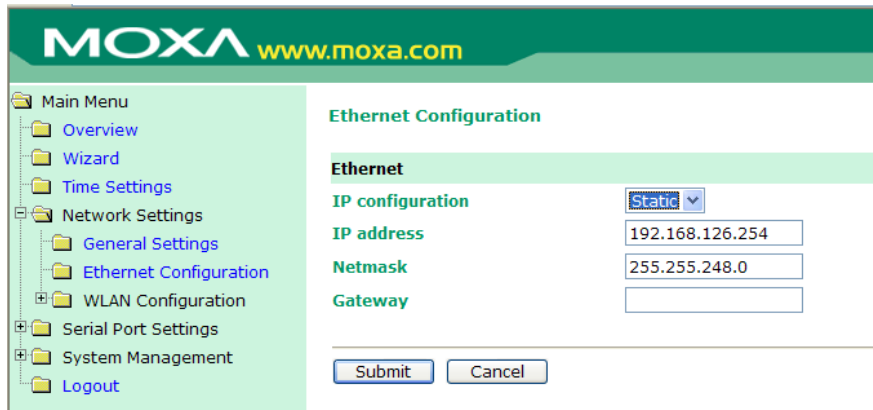
You must assign a valid IP address to NPort W2004 before it will work in your network environment. Your network system administrator should provide you with an IP address and related settings for your network. The IP address must be unique within the network (otherwise, NPort W2004 will not have a valid connection to the network). First time users should refer to Chapter 3, "Initial IP Address Configuration," for more information.

Choose from two possible "IP configuration" modes—**Static** and **DHCP**—located under the web console screen's **IP configuration** drop-down box.

IP configuration

Method	Function Definition
Static	User defined IP address, Netmask, Gateway.
DHCP	DHCP Server assigned IP address, Netmask, Gateway, DNS, and Time Server.

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 that 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 netmask is used to group network hosts into subnets. When a packet is sent out over the network, the NPort W2004 will use the netmask to check whether the desired TCP/IP host specified in the packet is on the same subnet as the NPort. If the address is on the same subnet, a connection is established directly between the NPort W2004 and the host. If the host is not on the same subnet, the packet is sent to the Gateway address.

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 W2004 needs to know the IP address of your network's default gateway computer in order to communicate with the hosts outside the local network environment. For correct gateway IP address information, consult your network administrator.

⚠️ **ATTENTION**

In Dynamic IP environments, the firmware will make 3 requests to the DHCP server every 2, 4, 6, 30 seconds until network settings are assigned by the DHCP server. The Timeout for each try increases from 1 second, to 3 seconds, to 5 seconds. If the DHCP Server is unavailable, the firmware will use the default IP address (192.168.126.254), Netmask, and Gateway for IP settings.

WLAN Configuration
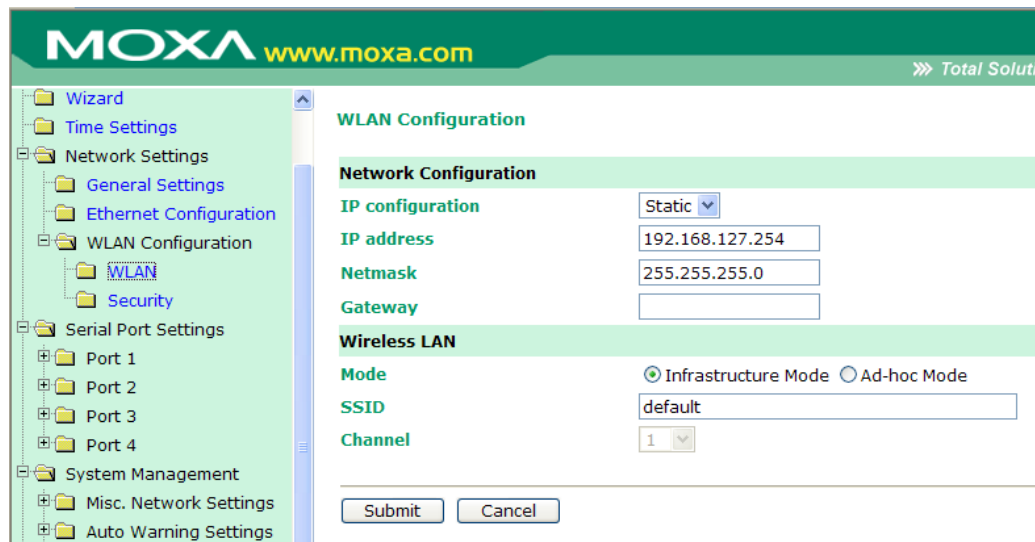
WLAN—Network Configuration

NPort W2004 supports the IEEE 802.11b wireless network interface.

The supported IP configurations are static and dynamic (DHCP). Users can set up the IP configuration via the serial console, or the Web/Telnet consoles through the NPort's Ethernet

interface.

For detailed information about configuring **IP configuration**, **IP address**, **Netmask**, and **Gateway**, see the previous section, "Ethernet Configuration."

WLAN—Wireless LAN

You may choose from two different WLAN modes—Infrastructure Mode and Ad-hoc Mode— which are illustrated in the following diagrams.
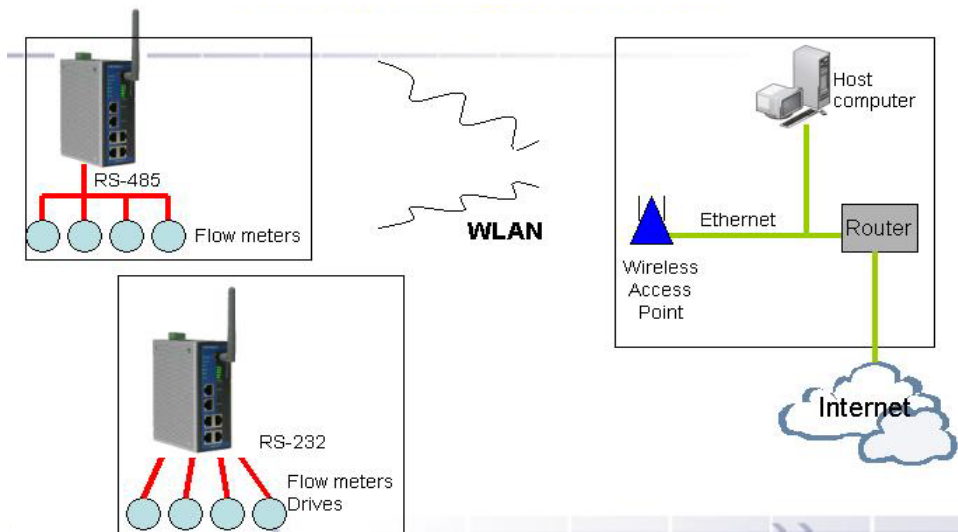
Ad-hoc Mode

In the following example, two NPort W2004 devices establish an Ad-hoc peer-to-peer relationship, which means that they communicate with each other directly, without going through an AP (Access Point).
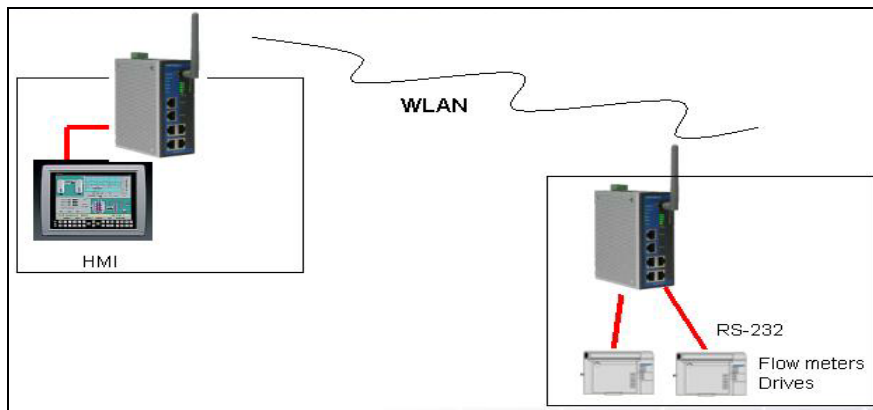
Infrastructure Mode

In the following example, the NPort W2004 communicates with the host computer via the AP. The host computer connects to the AP via an Ethernet connection, allowing serial data to be transmitted back and forth between the serial devices and host computer.

SSID

Enter the name of the wireless network (SSID) that the W2004 is connected to.
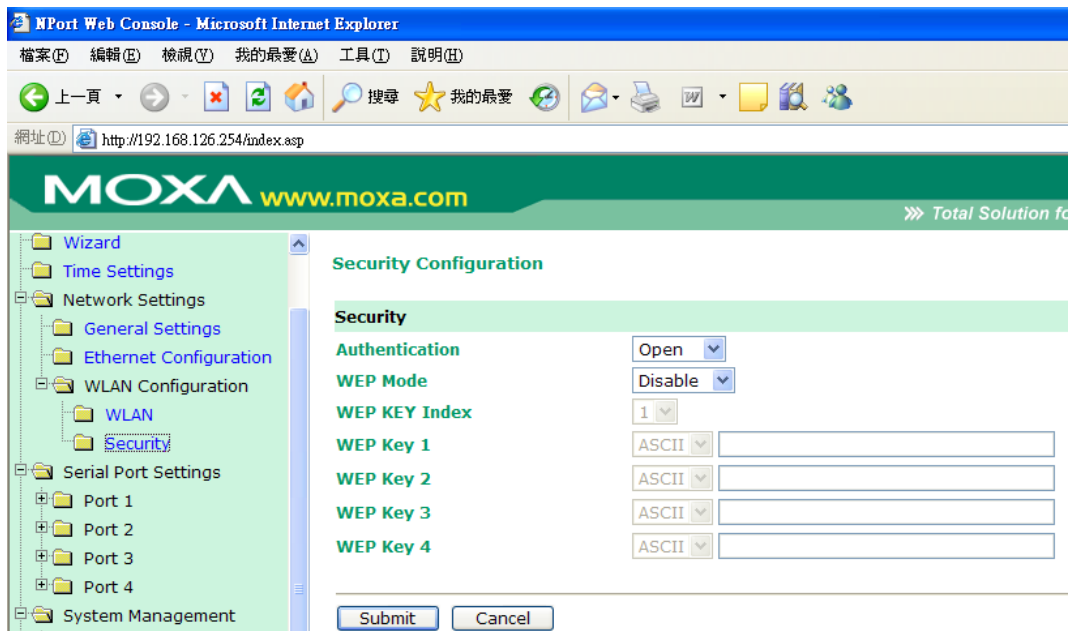
Channel

Select a radio channel for the wireless network from the pull-down menu. In infrastructure mode, the AP will specify the channel automatically. In Ad-hoc mode, the user must use the pull-down menu to specify the channel.

⚠️ **ATTENTION**

Click on the Wizard to configure the WLAN IP address quickly.

Security

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

Authentication

Select an authentication scheme of **Open** or **Shared** from the pull-down menu.

WEP Mode

By default, WEP Mode is **disabled**. When WEP Mode is **enabled**, data packets will be encrypted before being sent. You may select either 64-bit or 128-bit encryption.

WEP Key 1/2/3/4

For each of the four WEP Keys, select either **ASCII** or **HEX** format, and then enter the appropriate WEP Key. The WEP Keys are used to help prevent data from being stolen as it is transmitted over public networks. The WEP Key setting(s) for the NPort W2004 must be the same as the WEP Key settings for the AP.
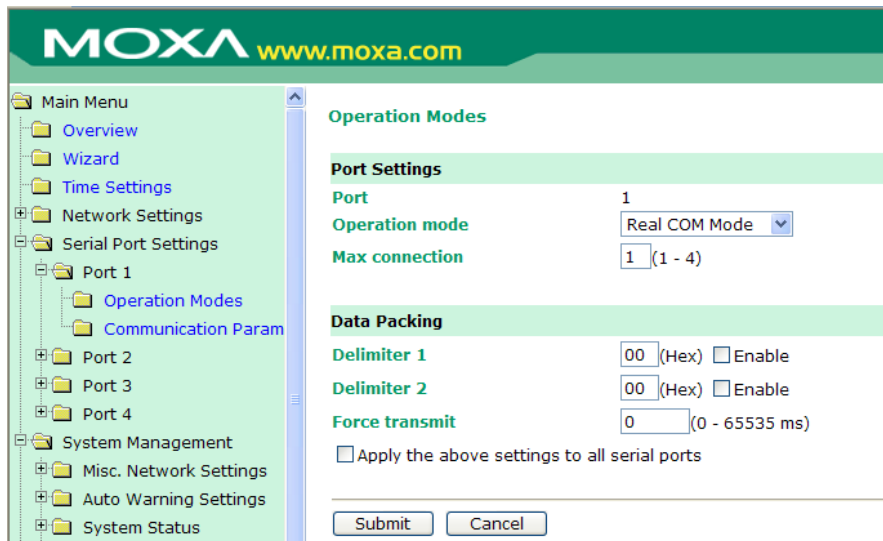
Serial Port Settings

Serial port settings are configured by port.

Operation Modes

The Serial Port parameters that appear in the right pane of the browser window when **Serial Port Settings → Port 1/2/3/4 → Operation Modes** is selected are dependent on which of the four operation modes is selected. We consider each operation mode separately.

Real COM Mode

Port 1/2/3/4

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 W2004, 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 W2004 serial port.

Max connection 2 to 4:
Allows 2 to 4 host's Real COM drivers to open the specific NPort W2004 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 tunneling 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 W2004 from the Ethernet interface.

⚠️ **ATTENTION**

When **Max connection** is set to 2, 3, or 4, NPort W2004 will use 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 W2004 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 W2004's console setting, data communication may not work properly.

Data Packing

Delimiter 1/2

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

Once the NPort W2004 receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the NPort W2004'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 W2004 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	Optional

0: Disable force transmit timeout.

1 to 65535: Forces the NPort W2004'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 W2004 fetches the serial data from its internal buffer. If data is incoming through the serial port, NPort W2004 stores the data in the internal buffer. NPort W2004 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
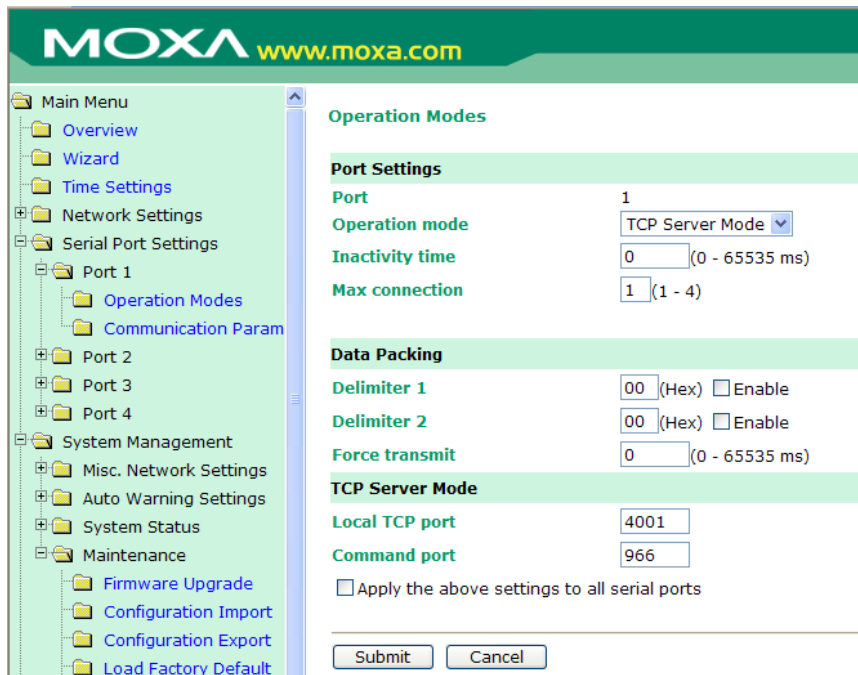
(10 (bits) / 1200 (bits/s)) * 1000 (ms/s) = 8.3 ms.

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

than or equal to 10 ms.

If you want to send a series of characters in the same packet, the serial device attached to NPort W2004 should send that series of characters during a time interval less than the Force transmit timeout, and the total length of data must be less than or equal to NPort W2004's internal buffer size. The serial communication buffer size for NPort W2004 is 1 KB per port.

TCP Server Mode

Port 1/2/3/4

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 W2004 automatically closes the TCP connection if there is no serial data activity for the given time. After the connection is closed, NPort W2004 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 W2004 will check the connection status between the NPort W2004 and remote host by sending "keep alive" packets periodically. If the remote host does not respond to the packet, NPort W2004 assumes that the connection was closed down unintentionally. NPort W2004 will then force the existing TCP connection to close.

⚠️ **ATTENTION**

The Inactivity time should be set at least 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 can be 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 is 1. In this case, only one specific host can access this port of the NPort W2004, 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 W2004 serial port.

Max connection 2 to 4:
Allows 2 to 4 host's Real COM drivers to open the specific NPort W2004 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 tunneling 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 W2004 from the Ethernet interface.

⚠️ **ATTENTION**

When **Max connection** is set to 2, 3, or 4, NPort W2004 will use 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 W2004 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 W2004's console setting, data communication may not work properly.

Data Packing

Delimiter 1/2

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

Once the NPort W2004 receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the NPort W2004'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 W2004 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	Optional

0: Disable force transmit timeout.

1 to 65535: Forces the NPort W2004'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 W2004 fetches the serial data from its internal buffer. If data is incoming through the serial port, NPort W2004 stores the data in the internal buffer. NPort W2004 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 to be larger than 8.3 ms, so in this case, it must be greater than or equal to 10 ms.

If you want to send a series of characters in the same packet, the serial device attached to NPort W2004 should send that series of characters during a time interval less than the Force transmit timeout, and the total length of data must be less than or equal to NPort W2004's internal buffer size. The serial communication buffer size for NPort W2004 is 1 KB per port.

TCP Server Mode

Local TCP Port

Setting	Factory Default	Necessity
1 to 65535	4001	Required

The "Local TCP port" is the TCP port that NPort W2004 uses to listen to connections, and that other devices must use to contact NPort W2004. 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 W2004 so that the user does not need to configure the program.

TCP Client Mode

Port 1/2/3/4

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 W2004 automatically closes the TCP connection if there is no TCP activity for the given time. After the connection is closed, NPort W2004 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 W2004 automatically closes the TCP connection if there is no serial data activity for the given time. After the connection is closed, NPort W2004 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 W2004 will check the connection status between the NPort W2004 and remote host by sending "keep alive" packets periodically. If the remote host does not respond to the packet, NPort W2004 assumes that the connection was closed down unintentionally. NPort W2004 will then force the existing TCP connection to close.

⚠️ **ATTENTION**

The Inactivity time should be set at least 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 can be completed.

⚠️ **ATTENTION**

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

Data Packing

Delimiter 1/2

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

Once the NPort W2004 receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the NPort W2004'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 W2004 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	Optional

0: Disable force transmit timeout.

1 to 65535: Forces the NPort W2004'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 W2004 fetches the serial data from its internal buffer. If data is incoming through the serial port, NPort W2004 stores the data in the internal buffer. NPort W2004 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 to be larger than 8.3 ms, so in this case, it must be greater than or equal to 10 ms.

If you want to send a series of characters in the same packet, the serial device attached to NPort W2004 should send that series of characters during a time interval less than the Force transmit timeout, and the total length of data must be less than or equal to NPort W2004's internal buffer size. The serial communication buffer size for NPort W2004 is 1 KB per port.

TCP Client Mode

Destination IP address 1/2/3/4

Setting	Factory Default	Necessity
IP address or Domain Name	None	Required

Designated Local Port 1/2/3/4

Setting	Factory Default	Necessity
Port No. (if Enabled)	Disabled	Optional

If disabled, the local TCP port will be chosen automatically by the NPort whenever a connection is established. If enabled, the designated local port will be used as the local TCP port.

⚠️ **ATTENTION**

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

UDP Mode

Data Packing

Delimiter 1/2

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

Once the NPort W2004 receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the NPort W2004'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 W2004 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	Optional

0: Disable force transmit timeout.

1 to 65535: Forces the NPort W2004'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 W2004 fetches the serial data from its internal buffer. If data is incoming through the serial port, NPort W2004 stores the data in the internal buffer. NPort W2004 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 to be larger than 8.3 ms, so in this case, it must be greater than or equal to 10 ms.

If you want to send a series of characters in the same packet, the serial device attached to NPort W2004 should send that series of characters during a time interval less than the Force transmit timeout, and the total length of data must be less than or equal to NPort W2004's internal buffer size. The serial communication buffer size for NPort W2004 is 1 KB per port.

UDP Mode

Destination IP address 1

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

Destination IP address 2/3/4

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

Allows NPort W2004 to connect actively to the remote host whose IP address is set by this parameter.

Communication Parameters
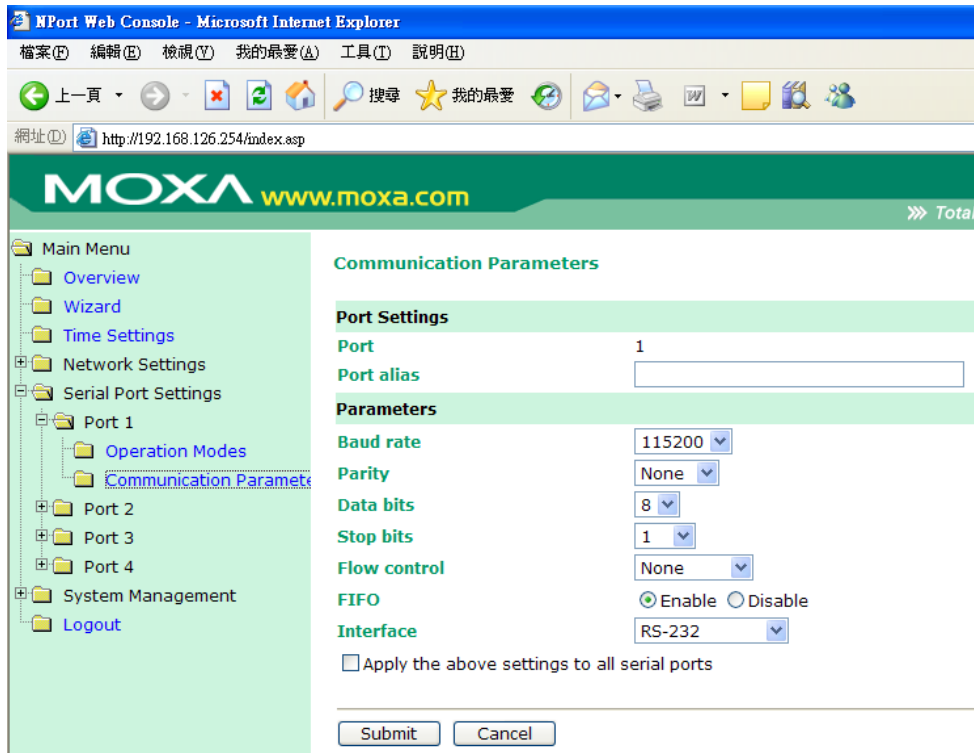
Port 1/2/3/4

Port alias

Setting	Factory Default	Necessity
1 to 39 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 W2004's serial port.

Serial Parameters

⚠️ **ATTENTION**

Check the serial communication parameters in your Serial Device's user's manual. You should set up NPort W2004's serial parameters with the same communication parameters used by your serial devices.

Baud Rate

Setting	Factory Default	Necessity
50 bps to 460.8 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, 1.5, 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, Odd, Even, Space, Mark	None	Required

Flow Control

Setting	Factory Default	Necessity
None, RTS/CTS, XON/XOFF	RTS/CTS	Required

FIFO

Setting	Factory Default	Necessity
Enable, Disable	Enable	Required

NPort 2004'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	Ports	Settings	Factory Default	Necessity
NPort W2004	4	RS-232/422/485	RS-232	Required

System Management

Misc. Network Settings

Console Settings
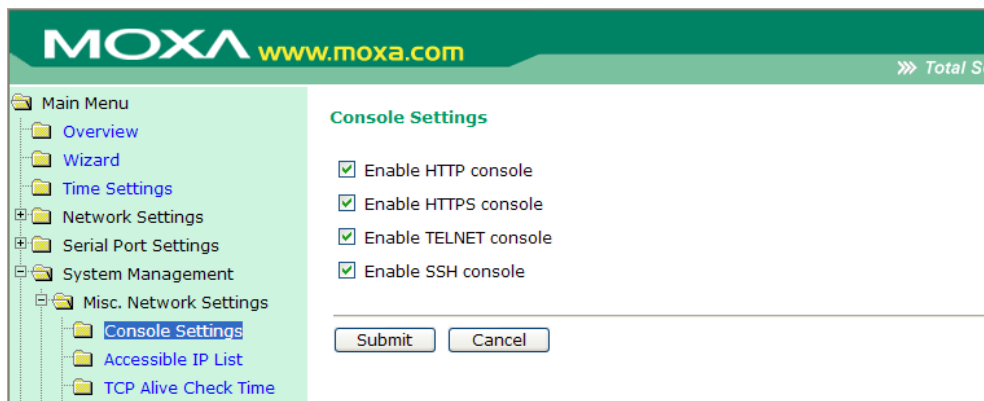
Use this screen to enable or disable **HTTP console**, **HTTPS console**, **TELNET console**, and **SSH console**.

Accessible IP List
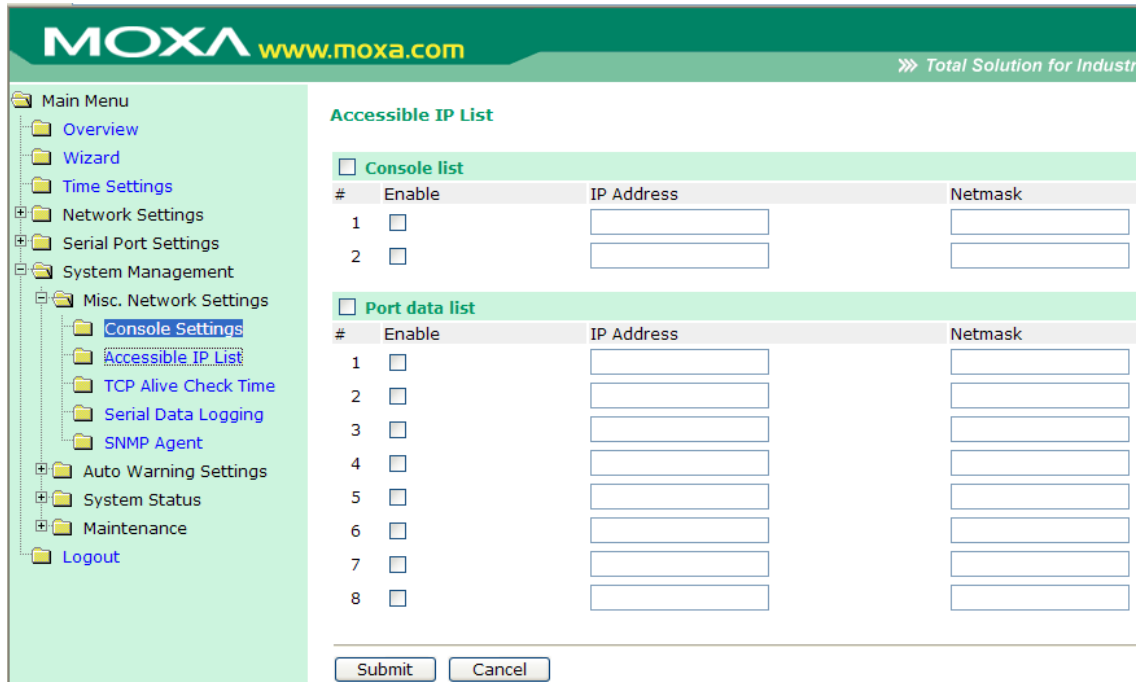
NPort W2004 uses an IP address based filtering method to control access to itself.

Accessible IP Settings allows you to add or block remote host IP addresses to prevent unauthorized access. Access to NPort W2004 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 W2004. You can set up one of the following cases by setting the parameters accordingly.

- **Only one host with a specific IP Address can access the NPort W2004**
  Enter the specific IP address (e.g., 192.168.1.1), and enter 255.255.255.255 for Netmask.

- **Hosts on the specific subnet can access the NPort W2004**
  Enter an IP address (e.g., 192.168.1.0), and enter the Netmask (e.g., 255.255.255.0). Note that this type of setting will allow access to all network hosts on a particular subnet.

- **Any host can access the NPort W2004**
  Disable this function by un-checking the "Enable the accessible IP list" checkbox. Refer to the following table for more configration examples.

The following "Allowable Hosts" table gives five configuration examples.

| Allowable Hosts	IP Address	Netmask
Any host	*blank*	*blank*
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

TCP Alive Check Time
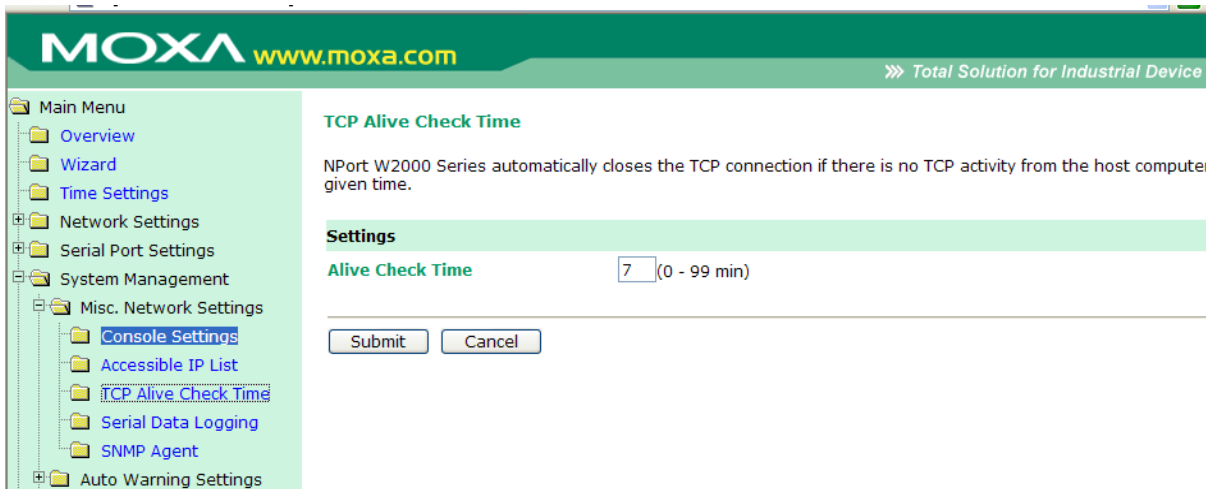
TCP alive check time

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 W2004 automatically closes the TCP connection if there is no TCP activity for the given time. After the connection is closed, NPort W2004 starts listening for another host's TCP connection.

Serial Data Logging
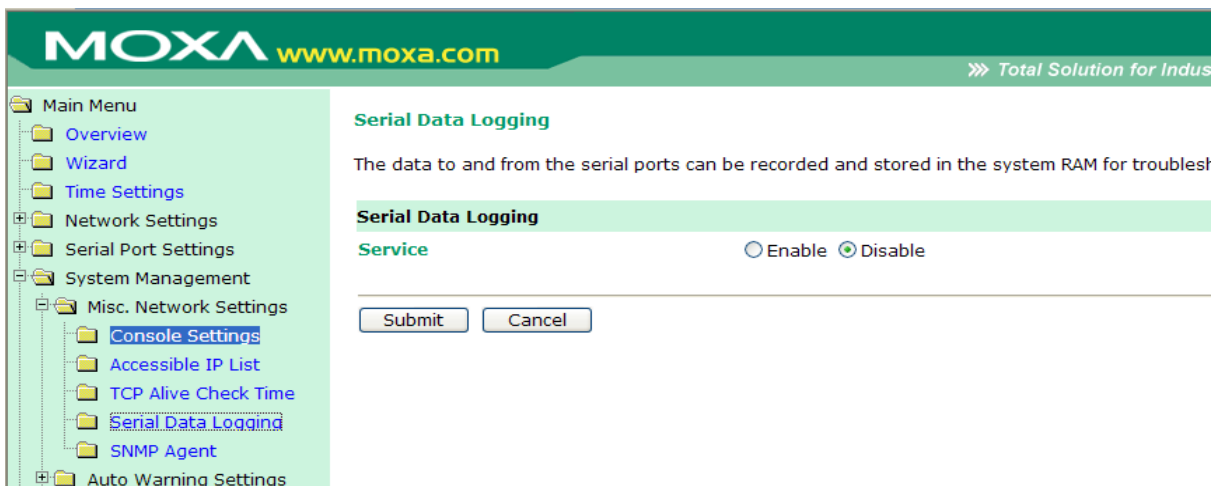
NPort provides the capability to store data logs for all serial ports. The logs will be stored in the system RAM. The data will be deleted when NPort is powered off. Due to the system's SDRAM limitation, the memory size of local buffers is fixed. Each serial port is allotted 64 KB to store the port's log file.

SNMP Agent

To enable the SNMP Agent function, select the enable option, and enter a Community Name (e.g., "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 authenticate weakly 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 No. 2)	None	Optional

Specify the location string for SNMP agents such as NPort W2004. This string is usually set to the street address where the NPort W2004 is physically located.

Auto Warning Settings

Event Settings
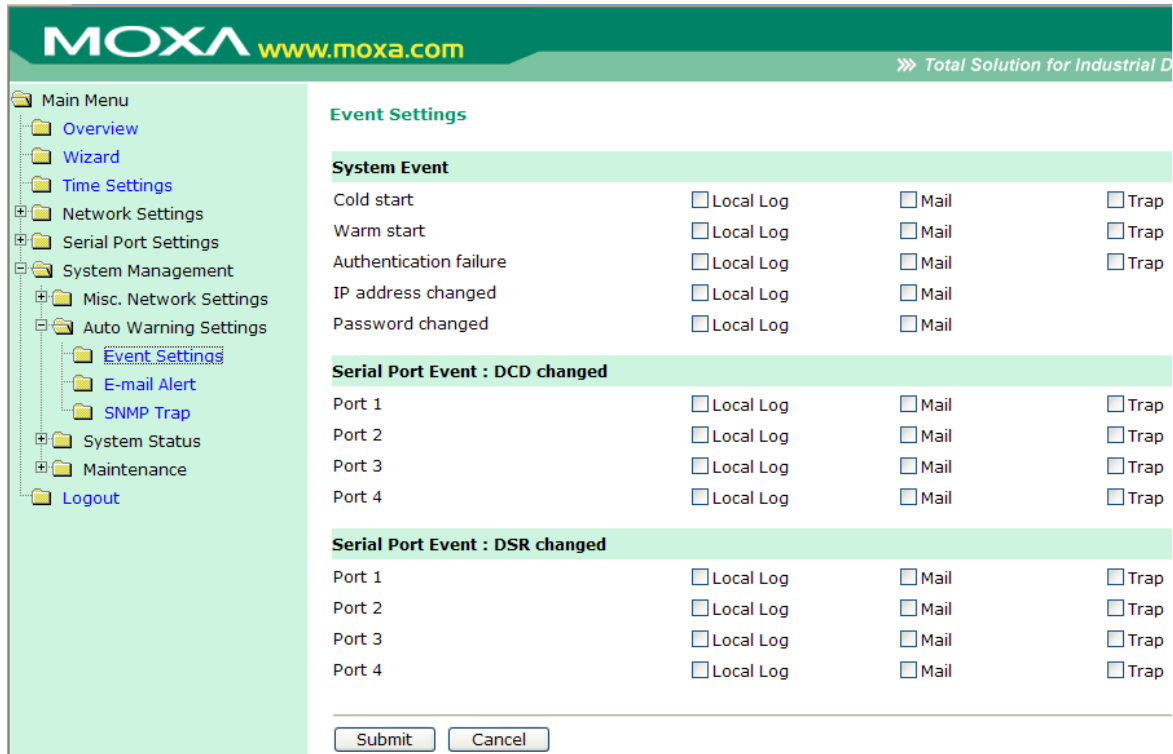
System Event

Cold start
This refers to starting the system from power off (contrast this with warm start). When performing a cold start, NPort W2004 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 W2004 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 W2004 will immediately send an e-mail or send an SNMP trap.

IP address changed
The user has changed NPort W2004's IP address. When the IP address changes, NPort W2004 will send an e-mail with the new IP address before NPort W2004 reboots. If the NPort W2004 is unable to send an e-mail message to the mail server within 15 seconds, NPort W2004 will reboot anyway, and abort the e-mail auto warning.

Password changed
The user has changed NPort W2004's password. When the password changes, NPort W2004 will

send an e-mail with the password changed notice before NPort W2004 reboots. If the NPort W2004 is unable to send an e-mail message to the mail server within 15 seconds, NPort W2004 will reboot anyway, and abort the e-mail auto warning.

Serial Port Event : 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 W2004 will immediately send an e-mail or send an SNMP trap.

Serial Port Event : 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 W2004 will immediately send an e-mail or send an SNMP trap.

Checkbox Items

Local Log

Setting	Factory Default	Necessity
Enable, Disable	Disable	Optional

This feature helps the administrator manage how the NPort W2004 logs system events when enabled events—such as Cold start, Warm start, Authentication failure, etc.—occur. To configure this feature, click on the Event Type **Local Log** checkbox.

Mail

Setting	Factory Default	Necessity
Enable, Disable	Disable	Optional

This feature helps the administrator manage how the NPort W2004 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 W2004 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.

E-mail Alert

Mail Server Settings

Mail server (SMTP)

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

Alert Mailing List

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 W2004 SMTP AUTH supports LOGIN, PLAIN, CRAM-MD5 (RFC 2554).

SNMP Trap

SNMP trap receiver IP (or domain name)

Setting	Factory Default	Necessity
IP address or Domain Name	None	Optional

System Status

WLAN Status

The **WLAN Status** page lists **Mode**, **SSID**, **Country Code**, **Channel**, **Link Status**, **Signal Strength**, **Connection Speed**, **WEP Mode**, **IP Configuration**, **IP Address**, and **Netmask**, as shown in the following figure.

Serial to Network Connections

The **Serial to Network Connections** page lists the operation modes and IP addresses associated with each of the wireless device server's serial ports.
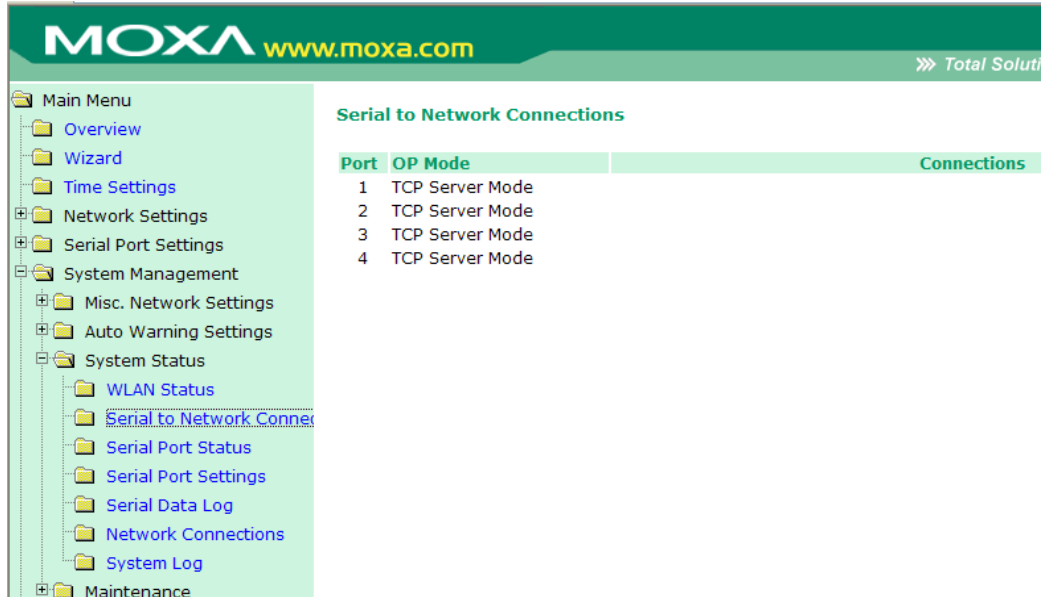
Serial Port Status

The **Serial Port Status** page lists serial transmission stats for each of the wireless device server's serial ports.

Serial Port Status

Port	TxCnt	RxCnt	TxTotalCnt	RxTotalCnt	DSR	CTS	DCD
1	0	0	0	0	Off	Off	Off
2	0	0	0	0	Off	Off	Off
3	0	0	0	0	Off	Off	Off
4	0	0	0	0	Off	Off	Off

Serial Port Settings

The **Serial Port Settings** page lists the serial transmission settings for each of the four ports.

Serial Port Settings

Port	Baud Rate	Bits	Stop	Parity	Flow Control	FIFO	Interface
1	115200	8	1	None	XON/XOFF	Enable	RS-232
2	115200	8	1	None	XON/XOFF	Enable	RS-232
3	115200	8	1	None	XON/XOFF	Enable	RS-232
4	115200	8	1	None	XON/XOFF	Enable	RS-232

Serial Data Log

This Text box is enabled only when Data logging is enabled. The data log contents are displayed in ASCII mode or HEX mode. Use the **Select all** button to select the entire log; you can then copy and paste the contents into a text file. The **Clear log** and **Refresh** buttons are used to clear the log, and refresh the log contents, respectively.
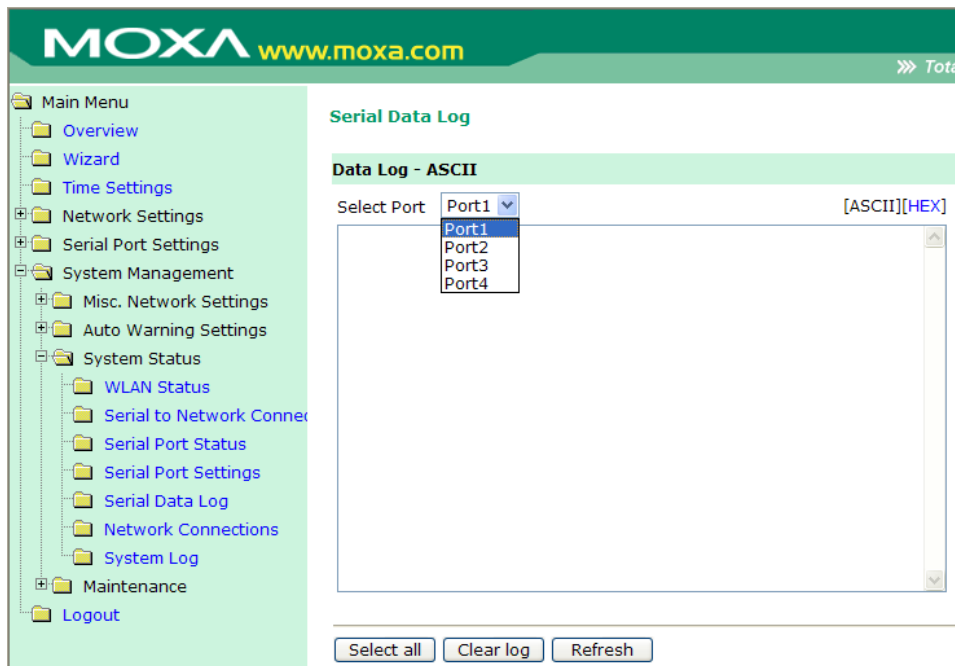
Network Connections

The **Network Connections** page displays the current status of the network connection.

Network Connections

Protocol	Recv-Q	Send-Q	Local Address	Foreign Address	State
TCP	0	0	*:1024	*:*	LISTEN
TCP	0	0	*:20000	*:*	LISTEN
TCP	0	0	192.168.126.254:4001	*:*	LISTEN
TCP	0	0	192.168.126.254:4002	*:*	LISTEN
TCP	0	0	192.168.126.254:4003	*:*	LISTEN
TCP	0	0	192.168.126.254:4004	*:*	LISTEN
TCP	0	0	192.168.126.254:966	*:*	LISTEN
TCP	0	0	192.168.126.254:967	*:*	LISTEN
TCP	0	0	192.168.126.254:968	*:*	LISTEN
TCP	0	0	192.168.126.254:969	*:*	LISTEN
TCP	0	0	*:110	*:*	LISTEN
TCP	0	0	*:111	*:*	LISTEN
TCP	0	0	*:80	*:*	LISTEN
TCP	0	0	*:22	*:*	LISTEN
TCP	0	0	*:23	*:*	LISTEN
TCP	0	0	*:25	*:*	LISTEN
TCP	0	0	*:443	*:*	LISTEN
TCP	0	0	192.168.126.254:80	192.168.126.100:3103	TIME_WAIT
TCP	0	653	192.168.126.254:80	192.168.126.100:3106	ESTABLISHED
UDP	0	0	*:1032	*:*	
UDP	0	0	127.0.0.1:1033	*:*	
UDP	0	0	127.0.0.1:1034	*:*	
UDP	0	0	127.0.0.1:1035	*:*	
UDP	0	0	127.0.0.1:1036	*:*	
UDP	0	0	127.0.0.1:1037	*:*	
UDP	0	0	127.0.0.1:1038	*:*	

System Log

This window displays the **System Log**. Use the **Select all** button to select the entire log; you can then copy and paste the contents into a text file. The **Clear log** and **Refresh** buttons are used to clear the log, and refresh the log contents, respectively.
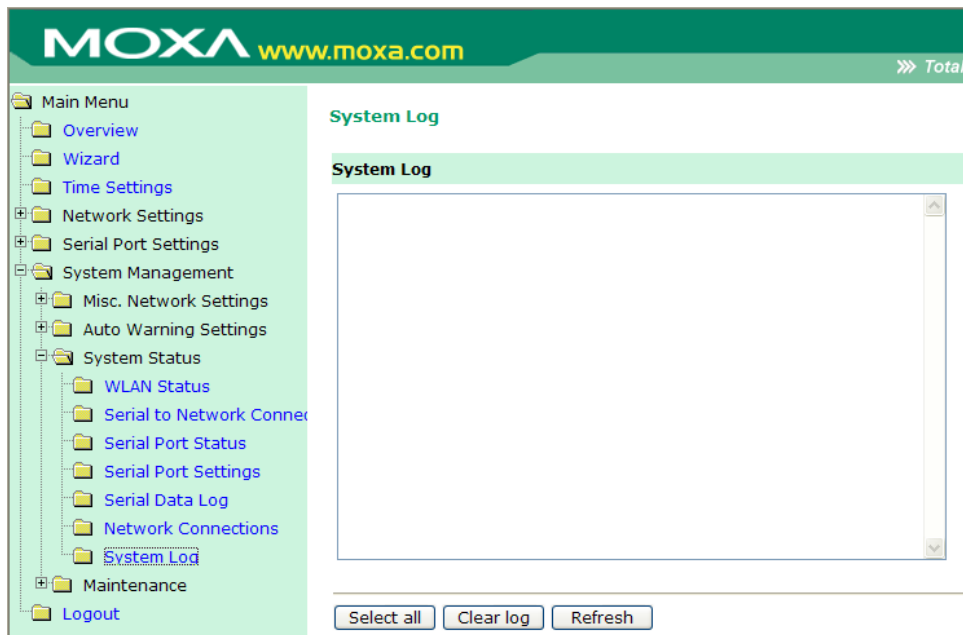
Maintenance

Firmware Upgrade

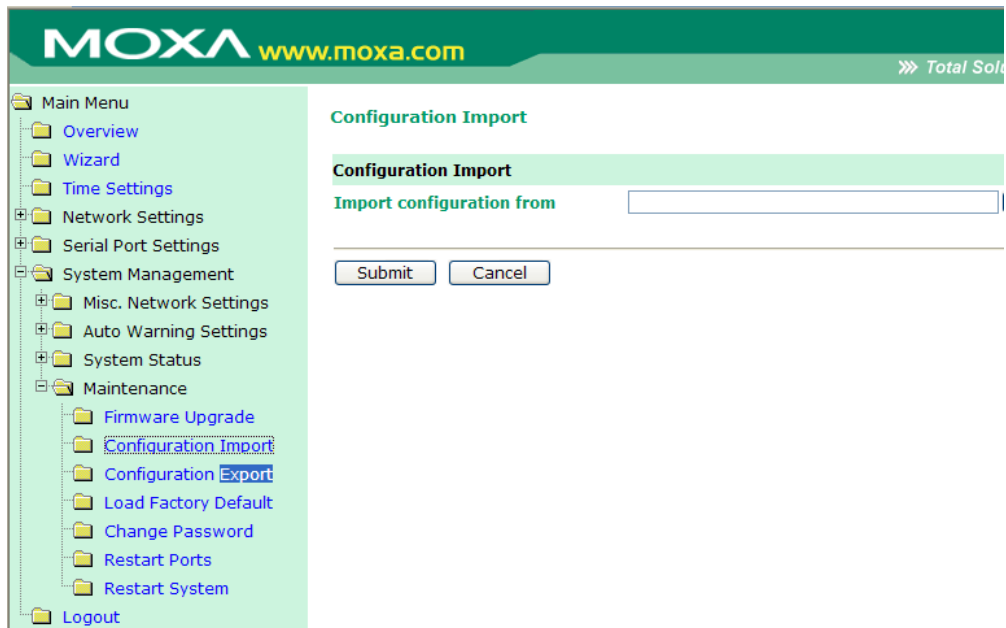Click on **Firmware Upgrade** to upgrade the firmware.
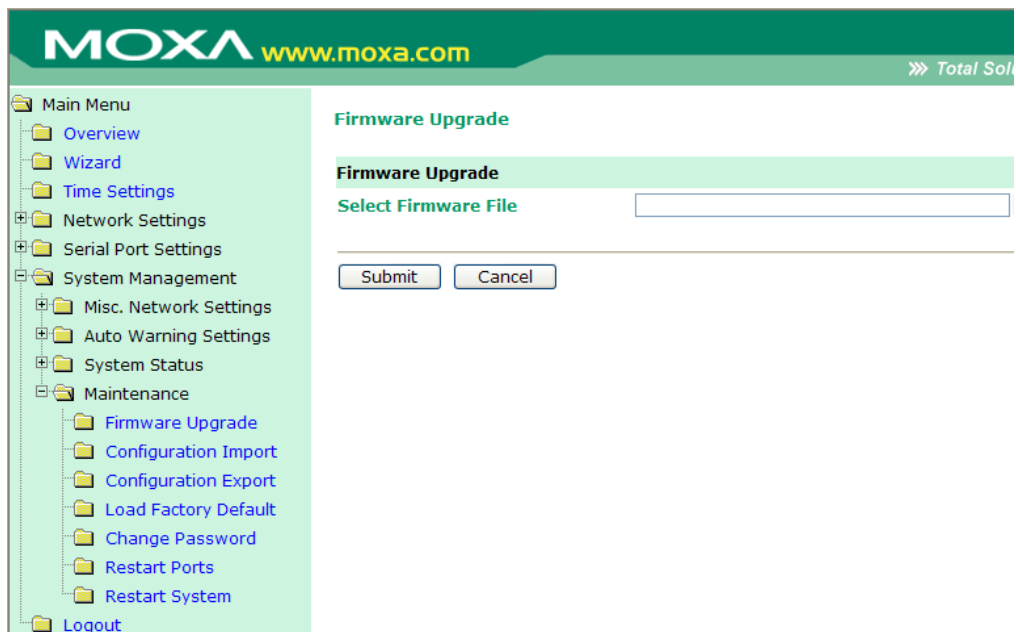
Select the correct firmware file, and then click on **Submit** to load the new firmware into the NPort W2004's memory.
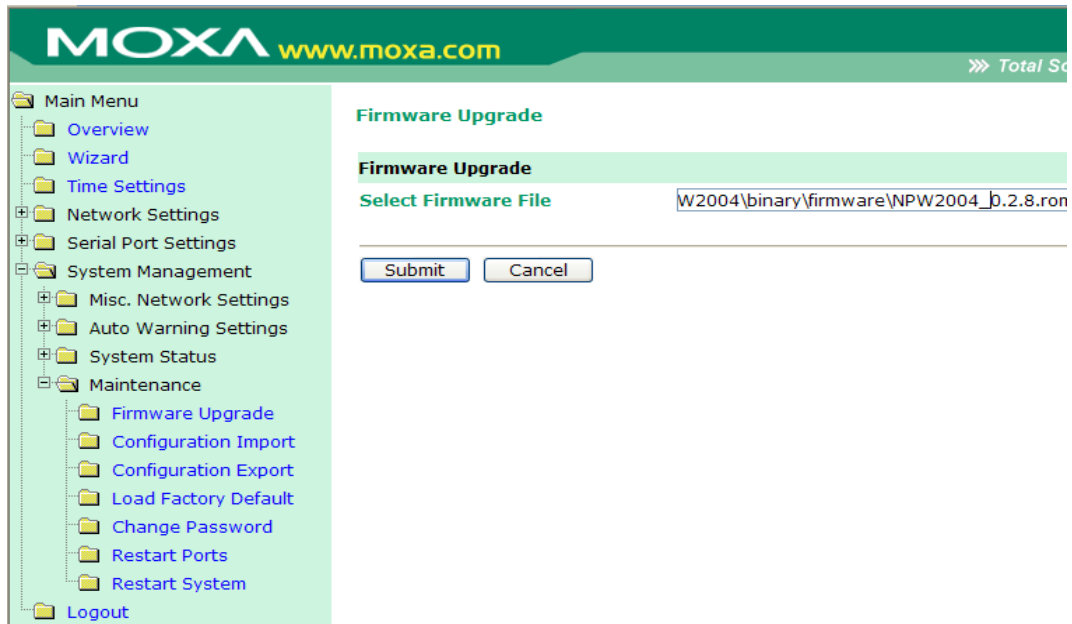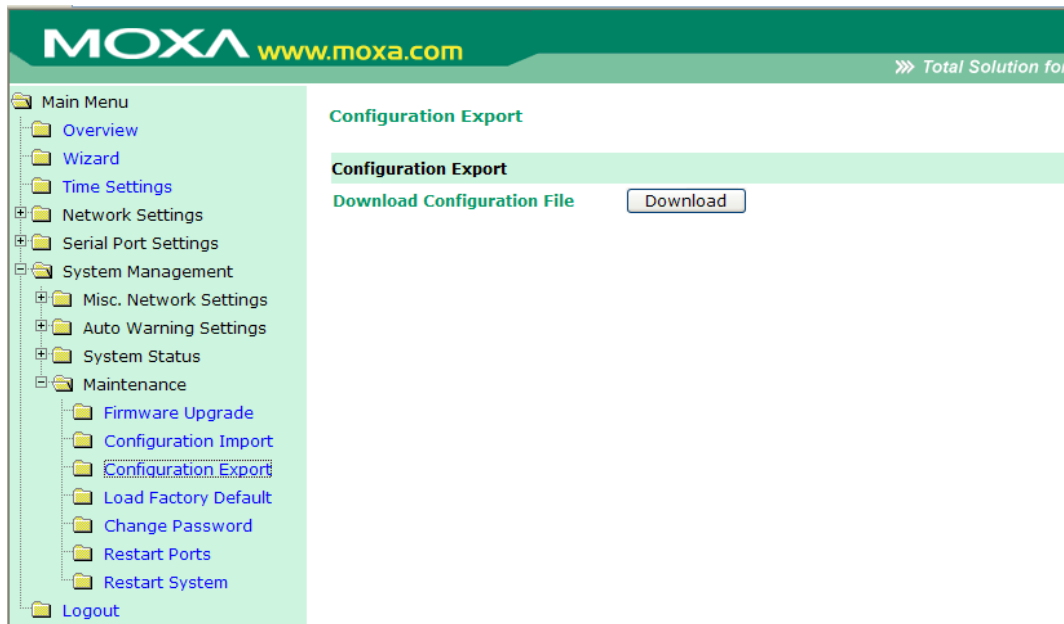
Configuration Import

Select the a configuration file, and then click on **Submit** to load the configuration settings into the NPort W2004.


Configuration Export

Click on the **Download** button, and then select the file that you would like to export the current configuration to.

Load Factory Default

Use this page to reset the NPort W2004's settings to the factory default values. Be aware that previous settings will be lost. Choose one of the two options—**Reset to factory default (excluding IP configuration)** or **Reset to factory default**—and then click on **Submit**. Choose the first option to retain the current IP address, Netmask, and Gateway address.
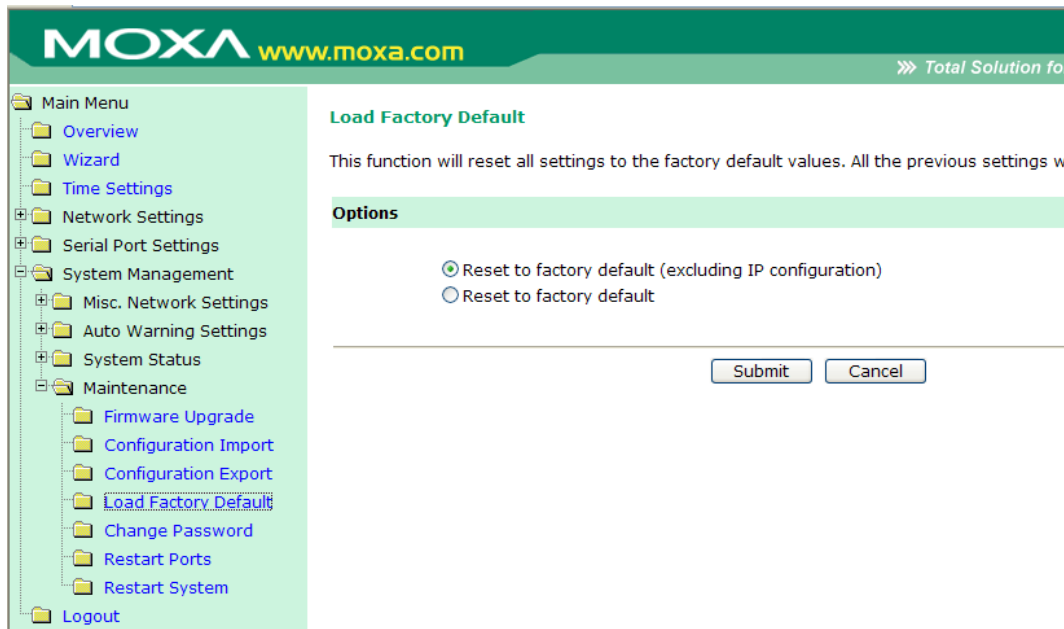
Change Password

To change the password for the NPort W2004, input the **Old password**, **New password**, and then retype the new password in the **Retype password** input box. To erase the password, simply leave all three text input boxes blank, and then click on **Submit**.

> **⚠ ATTENTION**
>
> If you forget the password, the ONLY way to configure NPort W2004 is by using the Reset button on NPort W2004's casing to "Load Factory Default."

Restart Ports

Select the ports you would like to restart, and then click on the **Submit** button to restart the ports.
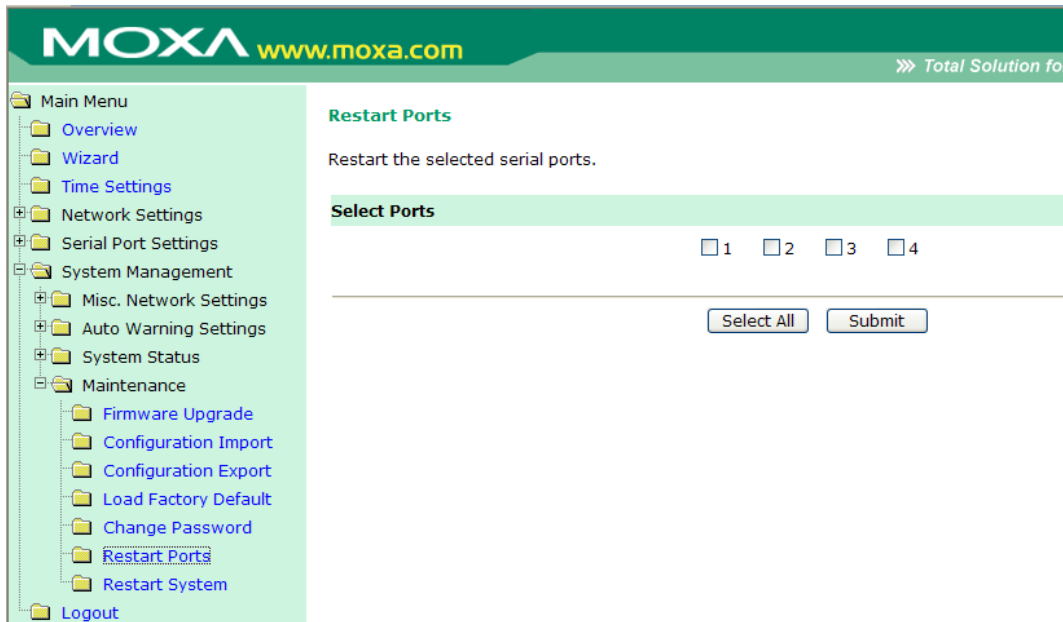
Restart System

Click on **Submit** to reboot the NPort W2004..

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- 🗀 Main Menu
  - 📁 Overview
  - 📁 Wizard
  - 📁 Time Settings
  - ⊞ 📁 Network Settings
  - ⊞ 📁 Serial Port Settings
  - ⊟ 🗀 System Management
    - ⊞ 📁 Misc. Network Settings
    - ⊞ 📁 Auto Warning Settings
    - ⊞ 📁 System Status
    - ⊟ 🗀 Maintenance
      - 📁 Firmware Upgrade
      - 📁 Configuration Import
      - 📁 Configuration Export
      - 📁 Load Factory Default
      - 📁 Change Password
      - 📁 Restart Ports
      - 📁 Restart System
  - 📁 Logout

Restart System

The configuration has been changed. Please click [Submit] button to reboot with new conf

!!! Warning !!!

Reboot will disconnect both serial and Ethernet connections and data

Submit

6

Installing and Configuring the Software

This following topics are covered in this chapter:

❑ **Overview**
❑ **Installing NPort COM Driver**
❑ **Intalling NPort Search Utility**
❑ **Configuring NPort COM Driver**
❑ **Configuring NPort Search Utility**
❑ **Real TTY and Fixed TTY Installation**
❑ **Upgrading the Firmware**

Overview

The Documentation & Software CD included with your NPort W2004 is designed to make the installation and configuration procedure easy and straightforward. This auto-run CD includes the NPort COM Driver (for COM mapping), NPort Search Utility (to broadcast search for all NPort W2004 accessible over the network), User's Manual, and firmware upgrade utility.

Installing NPort COM Driver

1. Click on the **INSTALL COM Driver** button in the NPort Installation CD auto-run window to install the NPort W2000 Series COM Driver.
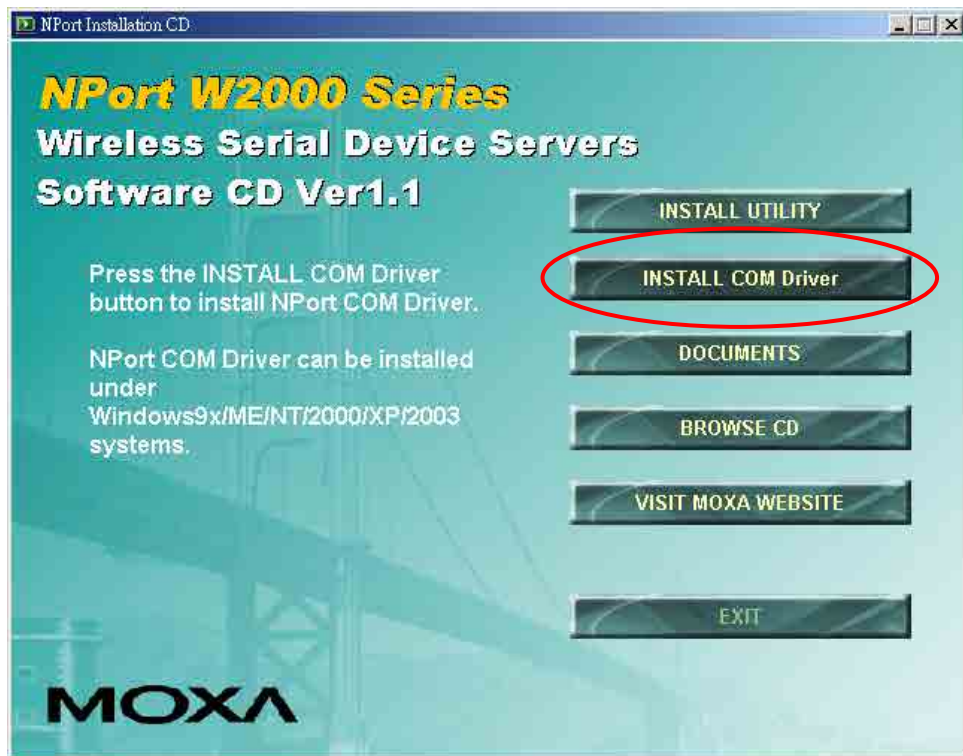
2. Once the installation program starts running, click on **Yes** to proceed.

3. Click on **Next** when the Welcome window opens to proceed with the installation.
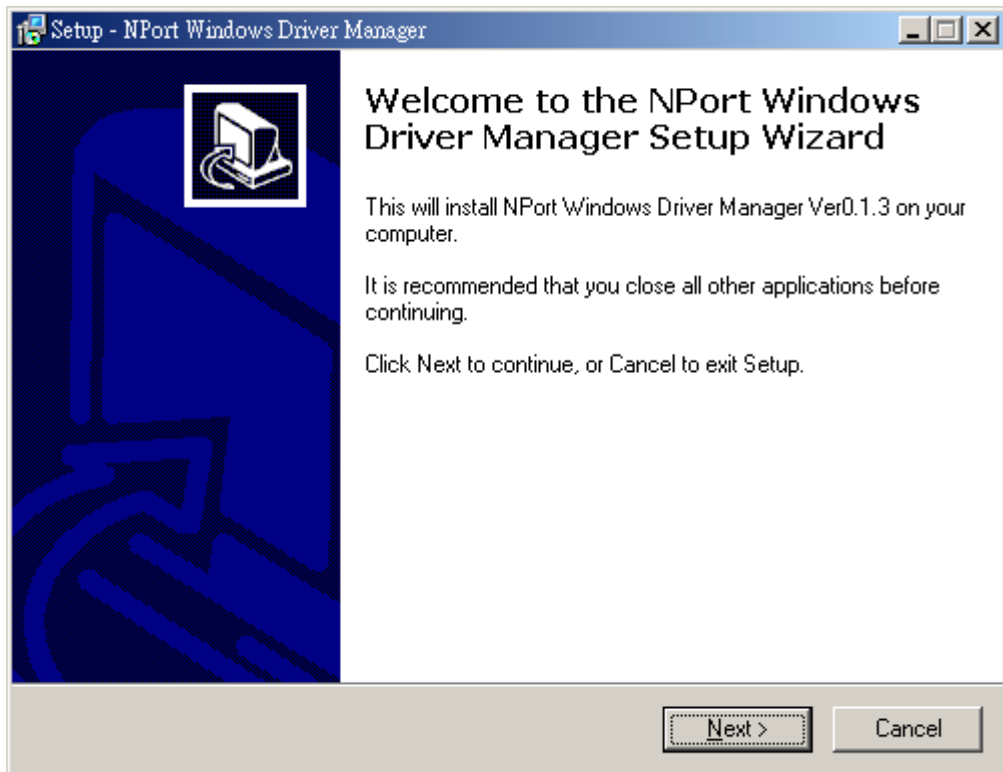
4. Click on **Next** to install program files in the default directory, or use the folder menu to select an alternative location.
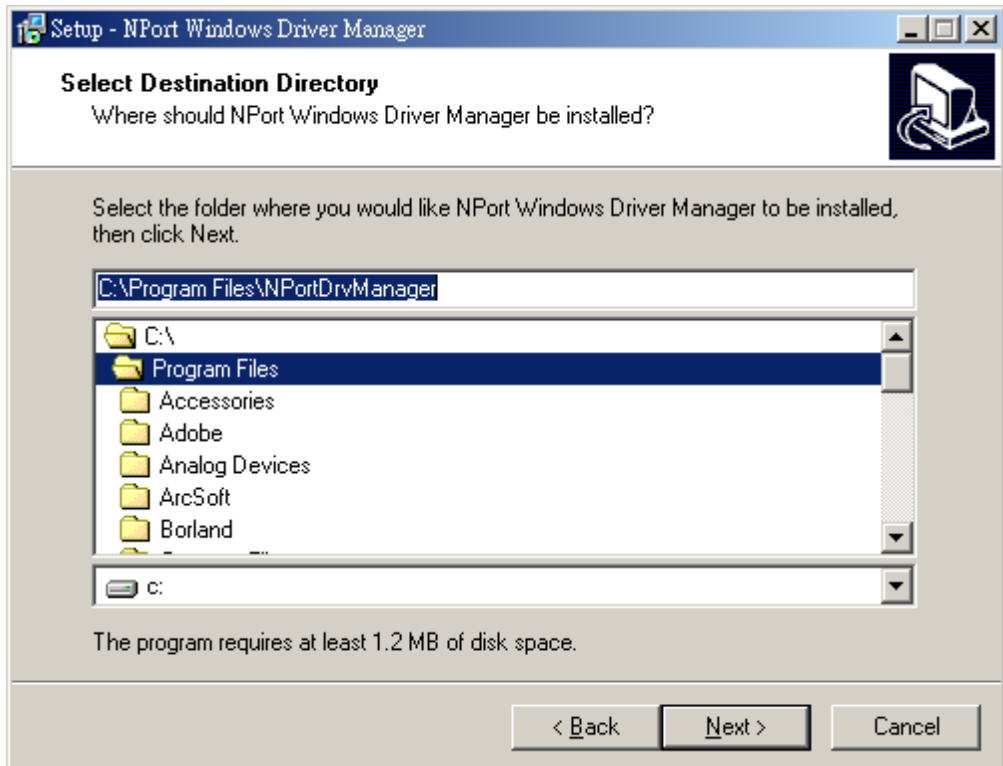
5. Click on **Next** to install the program's shortcuts in the **NPort Windows Driver Manager** Start Menu folder.
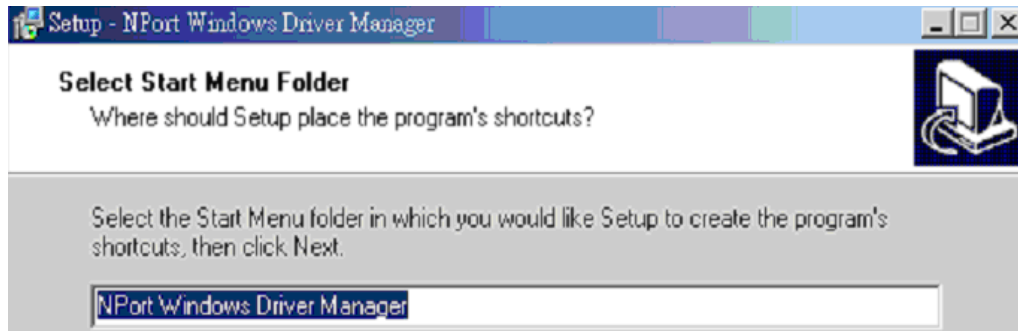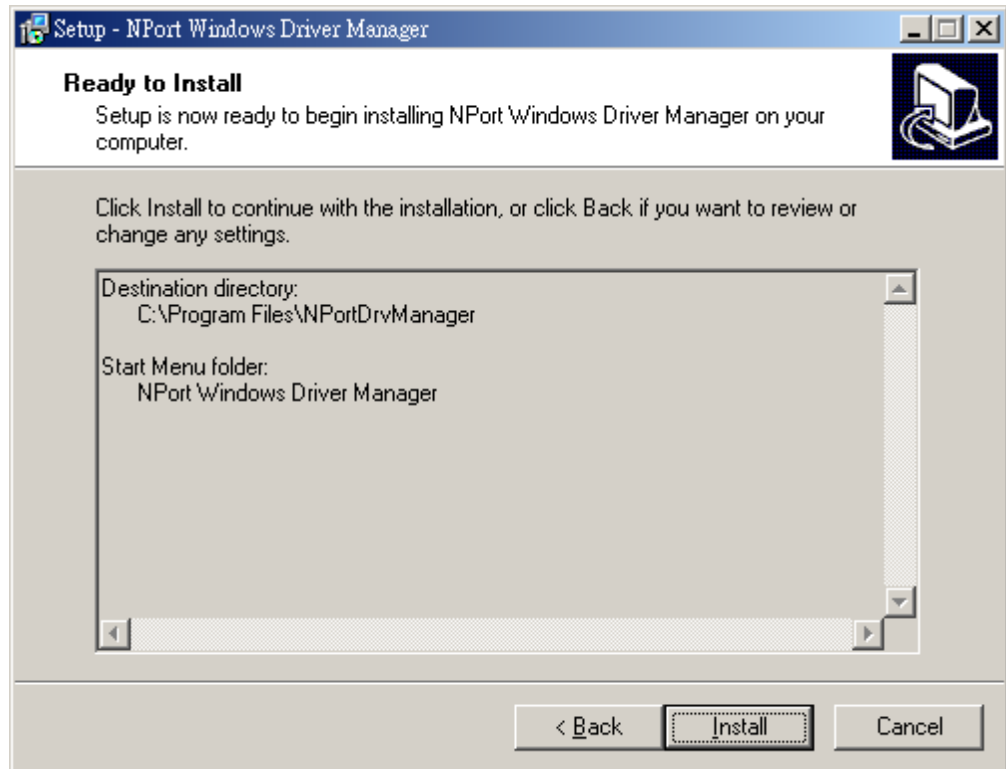
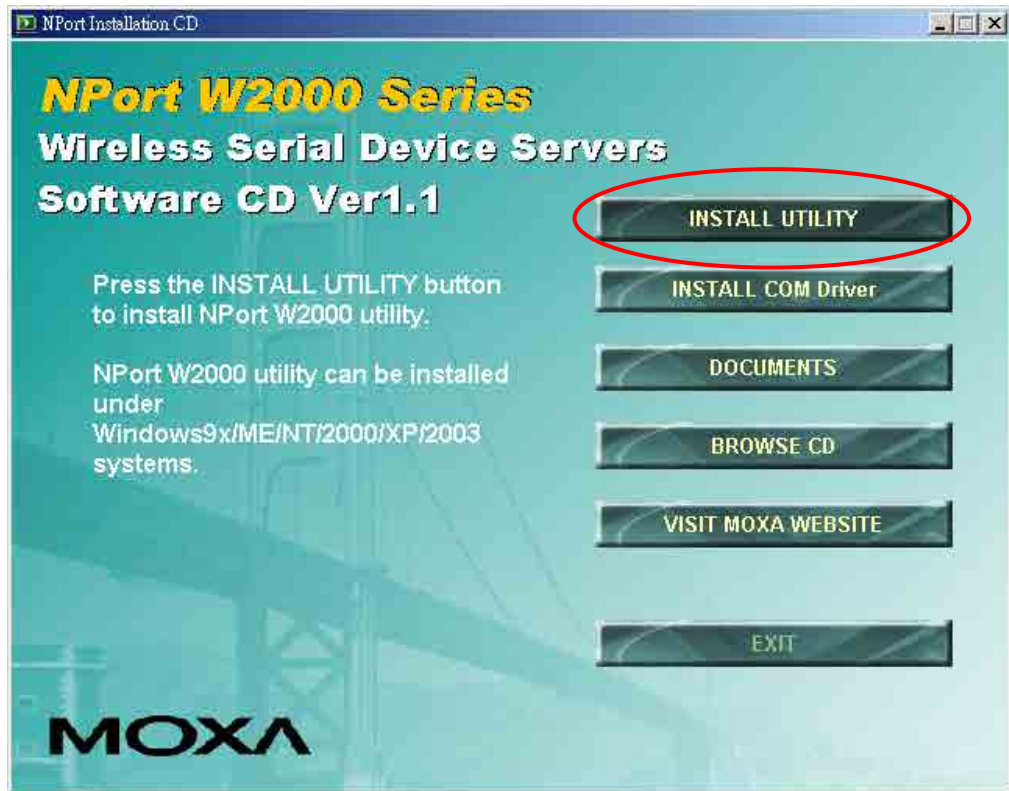6. Click on **Install** to proceed with the installation.

7. The Installing window will report the progress of the installation.
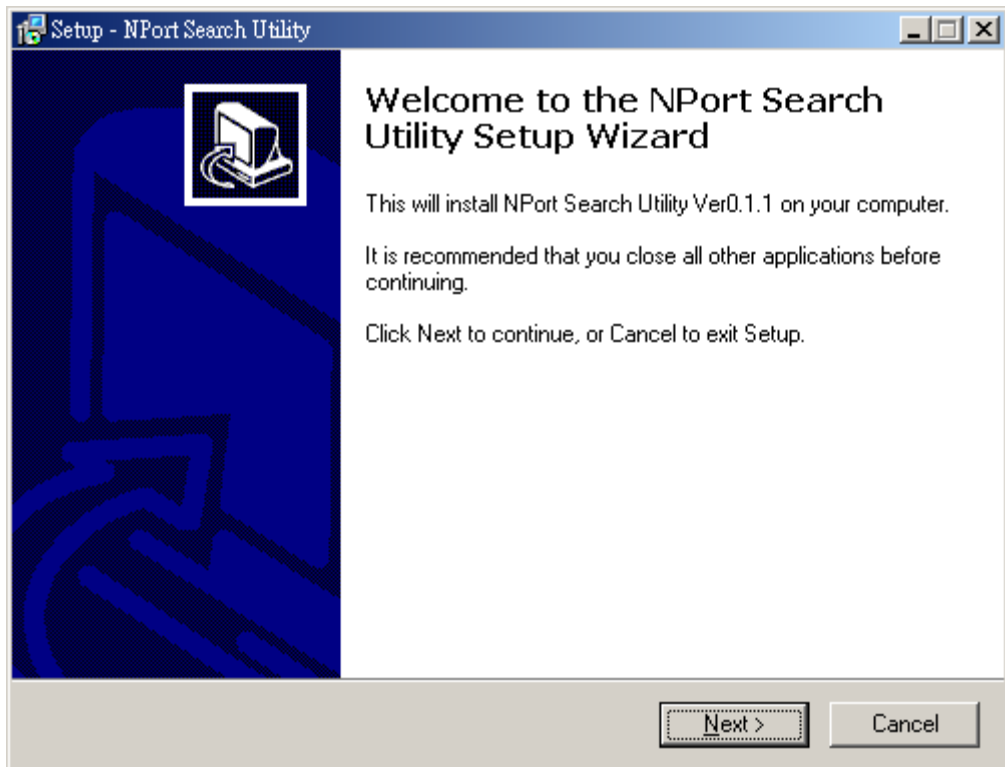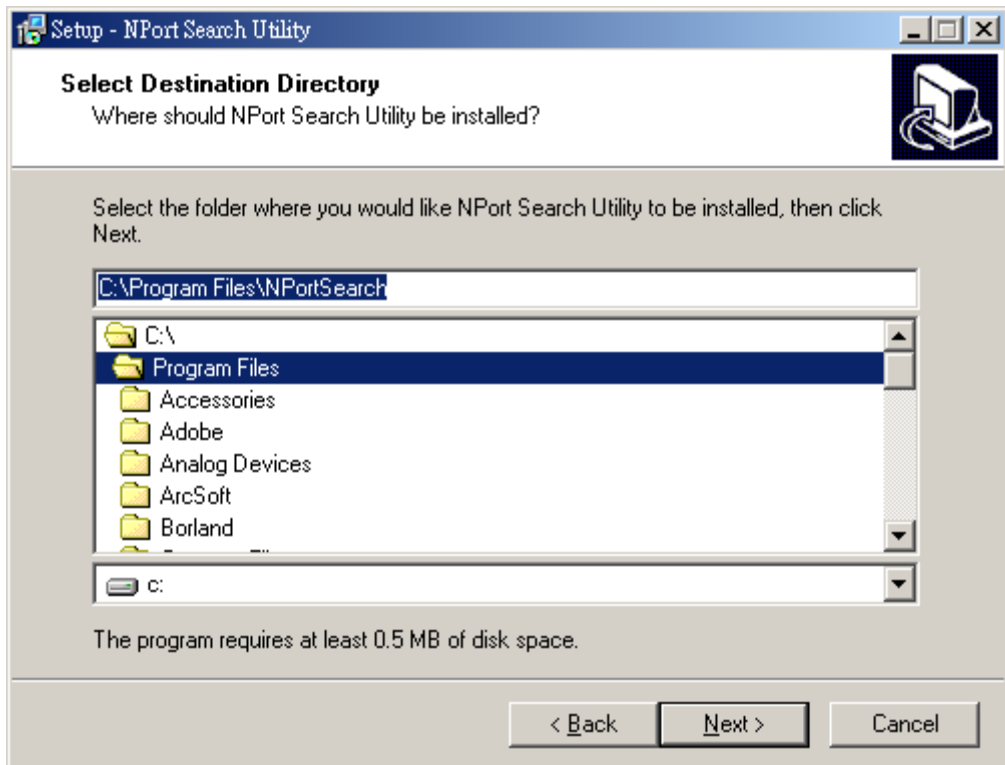8. Click on **Finish** to complete the installation of the NPort W2004 COM Mapping Utility.
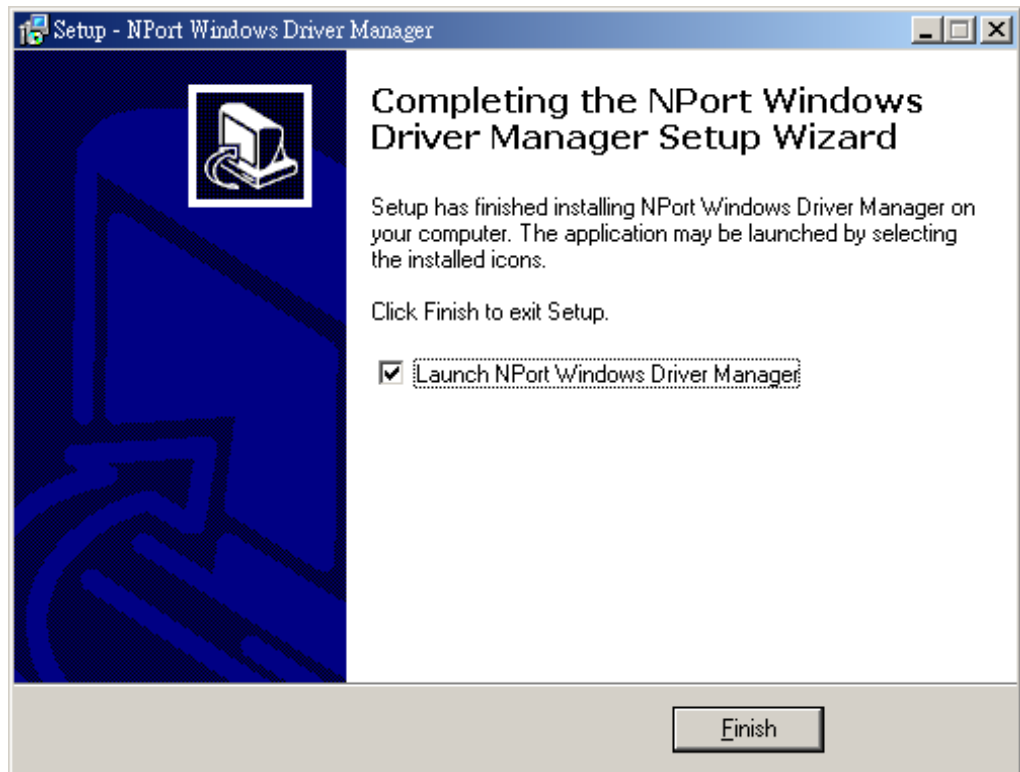
Installing NPort Search Utility

1. Click on the **INSTALL UTILITY** button in the NPort Installation CD auto-run window to install the NPort Search Utility.
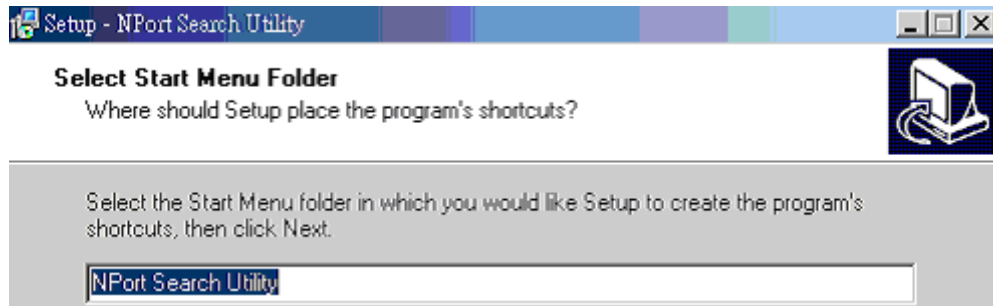

2. Once the program starts running, click on **Yes** to proceed.

3. Click on **Next** when the Welcome window opens to proceed with the installation.
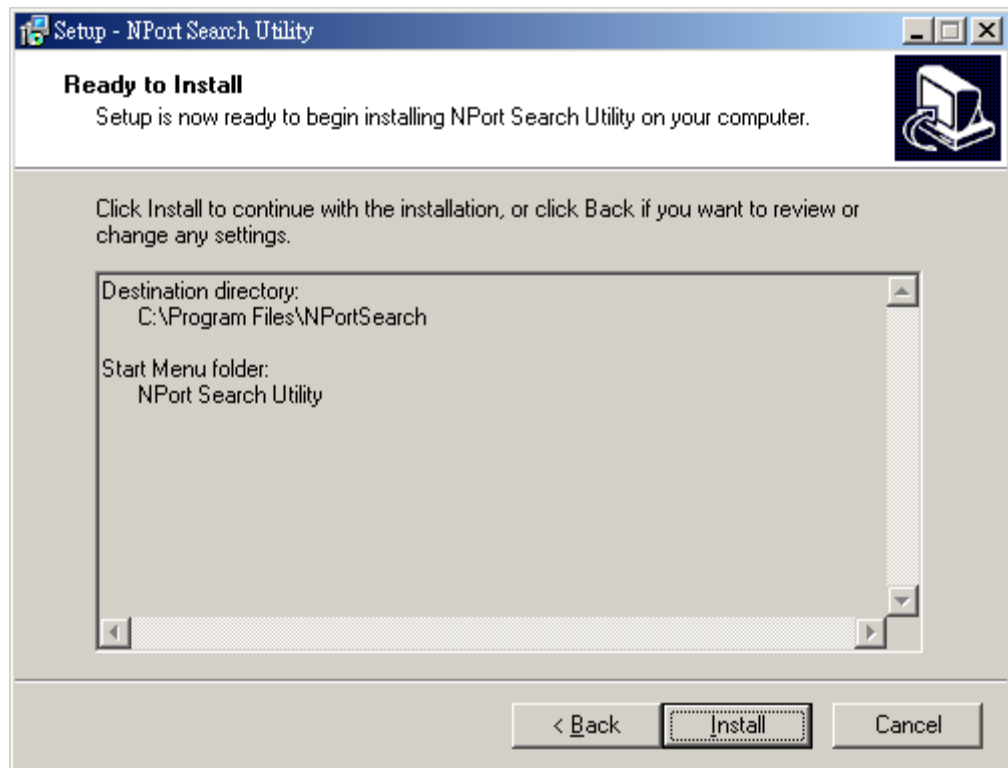
4. Click on **Next** to install program files in the default directory, or use the folder menu to select an alternative location.
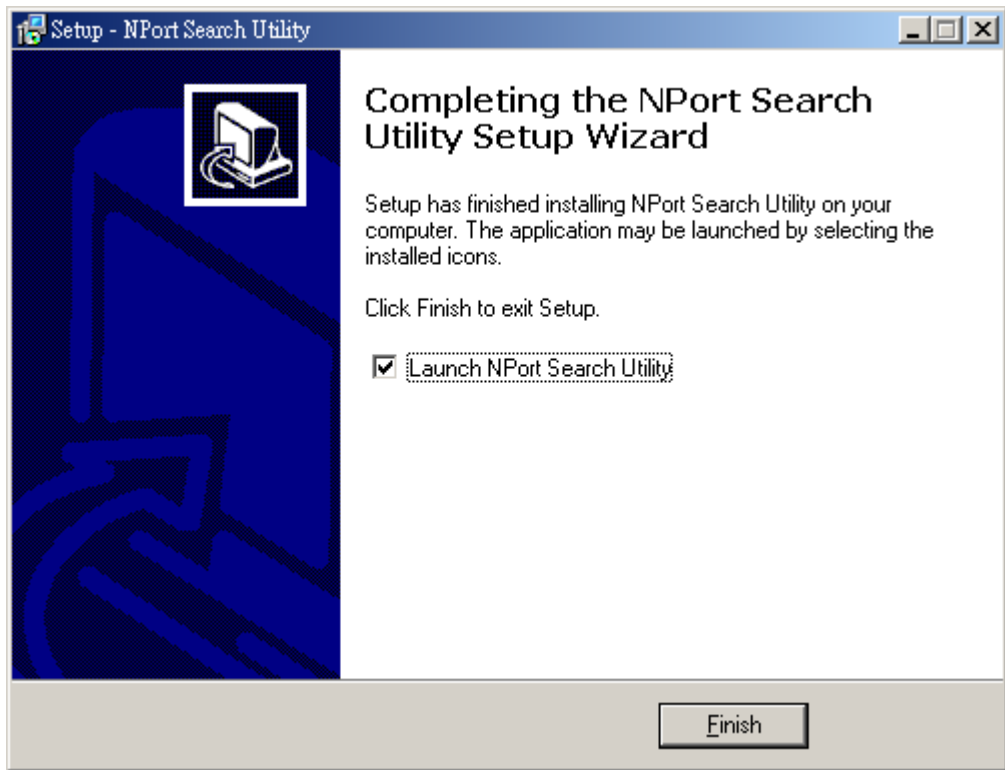
5. Click on **Next** to install the program's shortcuts in the **NPort Search Utility** Start Menu folder.

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

7. The Installing window will report the progress of the installation.

8. Click on **Finish** to complete the installation of the NPort W2004 Search Utility.

Configuring NPort COM Driver

The **NPort COM Driver** utility installs Real COM drivers that work under Windows 98/ME/2000/XP/2003. After you install NPort COM Driver, you can set up the NPort W2004's serial ports as remote COM ports for your PC host.

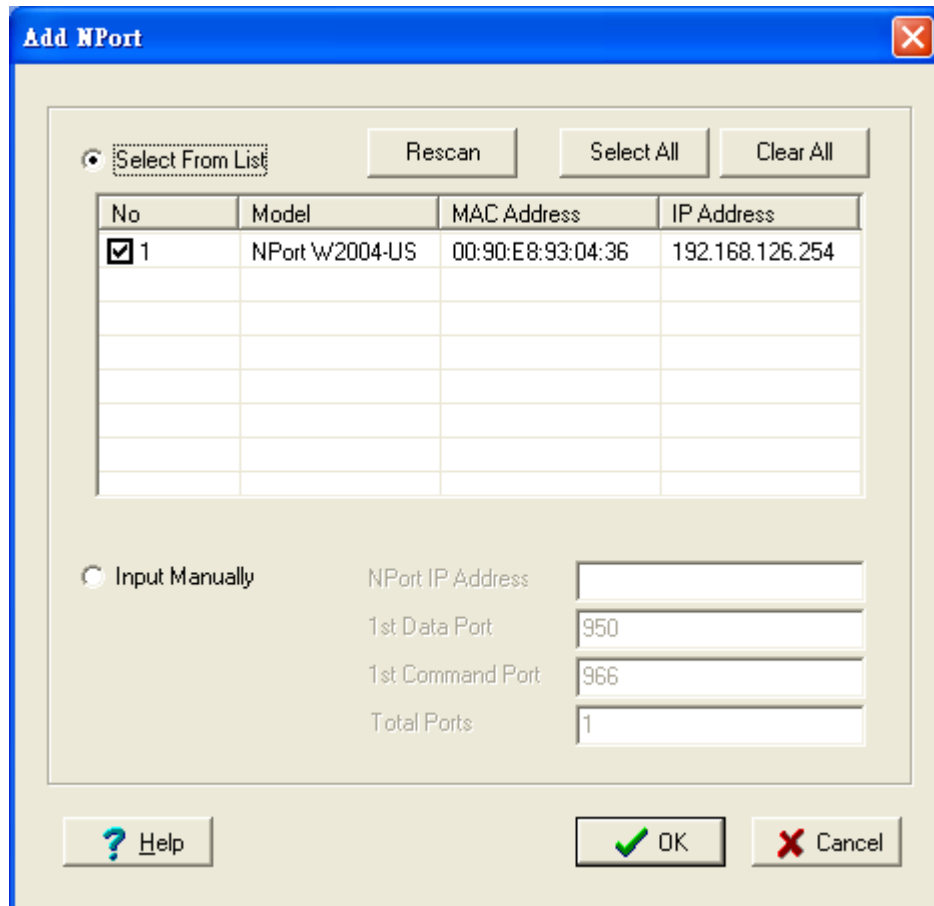Use the following steps to map the COM ports:

1. Click on **Start → Nport Windows Driver Manager → NPort COM Mapping Utility** to start the COM mapping utility.

2. Click on the **Add** icon.
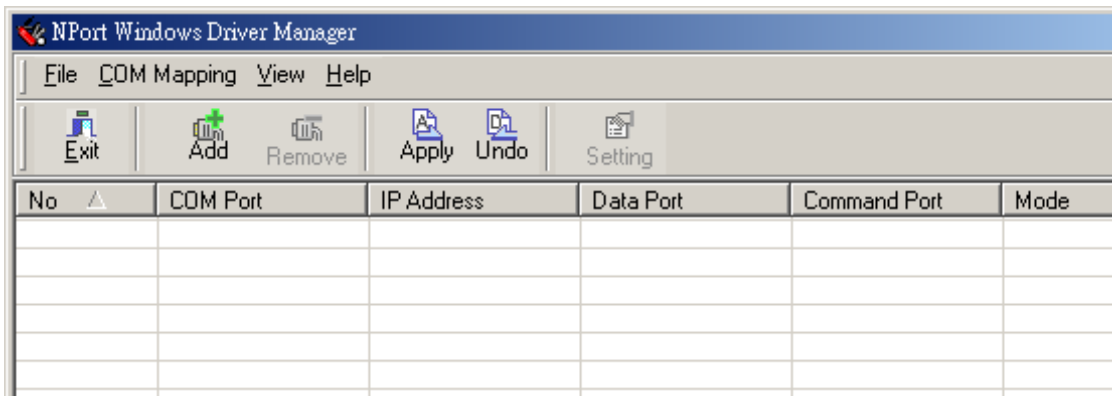
3.   Click on **Rescan** to search for NPort device servers, select the server you would like to map COM ports to, and then click on **OK**.

4. Alternatively, you can select **Input Manually** and then input the **NPort IP Address**, **1st Data Port**, **1st Command Port**, and **Total Ports** for the NPort W2004 that you would like to map COM ports to. Click on **OK** to proceed to the next step.

5.   Click on **Yes** to activate the COM ports at this time, or click on **No** to activate the COM ports later. Activating the COM ports saves the information in the host system registry. The host computer will not have the ability to use the COM port until you click on the **Apply** icon.
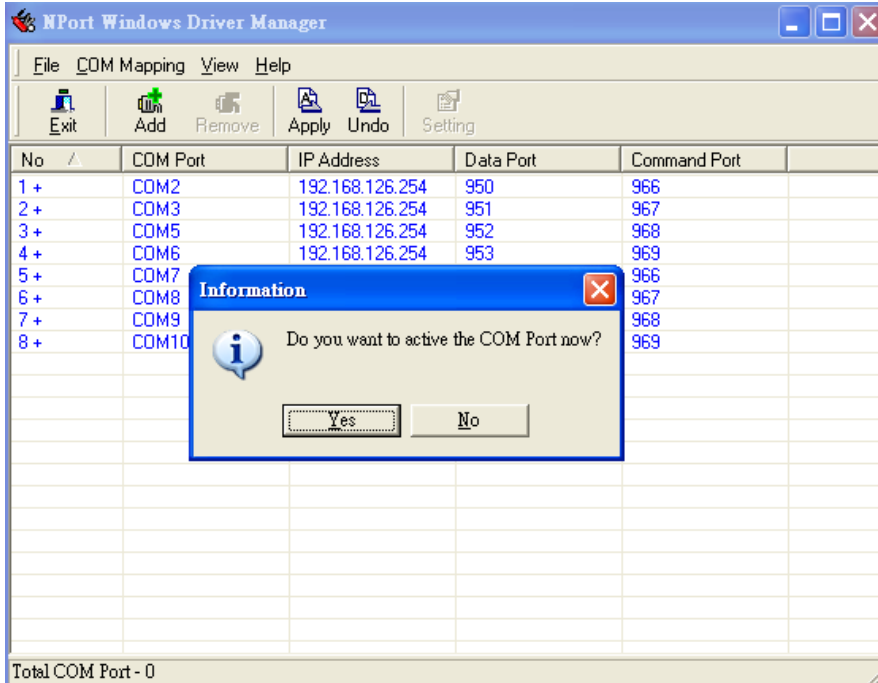
6.   The display text corresponding to NPorts whose ports are activated will change from blue to black.
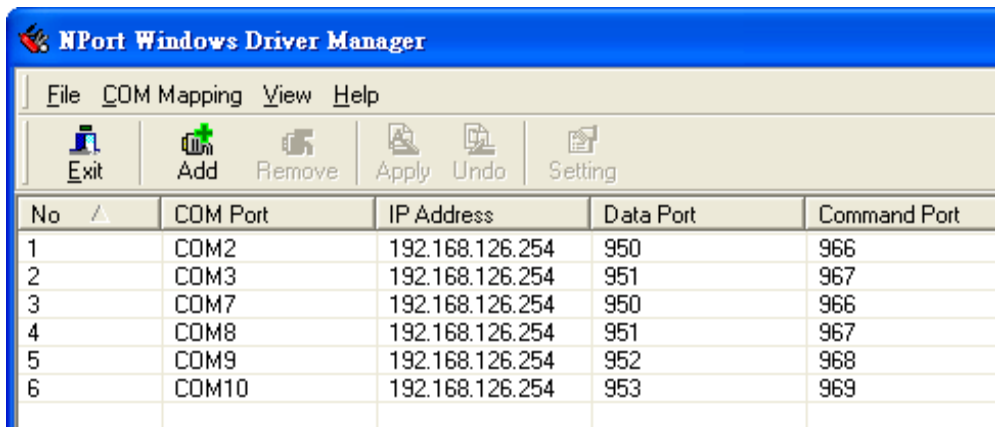
7. To re-configure the settings for a particular NPort, click on the row corresponding to that NPort to highlight it, and then click on the **Setting** icon.

8. In the **Basic Setting** panel, use the **COM Number** drop-down list to select a COM number for the NPort's first serial port. Check mark the **Auto Enumerating COM Number for Selected Ports** checkbox to automatically assign the next available COM number to the second serial port. Note that ports that are "in use" will be labeled accordingly.
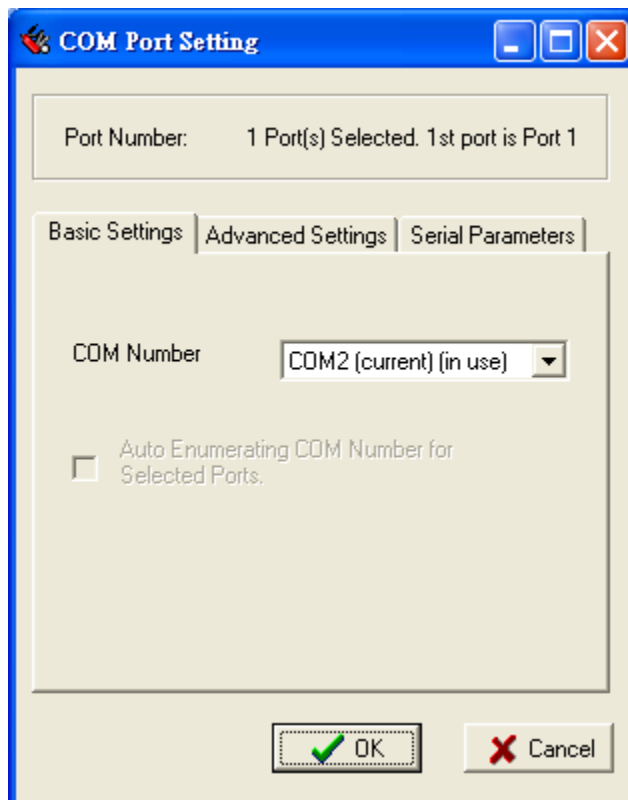
Click on the **Advanced Setting** tab to modify **Tx Mode**, **FIFO**, and **Flash Flush**.

Tx Mode
Hi-performance mode is the default for Tx mode. When the driver finishes sending data to the NPort W2004, the driver will issue a "Tx Empty" response to the program.

Under **classical mode**, the driver will not notify the user's program that Tx transmission is finished until all Tx data has been sent out from the NPort W2004. This ODE will cause lower throughput. Classical mode is recommended if you want to ensure that all data is sent out before further processing.

FIFO
If the FIFO is **Disabled**, NPort W2004 will transmit 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 the FIFO to Disable.

Fast Flush (only flushes the local buffer)
a.   We have added one optional Fast Flush function to Moxa's new NPort Real COM driver.

b.   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 no data is queued in the NPort firmware buffer, rather than just flushing the local buffer. This kind of design is used to satisfy 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.

c.   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.

d. 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()."
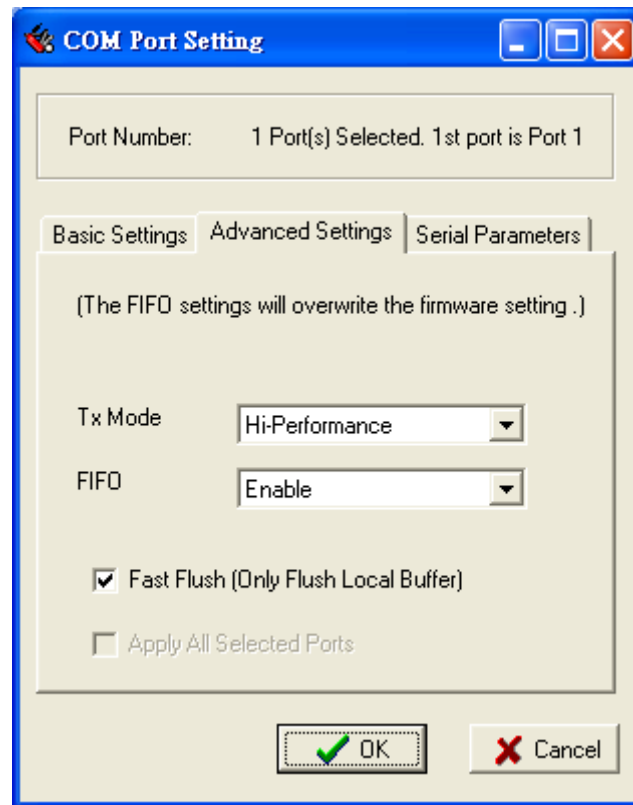
9. The Serial Parameter settings shown in the following figure are the default settings when the NPort W2004 is powered on. However, the program can redefine the serial parameters to different values after the program opens the port via Win 32 API.
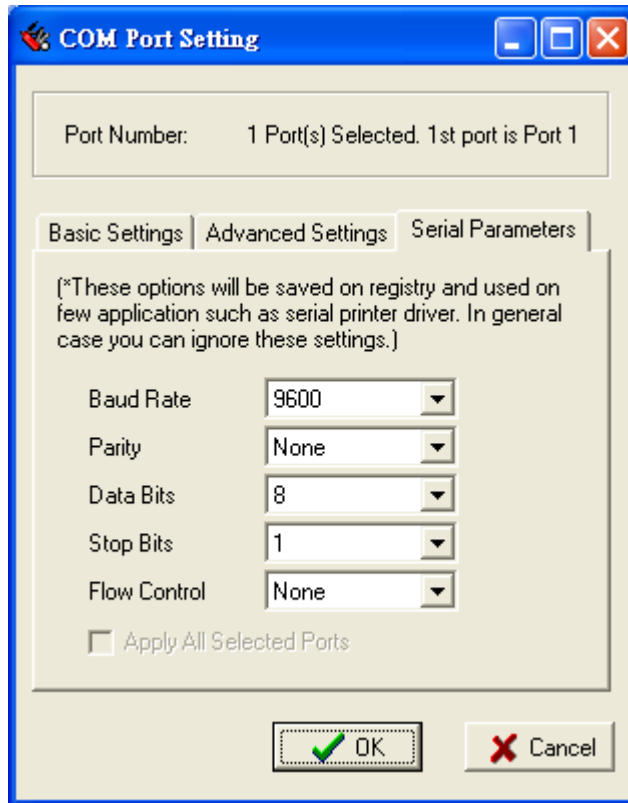
10. To save the configuration to a text file, select Export COM Mapping. You will then be able to import this configuration file to another host and use the same COM Mapping settings in the other host.
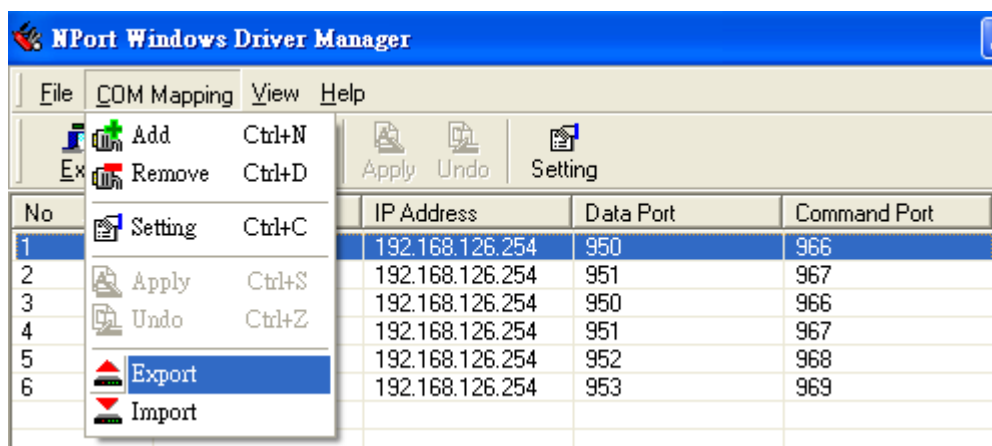
Configuring NPort Search Utility

The Broadcast Search function is used to locate all NPort W2004s that are connected to the same LAN as your computer. After locating an NPort W2004, you will be able to change the IP address.

Since the Broadcast Search function searches by MAC address and not IP address, all NPort W2004s connected to the LAN will be located, regardless of whether or not they are part of the same subnet as the host.

1. Open the **NPort Search Utility** and then click on the **Search** icon.
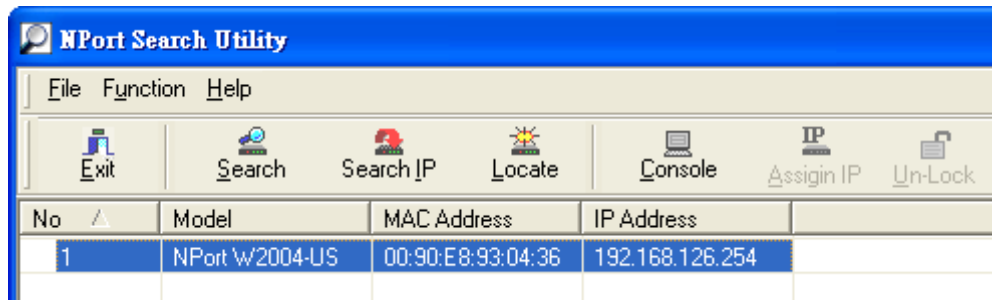
2. The **Searching** window indicates the progress of the search.
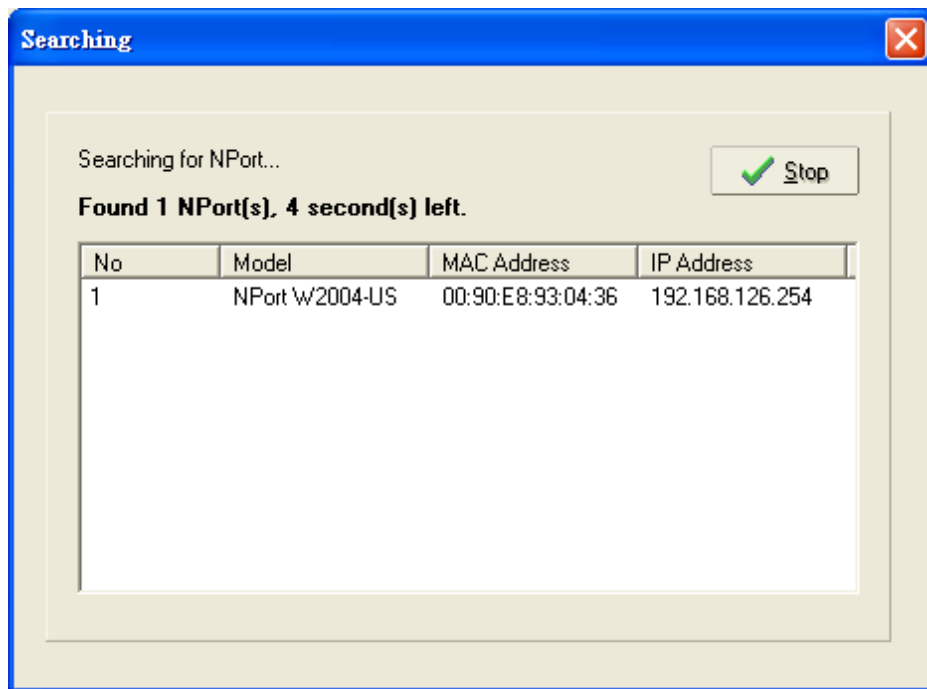
3. When the search is complete, the NPort W2004 units that were located will be displayed in the NPort Search Utility window.
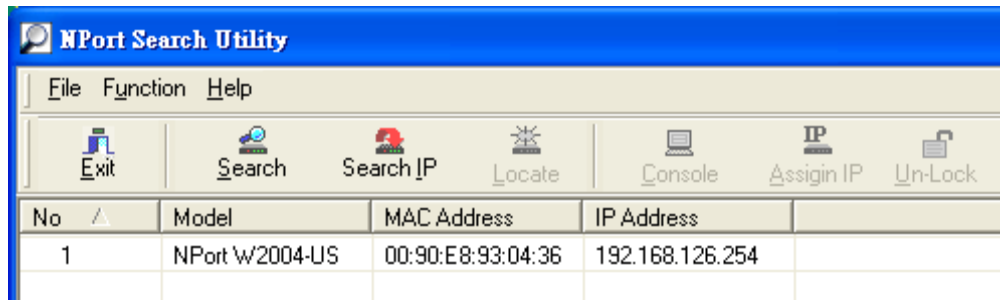
4. To modify the configuration of the highlighted NPort W2004, click on the **Console** icon to open the web console.
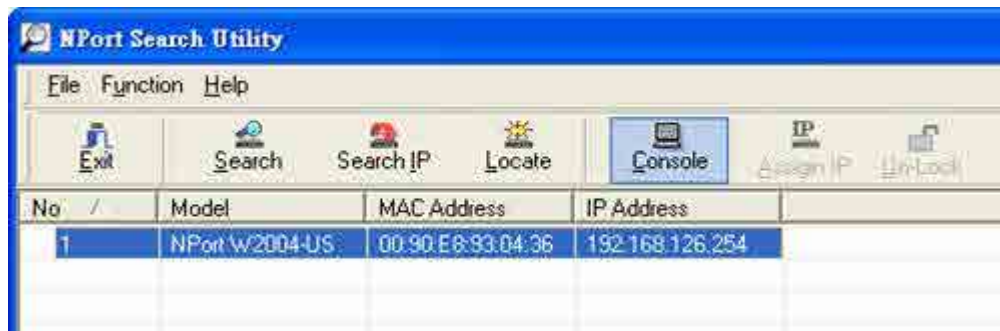
Linux Real TTY and UNIX Fixed TTY Installation

Installing the Linux Real TTY driver

Procedure

To map an NPort serial port to the host's tty port, you need to:

1. *Set up NPort*
   Make sure the IP configuration is ok and you can access the NPort (ping, telnet...) successfully, and then configure the NPort serial port to **Real COM Mode**.

2. *Install driver files on the host*
   Refer to "Driver Files Installation" below for details.

3. *Map the NPort serial port to the host's tty port*
   Refer to "Mapping TTY Ports" below for details.

Hardware Installation

Before proceeding with the software installation, make sure you have completed the hardware installation.

The default IP address for NPort Server is 192.168.127.254.

NOTE   After installing the hardware, you MUST configure the NPort operating mode to **Real COM Mode**.

Installing the Driver Files

    a.   Get the driver file from the product CD-ROM or Moxa website.

    b.   Log in to the console as a super user (root).

    c.   Execute `cd /` to go to the root directory.

    d.   Copy the driver file **npreal2xx.tgz** to the " / " 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
```

---

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

After installing the driver, you will be able to see several files in the `/usr/lib/npreal2/driver` folder, including

    > 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)

At this point, you will be ready to map the NPort serial port to the system tty port. See "Mapping TTY Ports" below for detailed instructions.

Mapping TTY Ports

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

Mapping tty ports automatically

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

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

Example 1:

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

Example2:

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

In Example 1, 16 tty ports will be added, all with IP **192.168.3.4**, but with data ports equal to (950, 951, …, 965), and command ports equal to (966, 967, 968, …, 981).

In example2, 16 tty ports will be added, all with IP **192.168.3.4**, but with data ports equal to (4001, 4002, …, 4016), and command ports equal to (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.

Removing Mapped TTY ports

As with the "Mapping TTY Ports" task, we provide two ways to remove mapped tty ports:

Remove the mapped tty ports automatically

After logging in as root, enter the directory **/usr/lib/npreal2/driver** and then execute **mxdelsvr** to delete a server. The syntax of mxdelsvr is:

mxdelsvr [IP]

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 the screen so that you can only choose the index of 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.

Removing the Driver Files

Driver 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.

Installing the UNIX Fixed TTY Driver

Installation and Configuration

Step 1: Log in to UNIX and create a directory for the Moxa TTY. E.g., to create a directory named /usr/etc, execute the command:
```
# mkdir /usr/etc
```

Step 2: Copy moxattyd.tar to the /usr/etc directory by executing the commands:
```
# cp moxattyd.tar /usr/etc
# cd /usr/etc
```

Step 3: Extract the source code from the tar file by executing the command:
```
# tar xvf moxattyd.tar
```

The following files will be extracted:

```
README
moxattyd.c          --- source code
moxattyd.cf         --- an empty configuration file
Makefile            --- makefile
VERSION.TXT         --- fixed tty driver version
```

Step 4:   Compile and Link

For SCO UNIX:
```
# make sco
```

For UnixWare 7:
```
# make svr5
```

For UnixWare 2.1.x, SVR4.2:
```
# make svr42
```

Step 5:   Modify the configuration:
The configuration used by the moxattyd program is defined in the text file
moxattyd.cf, which is in the same directory that contains the program moxattyd.
You may use vi, or any text editor to modify the file. E.g.,

```
ttyp1 192.168.1.1 950
```

For more configuration information, look at the file moxattyd.cf, which contains
detailed descriptions of the various configuration parameters.

NOTE   The "Device Name" depends on the OS. See the "Device Naming Rule" section for more
information.

Step 6:   To start the moxattyd daemon after system bootup, add an entry into /etc/inittab,
with the tty name you configured in moxattyd.cf. E.g.,

```
ts:2:respawn:/usr/etc/moxattyd/moxattyd –t 1
```

This completes the installation and configuration of Moxa TTY.

Device Naming rule

For UnixWare 7, UnixWare 2.1.x, and SVR4.2, use:
```
pts/[n]
```

For all other UNIX operating systems, use:
```
ttyp[n]
```

Starting moxattyd

Execute the command init q or reboot your UNIX operating system.

Adding an additional server

Step 1:   Modify the text file moxattyd.cf to add an additional server. User may use vi or any
text editor to modify the file. For more configuration information, look at the file
moxattyd.cf, which contains detailed descriptions of the various configuration
parameters.

Step 2   :Find the process id (PID) of the program moxattyd.
```
# ps -ef | grep moxattyd
```

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

This completes the process of adding an additional server.

Upgrading the Firmware

You will need to use the NPort W2004 web browser utility to upgrade the firmware. Type the NPort W2004's IP address in your web browser's address box if you already know the IP address. If you don't remember the IP address, you can use the NPort Search Utility to locate the server, and then double click on the server whose firmware you wish to upgrade. Your browser should open automatically to the NPort's web utility page.

1. Type the **User Name** and **Password** to login. The defaults are both "admin".

2. Click on **System Management** → **Maintenance** → **Firmware Upgrade** in the left pane, and then use the **Browse** button to locate the firmware file. Click on **Submit** to start upgrading.
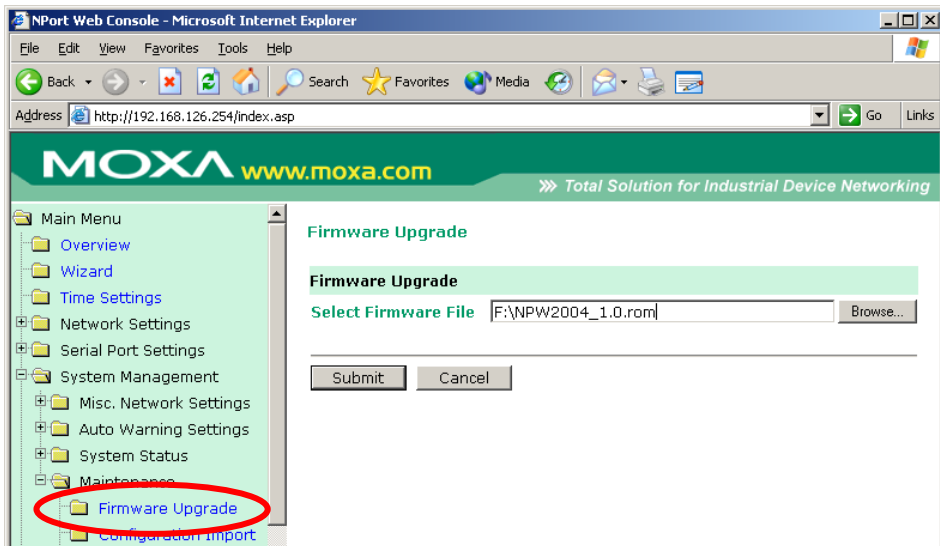
3. Click on **OK**.

4.   After the firmware has been upgraded, the NPort W2004 will reboot automatically.

A
SNMP Agents with MIB II

NPort has built-in SNMP (Simple Network Management Protocol) agent software that supports SNMP Trap 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:

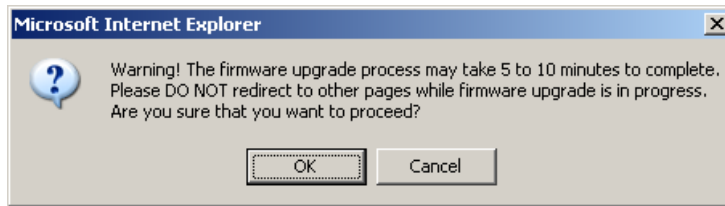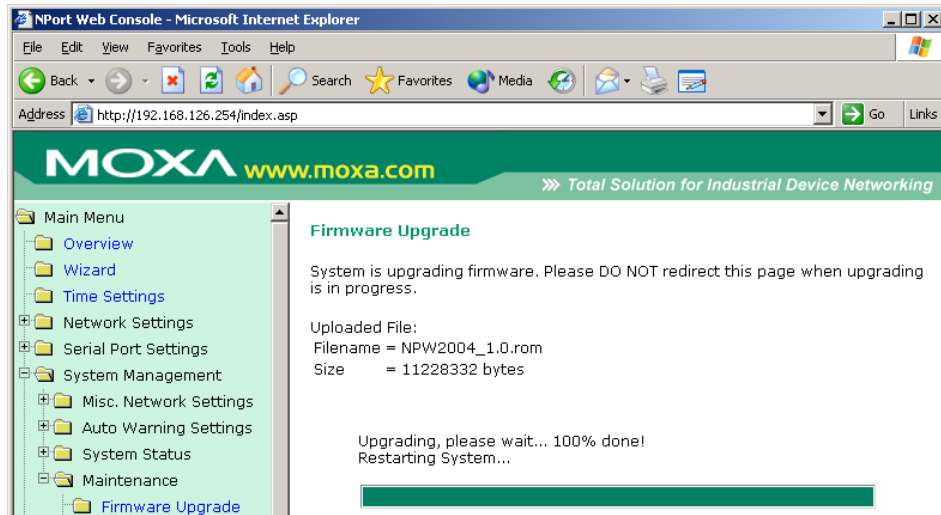| System MIB	Interfaces MIB	IP MIB	ICMP MIB
SysDescr	itNumber	ipForwarding	IcmpInMsgs
SysObjectID	ifIndex	ipDefaultTTL	IcmpInErrors
SysUpTime	ifDescr	ipInreceives	IcmpInDestUnreachs
SysContact	ifType	ipInHdrErrors	IcmpInTimeExcds
SysName	ifMtu	ipInAddrErrors	IcmpInParmProbs
SysLocation	ifSpeed	ipForwDatagrams	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 MIB	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 Translation MIB	tcpEstabResets	snmpInBadValues
AtIfIndex	tcpCurrEstab	snmpInReadOnlys
AtPhysAddress	tcpInSegs	snmpInGenErrs
AtNetAddress	tcpOutSegs	snmpInTotalReqVars

Address Translation MIB	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

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

B

Well Known Port Numbers

This appendix is for your reference. Listed below are Well Known Port Numbers that may cause network problems if you configure NE-4000T for the same port. Refer to RFC 1700 for Well Known Port Numbers or refer to the following introduction from 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 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 Protocol)
37	Time (Time Server)
42	Host name server (names server)
43	Whois (nickname)

TCP Socket	Application Service
49	(Login Host Protocol) (Login)
53	Domain Name Server (domain)
79	Finger protocol (Finger)
80	World Wibe Web HTTP
119	Netword news Transfer Protocol (NNTP)
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 (NNTP)
123	Network Time protocol (nnp)
161	SNMP (Simple Network Mail Protocol)
162	SNMP Traps
213	IPX (Used for IP Tunneling)

C

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 of the following measures:

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

This 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.

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

"Moxa declares that NPort W2004 is limited to CH1-CH11 by specified firmware when controlled in the USA."

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

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

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

INFORMATION TO USER:

The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.