NPort Express User's Manual

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NPort Express User's Manual

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1

Introduction

Welcome to Moxa NPort Express, a compact palm-sized communication device that allows you to control serial devices (RS-232/422/485) over a TCP/IP based Ethernet.

This chapter is an introduction to NPort Express and includes the following sections:

- Features
- Product Specifications
- Package Checklist
- Front/Top/Rear/Bottom Panel Views
- TCP/IP Description

NPort Express provides a data communication solution for connecting Windows and Unix/Linux hosts to asynchronous serial devices over a TCP/IP based Ethernet. You may connect your Windows NT/95/98/ME/2000 host to a native RS-232/422/485 serial port, or your PC-based Unix/Linux host to a fixed tty port, through a TCP/IP Ethernet. With one asynchronous serial port connection on one end, and a 10/100 Mbps Ethernet connection on the other, NPort Express allows any device that primarily supports the asynchronous communications protocol to attach to a network. NPort Express works like an add-on single-port serial board to your PC server, but with one major advantage—the TCP/IP network. Since the host communicates with the COM port on Nport Express over a TCP/IP network, you are able to control your asynchronous serial device from virtually any location.

Although it connects through the virtual link of the Ethernet, the port on NPort Express is recognized as a real COM port by Windows or a fixed tty port by Unix/Linux. NPort Express provides both the basic transmit/receive data functions, as well as RTS, CTS, DTR, DSR, and DCD control signals.

NPort Express can be used with your existing applications that support serial communication, and comes with a utility program providing a simple step-by-step installation procedure and a maintenance wizard that gives you easy access to your asynchronous device.

Features

- ❑ Compact size—fits in the palm of your hand
- ❑ Auto-detecting 10/100 Mbps Ethernet port
- ❑ 3-in-1 interface supports RS-232/422/485 connections
- ❑ Supports Unix/Linux fixed tty drivers
- ❑ Long range connection through the Internet/Intranet between host and serial port
- ❑ Supports sharing of the server or ports to multiple hosts
- ❑ Driver for Windows NT/95/98/ME/2000 platforms
- ❑ Easy configuration and management under Windows NT/95/98/ME/2000
- ❑ Secured access control to network hosts
- ❑ Serial connection speed up to 230.4 Kbps

Product Specifications

Hardware

Processor	80186
Memory	512 KB
Connector	Female DB9

Interface

LAN	Auto-detecting 100 Base-T (10/100 Mbps)	
Serial	RS-232/422/485, DIP switch selectable	
No. of serial ports	1	
Signals	RS-232:	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
	RS-422:	TxD+, TxD-, RxD+, RxD-, RTS+, RTS-, CTS+, CTS-
	RS-485:	Data+, Data-

Performance

Speed	50 bps – 230 Kbps

Configuration

Parity	None, even, odd
Data bits	7, 8
Stop bits	1, 2 (with parity setting of None)

OS Supported

DE-311	Windows NT/95/98/ME/2000, Unix fixed tty for SCO Unix, SCO Open Server SVR4.2, Unix Ware 7 SVR5, Linux 2.2.x, Linux 2.0.x (Intel x86) (running TCP/IP)

Protocol

DE-311	TCP, IP, UDP, Telnet, RTelnet, DHCP, ICMP

Management

DE-311	Serial console, Telnet console

Windows Utility

DE-311	Setup program, Manager, Monitor, Firmware Upgrade

Power and Environment

Power requirements	DC 9V to 20V, 400 mA at 9V
Operating temp.	0 – 55°C
Dimensions (W×D×H)	67 × 100.5 × 22 mm 90 × 100.5 × 22 mm (including the ears)
Regulatory approval	FCC, CE, UL, CUL, TUV

Package Checklist

- ❑ One NPort Express
- ❑ NPort Express User's Manual
- ❑ Power Adapter (110V or 230V)
- ❑ CD with Windows NT/95/98/ME/2000 and Unix/Linux fixed tty device drivers

Front/Top/Rear/Bottom Panel Views

Front Panel View

Top Panel View

Rear Panel View

Bottom Panel View

TCP/IP Description

NPort Express is an Ethernet device that uses IP (Internet Protocol) for communicating over a network. The various protocols supported are ARP, UDP, TCP, ICMP, Telnet/RTelnet, and DHCP. Addressing and routing of data blocks over the network are taken care of by IP, whereas TCP (Transmission Control Protocol) ensures that data is sent and received error-free.

You should be aware of the following basic network terminology before installing and setting up the software for your NPort Express.

- **Ethernet Address**
  Also referred to as the product's MAC address, this is a unique 6-byte (48-bit) number assigned by the manufacturer. Devices use each other's MAC address to maintain point-to-point communication over the Internet.
- **IP Address**
  This is a 4-byte (32-bit) number assigned to a network device for communicating over an Ethernet. Depending on how a device connects to the network (over a LAN, via modem to an ISP's server, etc.) the IP address may not be fixed, i.e., it could change each time the device is plugged into the network.
- **Port Number**
  A TCP connection or UDP datagram is defined by a destination IP address and port number. It is possible to associate a specific TCP/UDP port number with NPort Express's serial port.

2

Getting Started

Now that you have been introduced to NPort Express's features and specifications, it's time to set up the hardware, install the software, and get your system up and running.

We begin this chapter with a brief explanation of the three general types of operation mode available when using NPort Express. The setup procedure is somewhat different for each operation mode so first take the time to determine which application best suits your needs.

This chapter includes:

- Operation Modes
  - Host-Based Mode
  - Pair-Connection Mode
  - Raw-Connection Mode
- Hardware Installation
  - Serial Connection
  - Power Connection
  - Network Connection
- LED Indicators
- DIP Switch Settings
- IP Address Configuration
  - Telnet Console
  - Direct Console
  - DHCP Configuration

Operation Modes

NPort Express is an advanced, industrial Serial-to-Ethernet device designed to fit into today's ever-expanding networking world. It extends the usage of traditional COM ports on a PC—an isolated machine with restricted ports—to being able to access ports over a TCP/IP network. Through the nature of networking, you can control your serial devices from a distance, either over a LAN, or even over the Internet.

Traditional serial port communication uses a COM port board that slides into one of the slots on the back of your PC. In this case, only the computer containing the board has direct access to the board's serial ports. With Moxa's 1-port NPort Express serial device server, communicating with a COM port is much more versatile, since you are now able to access the COM port from a distance, over your company's LAN, or even over the Internet.

In this section, we discuss three types of application—Host-Based Mode, Pair-Connection Mode, and Raw-Connection Mode. Read carefully to determine which application best suits your needs.

Host-Based Mode

Host-Based Mode, which requires installing a device driver on each host and setting up the various parameters associated with the driver, refers to the case where one or more hosts are set up to use NPort Express's serial port.

Single-Host Mode is used by a host needing access to one or more NPort Express units that are connected to the same LAN to which the host is connected.

Custom Mode can be set up to give a host access to an NPort Express that is connected outside the host's LAN. All that is needed is information about the host's and NPort Express's public IP addresses as well as the two Gateway addresses. By using NPort Express's password protection function, Custom Mode also allows one host to act as administrator, providing and denying access to other hosts as needed.

Pair-Connection Mode

Pair-Connection Mode employs two NPort Expresses in tandem, and can be used to remove the 15 ft distance limitation imposed by the RS-232 interface. One NPort Express is connected from its RS-232 port to the COM port of the PC and the serial device is connected to the RS-232 port of the other NPort Express. The two NPort Expresses are then connected to each other by an Ethernet cable, are both connected to the same LAN, or in a more advanced setup, communicate with each other over a WAN (i.e., through one or more routers).

This mode of operation provides a certain amount of flexibility. Since NPort Express uses its own system software to transport data back and forth between the two devices, the data from the serial port of one NPort Express can be automatically sent to the serial port of the other NPort Express, without the need for an intermediate PC or controller.

You could, for example, use a palm-top computer (such as a Palm IIIc for example, commonly used in the field to record data), connected to one of the two NPort Express's serial ports, to send data to a remotely located serial device connected to the other NPort Express's serial port.

Raw-Connection Mode

Raw connection mode is used for standard TCP/IP socket programs and provides transparent communication between the network socket program and corresponding asynchronous port.

This mode of operation, which works over either a LAN or WAN connection, allows the user to easily open the asynchronous serial port and read or write raw data from an Ethernet host to the remote serial device by using an open TCP/IP socket.

Hardware Installation

In the previous section, we introduced the three general operation modes of NPort Express. This section describes briefly how to connect NPort Express to your serial device, how to hook up the power cable, and how to connect to the Ethernet.

Serial Connection

NPort Express has one female DB9 serial port on the back panel. Depending on your serial device and serial interfaces, there are two options:

1. You may use a DB9 to DB9 cable to connect your serial device to NPort Express. Simply plug one end of the cable into the port on the back panel of NPort Express and plug the other end into your serial device's serial port.
2. Refer to Appendix B for details of NPort Express's DB9 pinouts to make your own serial interface cable.

Power Connection

You should take the following steps to connect NPort Express's power adapter.

1. Plug the power adapter's DC plug into NPort Express's DC-IN jack.
2. Plug the power adapter into an electrical outlet.

Note that there is no on/off switch. The server automatically turns on when plugged into the outlet, and the red PWR light on NPort Express's top panel will glow to indicate that it is receiving power.

Network Connection

There are two ways to use the 10/100BaseT Ethernet jack located on NPort Express's front panel:

1. For most applications using NPort Express, you will simply plug one end of an Ethernet cable into NPort Express's 100 Base-T jack, and plug the other end into a hub connected to your network. In this case, use a regular *straight-through* Ethernet cable.
2. In some cases, such as when configuring the drivers and software used with NPort Express, you may connect NPort Express directly to your computer's Ethernet card. To do this you will need to use a *cross-over* Ethernet cable.

The amber Link light will flicker when NPort Express is properly connected to a live Ethernet.

LED Indicators

NPort Express's top panel contains three LED indicators, as described in the following table.

LED Name	LED Function
PWR	Red indicates that the power is on
Link	Orange indicates a 10 Mbps Ethernet connection Green indicates a 100 Mbps Ethernet connection
Ready	Green indicates NPort Express system is ready

DIP Switch Settings

The top panel of NPort Express contains a table, similar to the one shown below, describing DIP switch settings for the serial port.

SW1	Serial Connection	SW2	SW3	Interface Mode
ON	RS-232 Console	—	—	— — —
OFF	Data Comm.	OFF	OFF	RS-232
		OFF	ON	RS-422
		ON	OFF	RS-485 by RTS
		ON	ON	RS-485 ADDC

Switch SW1 controls the function of the serial port (ON, or up, for RS-232 Console connection, and down for Data Communication, such as when NPort Express is connected to your serial device). Note that after changing the setting of SW1, you must wait a few seconds for the green Ready light to turn off and on, indicating that the function of the serial port has been changed.

Switches SW2 and SW3 control the serial port's data communication Interface Mode. (Note that RTS stands for *Ready To Send* and ADDC stands for *Automatic Data Detection Control*.)

Keep the following points in mind when setting the DIP switches.

- **RS-232 Console**
  To use the serial port as a console connection, such as when using the MOXA PComm Terminal Emulator software, set SW1 to ON.
- **Telnet Connection**
  Some setup procedures can be carried out through a Telnet connection, during which data is transmitted through NPort Express's Ethernet port. However, **you must set SW1 to OFF to establish a Telnet connection**.

IP Address Configuration

NPort Express is shipped with the following default private IP address:

Default IP address: 192.168.127.254

(IP addresses of the form 192.168.*xxx*.*xxx* are private in the sense that they are never assigned by ISPs. Applications of NPort Express that require sending data over a public network, such as the Internet, require setting up the server with a valid public IP address. Pubic IP addresses are generally purchased or leased from a local ISP.)

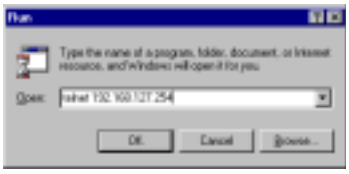
You may choose from two convenient methods for configuring the IP address assigned to your NPort Express. The Telnet Console method accesses NPort Express through its Ethernet port, whereas the Direct Console method accesses NPort Express through its serial port. (It is also possible to set up the IP address by first installing the Custom Mode form of NPort Express Manager, which is automatically installed when installing the Windows device driver. See the next chapter for details.)

Telnet Console

Depending on how your computer and network are configured, you may find it convenient to use network access to set up NPort Express's IP address. This can be done using the Telnet program.

NOTE: Set dip-switch SW1 to OFF to establish a Telnet connection.

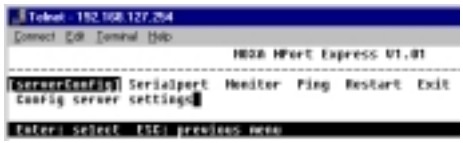
1. From the Windows desktop, click on **Start** and then select **Run**.
2. Type `telnet 192.168.127.254` (use the correct IP address if different from the default) in the **Open** text input box, and then click **OK**.



3. When the Telnet window opens, type `1` to select **ansi/vt100** for **Console terminal type**, and then press **Enter**.

4. If prompted for the **Console password**, input the password and then press **Enter**. A connection between your computer and NPort Express should now be established, and the MOXA NPort Express utility program will automatically start running.
5. To ensure proper operation, click on the **Terminal** menu, choose **Preferences…**, and then make sure **VT100 Arrows** is checked.

6. Use the keyboard arrow keys to highlight **[serverConfig]** as shown below, and then press **Enter**.



7. A window showing the various parameters required to configure NPort Express opens up, with configurable parameters enclosed in square brackets.

8. Since our goal in this section is to set the IP address of the server, use the keyboard arrow keys to position the cursor over the first digit of the IP address. Type in the correct IP address and then press **Enter** to accept this value.
9. Press **ESC** to return to main menu, and then **Restart** to activate the change.

Direct Console

You may use NPort Express's RS-232 console port to set up the IP address. We suggest using MOXA PComm Terminal Emulator, which is available free of charge as part of the MOXA PComm Lite program suite, to carry out the installation procedure, although HyperTerminal or other similar utilities may also be used. (Go to www.moxa.com to download the installation program for PComm Lite.)

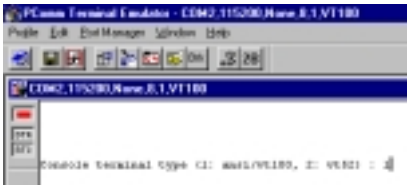
NOTE: Set dip-switches SW1 to ON to establish a console connection.

1. Either plug NPort Express's female serial port directly into your computer's male DB9 RS-232 serial port, or use an appropriate converter.
2. From the Windows desktop click on **Start → Programs → PComm Lite → Terminal Emulator**.
3. When the **PComm Terminal Emulator** window opens up, first click on the **Port Manager** menu item and select **Open**, or simply click on the **Open** icon.

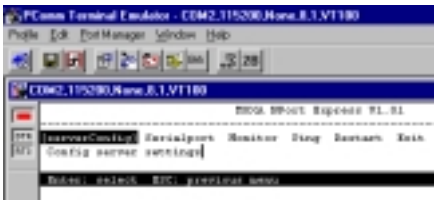
4. From the **Property** window's **Communication Parameter** page, select the appropriate COM port for the connection, **COM1** in this example, and **19200** for **Baud Rate**.

5. From the **Property** window's **Terminal** page, select **VT100** for **Terminal Type**.

6. Choose 1 for ansi/vt100 terminal emulation type, and then press **Enter**.



7. Use the keyboard arrow keys to highlight **[serverConfig]**, and then press **Enter** to select this option.



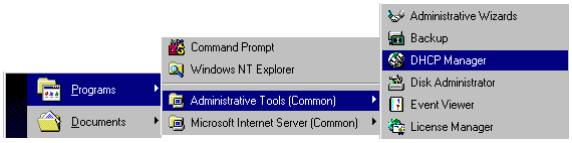
8. A window showing the various parameters required to configure NPort Express opens up, with configurable parameters enclosed in square brackets.
9. Since our goal in this section is to set the IP address of the server, use the keyboard arrow keys to position the cursor over the first digit of the IP address. Type in the correct IP address and then press **Enter** to accept this value. Press **ESC** to return to the main menu, and then select **Restart** to activate the change.

DHCP Configuration

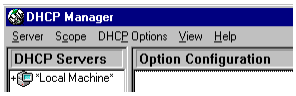
This section is applicable if you are using your Windows host as a DHCP (Dynamic Host Configuration Protocol) server. This type of server is set up to provide IP addresses for new devices as they log onto a network. As the operation of NPort Express requires a fixed IP address, we strongly recommend that you establish an IP reservation list in DHCP to maintain fixed IP assignments based on the server's MAC address. NPort Express's unique MAC address can be found on the server's bottom panel or by accessing its internal data from either a Telnet console or Direct console (see previous sections for details).

The following instructions were generated from a Windows NT host.

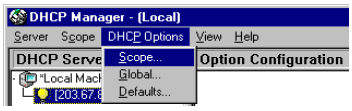
1. Access the **DHCP** Manager from the Windows NT desktop by clicking on **Start → Programs → Administrative Tools → DHCP Manager**.



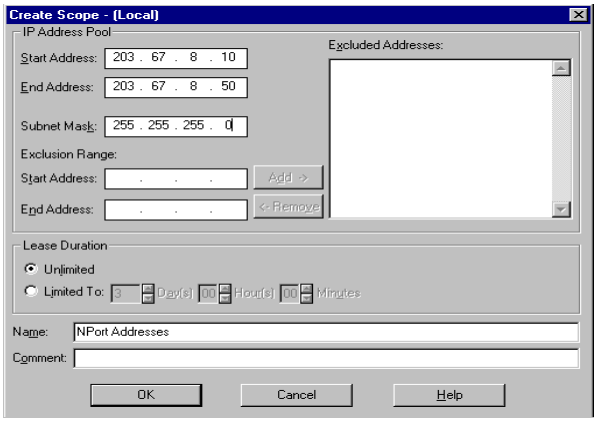
2. The **DHCP Manager** window's left info box will exhibit a list of DHCP hosts currently hooked up to the network. Note that before you can make changes to the host's parameters, there must be a minus sign (-) located to the left of the server name (**Local Machine** in the example shown here). If, as shown below, there is a plus sign (+) to the left of the server name, use the left mouse button to click on the name until you see the minus sign appear.



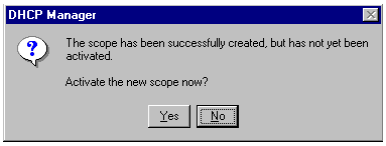
3. You must now define the DHCP server "scope". A "scope" is simply a range of IP addresses that the server assigns to machines as they log onto the network. Since the assignment is dynamic, the IP address assigned to a particular device can change each time the device logs in. What we will do is use DHCP Manager to set aside a specific IP address that will always be assigned to your NPort Express when it is hooked up to the network. When the device is not hooked up, the reserved IP address is not used. If you have already defined a scope, continue with step 6 below.



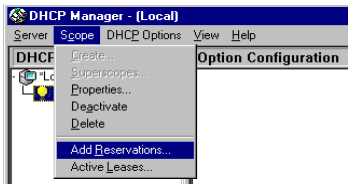
4. To get started, click on **DHCP Options** and then chose **Scope** from the pull down menu.
5. When the **Create Scope (Local)** window opens (see below), you will be required to input a range of IP addresses in the **IP Address Pool**. There is also an **Exclusion Range** used to prevent the DHCP server from issuing addresses to existing devices that have already been assigned IP addresses from this range. By using the **Add** and **Remove** buttons, several different ranges can be excluded and later included.



6. Another item that must be attended to is the **Subnet Mask**, which determines to which subnet the device belongs. For a Class C address you should input 255.255.255.0, and for Class B addresses use 255.255.0.0.
7. Make sure the **Unlimited** option under **Lease Duration** is checked. This prevents the system from automatically disconnecting devices that are using IP addresses in the specified range.
8. Assign a name to the scope, and if you like, include a comment. Click **OK** to accept the values.
9. When the **DHCP Manager** prompts you to **Activate the new scope now?** click on **Yes** to activate. At this point, we explain how to input a unique IP address reserved exclusively for use by your NPort Express.

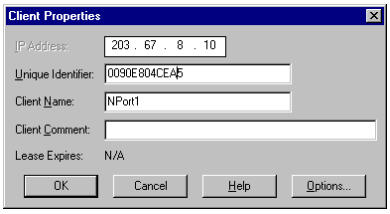


10. From the **DHCP Manager – (Local)** menu bar, click on **Scope**, and then select **Add Reservations**.

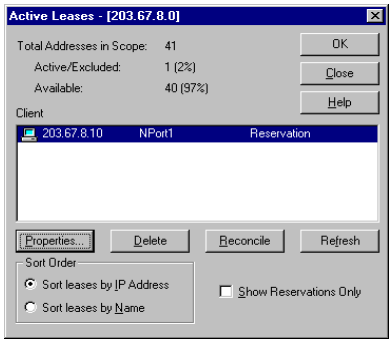


11. The **Client** Properties window that opens contains text input boxes for **IP Address**, **Unique Identifier**, **Client Name**, and **Client Comment**. First, enter the selected IP address, and then locate and enter your NPort Express's MAC address in the Unique Identifier field (the MAC address is located on NPort Express's bottom panel).

    Be sure to enter the same **Client Name** that was entered in the **Name** field of the **Create Scope - (Local)** window (see step 8 above). The **Client Comment** is optional. At this point, you should double-check the MAC address and IP address, and then click **OK** to accept the values.



12. To check that the numbers just entered are correct, return to the DHCP Manager main window, click on **Scope**, and then choose **Active Leases** from the pull down menu. The IP address reserved for your NPort Express will be displayed in the window that opens up. Check to make sure that it is accurate.



3

Installation and Configuration

In the previous chapter, we explained how to set up NPort Express for use on a network. In this chapter, we explain how to configure the server for the particular application you have chosen.

We discuss the following topics:

- Host Based Mode
  - Single Host Mode
    - Driver and Software Installation
    - Adding an NPort Express—Add Server Wizard
    - Using NPort Express Manager
    - NPort Express Manager Toolbar Icons
  - Custom Mode
    - Driver and Software Installation
    - Adding an NPort Express—Add Server Wizard
    - Using NPort Express Manager
    - NPort Express Manager Toolbar Icons
    - Granting Access to Hosts
    - Adding Routes to NPort Express
    - Examples of Internet/Intranet Routing Configuration
  - Upgrading NPort Express Firmware
- Pair-Connection Mode
- Raw-Connection Mode
- NPort Monitor User's Manual

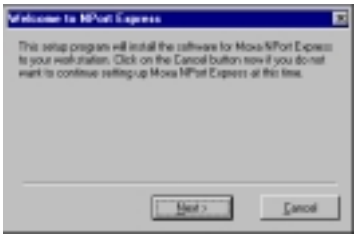
Host-Based Mode

There are two options under Host-Based Mode. Follow the installation instructions under **Single Host Mode** if you will be accessing NPort Express from just one host. Follow the instructions under **Custom Mode** for all other Host-Based applications.

Single Host Mode

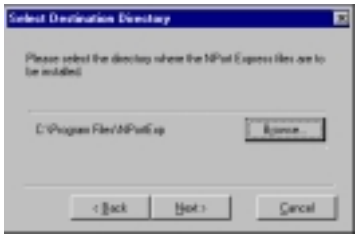
Driver and Software Installation

1. Locate and run the installation program setup.EXE.
2. When the **Welcome to NPort Express** window opens click on **Next** to continue.



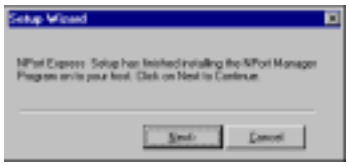
3. Select the type of application, **Single-Host** in this case, and then click on **Next**.

4. In the **Select Destination Directory** window, click on **Next** to install NPort Express files in the given default directory, or use the **Browse** button to enter the name of a different directory.



5. The **Installing** window opens to indicate that files are being copied to the appropriate folder.

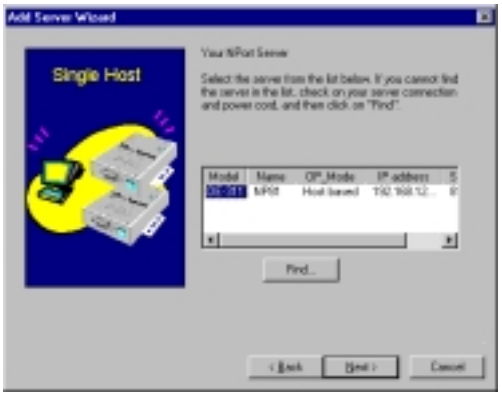
6. The **Setup Wizard** window indicates that NPort Manager has been successfully installed. Click on **Next** to run the **Add Server Wizard**, as described in the next section.



Adding an NPort Express—Add Server Wizard

1. Select **Yes** from the **Add Server Wizard**, and then click on **Next** to continue.

2. The next window lists all NPort Expresses connected to the network. Use the mouse to highlight the Model No. of the server you would like to add and then click on **Next** to continue.(If you forgot to plug in the your server's power cord, do so now and then click on **Find…** to locate the server.)



3. If a password has been set, you will be prompted to enter it at this time.

4. You must choose a COM port number to assign to your NPort Express serial port. Highlight the desired number from the pull down list and then click on **Next** to continue.

5. If a password was not previously set, you will be prompted to enter and confirm a new password at this time. Check the **Auto-Saved** box if you would like the password to be saved on your computer, and then click on **Next** to continue.

6. When the **Complete!** window opens, verify that all information is correct, and then click on **Finish**.

7. The installation program evokes the **NPort Express Manager** utility, which displays the server you have just added, including port configuration settings. You should see a screen similar to the one shown here.

8. If you would like to add another server, click on the **Add Server Wizard** icon and then repeat the above process.
9. Be sure to select **Save Configuration** under the **Server** menu, or click on the **Save all Server** icon to save settings to your Windows host and to the selected server.
10. Exit **NPort Express Manager** by clicking the "close window" button (the "x" in the upper right corner) when you finish.

Using NPort Express Manager

When you run the Setup program to install NPort Express software, you are automatically asked to add one server. However, you have the option to run NPort Express Manager at a later time if you decide to add more servers, change server names, remove servers, or change COM names.

To start NPort Express Manager, click on:
Start → Programs → NPort Express → NPort Express Manager.

As shown here, the NPort Express Manager main window displays server names and model numbers in the left info box. When a particular NPort Express is highlighted, the port associated with that server, the associated COM port names, and other relevant information, appear in the right info box.

All NPort Express Manager functions can be selected from the main menu. Functions related to servers are put under the **Server** menu, and port functions are under the **Port** menu. When you use the right mouse button to click on a port or server, a window with a list of functions available for the selected item opens up.

NPort Express Manager Toolbar Icons

The NPort Express Manager toolbar icons also provide an easy way for you to manage your servers.

Save all Servers 

Modifications of NPort Express or changes to port configurations must be saved by the OS and the server in order to be activated. Clicking on the toolbar **Save all Servers** icon will automatically detect any changes and save them in the appropriate places.

Add Server 

If you need to add another NPort Express to your system after the initial installation, simply click on the toolbar **Add Server** icon to start the **Add Server Wizard**, and then follow the instructions given earlier for adding new servers. Restart the system as requested.

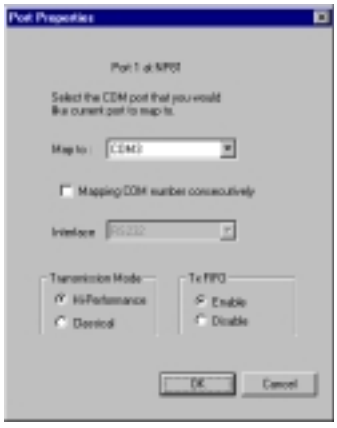
Delete Server 

If one of the NPort Expresses originally installed on your system has been moved, or you do not need the server installed on your system anymore, then you can use NPort Express Manager to delete it. First, highlight the name of the server you would like to remove, and then click on the toolbar **Delete Server** icon.

Map Port 

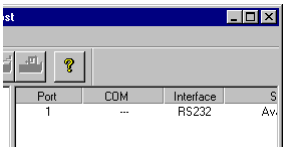
You may use NPort Express Manager to change previously assigned COM names.

1. Start NPort Express Manager, and then click on the name of the server, listed in the left info box, whose port number you would like to change.
2. The port on this particular server will be listed in the right info box. Click on the port to highlight it.
3. Click on the toolbar **Map Port** icon.
4. Select the new COM port name you would like to map to.
5. Click **OK** to finish, and return to the NPort Express Manager main window.



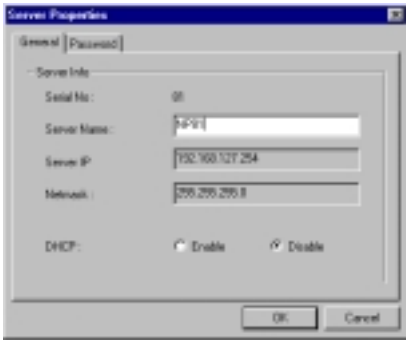
Unmap Port

If you do not need to use a port any more, you may use the toolbar **Unmap Port** function to remove it from your Windows NT operating system.



1. Click on the server you would like to modify. The port on that server will be listed in the right info box.
2. Click on the port to highlight it.
3. Click on the **Unmap Port** icon to remove the selected port. In the example shown here, we deleted Port 1, as indicated by the three dots under **COM**, and a missing "plug" icon under **Port**.

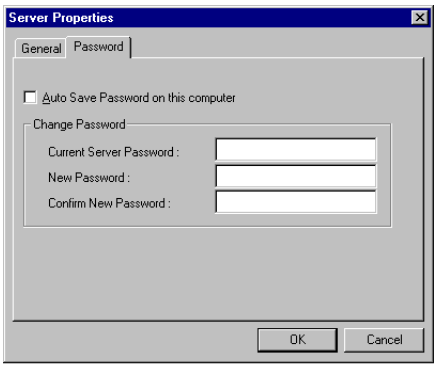
Server Properties—Change Name



You may modify the server name by using the toolbar **Properties** function.

1. Start NPort Express Manager, and then click on the name of the server, listed in the left info box, whose name you want to change.
2. Click on the toolbar **Properties** icon.
3. Modify the server name as desired.
4. Click **OK** to save the configuration.

Server Properties—Change Password



To add more security to your NPort Express, it is highly recommended that you set a password. If you did not set the password while running the **Add Server Wizard**, or you would like to change the current password, you may use the toolbar **Properties** function to do so.

1. Start NPort Express Manager, and then click on the name of the server, listed in the left info box, whose password you would like to change.
2. Click on the toolbar **Properties** icon.

3. Select the Password page.
4. Enter the current password and new password as indicated.
5. Check the **Auto Save Password on this computer** box if you want Windows NT to remember your password.
6. Click **OK** to save the changes.

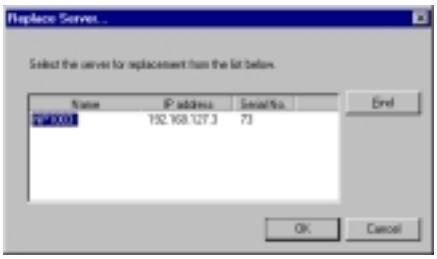
Replacing a Server

In the unlikely event that your NPort Express needs to be replaced, you can use the **Replace Server…** option listed under NPort Express Manager's **Server** menu. This procedure uses NPort Express's "hot-swap" feature, and provides an easy way for you to find the replacement server. The configurations that were set while installing the now defective server will also be saved. Otherwise, you would need to delete the old server from NPort Express Manager, and then configure the new server and its port.

1. Use the mouse to highlight the server that has a question mark (?) on top of it.

2. Click on the **Server** menu, and select **Replace Server…**.

3. The **Replace Server** window that opens up shows a list of servers that have not been configured. The new server can be identified by looking at the serial number.



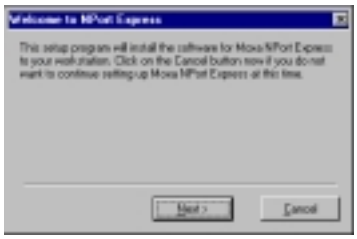
4. Use the pop up window to confirm the Server.
5. If the new server is password protected, enter the pre-set password when prompted to do so.
6. Click **OK** to save the current settings to the new server.
7. Click on **Save Configuration** to activate.

*NOTE: Previous configurations, including server name and port settings, are retained after going through the above described **Replace Server** procedure. However, the server password will be set to the one you entered during the replacement procedure, so you will need to start using the new password to access the server.*

Custom Mode

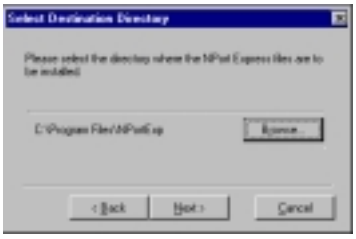
Driver and Software Installation

1. Locate and run the installation program setup.EXE.
2. When the **Welcome to NPort Express** window opens click on **Next** to continue.



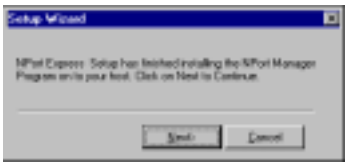
3. Select the type of application, **Custom** in this case, and then click on **Next**.

4. In the **Select Destination Directory** window, click on **Next** to install NPort Express files in the given default directory, or use the **Browse** button to enter the name of a different directory.



5. The **Installing** window opens to indicate that files are being copied to the appropriate folder.

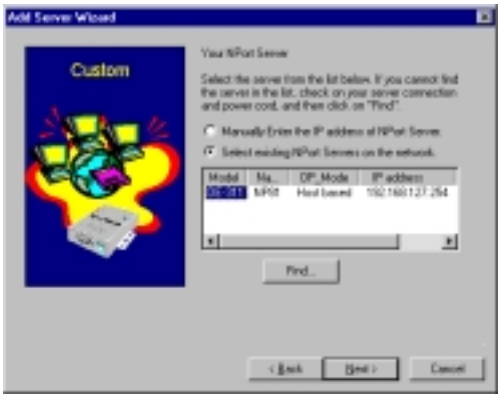
6. The **Setup Wizard** window indicates that NPort Manager has been successfully installed. Click on **Next** to run the **Add Server Wizard**, as described in the next section.



Adding an NPort Express—Add Server Wizard

1. Select **Yes** from the **Add Server Wizard**, and then click on **Next** to continue.

2. The next window lists all NPort Expresses connected to the network. Use the mouse to highlight the Model No. of the server you would like to add and then click on **Next** to continue.(If you forgot to plug in the your server's power cord, do so now and then click on **Find…** to locate the server.)

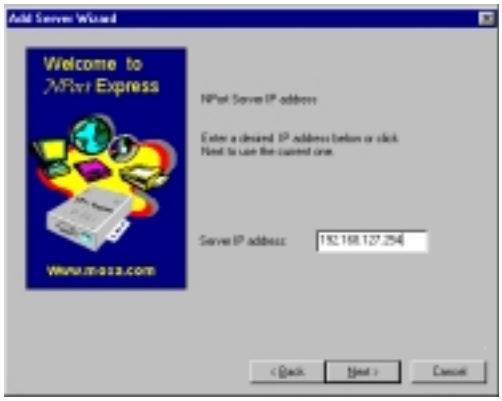


3. If the server is at a remote site, you must select **Manually Enter the IP address of NPort Server** and then click on **Next**. Enter the server's IP address in the text input box, and then click on **Next** to continue.
4. First-time installers jump directly to the next step. If the server being set up has a password, you will see a password protected screen. If you are the server administrator, select **Yes** and enter the password. However, if you're NOT the administrator, select **No** and continue to install ports.

NOTE: If you're not the administrator, be sure to ask the administrator to add you to the server's access control list.

5. Confirm that the displayed IP address is correct, or key in a dedicated IP address assigned by your LAN administrator.

NOTE: If you have a DHCP server on your local network, be sure to consult with the DHCP administrator to assign dedicated IP addresses to the server, and to the computers connected to the server.



6. You must choose a COM port number to assign to your NPort Express serial port. Highlight the desired number from the pull down list.

7. Choose and then type a password in both the **Server Password** and **Confirm Password** text input boxes, and then click on **Next** to continue. Check the **Auto-Saved** box if you would like the password to be saved on your computer.

8. When the **Complete!** window opens, verify that all information is correct, and then click on **Finish**.

9. The installation program evokes the **NPort Express Manager** utility, which displays the server you have just added, including port configuration settings.

NOTE: If you see ports with the status 'Non-authorized', and you are a general user, ask your server administrator to add access permission to the server for you.

10. If you would like to add another server, click on **Add Server Wizard**, and repeat the above process.
11. Exit NPort Express Manager when you finish.

Using NPort Express Manager

When you run the Setup program to install NPort Express software, you are automatically asked to add one server. However, you have the option to run NPort Express Manager at a later time if you decide to add more servers, change server names, remove servers, or change COM names.

To start NPort Express Manager, click on:
Start → Programs → NPort Express → NPort Express Manager.

As shown below, the NPort Express Manager main window displays server names and model numbers in the left info box. When a particular NPort Express is highlighted, the port associated with that server, the associated COM port names, and other relevant information, are shown in the right info box.

All NPort Express Manager functions can be selected from the main menu. Functions related to servers are put under the **Server** menu, and port functions are under the **Port** menu. The help menu shows topics concerning various aspects of NPort Express Manager's operations, as well as on-line help. Moreover, when you use the right mouse button to click on a port or server, a window with a list of functions available for the selected item opens up.

NPort Express Manager Toolbar Icons

The NPort Express Manager toolbar icons also provide an easy way for you to manage your servers.

Save all Servers

In order to be activated, modifications of NPort Express, or changes to port configurations, must be saved by the NT system or the server. Clicking on the toolbar **Save all Servers** icon will automatically detect any changes and save them in the appropriate places.

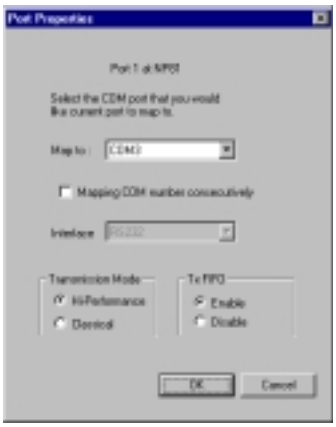
Add Server

If you need to add another NPort Express to your system after the initial installation, simply click on the toolbar **Add Server** icon to start the **Add Server Wizard**, and then follow the instructions given earlier for adding new servers. Restart the system as requested.

Delete Server

If one of the NPort Expresses originally installed on your system has been moved, or you do not need the server installed on your system anymore, then you can use NPort Express Manager to delete it. First, highlight the name of the server you would like to remove, and then click on the toolbar **Delete Server** icon.

Map Port

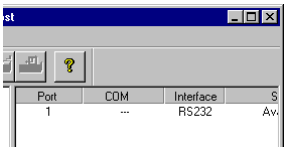


You may use NPort Express Manager to change previously assigned COM names.

1. Start NPort Express Manager, and then click on the name of the server, listed in the left info box, whose port number you would like to change.
2. The port on this particular server will be listed in the right info box. Click on the port to highlight it.
3. Click on the toolbar **Map Port** icon.
4. Select the new COM port name you would like to map to.
5. Click **OK** to finish, and return to the NPort Express Manager main window.

Unmap Port

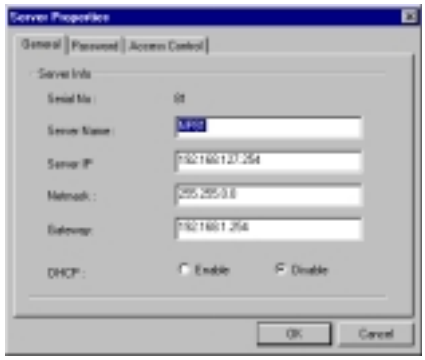
If you do not need to use a port any more, you may use the toolbar **Unmap Port** to remove it from your Windows NT operating system.



1. Click on the server you would like to modify. The port on that server will be listed in the right info box.
2. Click on the port to highlight it.
3. Click on the **Unmap Port** icon to remove the selected port. In the example shown here, we deleted Port 1, as indicated by the three dots under **COM**, and a missing “plug” icon under **Port**.

Server Properties—Change Name

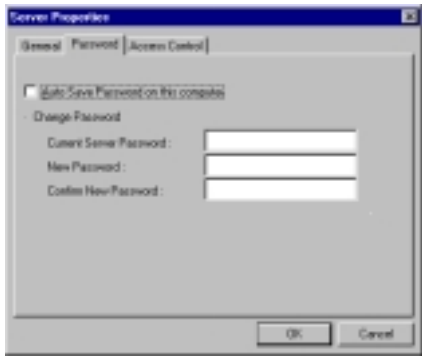
You can modify the server name by using the toolbar **Properties** function.



1. Start NPort Express Manager, and then click on the name of the server, listed in the left info box, whose name you want to change.
2. Click on the toolbar **Properties** icon.
3. Modify the server name as desired.
4. Click **OK** to save the configuration.

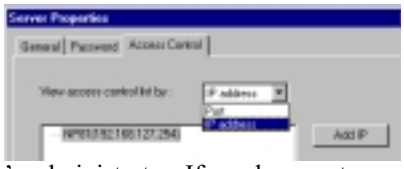
Server Properties—Change Password

To add more security to your NPort Express, it is highly recommended that you set a password. If you did not set the password while running **Add Server Wizard**, or you would like to change the current password, you may use the toolbar **Properties** function to do so.



1. Start NPort Express Manager, and then click on the name of the server, listed in the left info box, whose password you would like to change.
2. Click on the toolbar **Properties** icon.
3. Select the **Password** page.
4. Enter the current password and new password as indicated.
5. Check the **Auto Save Password on this computer** box if you want Windows NT to remember your password.
6. Click **OK** to save the changes.

Granting Access to Hosts



It is possible to assign host access permission to the ports on a shared NPort Express. For security reasons, the access control list can only be defined by the server's administrator. If you have not been granted access, you will see a screen with the message 'Non-authorized' for the ports.

You will be granted access to the server you have added after running the Add Server Wizard and inputting the password to verify you are the administrator. This can be checked in the **Server Properties** window (see below). If you do not know the correct password, you can still map the ports to your PC host—you just won't have access to the ports. To get access, you will need to ask your administrator to add your IP address to NPort Express's access control list. (If you are not sure of the IP address of the host you want to add, run "ipconfig" from the host's NT MS-DOS prompt.)

NOTE: If you want to allow NPort Express's ports to be accessed by all users, simply empty the access control list.

To grant access, you must first enter the Access Control Page:

1. Run NPort Express Manager.
2. Click on the server you want to modify.
3. Click on the toolbar **Server Properties** icon.
4. Select the **Access Control** tab.
5. The screen will show a list of ports, and two methods of adding permission.

When adding access permission, you may either view the access control list by **Port**, or by **IP address**. These two approaches also apply to the procedure for adding new hosts. The next two sections describe how to add hosts using both approaches.

Configuring Through View by IP Address

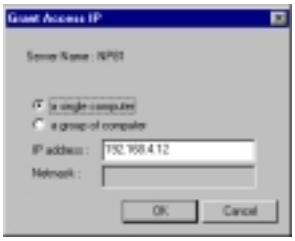
Using the **view access control list by IP address** option displays the access control list by giving server IP addresses. It should be clear which IP addresses have been granted access to which ports, and which IP addresses are allowed access to the server.

If particular hosts are permitted access to the port on a specific NPort Express, we recommend configuring using the **view access control list by IP address** option.

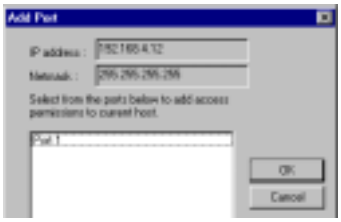
1. Click on the **Access Control** tab, and then select the **IP address** option next to **View access control list by:**

2. Click on the server you would like to modify.
3. Click on **Add IP** to open the **Grant Access IP** window.
4. To add access for only one computer, select **a single computer**, and then enter the host's IP address in the appropriate text box.

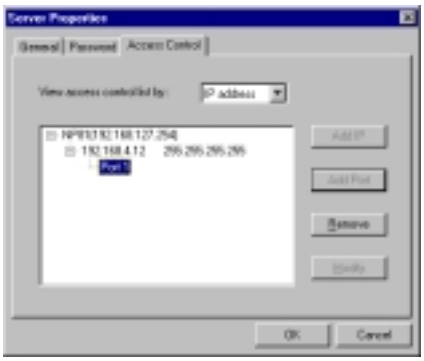
   To add access for a group of computers, select **a group of computer,** and then enter the **IP address** and **netmask**. (E.g., for network class C computers, you might enter 192.168.1.0 for **IP address** and then 255.255.255.0 for **netmask**. This would allow access for any computer on the network with IP address of the form 192.168.1.*xxx*, in which *xxx* is any number between 0 and 255.)



5. Click **OK**.
6. When the **Add Port** window opens up, highlight the port and then click **OK**.



7. Click **OK** to finish, and return to the **Access Control** page.



8. The ports granted access to will be listed under the host's IP address. Click **OK**, and then choose **Save Configuration** to activate the settings.

Modifying the Host Setting

1. Select the IP address of the host you would like to modify.
2. Click on the **Modify** button.
3. Modify the configuration as desired.
4. Click OK to exit.
5. Select **Save Configuration** if you need to activate the settings immediately.

Removing Ports from a Granted Host

1. Double click on the host's IP address.
2. Click on the port that you would like to remove from the list.
3. Click on **Remove**, and then click **OK** to exit.
4. Select **Save Configuration** if you need to activate the settings immediately.

Removing a Host

If you do not allow a particular host to use any of the ports, simply remove the host from the list. Note that removing all hosts will grant server access to all computers.

1. Double click on the host's IP address.
2. Click on the **Remove** button, and then click **OK** to exit.
3. Select **Save Configuration** if you need to activate the settings immediately.

Configuring Through View by Port

By choosing the option **View access control list by Port**, it is easy to see the access permission granted for each port. This viewing option is particularly useful for adding hosts to specific ports.

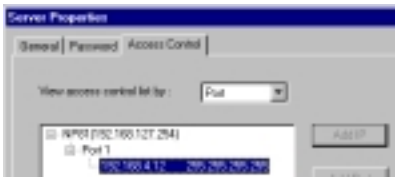
Adding a Host IP Address to a Specific Port

1. Click on the Port you would like to add the host to.

2. Click on **Add IP**.
3. To add access for only one computer, select **a single computer**, and then enter the host's IP address in the appropriate text box.

   To add access for a group of computers, select **a group of computer,** and then enter the **IP address** and **netmask**. (E.g., for network class C computers, you might enter 192.168.1.0 for **IP address,** and then 255.255.255.0 for **netmask**.)

4. Click **OK** to finish.
5. When the **Server Properties** window opens up, you can examine the **Access Control** page to verify that the host was added to the port.



6. Click **OK** to finish.
7. Select **Save Configuration** if you need to activate the settings immediately.

Modifying Granted Host

1. Click on the port.
2. Click on the IP address you want to change, and then click on **Modify**.
3. Modify the IP address as needed.
4. Select **Save** Configuration if you need to activate the settings immediately.

NOTE: This host modification will only be activated for the specific host of this port.

Removing Granted Host

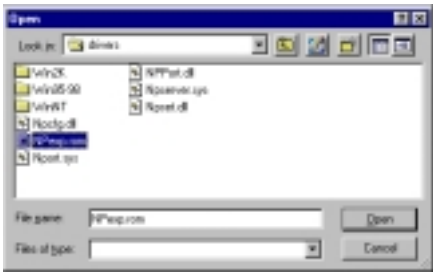
1. Click on the port.
2. Click on the IP address of the host to be removed, and then click on **Remove**.
3. Click **OK** to finish.
4. Select **Save Configuration** if you need to activate the settings immediately.

Upgrading NPort Express Firmware

Moxa continually upgrades its driver software and server firmware to keep pace with the ever-expanding world of computing. You may use the **Upgrade** function located on NPort Express Manager's toolbar to carry out the upgrade procedure. Please access Moxa's Web site at www.moxa.com to download the necessary file (contact our sales department if you need assistance with this), and then follow these instructions.

1. Stop all port action related to the server you are upgrading.
2. Click on the toolbar **Upgrade** icon  or choose **Upgrade Firmware** under the **Server** menu item.

3. Locate and then select the filename of the firmware that you have downloaded. Click on **Open** and then wait until you see an "upgrade completed" message. The server will restart automatically.



Note: When using this procedure, only the selected server's firmware is upgraded. If you know that new NPort Express Manager software has been released, it is recommended that you uninstall the old NPort Express Manager program from your host's hard drive, and then install the new version.

Pair-Connection Mode

This operation mode is used when connecting two NPort Expresses, and must be set up using either a Telnet Console or a Console Terminal connection. See Appendix A for detailed instructions on using Telnet to access the following NPort Express configuration page. Specific Instructions are given below the figure.

Note that Pair Connection Mode involves communication between two NPort Expresses, referred to as the "Master" and the "Slave". The main difference is that each Master can be configured to communicate with only one Slave, whereas each Slave can communicate with several Masters.

Pair Connection (Master)

Choose this **Operating Mode** option if configuring the NPort Express as Master. It is important to keep in mind that each Master is allowed to communicate with only one Slave at one time.

- **Remote IP Begin**
  Input the IP address of the single remote slave.
- **Remote IP End (Slave Only)**
  This field is not for Master configuration, leave it blank, since it is ignored by the NPort Express communication software.

Pair Connection (Slave)

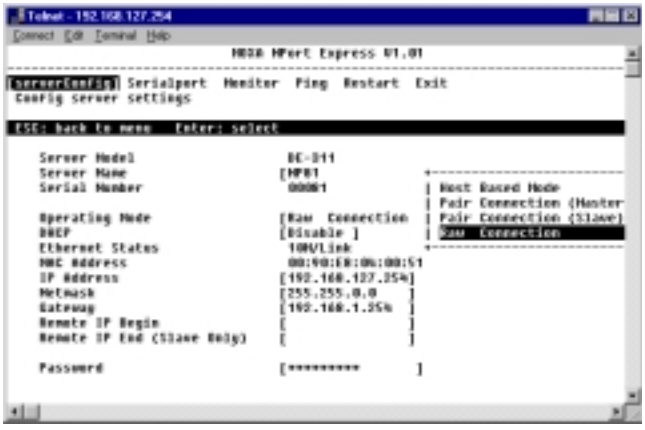
Choose this **Operating Mode** option if configuring the NPort Express as Slave. It is important to keep in mind that each Slave is allowed to communicate with several masters, with IP addresses indicated as a range of addresses.

- **Remote IP Begin**
  Leave this field blank to allow communication with any Master.

  Input the IP address of the single corresponding remote Master, or the first in a range of remote Master IP addresses.
- **Remote IP End (Slave Only)**
  Input the last IP address of a range of remote Master IP addresses. Or leave this field blank.

Raw-Connection Mode

This operation mode is used to transmit "raw" data between a remote network card and an NPort Express. The word "raw" in this case simply refers to the fact that NPort Express does not strip away any of the transmitted packets' layers of data, but simply passes it on "as is".



You must use either a Telnet Console or a Console Terminal connection to set up this mode. See Appendix A for detailed instructions on using Telnet to access the following NPort Express configuration pages. Specific Instructions are given below the figures.

Raw Connection

Choose this **Operating Mode** option if configuring your NPort Express for Raw Connection Mode. You must also set up a **TCP port no.**, **Destination IP**, and **Inactivity time**, as described below the following figure.

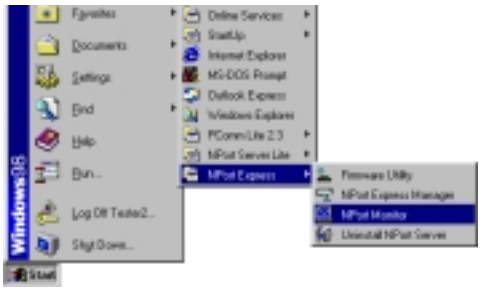
Serial Port Setup

You must also set up **TCP port no.**, **Destination IP**, and **Inactivity time**, on the **Serialport** setup page.

- **Alive timeout**
  Input the amount of time, in minutes, that will be allowed to transpire before an TCP/IP connection is shut down.
- **TCP port no.**
  Input the desired TCP port number.
- **Destination IP**
  Input the IP address of the remote network card which will be sending raw data to your NPort Express.
- **Inactivity time**
  Input the amount of time, in minutes, that will be allowed to transpire before an inactive connection is shut down. Inactive connection stands for no data in/out via serial port during the period, after that system software will reset the serial port.

NPort Monitor User's Manual

The MOXA NPort Monitor utility is automatically installed when setting up NPort Express to run under Windows NT/95/98/ME, as you can see from the following figure. Although we have not included specific information in this manual that discusses the use of NPort Monitor, you may download the User's Manual for this useful utility from the Moxa website, at www.moxa.com.



4
Windows 2000—Installation and Configuration

In this chapter, we explain how to configure NPort Express to operate under the Windows 2000 operating system. The installation and configuration procedure is substantially different than for Windows NT/95/98/ME, so please read carefully.

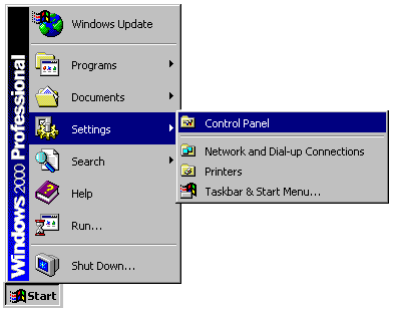
The following topics are discussed:

- Windows 2000 Driver Intallation
  - Installing NPort Express
  - Installing NPort Express's Serial Port
- NPort Express Properties
  - General
  - Configuration
    - NPort Server
    - Port Status
  - Driver

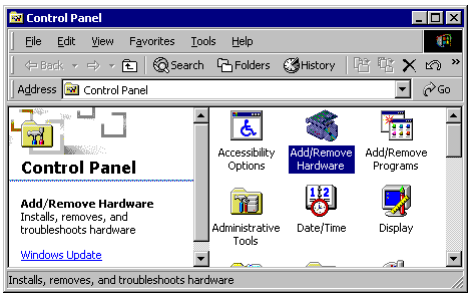
Windows 2000 Driver Installation

Installing NPort Express to run under Windows 2000 involves installing the drivers that are used to operate NPort Express and its port. This is done by running the Windows 2000 "Add/Remove Hardware Wizard". In fact, unless you have previously installed and then uninstalled an NPort Express on your system, the "Add/Remove Hardware Wizard" will run twice—once to install NPort Express itself, and then once to install NPort Express's ports.

1. From the Windows 2000 desktop, click on **Start → Settings → Control Panel**.

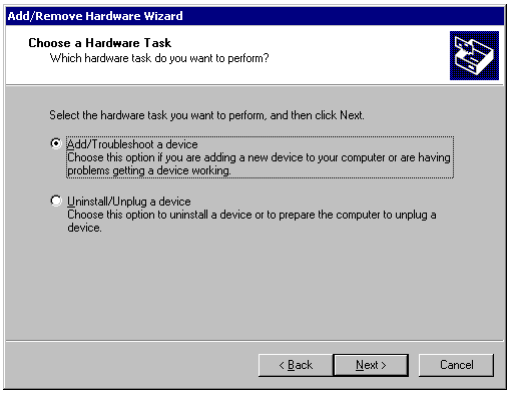


2. Double click on the **Add/Remove Hardware** icon.

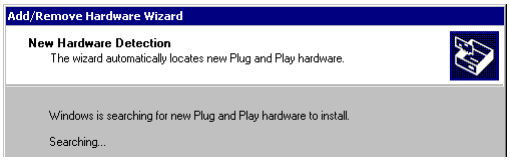


3. When the **Welcome to the Add/Remove Hardware Wizard** window opens, click on **Next** to continue with the installation process.

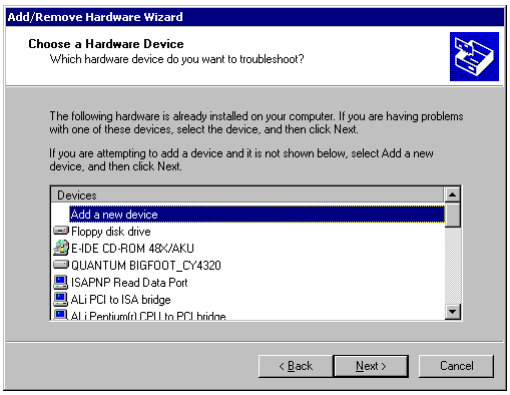
4. Select the **Add/Troubleshoot a device** option, and then click on **Next** to continue.



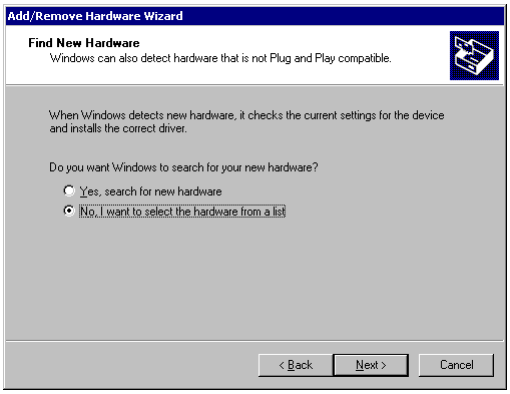
5. Windows 2000 will spend some searching for a device that is connected directly to your computer. Keep in mind, however, that this procedure does not detect devices that are connected over a network.



6. Select **Add a new device** and then click on **Next** to continue.



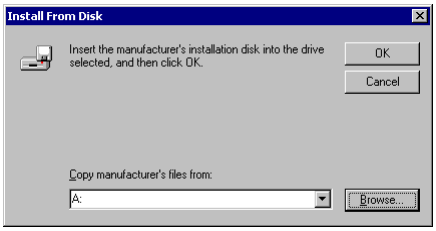
7. Choose the **No, I want to select the hardware from a list** option from the next window, and then click on **Next** to continue.

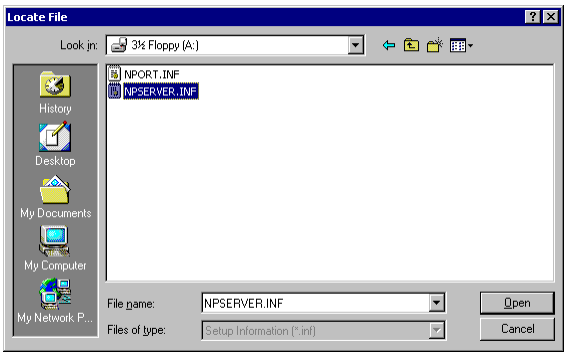


8. Select **Multiport serial adapters** and then click on **Next** to continue.

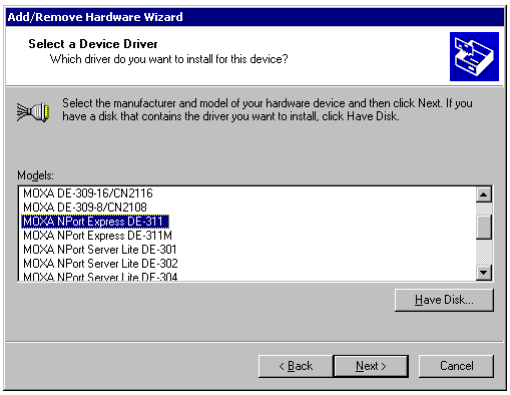
9. The **Select a device driver** window displays a list of manufacturers and products. If Moxa's name is not listed, you will need to click on **Have Disk…** and then select the NPort Express driver from diskette, CD, or from your hard drive.

10. If necessary, click on **Browse…** to locate the directory that contains the NPort Express driver. During the installation shown here, the driver was located on the A: drive, so the next step is to click **OK**. Note from the second figure that the driver name is NPSERVER.INF.

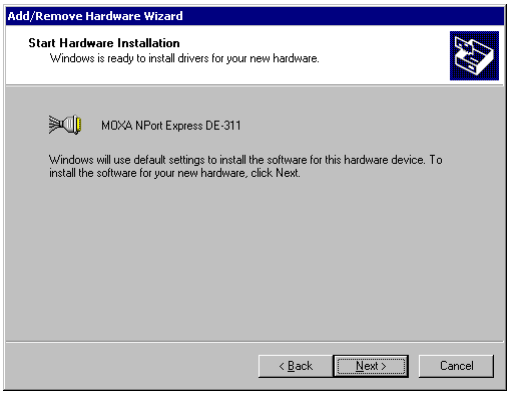




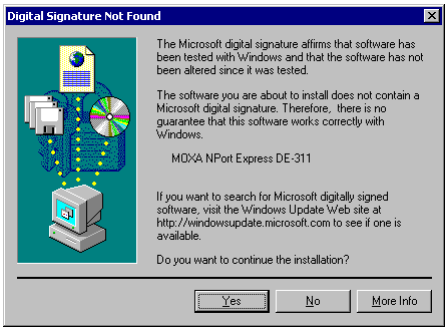
11. The next window contains a list of NPort Family products. Select **MOXA NPort Express DE-311** and then click on **Next** to continue.



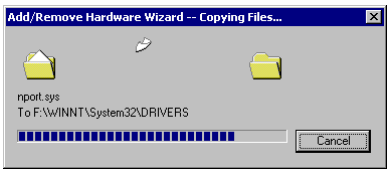
12. The **Start Hardware Installation** window should verify that you have chosen the correct driver. Click on **Next** to continue.

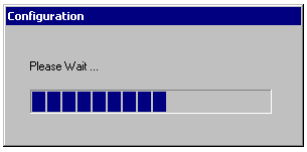


13. You may safely ignore any admonitions such as **Digital Signature Not Found**. Simply click on **Yes** to continue.

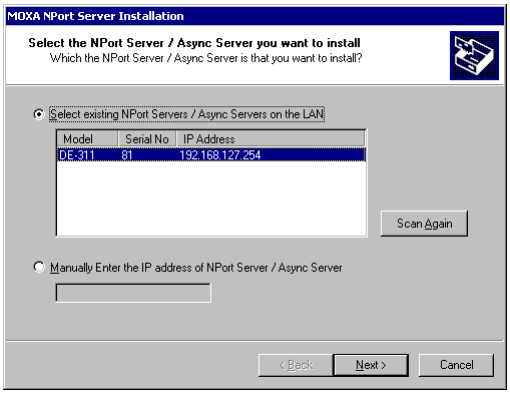


14. A series of windows indicating the progress of the installation procedure will open and then close.

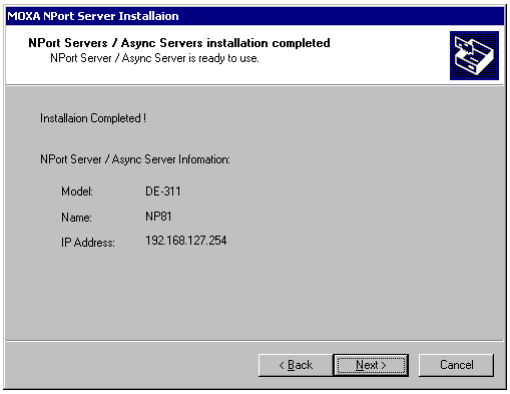




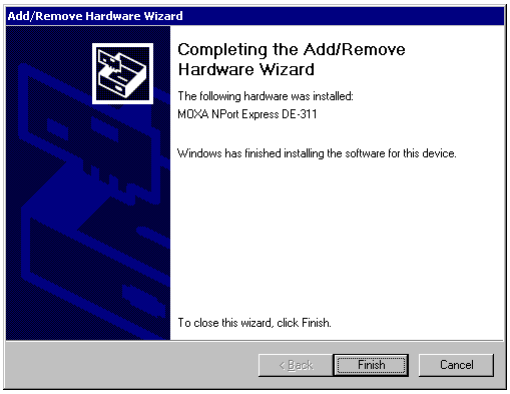
15. The next window lists all NPort Express units that are currently connected to your network. Select the server you wish to install, or manually enter the IP address of your server if it does not show up in the list. Click on **Next** to continue.



16. When the **Installation Completed!** window opens, check to make sure that the information displayed is correct.



17. Click on **Finish** to complete the installation of NPort Express. Keep in mind, however, that you may still need to install the port.

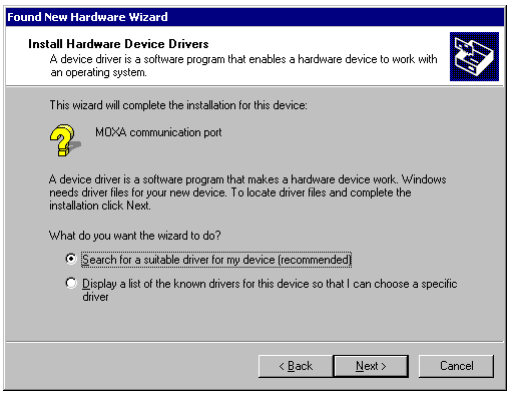


Installing NPort Express's Serial Port

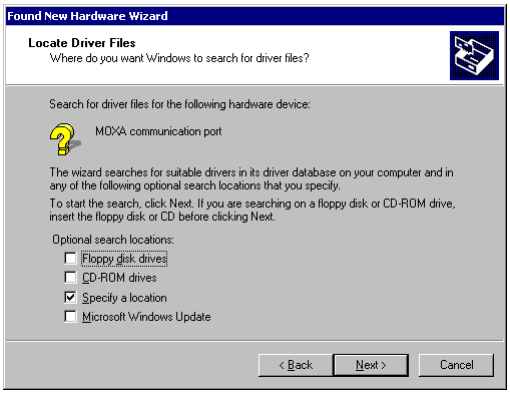
If you or someone else has previously installed an NPort Express on your system, then NPort Express's serial port should be installed automatically. In this case, you may skip this section and continue to the section *NPort Express Properties*.

If this is the first time that anyone has installed an NPort Express on your system, the following window should open automatically.

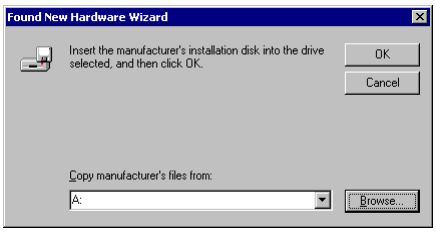
1. When the **Found New Hardware Wizard** starts up, choose the option **Search for a suitable driver for my device (recommended)** and then click on **Next** to continue.

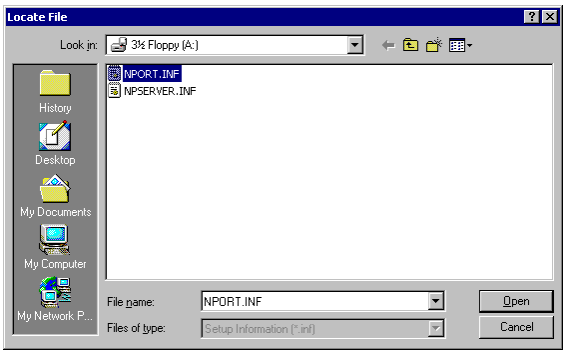


2. Choose the **Specify a location** option from the **Locate Driver Files** window, and then click on **Next** to continue.

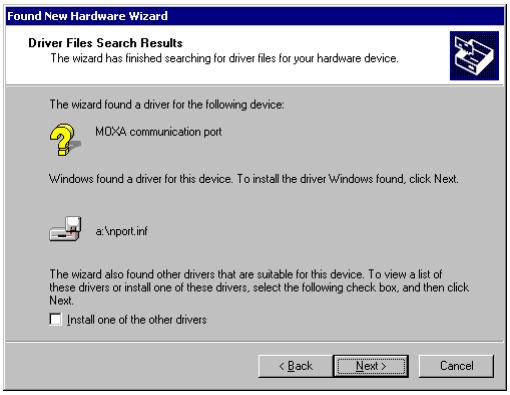


3. If necessary, click on **Browse…** to locate the directory that contains the NPort Express driver. During the installation shown here, the driver was located on the A: drive, so the next step is to click **OK**. Note from the second figure that the driver name is NPORT.INF.





4. The next window verifies that a **MOXA communication port** will be installed, and the correct driver, NPORT.INF, will be used for the installation.

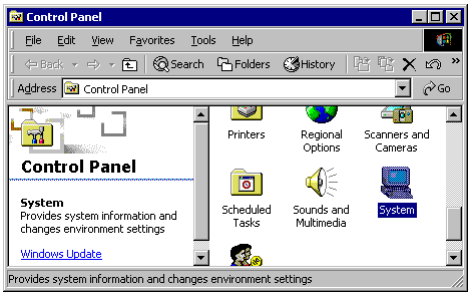


5. Click on **Finish** to complete the installation procedure.

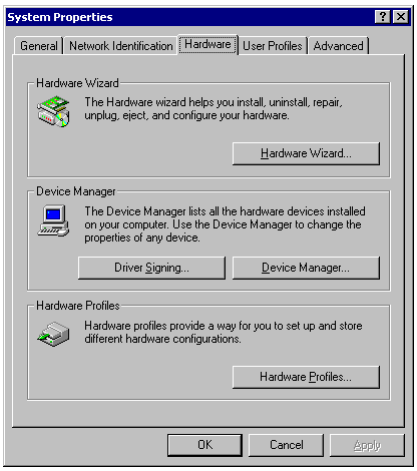
NPort Express Properties

NPort Express's configuration parameters, such as IP address, COM port number, etc., are easily changed from within the Windows 2000 system's device manager.

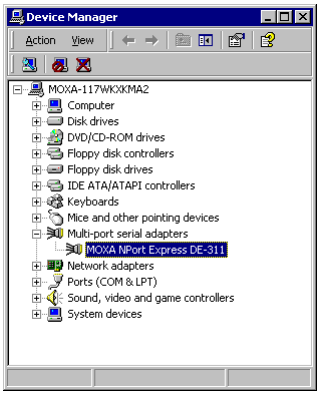
1. To evoke the device manager, double click on the **System** icon from the **Control panel** window.



2. Select the **Hardware** tab, and then click on **Device Manager…**.

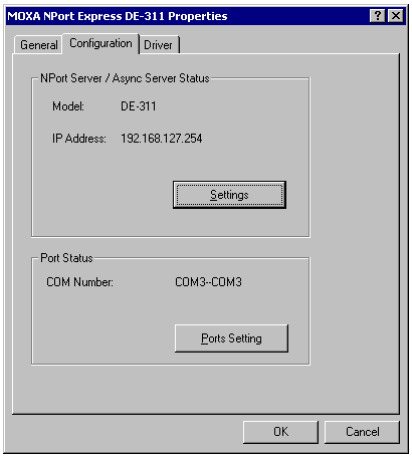


3. Click on the plus sign to the left of **Multi-port serial adapters** and then double click on **MOXA NPort Express DE-311** to open the **Properties** window.



Configuration

Select the **Properties** window's **Configuration** tab to change parameter settings for your NPort Express. Most of the system settings are accessed by clicking on **Settings** (see the *NPort Server* subsection below). The COM port number can be changed by clicking on **Ports Setting** (see the *Port Status* subsection below).



NPort Server

Clicking on **Settings** in the above **Properties** window causes NPort Express's **Property Sheet** to open. If prompted, enter NPort Express's password, and then click **OK** to continue.

Basic Configuration

The **Basic Configuration** page, open by default, allows you to make changes to the following items.

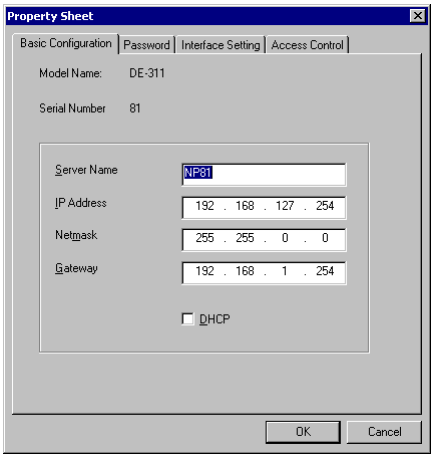
Server Name Choose an appropriate name for NPort Express. The default name is simply "NP" followed by the serial number.

IP Address Check with your network administrator.

Netmask 255.255.0.0 is for Class B networks.
255.255.255.0 is for Class C networks.

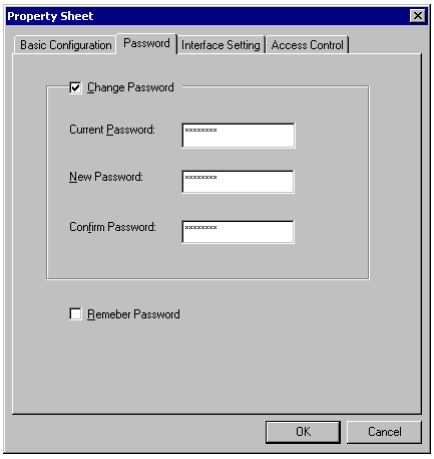
Gateway This is the IP address of the router connecting your LAN to the Internet.

DHCP Click on the DHCP box to allow NPort Express's IP address to be chosen automatically by a DHCP server connected to your LAN.



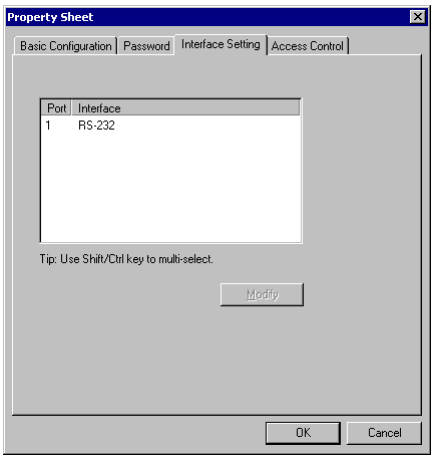
Password

The **Password** page allows you to change the password. Click the **Remember Password** box to have the password automatically stored by your operating system.



Interface Setting

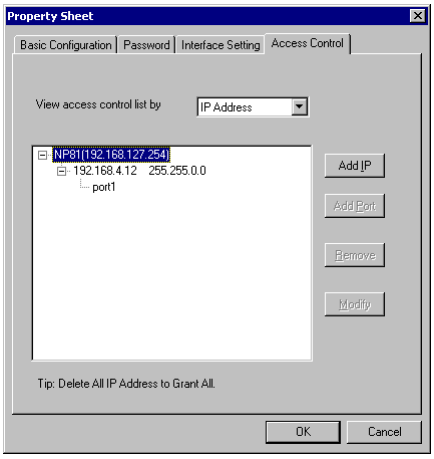
The **Interface Setting** page shows the current Serial Port interface setting. You must use the DIP switch settings on NPort Express's front panel to make any changes. To see changes in the setting, click **OK** at the bottom of the **Property Sheet** window to close the window, and then follow the instructions given above to reopen the window.



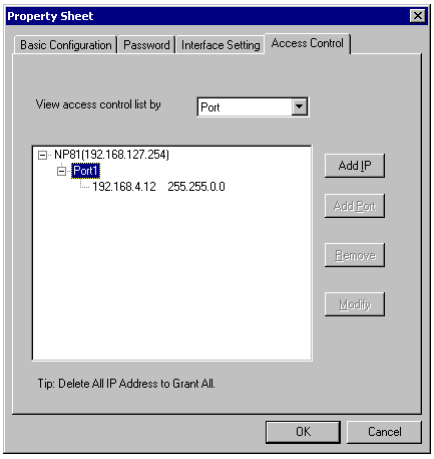
Access Control

The **Access Control** page can be used to allow access to NPort Express's serial port. The process of adding and removing IP addresses is straightforward, although three comments are in order.

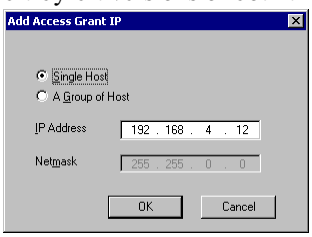
- You may add access by **IP Address** as shown here.

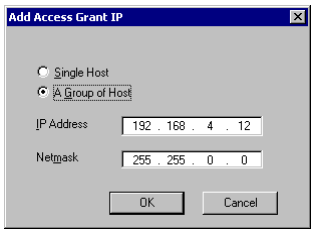


- You may add access by **Port** as shown here.



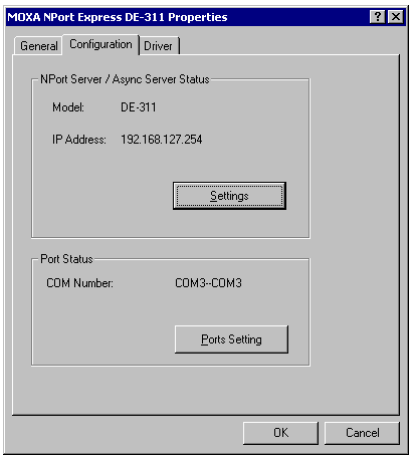
- There are two options to choose from when adding access. Choose **Single Host** to only allow access to the computer with the given IP Address. Choose **A Group of Host** to allow access to a group of computers. In the example shown here, computers connected to the same LAN as NPort Express, and with IP addresses of the form 192.168.*xxx*.*xxx*, will all be given access. More specific types of (limited or wider) access can be granted by considering the bit-by-bit versions of both the IP Address and Netmask.



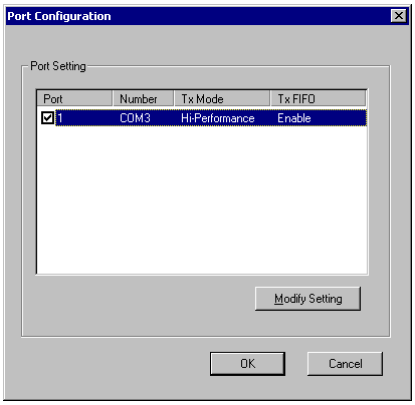


Port Status

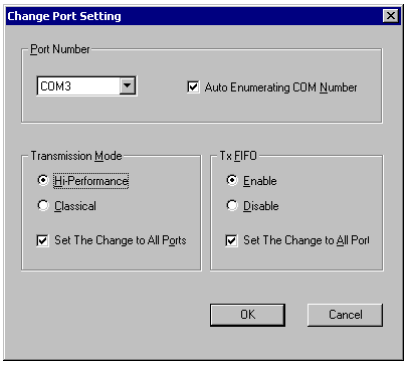
NPort Express's serial port's COM number can be changed by clicking on the **Ports Setting** button.



Click on **Modify Setting** to make changes.

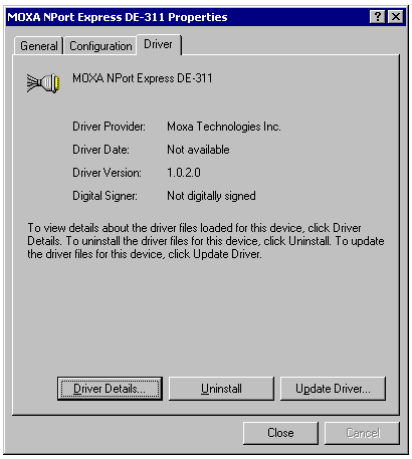


Use the following window to change **Port Number**, **Transmission Mode**, and **TxFIFO**.



Driver

The **Driver** page displays important information about the driver. Use the buttons at the bottom of the window for **Driver Details…**, to **Uninstall** the driver, or **Update Driver**.



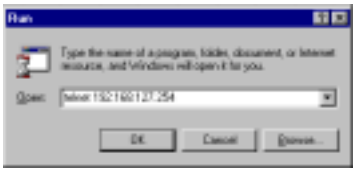
A

Telnet Console

This appendix contains instructions and illustrations that explain how to use the Telnet Console Interface. The following discussion and examples were generated by running Telnet from a Windows 98 host, although they apply equally well to all other Windows operating systems.

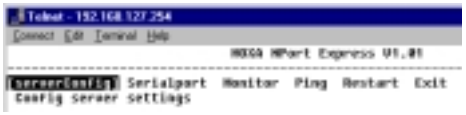
Starting Telnet

From the Windows desktop click on **Start** and then choose **Run**. Type `telnet 192.168.127.254` in the **Open** text input box (change the IP address if different from the default address shown here), and then click **OK** to begin the Telnet session.



Choose option **1** for **ansi/vt100** and then press **Enter**.

This activates the Telnet Console Interface utility program, with MAIN MENU as shown in the figure.



Navigating the Telnet Console

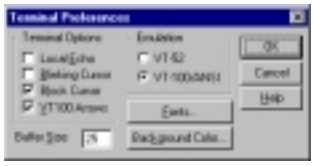
After activating the Telnet Console, use the keyboard keys, as described below, to maneuver about the vt100 screen.

- While in the MAIN MENU, the **left/right arrow** keys move the cursor between menu headings, and pressing **Enter** activates whichever menu heading is currently highlighted.
- After pressing **Enter** from the MAIN MENU, the **Tab** key and **up/down arrow** keys are used to move between configurable options.

  The **left/right arrow** keys are used to "move through" certain configurable settings without making any changes. To modify a setting, such as a device name or IP address, both of which have a very large number of possible settings, use the appropriate letter and number keys on the keyboard.

  The **Enter** key is used to open a menu containing a small number of options (Yes and No, for example) for configurable settings which have only a limited number of possible settings. The **up/down arrow** keys move the cursor between options, and **Enter** is used to select the option that is highlighted.
- The **Esc** key is used to maneuver backwards. For example, if you have made modifications to the settings listed under the **serverConfig** menu, press the **Esc** key to return to the MAIN MENU.

When you first activate the Telnet Console Utility's MAIN MENU, you may find that the arrow keys on your keyboard initially have no effect on the cursor. If that's the case, first click on **Terminal**, located on the Telnet menu bar, and then choose **Preferences**.



Make sure the **VT100 Arrows** box in the **Terminal Preferences** window is checked, and then click **OK** to return to the Telnet Console window.

Telnet Console Menu Functions

In this section, we outline the six MAIN MENU categories: **serverConfig**, **Serialport**, **Monitor**, **Ping**, **Restart**, and **Exit**. Note that the setting names are listed in the left column, with the current settings given to the right of each name.

Settings that can be edited are enclosed in square brackets, and those that can't be edited are not enclosed in brackets.

Using the **left/right arrow** keys, maneuver the cursor so that severConfig is highlighted, and then press **Enter** to display twelve NPort Express attributes.

Consider **Server Name** for example. To change the name of your NPort Express, use the keyboard arrow keys to position the cursor over the first character of the current name. Simply type in the new name, and then use the arrow keys to move to the next configurable setting.

As a second example, consider **Operating Mode**. This manual considers the 1-port NPort Express, so there are actually four options for this attribute.

Using the arrow keys, position the cursor so that the current **Operating Mode** setting is highlighted. For the example shown below the current setting is **Host Based Mode**.

Press **Enter** to activate a pop up window displaying the four **Operating Mode** options: **Host Based**, **Pair Connection (Master)**, **Pair Connection (Slave)**, and **Raw Connection**. Use the **up/down arrow** keys to highlight the desired setting, and then press **Enter**. The new setting, enclosed in square brackets will appear to the right of **Operating Mode**.

If you find that you have chosen the wrong setting, simply press **Enter** again to reactivate the pop-up window and choose the correct setting.

When all of the settings are correct, press the **Esc** key to return to the MAIN MENU.

Serialport Options

Starting from the Telnet Console Interface MAIN MENU, use the arrow keys to position the cursor over the **Serialport** menu, and then press **Enter** to display the options **Port Number**, **Baud Rate(bps)**, **Parity**, **Data Bit**, **Stop Bit**, **Flow Control**, **Alive timeout(0-99 min)**, and **Tx FIFO**.

Note that the above screen applies to a 1-port NPort Express with Operating Mode set to Host Based Mode. If the Operating Mode is set to Raw Connection, three additional configurable settings will be visible (see the *Raw-Connection Mode* section of Chapter 3).

Monitor

The Monitor screen displays the following information:

Ping

Ping is a standard network testing function that checks to see if a computer with a particular IP address is logged onto the network.

Restart and Exit

When you are sure that all of your settings are correct, return to the MAIN MENU, and run **Restart**. You will be prompted with a warning that your settings are going to be changed. Press **Enter** to proceed.

If you decide to reject all of the modifications which you've made, return to the MAIN MENU and run **Exit**.

Administration problems:

Q1: I forgot the administration password.

Ans: Press the reset button, located next to the Ethernet RJ-45 port on the rear panel, for 3 seconds to erase the password. Note that this action also resets all parameters back to the manufacturer's default values.

Q2: Why can't I find NPort Monitor under Windows 2000? And how do I use NPort Monitor under Windows 95/98/NT?

Ans: The NPort Monitor utilities were not ready as of June, 2001. Release information can be obtained by visiting our website at www.moxa.com. Refer to the attached .pdf file located on the NPort Monitor Manual CD to see how to configure NPort Monitor.

Pair connection mode and RAW Connection mode:

Q1: Can I set the RAW Connection mode and Pair Connection mode with the attached driver?

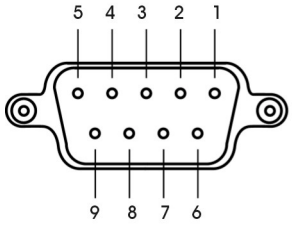
Ans: The NPort Express driver cannot be used to configure Pair Connection mode and RAW Connection mode. You must do the configuration by Telnet console utility. Refer Chapter 3 for details.

Q2: What are the meanings of "Alive timeout" and "Inactivity time"?

Ans: See explanations below.

- **Alive timeout**
  The amount of time, in minutes, that will be allowed to transpire before a TCP/IP connection is shut down.
- **Inactivity time**
  The amount of time, in minutes, that will be allowed to transpire before an inactive serial port connection is shut down. An "inactive connection" exists when data is not going in or out of the serial port. The system software will reset the serial port after the inactivity time has transpired.

DB9 Female

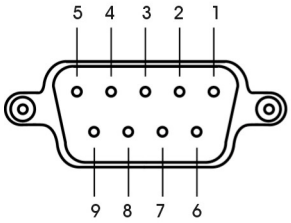


PIN	RS-232
1	DCD
2	TxD
3	RxD
4	DSR
5	GND
6	DTR
7	CTS
8	RTS

RS-232 Loopback Tester

PIN	signal
1	DCD
2	TxD
3	RxD
4	DSR
5	GND
6	DTR
7	CTS
8	RTS

DB9 Female



PIN	RS-422	RS-485
1	RxD-(A)	
2	RxD+(B)	
3	TxD+(B)	Data+(B)
4	TxD-(A)	Data-(A)
5	GND	GND
6	CTS-(A)	
7	CTS+(B)	
8	RTS+(B)	
9	RTS-(A)	

RS-422 Loopback Tester

PIN	signal
1	RxD-(A)
2	RxD+(B)
3	TxD+(B)
4	TxD-(A)
5	GND
6	CTS-(A)
7	CTS+(B)
8	RTS+(B)
9	RTS-(A)

D

Declaration of Conformity

Manufacturer's Name: Moxa Technologies Co., Ltd.

Manufacturer's Address: Fl.4, No.135, Lane 235, Pao-Chiao Rd.,
Shing Tien City, Taipei, Taiwan, R.O.C.

declares that the product:

Product Name: NPort Express

Model Number: DE-311

conforms to the following standards:

EMC: FCC Class B
EN55022:1994 class B
EN61000-3-2:1995 class B
EN61000-3-3:1995
EN55082-1:1997
EN61000-4-2:1995
Contact Discharge 4kV, Air Discharge 8kV
EN61000-4-3:1995
EN61000-4-4:1995
AC/DC Power supply 1kV, Data/Signal lines 5kV
EN61000-4-5:1995
AC/DC Line to Line 1kV, AC/DC Line to Earth 2kV
EN61000-4-6:1995
EN61000-4-8:1993
3A/m at 50Hz
EN61000-4-11:1994

Safety UL/CUL, TUV
EN60950

Problem Report Form

NPort Express

Customer name:	
Company:	
Tel:	**Fax:**
Email:	**Date:**

1. **Moxa Product:** ☐ DE-311 (1 RS-232/422/485 port)
2. **Interface:** ☐ RS-232 ☐ RS-422 ☐ RS-485 (ADDC) ☐ RS-485 (by RTS)
3. **Operation mode:** ☐ Host-Based mode ☐ Pair-Connection mode
   ☐ Raw-Connection mode
4. **Serial Number:** _____
5. **NPort Firmware Version:** _____
6. **NPort Manager Version:** _____
7. **PC Host:** Make _____ Model _____
8. **CPU:** Speed _____MHz Make _____ Model ____
9. **Ethernet Card :** ☐ ISA Card Make _____
   ☐ PCI Card Make _____
10. **Your Installation Type:** ☐ Single-Host ☐ Custom
11. **Problem Description:** Please describe the symptoms as clearly as possible, including all error messages. Be complete, since we may need to follow your description to reproduce the symptoms.

RETURN PROCEDURE

For product repair, exchange, or refund, the customer must:

- Provide evidence of original purchase.
- Obtain a Product Return Agreement (PRA) from the sales representative or dealer.
- Fill out the Problem Report Form (PRF). Include as much detail as possible for a shorter product repair time.
- Carefully pack the product in an anti-static package, and send it, pre-paid, to the dealer. The PRA should be visible on the outside of the package, and include a description of the problem, along with the return address and telephone number of a technical contact.