# NPort 5000 Series User's Manual

NPort 5000/5000A/IA5000/IA5000A Series

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www.moxa.com/product



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# NPort 5000 Series User's Manual

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NPort Family	Model Series	Introduction
NPort 5000	NPort 5110/5130/5150 Series	NPort 5000 series device servers are
	NPort 5210/5230/5232 Series	designed to make serial devices
	NPort 5410/5430/5450 Series	network-ready in an instant. The
	NPort 5610/5630/5650 Series	different form factors of the servers
	NPort 5610-8-DT/5650-8-DT Series	provide flexible options for users to
	NPort 5610-8-DTL/5650-8-DTL Series	connect legacy devices to an IP-based
		Ethernet LAN.
NPort 5000A	NPort 5110A/5130A/5150A Series	The NPort 5000A device servers are
	NPort 5210A/ 5230A/5250A Series	designed to make serial devices
	NPort 5150AI-M12/5250AI-M12/5450AI-M12	network-ready in an instant and give
	Series	your PC software direct access to serial
	NPort P5150A Series	devices from anywhere on the network.
		The NPort 5000A device servers are
		ultra-lean, rugged, and user-friendly,
		making simple and reliable serial-to-
		Ethernet solutions possible.
NPort	NPort IA5150/IA5250 Series	NPort IA device servers are an ideal
IA5000/IA5000A	NPort IA5150A/IA5250A/IA5450A Series	choice for establishing network access to
		RS-232/422/485 serial devices, including
		PLCs, sensors, meters, motors, drives,
		barcode readers, and operator displays.
		All models are housed in a compact,
		rugged, DIN-rail mountable housing, and
		come with redundant power inputs,
		cascading Ethernet ports, and industrial-
		grade certifications.

Read this user's manual to learn how to configure and use your Moxa NPort device server. The following products are covered by this manual:

# **Getting Started**

In this chapter, we explain how to install a Moxa NPort device server for the first time. There are four ways to access the Moxa NPort's configuration settings: Windows utility, web console, serial console, or Telnet console.

NPort products support the following configuration options:

- Windows Utilities: NPort Administrator; Device Search Utility and Windows Driver Manager
- Web Console
- Quick Setup Wizard\*
- Serial Console\*\*
- Telnet Console
- \* Does not support 5100/5200/IA5000 series
- \*\* Only available for NPort Series that has RS-232 interface.

The following topics are covered in this chapter:

- Installing Your NPort Device Server
- Configuration by Windows Utility
- Configuration by Web Console
- Account Management
- System Log Settings
- Configuration by Telnet Console
- Configuration by Serial Console
- Testing Your NPort

# **Installing Your NPort Device Server**

This section describes how to connect an NPort device server to your serial devices for the first time. We cover Wiring Requirements, Connecting the Power, Grounding the NPort Device Server, 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 NPort Device Server.

#### Wiring Caution!

Calculate the maximum possible current allowed in each power wire and common wire. Observe all electrical codes dictating the maximum current allowed for each wire size. If the current goes above the allowed maximum, the wiring could overheat, causing serious damage to your equipment.

#### **Temperature Caution!**

Please be cautious when handling the NPort device server. When plugged in, the NPort's internal components generate heat, and consequently the casing may feel hot to the touch. When installed with other components, make sure that there is at least a 2-cm clearance on all sides of the NPort device server in order to allow proper heat dissipation.

You should observe the following:

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

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

- You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wires that shares similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separate.
- Where necessary, it is strongly advised that you label wires to all devices in the system.

# **Connecting the Power**

Connect the power line with the NPort's power input. If the power is properly supplied, the "Ready" LED will show a solid red color until the system is ready, at which time the "Ready" LED will change to a green color.

# **Grounding the NPort Device Server**

Note: This section only applies if your NPort's power input is on a terminal block.

Grounding and wire routing help limit the effects of noise caused by electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface before connecting the devices.



#### WARNING

NPorts with a power terminal block are intended to be mounted to a well-grounded mounting surface such as a metal panel.

Type of Power Terminal Block	Shielded Ground (SG)	Applicable Products
	The Shielded Ground (sometimes called	NPort IA5000 Series
	Protected Ground) contact is the left most	
	contact of the 7-pin power terminal block	
0 0 0 0 0 0 0	connector when viewed from the angle	
	shown here. Connect the SG wire to an	
	appropriate grounded metal surface.	
PWR2 PWR1 PWR1	The Shielded Ground (sometimes called	NPort IA5000A Series
	Protected Ground) contact is the left most	
	contact of the 8-contact power terminal	
	block connector when viewed from the	
	angle shown here. Connect the SG wire to	
<u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u>	an appropriate grounded metal surface.	
SG	The Shielded Ground (sometimes called	NPort 5200/5400 Series
	Protected Ground) contact is the left most	NPort 5200A Series
0000	contact of the 3-pin power terminal block	
	connector when viewed from the angle	
NPor	shown here. Connect the SG wire to an	
	appropriate grounded metal surface.	
	The Shielded Ground (sometimes called	NPort 5600 Series
ABBBAB	Protected Ground) contact is the second	
V+ V- 😑	contact from the right of the 5-pin power	
	terminal block connector located on the	
$\sim \gamma$	rear panel of NPort 5600 VDC models.	
3G	Connect the SG wire to the earth ground.	

# **Connecting to the Network**

Connect one end of the Ethernet cable to the NPort's 10/100M Ethernet port and the other end of the cable to the Ethernet network. The NPort device server 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.



#### ATTENTION

NPort IA5000/IA5000A/5600-8-DT series NPorts have two Ethernet ports that can be used to create an open chain of NPort IA5000/IA5000A/5600-8-DT device servers. Be careful not to connect the Ethernet ports of the two device servers at the ends of the chain.

In other words, NPort IA5000/IA5000A/5600-8-DT series NPorts do NOT support closed chains.

# **Connecting to a Serial Device**

Connect a serial data cable between the NPort and the serial device. Serial data cables must be purchased separately. They are not provided with the NPort.

# **LED Indicators**

LED Name	LED Color	LED Function	
Ready	Red	Steady on: Power is on, and the NPort is booting up.	
		Blinking: Indicates an IP conflict, or the DHCP or BOOTP server did not	
		respond properly.	
	Green	Steady on: Power is on, and the NPort is functioning normally.	
		Blinking: The device server has been located by NPort Administrator's	
		Location function.	
	Off	Power is off, or a power error condition exists.	
Link	Orange	The device is connected to a 10 Mbps Ethernet connection.	
	Green	The device is connected to a 100 Mbps Ethernet connection.	
	Off	The Ethernet cable is disconnected, or has a short.	
Tx/Rx	Orange	The serial port is receiving data.	
	Green	The serial port is transmitting data.	
	Off	Data is NOT being transmitted or received through the serial port.	

# NPort 5100/5100A/P5150A Series

## NPort 5200/5200A/5400 Series

LED Name	LED Color	LED Function	
Ready	Red	Steady on: Power is on, and the NPort is booting up.	
		Blinking: Indicates an IP conflict, or the DHCP or BOOTP server did not	
		respond properly.	
	Green	Steady on: Power is on, and the NPort is functioning normally.	
		Blinking: The device server has been located by NPort Administrator's	
		Location function.	
	Off	Power is off, or a power error condition exists.	
Link	Orange	The device is connected to a 10 Mbps Ethernet connection.	
(Ethernet)	Green	The device is connected to a 100 Mbps Ethernet connection.	
	Off	The Ethernet cable is disconnected, or has a short.	
P1, P2,	Orange	The serial port is receiving data.	
(P3, P4)	Green	The serial port is transmitting data.	
	Off	Data is NOT being transmitted or received through the serial port.	

## NPort 5600 Series (Rackmount)

LED Name	LED Color	LED Function	
Ready	Red	Steady on: Power is on and the NPort is booting up.	
		Blinking: Indicates an IP conflict, or the DHCP or BOOTP server did not	
		respond properly.	
	Green	Steady on: Power is on, and the NPort is functioning normally	
		Blinking: The device server has been located by NPort Administrator's	
		Location function.	
	Off	Power is off, or a power error condition exists.	
Tx/Rx,	Orange	The serial port is receiving data.	
P1 to P16	Green	The serial port is transmitting data.	
	Off	Data is NOT being transmitted or received through the serial port.	
LAN	Green	The Ethernet port is connected, but data is NOT being transmitted.	
	Blinking	The Ethernet port is connected, and data is being transmitted.	
	Off	The Ethernet port is disconnected.	
PWR	Green	Power cable is connected and provides electricity properly.	
Off Power cable is disconnected.		Power cable is disconnected.	

# NPort 5600-8-DT/DTL Series

LED Name	LED Color	LED Function	
PWR	Red	Power is on.	
	Off	Power is off.	
Ready	Green	Steady on: The NPort is operational.	
		Blinking: The NPort is responding to NPort Administrator's Location	
		function, or the NPort is being reset to factory defaults.	
	Off	Power is off, or power error condition exists.	
Fault	Red	Indicates an IP conflict, or the DHCP or BOOTP server did not respond	
		properly.	
	Off	No fault condition detected.	
	Off	Blinking: Network is connected, data is being transmitted.	
ETH 1, ETH2	Green	Steady on Network is connected, no data is being transmitted.	
	Off	Blinking Network is connected, data is being transmitted.	
In Use	Green	Serial port has been opened by server side software.	
(P1 to P8)	Off	Serial port is not currently opened by host side software.	
Tx/Rx	Green (Tx)	Serial device is transmitting data.	
(P1 to P8)	Orange(Rx)	Serial device is receiving data.	
	Off	No data is flowing to or from the serial port.	

LED Name	LED Color	LED Function	
PWR	Green	Power is being supplied to the power input.	
Ready	Red	Steady on: Power is on, and the NPort is booting up.	
		Blinking: Indicates an IP conflict, or the DHCP or BOOTP server did not	
		respond properly.	
	Green	Steady on: Power is on, and the NPort is functioning normally	
		Blinking: The device server has been located by NPort Administrator's	
		Location function.	
	Off	Power is off, or a power error condition exists.	
10M, 100M	Orange	The device is connected to a 10 Mbps Ethernet connection.	
	Green	The device is connected to a 100 Mbps Ethernet connection.	
	Off	The Ethernet cable is disconnected, or has a short.	
P1, P2, P3, P4	Orange	The serial port is receiving data.	
	Green	The serial port is transmitting data.	
	Off	Data is NOT being transmitted or received through the serial port.	

## NPort 5000AI-M12 Series

## NPort IA5000/IA5000A Series

LED Name	LED Color	LED Function	
PWR1, PWR2	Red	Power is being supplied to power input PWR1, PWR2.	
Ready	Red	Steady on: Power is on, and the NPort IA is booting up.	
		Blinking: Indicates an IP conflict, the DHCP or BOOTP server did not	
		respond properly, or a relay output was triggered. When the	
		above two conditions occur at the same time, check the relay	
		output first. If after resolving the relay output and the Ready	
		LED is still blinking, then there is an IP conflict, or the DHCP or	
		BOOTP server did not respond properly.	
	Green	Steady on: Power is on and the NPort IA is functioning normally.	
		Blinking: The device server has been located by NPort Administrator's	
		Location function.	
	Off	Power is off, or a power error condition exists.	
E1, E2 Orange		The device is connected to a 10 Mbps Ethernet connection.	
	Green	The device is connected to a 100 Mbps Ethernet connection.	
	Off	The Ethernet cable is disconnected, or has a short.	
P1, P2,	Orange	The serial port is receiving data.	
(P3, P4)	Green	The serial port is transmitting data.	
	Off	Data is NOT being transmitted or received through the serial port.	
FX*	Orange	Steady on: The fiber port is connected, but data is NOT being transmitted.	
		Blinking: The fiber port is connected, and data is being transmitted.	

\*Only applies to NPort IA5000 fiber models.

# RS-485 Port's Adjustable Pull High/Low Resistor

For some applications, you may need to use termination resistors to prevent the reflection of serial signals. When using termination resistors, it is important to set the pull high/low resistors correctly so that the electrical signal is not corrupted. Refer to **Appendix B** for detailed instructions on how to set the pull high/low resistor values for different models.

# **Configuration by Windows Utility**



#### ATTENTION

Before installing and the configuring the NPort Administration suite, make sure your user privilege is set as system administrator.

NPort Administration Suite is an integrated software suite that bundles NPort Administrator and the IP Serial Library, providing everything you need to manage, monitor, and modify your NPort from a remote location.

With NPort Administrator, you can easily install and configure your NPort device server over the network. Five different sets of functions are provided to ease the installation process: Configuration, Monitor, Porting Monitor, COM Mapping, and IP Address Report.

In this section, we will cover only the "configuration of general settings" using NPort Administrator. For more detailed information on how to use this suite of useful utilities, refer to **Chapter 6**.

You may also use the web console, serial console, or Telnet to configure the device server. Refer to the section **Configuration by Web Console**, **Configuration by Serial Console**, and **Configuration by Telnet Console** for additional information on using these consoles.

# **Installing NPort Administrator**

Download and run the setup program from Moxa's support website (<u>https://www.moxa.com/support/</u>). You may find it in the **Resource** section under your product page. Run NPort Administrator when the installation has been completed.

# Searching for Device Servers over a LAN

The **Broadcast Search** function is used to locate all NPort 5400 device servers that are connected to the same LAN as your computer. Since the **Broadcast Search** function searches by MAC address and not IP address, all NPorts connected to the LAN will be located, regardless of whether or not they are part of the same subnet as the host.

Elle Eunction Configuration								
Exit Search Search	hIP Locale	Configure \	//eb					
Function				Configuration	- 0 NPort(s	)		
Protet     Prot     Prot		Model	MAC Address	IP Address	IP Addess2	Server Name	Status	
Message Log · 0 Monitor Lo	) <							
No Time	g-ul	Description						
		Description						

In NPort Administrator, click **Search** to search your LAN for NPort device servers. When your unit appears in the search results, you may click **Stop** to end the search. You may also wait a few more moments for the search to complete.

<u>File</u> <u>Func</u>	ction <u>Configuration</u>	n ⊻iew <u>H</u> e	qle						
Exit	search Search	IP Locate	Configure We						
Fu	nction			Co	nfiguration -	1 NPort(s	)		
NPo	rt	No / Model MAC Address IP Address IP Address2 Ser				Server Name	Status		
N N N	Configuration Monitor Pott Monitor COM Mapping IP Address Report	1	NPort 52504	00:90:E8:63:50:FD	192,168,127,254		NP5250A_7162	Unlock	
		<							1
Message Lo	og - 9 Monitor Log	0-0							
No	Time		Description						^
5 6 7 8 9	3/21/2019 4:5 3/21/2019 4:5 3/21/2019 4:5 3/21/2019 4:5 3/21/2019 4:5 3/21/2019 4:5	4:28 PM 4:33 PM 7:07 PM	Uesception         Unlock Fait: NPort 5650-9-D T J (00:90:E8:00:00:99)           Found NPort(s) 1         Unlock Oit: NPort 5250A (00:90:E8:63:50:FD)           Found NPort(s) 1         Found NPort(s) 1						

The **Configuration** screen will list the NPort device servers that were found on the LAN. If your unit cannot be found, you may have a network problem. Check all cables and verify that your PC and device server are on the same LAN. If you still have problems, try connecting the device server directly to your PC.

Before configuring the NPort, you will need to unlock the NPort first. Right-click the unit in the Configuration screen and select **Unlock** in the pop-up menu. Before configuring the NPort, you will need to unlock it first. Right-click the unit in the Configuration screen and select **Unlock** in the pop-up menu.

The default login is:

Username: admin

Password: moxa

For the NPort 5100, 5200, and IA5000 Series, only the password is required to log in.

# **Adjusting General Settings**

Right-click your unit in the Configuration screen and select **Configure** in the pop-up menu. If your device server is password protected (the default username is **account** and the default password is **moxa**), first select **Unlock** in the pop-up menu, and then click the **Network** tab in the configuration window. Select the **Modify** checkbox for items you would like to modify. The device server must be assigned a unique IP address that is valid for your network. Both fixed and dynamic IP addresses are supported. Consult with your network administrator if you are not sure how to set these parameters.

Also, For the NPort 5100, 5200, and IA5000 Series, only the password is required to log in.

When you are ready to restart the device server with the new settings, click OK.

essible IP

#### Static IP Addresses

For most applications, you will assign a fixed IP address to the device server. To assign a static (fixed) IP address, the **IP Configuration** parameter must be set to **Static**, which is the default setting. You may then modify the **IP Address** and **Netmask** parameters.

#### Dynamic IP Addresses

For certain network environments, your device server's IP address will be assigned by a DHCP or BOOTP server. In this case, instead of assigning the device server's IP address, you will need to configure the device server to receive its IP address from the appropriate server. Set the **IP Configuration** parameter to **DHCP**, **BOOTP**, or **DHCP/BOOTP**, depending on your network environment. The **IP Address** and **Netmask** parameters will be unavailable for editing since these parameters will be assigned automatically.

If you are not sure whether you need to configure your device server for a dynamic or static IP address, consult the administrator who set up the LAN.

#### Verifying Network Settings

If your device server has been configured correctly, you should be able to ping its IP address from your PC. First, make sure that your PC and device server are on the same subnet, and then ping the device server's address. If no response is received, check your cables and network settings.

#### **Configuring Device Port Operation Mode**

This section covers configuration of a device port's operation mode. The operation mode determines how the device port will interact with the network. Which operation mode you select will depend on your specific application. Refer to the chart at the end of this section for guidance on selecting the most appropriate operation mode. For additional information on each operation mode, refer to **Chapter 4** and **Chapter 5**.

#### Adjusting Operation Mode Settings

The operation mode parameters for each device port can be configured through NPort Administrator. Open your device server's configuration window using the same method you used to adjust the network

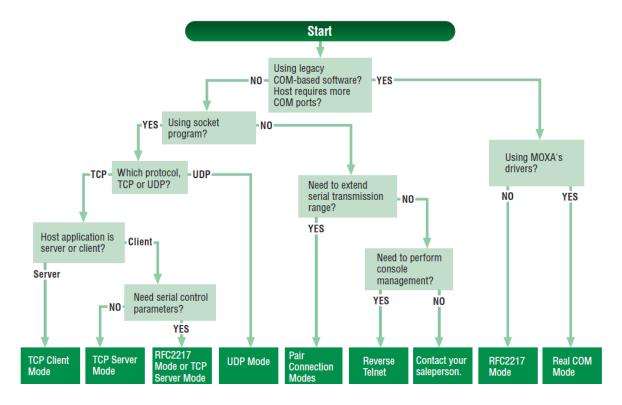
parameters. On the **Operating Mode** screen, select the **Modify** check box and then select the device port that you wish to configure. Click **Settings** to configure the selected device port.

— [ M	odify —		,	
Port	Alias	OP Mode		
1		Real COM Mode Real COM Mode		_
-		110010011111000		
				_
				_
				_
				-

Set the operating mode and associated parameters as needed. Refer to **Chapter 4** and **Chapter 5** for additional information on operating modes and advanced settings. When you are ready to restart the device server with the new settings, click **OK**.

Operating Mode	Real COM Mode		
Max. Connection	1	•	
Misc (Optional)			
TCP Alive Check T 7	imeout (0-99 min)		
Allow Driver Co	ntrol		
Ignore Jammed	IP		
– Data Packing (Option	nal)		
Delimiter 1	00 (0-ff, Hex)	Force Tx Timeout	0 (0-65535 ms)
Delimiter 2	00 (0-ff, Hex)	Packing Length	0 (0-1024 bytes)
Delimiter Process	Do Nothing 🗸 👻		

## **Operation Mode Selection Chart**



# **Configuring Serial Communication Parameters**

This section covers the configuration of each device port's serial communication parameters: baudrate, stop bit, etc.

## **Serial Parameter Review**

The following parameters need to be set correctly on the device port to ensure proper communication with your device. Refer to your device's documentation for the appropriate settings.

Parameter	Setting	Factory	Description	Necessity
		Default		
Baudrate	Support standard	115200 bps	The data transmission rate to and	Required
	baudrates (bps):		from the attached serial device.	
	50/ 75/ 110/ 134/ 150/			
	300/ 600/ 1200 1800/			
	2400/ 4800/ 7200/			
	9600/ 19200/ 38400/			
	57600/ 115200/			
	230.4k/ 460.8k/			
	921.6k			
	* The NPort			
	5110/5210/5230/52321			
	Series, and IA 5000			
	Series are as low as			
	110 bps, and up to			
	230.4 kbps			
Data bits	5, 6, 7, 8	8	The size of each data character.	Required
Stop bits	1, 1.5, 2	1	The size of the stop character.	Required

Parity	None, Even, Odd,	None	The parity that will be used. Even and	Required
	Space, Mark		Odd parity provide rudimentary error-	
			checking; Space and Mark parity are	
			rarely used.	
Flow control	None, RTS/CTS,	RTS/CTS	The method used to suspend and	Required
	DTR/DSR, Xon/Xoff		resume data transmission to ensure	
			that data is not lost. RTS/CTS	
			(hardware) flow control is	
			recommended.	
FIFO	Enable, Disable	Enable	Controls whether the device port's	Required
			built-in 128-byte FIFO buffer is used.	
			When enabled, the FIFO helps reduce	
			data loss regardless of direction.	
Interface*	RS-232	RS-232	The serial interface that will be used.	Required
	RS-422		The options that are available depend	
	2-wire RS-485		on the specific model of device server.	
	4-wire RS-485			

\*Supported interfaces vary by model; refer to your NPort's datasheet for a list of supported serial interfaces.

# **Adjusting Serial Parameters**

Operating Mode	Accessible IPs
	-
S/CTS	
S/CTS	
	-
	-
	-
	-
	-
C-W	1
w Settings	
	w Settings Settings

The serial communication parameters for each device port can be configured through NPort Administrator. Open your device server's configuration window, using the same method you used to configure network parameters. On the **Serial** screen, select the **Modify** check box and then select the device port that you wish to configure. Click **Settings** to configure the selected device port.

Modify the parameters as needed. When you are ready to restart the device server with the new settings, click **OK**.

Port Alias					
Baud Rate	115200	•	Flow Control	RTS/CTS	•
Parity	None	•	FIFO	Enable	-
Data Bits	8	-	Interface	RS-232	-
Stop Bits	1	-			

# Mapping COM Port to Device (only required when operation

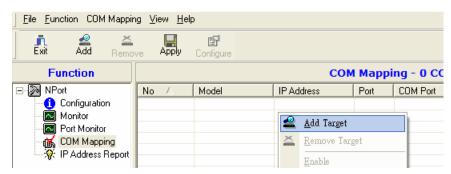
# mode is set to Real COM or RFC2217)

This section covers how to map the COM ports on a Windows PC to NPort device ports. The mapping will allow Windows software to access serial devices over the network as if they were local COM devices, providing instant device networking without software migration. COM mapping is supported in Real COM and RFC2217 modes only.

The following instructions are for device ports operating in Real COM mode. For device ports operating in RFC2217 mode, follow the instructions for your particular driver. Real COM mode also supports TTY port mapping on Linux and UNIX systems.

#### Specifying the Target Device Server

In NPort Administrator, click **COM Mapping** in the **Function** panel to open the COM Mapping window. Right-click on an empty line in the COM Mapping window. Select **Add Target** in the pop-up menu to assign your device server as the mapping target.



A list of NPort device servers that have been found by NPort Administrator will appear. Select your device server and click **Finish**.

j <u>F</u> ile <u>F</u> unction COM Mapping <u>V</u> iew <u>H</u> elp						
Exit Add Remo		Configure				
Function			COM Mappir	ng - 8 C	ом	
🔊 NPort	No 🛆	Model	IP Address	Port	COM Port	
Configuration	1	NPort 5610-8-DT	192.168.127.254	1	COM5	
Monitor	2	NPort 5610-8-DT	192.168.127.254	2	COM6	
Port Monitor	3	NPort 5610-8-DT	192.168.127.254	3	COM7	
COM Mapping	4	NPort 5610-8-DT	192.168.127.254	4	COM8	
P Address Report	5	NPort 5610-8-DT	192.168.127.254	5	COM9	
ma γ <sub>0</sub> , π Address hepoit	6	NPort 5610-8-DT	192.168.127.254	6	COM10	

#### Assigning COM Port Number to Device Port

The **COM Mapping** screen shows a list of available device ports on the network. Right-click the target device port and select **COM Settings** in the pop-up menu.

<u>File</u> Eunction COM Mappir	ng <u>V</u> iew <u>H</u> elj	p						
Exit Add Remo	ve Apply	Configure						
Function	COM Mapping - 16 COM							
⊡- 🔊 NPort	No 🛆	Model	IP Address	Po	rt	COM Port	Mode	Parameter
Configuration	1	NPort 5650-16	192.168.16.130	1		COM5	Lu: Performance, FIFO Ena	9600, None, 8, 1
Monitor	2	NPort 5650-16	192.168.16.130	2	<u>A</u> dd 1	Carget	Performance, FIFO Ena	9600, None, 8, 1
Port Monitor	3	NPort 5650-16	192.168.16.130	-	<u>R</u> emove Target		Performance, FIFO Ena	9600, None, 8, 1
	4	NPort 5650-16	192.168.16.130	۲			Performance, FIFO Ena	9600, None, 8, 1
COM Mapping	5	NPort 5650-16	192.168.16.130		Enabl	٥	Performance, FIFO Ena	9600, None, 8, 1
W. II Address hepott	6	NPort 5650-16	192.168.16.130		-		Performance, FIFO Ena	9600, None, 8, 1
	7	NPort 5650-16	192.168.16.130		Disab	le	Performance, FIFO Ena	9600, None, 8, 1
	8	NPort 5650-16	192.168.16.130	-51		AL	Performance, FIFO Ena	9600, None, 8, 1
	9	NPort 5650-16	192.168.16.130	<b>P</b>	COM	Settings	Performance, FIFO Ena	9600, None, 8, 1
1	10	NID-A ECEO 1C	100 100 10 100					0000 Nata 0 1

On the **Basic Settings** screen, select the COM port number that will be mapped to the device port. You can map multiple COM ports at the same time by selecting the **Auto Enumerating** check box to number the COM ports automatically.

COM Port Settings	×
Port Number: 2 Port(s) Selected. 1st port is Port 1	ĺ
Basic Settings Advanced Settings Serial Parameters COM Groupin	9
COM Number COM7 +	
<ul> <li>Auto enumerating COM number for selected ports.</li> </ul>	
Grouping selected port(s) together.	
V DK X Cancel	]

On the **Serial Parameters** screen, adjust the settings to match your device. These settings, which are only used for serial printers, must also match the settings on the device port. Click **OK** when you are satisfied with your changes.

Basic Settings   Adv	vanced Settings	Serial Parameters CO	M Grouping
Baud Rate	9600		
Parity	None	-	
Data Bits	8	•	
Stop Bits	1	•	
Flow Control	None	-	
Apply All Se	ected Ports		

#### **Advanced Settings**

(See Chapter 6 for detailed information about NPort Administrator's Advanced Settings.)

**Tx Mode:** In Hi-Performance mode, the driver immediately issues a "Tx Empty" response to the program after sending data to the NPort. In Classical mode, the driver sends the "Tx Empty" response after confirmation is received from the NPort. Classical mode is recommended if you want to ensure that all data is sent out before further processing.

FIFO: Tells the driver whether or not to use FIFO transmission.

Network Timeout: Specifies when an open, close, or serial parameter change operation will time out.

**Fast Flush:** When enabled, the driver flushes only the local buffer on the host for a Win32 PurgeComm() function call. When disabled, both the local and remote buffers are flushed. If your application uses PurgeComm() and it performance seems sluggish, try enabling Fast Flush.

**Always Accept Open Requests:** Even if the driver cannot establish a connection with the NPort, the user's software will still be able to open the mapped COM port, the same as with an onboard COM port.

**Ignore TX Purge:** The application can use Win32 API PurgeComm to clear the output buffer and terminate outstanding overlapped write operations. Select **Ignore TX Purge** if you do not want the output buffer to be purged.

#### **Apply Change**

Right-click **COM Mapping** in the **Function** panel. Select **Apply Change** in the pop-up menu to save the current COM mapping settings. Your application will now be able to access the target serial device using the COM port.

Eile Eunction COM Mappir						
Exit Add Remo	ve Apply	Configure				
Function			COM Mappi	ng - 8 (	сом	
⊡- 🔊 NPort	No 🛆	Model	IP Address	Port	COM Port	Mode
🔂 Configuration	1	NPort 5610-8-DT	192.168.127.254	1	COM5	Hi-Performance, FIFO Ena
🚾 Monitor	2	NPort 5610-8-DT	192.168.127.254	2	COM6	Hi-Performance, FIFO End
- Port Monitor	3	NPort 5610-8-DT	192.168.127.254	3	COM7	Hi-Performance, FIFO End
COM Mapping	4	NPort 5610-8-DT	192.168.127.254	4	COM8	Hi-Performance, FIFO End
IP Address Report	5	NPort 5610-8-DT	192.168.127.254	5	COM9	Hi-Performance, FIFO En-
Mr. II Address Heport	6	NPort 5610-8-DT	192.168.127.254	6	COM10	Hi-Performance, FIFO En-
	7	NPort 5610-8-DT	192.168.127.254	7	COM11	Hi-Performance, FIFO En-
	8	NPort 5610-8-DT	192.168.127.254	8	COM12	Hi-Performance, FIFO Ena
	-					
	<					2
· · · · · · · · · · · · · · · · · · ·					)	
Message Log - 28 Monitor Lo	g-0					

# **Configuration by Web Console**

The Web Console is the most user-friendly way to configure NPort products. In this section, we cover a device server's general settings.

# **Opening Your Browser**

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

Internet Options	? X Security Settings ? X
General Security Content Connections Programs Advanced	Settings:
Select a Web content zone to specify its security settings.	Cookies     Cookies     Allow cookies that are stored on your computer     O Disable     Enable
Internet	Prompt     Allow per-session cookies (not stored)
This zone contains all Web sites you sites	Disable     Disable     Enable     Prompt
Security level for this zone Move the slider to set the security level for this zone. -   - Medium - Safe browsing and still functional Prompts before downloading potentially unsafe content - Unsigned ActiveX controls will not be downloaded Appropriate for most Internet sites	t Downloads Disable Disable Enable Enable
Custom Level Default Level	Reset custom settings Reset to: Medium Reset
OK Cancel App	ply OK Cancel

- 2. Type 192.168.127.254 in the **Address** input box (use the correct IP address if different from the default), and then press **Enter**.
- 3. For the overall NPort 5000 Series, you will be prompted to enter the username and password to access the NPort web console. Before configuring the NPort, you will need to unlock it first. Right-click the unit in the Configuration screen and select **Unlock** in the pop-up menu. The default username and password are **admin** and **moxa**, respectively.For the NPort 5100, 5200, and IA5000 Series, only the password is required to log in.

	the NPort 5100, 5200, and IA5000 Series Only
Input Password -	Microsoft Internet Explorer
File Edit View	Favorites Tools Help
] <= Back → → → (	🎱 🚰 🚮 🔯 Search 🚯 Favorites 🎲 History 🛛 🖏 🗸 🤅
Address 🙋 http://19	92.168.127.254/
Input password	
Password :	skok
Submit	
Web Interface for t	the Overall NPort 5000 Series
ΜΟΧΛ°	Total Solution for Industrial Device Networking WWW.moxa.com
	Username: Password: Login



#### ATTENTION

If you use other web browsers, remember to enable the functions to "allow cookies that are stored on your computer" or "allow per-session cookies." NPort device servers use cookies only for "password" transmissions.

The NPort homepage will open. On this page, you can see a brief description of the Web Console's function groups.

rt Web Console - Microsoft I			00, and IA5000 Series Only			
Edit View Favorites Tools						
Back 🔹 💮 🖌 💌 💋 🦿	🏠 🔎 Search   👷 Favorites	: 😢 Media 🔗 🔗 🎍				
ss 🕘 http://192.168.127.254/h	iome.htm?Password=731a9e0a41ba	a3bb0a27ca8b330c239db85ubmit=	-Submit			
MOXA	www.n	moxa.com				
lain Menu ) Overview	Welcome to N	IPort's web coi	nsole !			
Basic Settings	Model Name	NPort IA-525	50			
Network Settings	MAC Address	00:90:E8:52				
Serial Settings Operating Settings	Serial No.	525016				
Accessible IP Settings	Firmware Version	1.0				
Auto Warning Settings	System Uptime	0 days, 00h:				
Monitor	NPort's web console prov	vide the following functio	in groups.			
Change Password Load Factory Default Save/Restart	Basic Settings Server name, real time clock, time server IP address, and Web console, Telnet console Enable, Disable function.					
		isk, default gateway, stat	tic IP or dynamic IP, DNS, SNMP, IP location report.			
		its, data bits, stop bits, f	flow control, UART FIFO.			
	Operation mode, T	Operating Settings Operation mode, TCP alive check, inactivity, delimiters, force transmit timeout.				
	Accessible IP Settin "Accessible IP or A		ble to accept all IP's connection.			
	"Accessible IP or A	Accessible IP group". Disa	ble to accept all IP's connection.			
	"Accessible IP or A Auto Warning Setti	Accessible IP group". Disa				
	"Accessible IP or A Auto Warning Setti	Accessible IP group". Disa				
b Interface	"Accessible IP or A Auto Warning Setti	Accessible IP group". Disa <b>tings</b> ail, SNMP Trap server IP a	address, Relay Output.			
eb Interface	"Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group". Disa <b>tings</b> ail, SNMP Trap server IP a	address, Relay Output.			
eb Interface	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group". Disa tings ail, SNMP Trap server IP a rall NPort 5	address, Relay Output.			
eb Interface	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group". Disa tings ail, SNMP Trap server IP a rall NPort 5	address, Relay Output.			
	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group <sup>1</sup> . Disa ings ail, SNMP Trap server IP : erall NPort 5 7elcome to NP	address, Relay Output.			
<b>eb Interface</b> Verview Quick Setup	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group <sup>1</sup> . Disa ings ail, SNMP Trap server IP / erall NPort 5 7elcome to NP Model	address, Relay Output. 6000 Series ort web console NPort IA5450AI			
verview luick Setup asic Settings	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group", Disa ings all, SNMP Trap server IP : Parall NPort 5 Yelcome to NP Model Name	address, Relay Output. 5000 Series ort web console NPort IA5450AI NPIA5450AI_11625			
verview uick Setup asic Settings stwork Settings	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group", Disa ings ail, SNMP Trap server IP + rall NPort 5 7elcome to NP Model Name Serial NO.	address, Relay Output. 6000 Series ort web console NPort IA5450AI			
verview uick Setup asic Settings twork Settings Serial Settings	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group". Disa ings ail, SNMP Trap server IP : erall NPort 5 Velcome to NP Model Name Serial NO. Firmware	address, Relay Output. 30000 Series ort web console NPGt (A6450A) NPIA5450AL_11625 11625 1.6 Build 19013022			
verview Jick Setup asic Settings vork Settings Serial Settings Operating Settings	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group", Disa ings ail, SNMP Trap server IP + rall NPort 5 7elcome to NP Model Name Serial NO.	address, Relay Output. 5000 Series ort web console NPort IA5450AI NPIA5450AI_11625 11625			
verview uick Setup saks Settings etwork Settings Serial Settings Operating Settings coessible IP Settings	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group". Disa ings ail, SNMP Trap server IP : erall NPort 5 Velcome to NP Model Name Serial NO. Firmware	address, Relay Output. 30000 Series ort web console NPGt (A6450A) NPIA5450AL_11625 11625 1.6 Build 19013022			
verview iick Setup sis: Settings etrail Settings berail settings Operating Settings cessible IP Settings dministration	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group". Disa ings ail, SNMP Trap server IP : erall NPort 5 Velcome to NP Model Name Serial NO. Firmware IP	address, Relay Output. 0000 Series ort web console NPi45450AI NPi45450AI 11625 11625 16 Build 19013022 192.168.127.254			
vervlew tuick Setup asic Settings Serial Settings Operating Settings coessible IP Settings Administration Backup/Restore	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group*, Disa ings all, SNMP Trap server IP : Perall NPort 5 Velcome to NP Model Name Serial NO. Firmware IP Mac Address Up Time	address, Relay Output. 50000 Series ort web console NPot IA5450AI NPIA5450AI_11625 11625 11625 1684D149130222 192.168.127.254 00.90.E8.4D.A9.6F 0 days 01h:18m:37s			
Verview Juick Setup Iasic Settings Serial Settings Operating Settings coessible IP Settings Administration Backup/Restore tystem Log Settings	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group", Disa ings ail, SNMP Trap server IP + Parall NPort 5 Velcome to NP Model Name Serial NO. Firmware IP Mac Address Up Time Serial Port 1	address, Relay Output. 30000 Series ort web console NPort IA5450AI NPIA5450AI_11625 162 16 Build 19013022 192.168.127.254 00.90.58.4D.A26F 0 days 01h:18m:37s 115200.None.8,1			
Vverview Juick Setup asic Settings letwork Settings Operating Settings Occessible IP Settings Administration Backup/Restore ystem Log Settings Auto Warning Settings	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group*, Disa ings all, SNMP Trap server IP : Prall NPort 5 Velcome to NP Model Name Serial NO. Firmware IP Mac Address Up Time Serial Port 1 Serial Port 2	address, Relay Output. 30000 Series Ort web console NPIA450AI_11625 11625 16 Buld 19013022 122.188.127.254 00.90.284.03.96F 0 days 01h:18m:37s 115200.None.8.1 115200.None.8.1			
Vverview Aulck Setup Iaslic Settings Serial Settings Operating Settings Operating Settings Administration Backup/Restore tystem Log Settings Auto Warning Settings System Log Settings	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group". Disa ings ail, SNMP Trap server IP : crall NPort 5 Velcome to NP Model Name Serial NO. Firmware IP Mac Address Up Time Serial Port 1 Serial Port 2 Serial Port 3	address, Relay Output. 2000 Series ort web console NPot IA5450AI NPIA5450AL_11625 11625 1.6 Build 19013022 192.168.127.254 0.990:E4:0D.49.6F 0. days 01h:18m:37s 115200,None.8,1 115200,None.8,1			
Verview Juick Setup lasic Settings Serial Settings Operating Settings Operating Settings Administration Backup/Restore Hystem Log Settings Auto Warning Settings System Log Settings System Log Net settings	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group*, Disa ings all, SNMP Trap server IP : Prall NPort 5 Velcome to NP Model Name Serial NO. Firmware IP Mac Address Up Time Serial Port 1 Serial Port 2	address, Relay Output. 30000 Series Ort web console NPIA450AI_11625 11625 16 Buld 19013022 122.188.127.254 00.90.284.03.96F 0 days 01h:18m:37s 115200.None.8.1 115200.None.8.1			
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Verview Juick Setup lasic Settings Serial Settings Operating Settings Operating Settings Administration Backup/Restore Hystem Log Settings Auto Warning Settings System Log Settings System Log Net settings	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group". Disa ings ail, SNMP Trap server IP : crall NPort 5 Velcome to NP Model Name Serial NO. Firmware IP Mac Address Up Time Serial Port 1 Serial Port 2 Serial Port 3	address, Relay Output. 2000 Series ort web console NPot IA5450AI NPIA5450AL_11625 11625 1.6 Build 19013022 192.168.127.254 0.990:E4:0D.49.6F 0. days 01h:18m:37s 115200,None.8,1 115200,None.8,1			
Verview Juick Setup Lasic Settings Serial Settings Operating Settings occessible IP Settings Administration Backup/Restore lystem Log Settings Auto Warning Settings System Log Event settings Event Type Event Type Event Type Event Type Line	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group". Disa ings ail, SNMP Trap server IP : crall NPort 5 Velcome to NP Model Name Serial NO. Firmware IP Mac Address Up Time Serial Port 1 Serial Port 2 Serial Port 3	address, Relay Output. 2000 Series ort web console NPot IA5450AI NPIA5450AL_11625 11625 1.6 Build 19013022 192.168.127.254 0.990:E4:0D.49.6F 0. days 01h:18m:37s 115200,None.8,1 115200,None.8,1			
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Vverview Juick Setup asic Settings letwork Settings Serial Settings Operating Settings Operating Settings Administration Backup/Restore yaten Log Settings Auto Warning Settings System Log Event settings Event Type Event Type Event Type Line Async	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group". Disa ings ail, SNMP Trap server IP : crall NPort 5 Velcome to NP Model Name Serial NO. Firmware IP Mac Address Up Time Serial Port 1 Serial Port 2 Serial Port 3	address, Relay Output. 2000 Series ort web console NPot IA5450AI NPIA5450AL_11625 11625 1.6 Build 19013022 192.168.127.254 0.990:E4:DA9.6F 0. days 01h:18m:37s 115200,None.8,1 115200,None.8,1			
Dverview Juick Setup asic Settings Letwork Settings Serial Settings Operating Settings Administration Backup/Restore System Log Settings Auto Warning Settings System Log Event settings E-mail and SNMP Trap Event Type Iograde Firmware Monitor Line Async	*Accessible IP or A Auto Warning Setti Auto warning E-Ma	Accessible IP group". Disa ings ail, SNMP Trap server IP : crall NPort 5 Velcome to NP Model Name Serial NO. Firmware IP Mac Address Up Time Serial Port 1 Serial Port 2 Serial Port 3	address, Relay Output. 2000 Series ort web console NPot IA5450AI NPIA5450AL_11625 11625 1.6 Build 19013022 192.168.127.254 0.990:E4:DA9.6F 0. days 01h:18m:37s 115200,None.8,1 115200,None.8,1			
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#### ATTENTION

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

Remember to use NPort Administrator (for NPort 5000 and NPort IA5000 Series) to export the configuration file when you have finished the configuration. After using the **Reset** button to load factory defaults, your configuration can be easily reloaded into NPort by using the NPort Administrator Import function. Refer to **Chapter 5** for details about using the Export and Import functions

# Quick Setup (excluding the NPort 5100, 5200, and IA5000 Series)

**Quick Setup** streamlines configuration of your NPort into three basic and quick steps that cover the most commonly-used settings. While in Quick Setup, you may click the **Back** button at any time to return to the

previous step, or click the **Cancel** button to reverse all settings. For more detailed settings, refer to the **Basic Settings**, **Network Settings**, **Serial Settings**, and **Operating Settings** sections later in this chapter

#### Step 1/3

In Step 1/3, you must assign a valid IP address to the NPort 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. In addition, the server name field is a useful way to specify the location or application of different NPort units.

# :• Step 1/3

Server name	NPIA5450AI_6671	
Network Settings		
IP settings	Static 🔹	
IP address	192.168.127.135	
Netmask	255.255.255.0	
Gateway		

#### Step 2/3

In Step 2/3, you must specify which operation mode you will use. If your operation mode is not **Real COM**, **TCP Server, TCP Client**, or **UDP mode**, click **Cancel**, return to the main menu, and choose **Operating Settings** to select the correct settings.

Operation Mode Settings	
Real COM	
PC communicate with serial device through COM port.	
Remember to install Real COM/TTY driver on PC.	. For detail information please refer to User's Manua
Отср	
PC communicate with serial device through TCP port.	
Device is TCP client	
	Port 4001
Destination IP address	
UDP PC communicate with serial device through UDP port.	

#### Step 3/3

• Step 3/3

In Step 3/3, modify the Serial Settings.

Serial Settings	
aud rate	115200 🔻
ata bits	8 💌
top bits	1 •
arity	None <b>v</b>
terface	RS-232 V

## **Finish Settings**

Review your settings on the **Finish Settings** page to confirm that they are correct and then click the **Save/Restart** button to restart the device with the new settings.

# **Finish Settings**

Server name	NPIA5450AI_6671	
Network Settings		
IP settings	Static	
IP	192.168.127.135	
Netmask	255.255.255.0	
Gateway		
Operation Mode Setting	is l	
Mode	RealCOM	
Parameters		
Serial Settings		
Baudrate	115200	
Parameters	Data bits: 8, Stop bits: 1, Parity: None	
Interface	RS-232	

**NOTE** If you change the IP address, you will not be able to use the **Home** button to return to the Home Page.

# Export/Import (Excluding the NPort 5100, 5200, and IA5000 Series)

Export/Import allows you to back up and recover your settings.

- -

		n mport
	Configuration Import	
ip ings	Select configuration file	Choose File No file chosen
gs	IP configuration	<ul> <li>Import all configurations including IP configurations.</li> </ul>
gs ettings		
P Settings	Submit	
tion		
store		
d Key		
tion Import		
on Export		
Settings		
ng Settings		
nware		
sword		
/ Default t		
ew	Configuration Fu	
w etup	Configuration Ex	aport
tings		
ettings	Developed	
•	Download	
ettings		
Settings		
IP Settings		
ation		
estore		
red Key		
ation Import		
ation Export		
g Settings		
ning Settings		
irmware		
assword		
ory Default		
tart		

The exported configuration file can be encrypted for security purposes with a user-specified export password (the default password is **moxa**), which you may assign in **Pre-shared Key**. Click **Download** to write all configuration data to a fixed file name as follows: **<Servername>.txt**.

To import the configuration file, you will need to be sure that the pre-shared key stored in the system is the same as the configuration file (which is assigned when exporting the configuration file) in order to successfully import the configuration file.

If the firmware is not up to the version below, you many need to key in the password manually.

NPort 5100A Series Firmware v1.5

NPort 5200A Series Firmware v1.5

NPort 5150AI Series Firmware v1.4

- NPort 5250AI Series Firmware v1.4
- NPort 5450AI Series Firmware v1.4

NPort 5600 Series Firmware v3.9

NPort 5600 DT Series Firmware v2.6

NPort 5600 DTL Series Firmware v1.5

NPort IA5150A Series Firmware v1.4

NPort IA5450A Series Firmware v1.6

**NOTE** The configuration encrypting function is not available in the NPort 5100, NPort 5200, and NPort IA5000 Series.

	-Pre-shared Key
Overview	
Quick Setup	Pre-shared Key
Basic Settings	Cipher key for encrypting the configuration file
Network Settings	
- Serial Settings	Submit
- Operating Settings	
Accessible IP Settings	
- Administration	
- Backup/Restore	
Pre-shared Key	
Configuration Import	
Configuration Export	
System Log Settings	

Refer to the table below for the firmware versions that support the encrypted configuration files in the Web Console.

Model Name	Firmware version supporting encrypted configuration files.
NPort 5100A Series	Firmware v1.3 and up
NPort 5200A Series	Firmware v1.3 and up
NPort 5x50AI-M12 Series	Firmware v1.2 and up
NPort IA5150A, NPort	Firmware v1.3 and up
IA5250A	
NPort IA5450A	Firmware v1.4 and up

# **Basic Settings**

	; Help		
dk • 🕥 - 💌 😰 🦿	👌 🔎 Search 🥎	📩 Favorites 🛛 🚷	Media 🚱 🍰 + 😓 🖂
(a) http://192.168.127.254/h	ome.htm?Password=	731a9e0a41ba3bb0a27	7ca8b330c239db8Submit=Submit
MOXA			
	- wi	ww.mo>	xa.com
in Menu	Basic Settir	ng	
Overview Basic Settings	Server name		NPIA-5250_525016
Network Settings	Server fiame		Time
Serial Settings	Time zone		(GMT)Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London V
Operating Settings			2005 / 8 / 31 5 56 36
Accessible IP Settings Auto Warning Settings	Local time		Modify
Monitor	Time server		
Change Password			Settings
oad Factory Default	Web console		C Enable C Disable
Save/Restart	Telnet consol	e	C Enable C Disable
	Reset button	protect	€ No C Yes
			( management)
			Submit
nterface for the Basic Setti		IPort Series	5
Server Settings			
Basic Setti		NPIA5450AI_11625	
Server Settings			
Server Settings		NPIA5450AI_11625	
Server Settings Server name Time Settings		NPIA5450AI_11625	5 Mean Time: Dublin, Edinburgh, Lisbon, London ¢
Server Settings Server name Time Settings Time zone		NPIA5450AI_11625 (GMT)Greenwich N	5 Mean Time: Dublin, Edinburgh, Lisbon, London ¢
Server Settings Server name Time Settings Time zone Time		NPIA5450AI_11625 (GMT)Greenwich N	5 Mean Time: Dublin, Edinburgh, Lisbon, London ¢
Server Settings Server name Time Settings Time zone Time		NPIA5450AI_11625 (GMT)Greenwich N	5 Mean Time: Dublin, Edinburgh, Lisbon, London ¢
Server Settings Server name Time Settings Time zone Time Time server		NPIA5450AI_11625 (GMT)Greenwich N	5 Mean Time: Dublin, Edinburgh, Lisbon, London ¢
Server Settings Server name Time Settings Time zone Time Time server Console Settings		NPIA5450AI_11625 (GMT)Greenwich N 2019 / 2 / 19	Mean Time: Dublin, Edinburgh, Lisbon, London 16 : 6 : 28 Modify
Server Settings Server name Time Settings Time zone Time Time server Console Settings HTTP console		NPIA5450AI_11625           (GMT)Greenwich N           2019 / 2 / 19           •           Enable	Mean Time: Dublin, Edinburgh, Lisbon, London 🛊) 16 : 6 : 28 Modify Disable
Server Settings Server name Time Settings Time zone Time Time server Console Settings HTTP console HTTPS console		NPIA5450AI_11625           (GMT)Greenwich N           2019 / 2 / 19           •           Enable           •           Enable	5 Mean Time: Dublin, Edinburgh, Lisbon, London ¢ 16 : 6 : 28 Modify Disable Disable
Server Settings Server name Time Settings Time zone Time Time server Console Settings HTTP console HTTPS console Telnet console		NPIA5450AI_11625           (GMT)Greenwich N           2019 / 2 / 19           Enable           Enable           Enable           Enable	5 Mean Time: Dublin, Edinburgh, Lisbon, London ¢ 16 : 6 : 28 Modify Disable Disable Disable
Server Settings Server name Time Settings Time zone Time Time server Console Settings HTTP console HTTPS console Telnet console Serial console	ings	NPIA5450AI_11625         (GMT)Greenwich N         2019 / 2 / 19         • Enable	5 Mean Time: Dublin, Edinburgh, Lisbon, London 🔄 16 : 6 : 28 Disable Disable Disable Disable Disable
Server Settings Server name Time Settings Time zone Time Time server Console Settings HTTP console HTTPS console Serial console Serial console Moxa Service	ings	NPIA5450AI_11625         (GMT)Greenwich N         2019 / 2 / 19         • Enable         • Enable	Mean Time: Dublin, Edinburgh, Lisbon, London 🛊) 16 : 6 : 28 Modify Disable Disable Disable Disable Disable Disable Disable

**NOTE** The NPort 5150A does not support **Time Settings**.

Parameter	Setting	Factory Default	Description	Necessity
Server name	1 to 39 characters	NP[model	This option is useful for specifying	Optional
		name]_[Serial	the location or application of	
		No.]	different NPorts.	
Time zone	User selectable time	GMT (Greenwich	N/A	Required
	zone	Mean Time)		

Parameter	Setting	Factory Default	Description	Necessity
Local time	User adjustable time	GMT (Greenwich	Click the Modify button to open	Required
	(1900/1/1-	Mean Time)	the Modify time settings window to	
	2037/12/31)		input the correct local time.	
Time server	IP or Domain address	None	NPorts use SNTP (RFC-1769) for	Optional
	(E.g., 192.168.1.1 or		auto time calibration. Input the	
	time.stdtime.gov.tw		correct Time server IP address or	
	or time.nist.gov )		domain name. Once the NPort is	
			configured with the correct Time	
			server address, the NPort will	
			request time information from the	
			Time server every 10 minutes.	
Web console	Enable or Disable	Enable	The Disable option for "Web	Required
			Console", "Telnet Console", "Serial	
			Console", and "Moxa Service" is	
Telnet	Enable or Disable	Enable	included for security reasons. In	Required
console		2110010	some cases, you may want to	
			disable one or both of these	
Serial	Enable or Disable	Enable	console utilities as an extra	Required
Consoles			precaution to prevent unauthorized	
			users from accessing your NPort.	
Moxa Service	Enable or Disable	Enable	Please refer to Chapter 3	Required
			"Cybersecurity Considerations" for	
			detailed suggestions.	
Reset button	No or Yes	No	Select the Yes option to allow	Required
protect			limited use of the Reset Button. In	
			this case, the Reset Button can be	
			used for only 60 seconds; 60 s.	
			after booting up, the Reset Button	
			will be disabled automatically.	
LCM read-	Writeable/Read-only	Writeable	The NPort 5000 front panel, known	Optional
only			as the LCM (Liquid Crystal	
protection			Module), may be configured for	
			read-only or writeable access.	
			Read-only access allows settings to	
			be viewed but not changed.	
			Writeable access allows users in	
			the Administration group to	
			change the setting. This setting is	
			only available for the model that	
			has a font panel.	



# ATTENTION

If you disable both the **Web console** and **Telnet console**, you can still use NPort Administrator to configure NPort device servers either locally or remotely over the network. Refer to Chapter 5 for details.

# **Network Settings**

WWW.MICK Settings         Image: Seting Settings         Seting Settings         Seting Settings         Image: Seting Settings         Image: Seting Settings         Image: Seting Settings         Image: Seting Setting Se	Web Interface for the	NPort 5100, NPort 5200, a	nd NPort IA5	000 Series Only
Presidential settings   Style   Presidential settings   Presidential settings   Presidential settings   Presidential settings   Presidential settings   Preside	MOXA	www.moxa	.com	
Paddress 192168127254   Network Settings   Poesting Settings   Poesting Settings   Accessible Settings   Accessible Settings   Notion Server 1   DNS server 1   DNS server 2   Save Press   Notion Settings     Save Press     Notion Settings     Network Settings     Network Settings     Network Settings     Network Settings     Network Settings     Network Settings     IP address Report     Auto report to IP   Auto report to IP   Auto report to IP   Auto report State   State   P address   IP address		Network Settings		
Image: Series		IP address	192.168.127.254	
Service Settings Context Settings Context Settings Context Settings Context Settings Context Settings Save/Restart Save/R				
Accessible IP Settings Accessible IP Settings Montor I Change Password Lade Factor Default Save/Restart MMIP P Enable Community name Public Contact Location IP Address report Auto report to IP Auto report to TCP port 4002 Auto report to TCP port 4002 Auto report to TCP port 4002 Auto report to TCP port 4002 Auto report to IP Auto report to TCP port 4002 Auto report to Sectings Network Settings IP address P address P address IP a				
P Address Pastings          P address       192168.127.254         Network Settings       192.168.127.254         Network Settings       192.168.127.254         P address Report       10         ONS server 1       10         State report to IP       10         Auto report to TCP port       1002         Auto report to IP       10         Auto report to IP       1			Static	
Web Interface for the Overall NPort 5000 Series, excluding the NPort 1A5000A Series     Veb Interface for the Overall NPort 5000 Series, excluding the NPort 1A5000A Series     Veb Interface for the Overall NPort 5000 Series, excluding the NPort 1A5000A Series     Veb Interface for the Overall NPort 5000 Series, excluding the NPort 1A5000A Series     Veb Interface for the Overall NPort 5000 Series, excluding the NPort 1A5000A Series     Vetwork Settings     IP address     IP Address Report     Auto report to IP   Auto report to IP   Auto report to IP   Autor report Period     IP Address   IP Address   IP Address Report   Auto report to IP   Auto report Berlings <th></th> <th></th> <th></th> <th></th>				
Load Factory Default   SWAP   SwaP setting   SWAP   Prable   Cormunity name   public   Contact   Location   IP Address report   Auto report to IP   Auto report to TCP port   4002   Auto report to TCP port   905   Sovers Settings     IP address   192.168.127.254   Network Settings   IP address   192.168.127.254   Netmask   255.255.0   Gatoway   IP configuration   Static e   DNS server 1   DNS server 2   IP Address Report   Auto report to UDP port   4002   Bable   Disable   Message Transmit Interval				
Save/Restart       SNMP		DNS server 2	ļ	
Contact   Location   IP Address report   Auto report to IP   Auto report period   ID seconds   Web Interface for the Overall NPort 5000 Series, excluding the NPort IAS000A Series Web Interface for the Overall NPort 5000 Series, excluding the NPort IAS000A Series Web Interface for the Overall NPort 5000 Series, excluding the NPort IAS000A Series IVeb Interface for the Overall NPort 5000 Series, excluding the NPort IAS000A Series IVeb Interface for the Overall NPort 5000 Series, excluding the NPort IAS000A Series IVeb Interface for the Overall NPort 5000 Series, excluding the NPort IAS000A Series IP address IP address IP 2525255250 Gatoway IP configuration Static e IP Address Report Auto report to IP Auto report to UDP port Auto report to UDP port Auto report period ID (0-99 secs) LLDP Enable Disable Message Transmit Interval I Enable Disable Message Transmit Interval	🗋 🗀 Save/Restart	SNMP	-	
Contact   Location   P Address report   Auto report to IP   Auto report period   10   submit      Web Interface for the Overall NPort 5000 Series, excluding the NPort I A5000A Series Seconds   Submit   Web Interface for the Overall NPort 5000 Series, excluding the NPort I A5000A Series   Network Settings   Pr address   IP address   IP address   IP configuration   Static et   DNS server 1   DNS server 2   IP Address Report   Auto report to IP   Auto report to UDP port   4002   Auto report period   10   (0-99 secs)   LLDP Settings   LLDP Settings		Community name	public	
Location   IP Address report   Auto report to 1P   Auto report to TCP port   10 seconds   Submit Web Interface for the Overall NPort 5000 Series, excluding the NPort 1A5000A Series Settings   P address   192.168.127.254   Network Settings   19 configuration   Static   10 co-99 secs)   LLDP Settings   LLDP Settings   LLDP Settings				
Image: Constraint of the constraint o				
Veb Interface for the Overall NPort 5000 Series, excluding the NPort IA5000A Series     Web Interface for the Overall NPort 5000 Series, excluding the NPort IA5000A Series     Image:			IP	Address report
Auto report to TCP port 1002   Auto report period 10 seconds   Web Interface for the Overall NPort 5000 Series, excluding the NPort 1A5000A Series   Wetwork Settings     Network Settings   IP address 192.168.127.254   Netmask 255.255.0   Gateway   IP configuration   Static   DNS server 1   DNS server 2     IP Address Report   Auto report to IDP   Auto report to IDP port   4002   Auto report to IDP port   4002   Auto report period   10 (0-99 secs)   LLDP Settings   LLDP Settings		Auto report to IP		
Auto report period     Submit     Web Interface for the Overall NPort 5000 Series, excluding the NPort 1A5000A Series   Settings   IP address     IP address     192.168.127.254     Network Settings     IP configuration     Static   ONS server 1   DNS server 2     IP Address Report   Auto report to IP   Auto report to IP   Auto report period   10   (0-99 secs)     LLDP Settings   LLDP   Message Transmit Interval     30			4002	
Submit         Submit         Web Interface for the Overall NPort 5000 Series, excluding the NPort 1A5000A Series         · Network Settings         IP address       192.168.127.254         Network Settings       IP address         IP address       192.168.127.254         Network Settings       IP configuration         Static       •         DNS server 1       IP configuration         DNS server 2       IP Address Report         Auto report to IP       4002         Auto report to UDP port       4002         Auto report period       10 (0-99 secs)         LLDP Settings       LLDP         Message Transmit Interval       30 (5~32768 secs)			10 seconds	
Web Interface for the Overall NPort S000 Series, excluding the NPort IA5000A Series         Server Settings         IP address         IP address         IP address         IP address         IP configuration         Static         DNS server 1         DNS server 2         IP Address Report         Auto report to IP         Auto report to UDP port         4002         Auto report period         10       (0-99 secs)         LLDP Settings         LLDP       Enable         Message Transmit Interval       30         (5-32768 secs)			In seconds	
In etwork Settings   IP address   IP address   IP address   IP configuration   Static   IP configuration   Static   IP configuration   Static   IP Address Report   Auto report to IP   Auto report to IDP port   Auto report period   10   0-99 secs)   LLDP Enable Disable Message Transmit Interval				Submit
Network Settings   IP address   192.168.127.254   Netmask   255.255.255.0   Gateway   IP configuration   Static   DNS server 1   DNS server 2     IP Address Report   Auto report to IP   Auto report to UDP port   4002   Auto report to UDP port   4002   Auto report period   10   (0-99 secs)     LLDP   Message Transmit Interval	Web Interface for the	<b>Overall NPort 5000 Series</b>	excluding th	e NPort I A5000A Series
Netmask   Gateway   IP configuration   Static +   DNS server 1   DNS server 2     IP Address Report   Auto report to IP   Auto report to UDP port   4002   Auto report period   10 (0-99 secs)     LLDP Settings   LLDP   Message Transmit Interval     30 (5-32768 secs)	i and a second			
Gateway   IP configuration   Static   DNS server 1   DNS server 2     IP Address Report   Auto report to IP   Auto report to UDP port   Auto report to UDP port   4002   Auto report period   10   (0-99 secs)     LLDP   ELLDP   Message Transmit Interval	IP address	19	2.168.127.254	
IP configuration IP configuration Static DNS server 1 DNS server 2 IP Address Report Auto report to IP Auto report to UDP port 4002 Auto report period 10 (0-99 secs) LLDP Settings LLDP PEnable Disable Message Transmit Interval 0 (5-32768 secs)	Netmask	25	5.255.255.0	
IP configuration IP configuration Static DNS server 1 DNS server 2 IP Address Report Auto report to IP Auto report to UDP port 4002 Auto report period 10 (0-99 secs) LLDP Settings LLDP PEnable Disable Message Transmit Interval 0 (5-32768 secs)	Gateway			
DNS server 1 DNS server 2  IP Address Report Auto report to IP Auto report to UDP port 4002 Auto report period 10 (0-99 secs)  LLDP Settings LLDP P P Enable Disable 30 (5-32768 secs)	IP configuration	S	atic 🔹	
DNS server 2				
IP Address Report   Auto report to IP   Auto report to UDP port   Auto report period   10 (0~99 secs)     LLDP Settings   LLDP   Message Transmit Interval     30 (5~32768 secs)				
Auto report to IP         Auto report to UDP port         Auto report period         10       (0~99 secs)         LLDP Settings         LLDP         Message Transmit Interval         30       (5~32768 secs)	DNS server 2			
Auto report to UDP port     4002       Auto report period     10 (0~99 secs)       LLDP Settings       LLDP       Message Transmit Interval         30 (5~32768 secs)	IP Address Rep	port		
Auto report period     10     (0~99 secs)       LLDP Settings       LLDP     Enable     Disable       Message Transmit Interval     30     (5~32768 secs)	Auto report to IP			
Auto report period     10     (0~99 secs)       LLDP Settings       LLDP     Enable     Disable       Message Transmit Interval     30     (5~32768 secs)	Auto report to U	DP port 400	)2	
LLDP       Image: Constraint of the second sec				
LLDP O Enable O Disable Message Transmit Interval 30 (5~32768 secs)	Auto Topolit polit		(0 00 0000)	
Message Transmit Interval 30 (5~32768 secs)	LLDP Settings			
	LLDP	0	Enable O Disable	e
Submit	Message Transm	nit Interval 30	(5~32768	3 secs)
	Submit			

• Network Se	ttings	
Network Settings		_
LAN1 IP address	192.168.127.254	
LAN1 Netmask	255.255.255.0	
LAN1 Gateway		
LAN1 IP configuration	Static \$	
Multi-LAN mode	Switch	
LAN2 IP address	192.168.126.254	
LAN2 Netmask	255.255.255.0	
LAN2 Gateway		
LAN2 IP configuration	Static \$	
DNS server 1		
DNS server 2		
IP Address Report Auto report to IP Auto report to IP (LAN2) Auto report to UDP port Auto report period	4002 10 (0~99 secs)	
LLDP Settings		
LLDP	<ul> <li>Enable          Disable</li> </ul>	
Message Transmit Interval	30 (5~32768 secs)	

You must assign a valid IP address to the NPort 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, the NPort will not have a valid connection to the network). You can choose from four possible **IP configuration** modes—Static, DHCP, DHCP/BOOTP, and BOOTP—located under the web console screen's IP configuration dropdown box.

Method	Function Definition
Static	The user must define the IP address, Netmask, and Gateway.
DHCP	The DHCP Server assigns the IP address, Netmask, Gateway, DNS, and Time Server
DHCP/BOOTP	The DHCP Server assigns the IP address, Netmask, Gateway, DNS, and Time Server, or
	the BOOTP Server assigns the IP address (if the DHCP Server does not respond).
BOOTP	The BOOTP Server assigns the IP address.

#### **Network Settings**

Parameter	Setting	Factory Default	Description	Necessity
IP Address	E.g., 192.168.1.1	192.168.127.2 54	An IP address is a number assigned to a network device (such as a computer) as a	Required

#### **Getting Started**

Parameter	Setting	Factory Default	Description	Necessity
			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	E.g., 255.255.255.0	255.255.2	A subnet mask represents all of the network hosts at one geographic location, in one building, or on the same local area network. When a packet is sent out over the network, the NPort will use the subnet mask to check whether the desired TCP/IP host specified in the packet is on the local network segment. If the address is on the same network segment as the NPort, a connection is established directly from the NPort. Otherwise, the connection is established through the given default gateway.	Required
Gateway	E.g., 192.168.1.1	None	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. The NPort needs to know the IP address of the default gateway computer in order to communicate with the hosts outside the local network environment. For correct gateway IP address information, consult with your network administrator.	Optional
IP Configuration	Static DHCP DHCP/BOOTP BOOTP	Static	N/A	Required
Multi-LAN mode (for the	Switch Redundant LAN	Switch	Dual LAN can be used as a redundant connection or dual	Optional

#### **Getting Started**

Parameter	Setting	Factory Default	Description	Necessity
NPort IA5000A	Dual IP		IP. The scenario for	
Series only)			redundancy is the NPort will	
			automatically switch to working	
			connection in case the other	
			one lose connectivity (due to	
			failed network component in	
			the NPort, port at the	
			switch/router stop working,	
			etc.). As for dual IP scenario,	
			each port will have its own IP	
			address, but both will have the	
			same MAC address, as it is	
			convenient to connect the NPort to different network.	
			NPOIL to different network.	
DNS server 1/	E.g., 192.168.1.1	None	In order to use the NPort's DNS	Optional
DNS server 2			feature, you need to configure	
			the DNS server. Doing so	
			allows the NPort to use a host's	
			domain name to access the	
			host. The NPort 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	
			server 1 is unavailable.	
			The NPort plays the role of	
			DNS client, in the sense that	
			the NPort will actively query	
			the DNS server for the IP	
			address associated with a	
			particular domain name.	
LLDP Settings	Enable or Disable	Enable	Not available for the NPort	Optional
U U			5600DT Rev 1.5 or earlier	-



#### ATTENTION

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

If the DHCP/BOOTP Server is unavailable, the firmware will use the default IP address (192.168.127.254), Netmask, and Gateway for IP settings.

Web Interface for th	Web Interface for the Overall NPort 5000 Series					
	SNMP Agent Se	ettings				
Overview Quick Setup	Configuration					
Basic Settings	SNMP	Enable O Disable				
Network Settings	Read community string	public				
- Serial Settings	Contact name					
- Operating Settings	Location					
Accessible IP Settings						
- Administration	SNMP agent version	🖸 v1 🗹 v2				
- Account Management						
Notification Message	Submit					
User Account						
Password & Login Policy						
SNMP Agent						
- Backup/Restore						
System Log Settings						

#### **SNMP Settings**

Parameter	Setting	Factory	Description	Necessity
		Default		
Community	1 to 39 characters	public	A community name is a plain-text	Optional
Name	(E.g., MOXA)		password mechanism that is used to	
			weakly authenticate queries to agents	
			of managed network devices.	
Contact	1 to 39 characters	None	The SNMP contact information usually	Optional
	(E.g., Support, 886-		includes an emergency contact name	
	89191230 #300)		and telephone or pager number.	
Location	1 to 39 characters	None	Specify the location string for SNMP	Optional
	(E.g., Floor 1, office 2)		agents, such as the NPort. This string	
			is usually set to the street address	
			where the NPort is physically located.	
SNMP Agent	V1, V2	V1, V2	Select the version according to your	Optional
Version		checked	environmental needs. Please note that	
			the NPort 5000 Series only supports	
			'Get', but not 'Set'.	

#### **IP Address Report**

When NPort products are used in a dynamic IP environment, users must spend more time with IP management tasks. For example, if the NPort works as a server (TCP or UDP), then the host, which acts as a client, must know the IP address of the server. If the DHCP server assigns a new IP address to the NPort, the host must have some way of determining the NPort's new IP address.

NPort products help out by reporting their IP address periodically to the IP location server, in case the dynamic IP has changed. The parameters shown below are used to configure the Auto IP report function. There are two ways to develop an "Auto IP report Server" to receive NPort's Auto IP report.

- 1. Use Device Server Administrator's **IP Address Report** function.
- Auto IP report protocol, which can receive the Auto IP report automatically on a regular basis, is also available to help you develop your own software. Refer to Appendix E for details about the Auto IP report protocol.

Parameter	Setting	Factory	Description	Necessity
		Default		
Auto report to	E.g., 192.168.1.1 or	None	Reports generated by the Auto report	Optional
IP	URL		function will be automatically sent to	
			this IP address. In multiple-LAN model	
			version, two IPs can be set for Auto	
			report. The report will be sent to each	
			IP when generated.	

Auto report UDP port	to E.g., 4001	4002	In multiple-LAN model version, two IPs can be set for Auto report. Report will be sent to each IP when generated.	Optional
Auto report period	Time interval (in seconds)	10	NA	Optional

# **Serial Settings**

The **Serial Settings** page is where you set the serial communication parameters for each device port. Settings include baudrate, parity, and flow control. Each device port can be configured independently.

	1OX	<b>^</b>	www.	moxa	.com						
Main											
	erview	Serial Settings									
Basic Se			Alias Baud rate Data bits Stop bits Parity FIFO Flow ctrl Interface								
	twork Settings	Port 1			115200	8	1	None	Enable	RTS/CTS	RS-232
	rial Settings Port 1	Port 2			115200	8	1	None	Enable	RTS/CTS	RS-232
	Port 2	Port 3	1		115200	8	1	None	Enable	RTS/CTS	RS-232
1.000	Port 3	Port 4	1		115200	8	1	None	Enable	RTS/CTS	RS-232
	Port 4	Port 5			115200	8	1	None	Enable	RTS/CTS	RS-232
1000	Port 5	Port 6			115200	8	1	None	Enable	RTS/CTS	RS-232
1000	Port 6	Port 7			115200	8	1	None	Enable	RTS/CTS	RS-232
1000	Port 7	Port 8			115200	8	1	None	Enable	RTS/CTS	RS-232
	ntorfaco fo	r the Ov	erall NPo	ort 5000	Series						
	Serial S	Baud rate	Data bits	Stop bits	Parity	FIFO	Flow ctrl	Interfa	ce		
Port		Baud rate	Data bits	Stop bits	Parity	FIFO			ce		
	Serial S		Data bits 8		Parity None None	FIFO Enable Enable	Flow ctrl RTS/CTS RTS/CTS	RS-232	ce		
Port 1	Serial S	Baud rate	8	1	None	Enable	RTS/CTS	RS-232	ce		

To modify serial settings for a particular port, click on the **Port Number** under **Serial Settings**, located under **Main Menu** on the left side of the browser window.

Veb Interface for	the NPort 5100	), 5200, and IA5000 Series Only				
	www.n Serial Settings	noxa.com				
Overview	Port 1					
Network Settings	Port alias					
🔁 Serial Settings	Serial Parameters					
Port 1	Baud rate	115200 💌				
Dort 2	Data bits	8 🛩				
Port 3	Stop bits	1 •				
Port 5	Parity	None 🗸				
Dort 6	Flow control	RTSATS				
Port 7	FIFO	⊙ Enable ○ Disable				
Port 8     Operating Settings	Interface	RS-232 v				
Accessible IP Settings	Apply the above settings to all serial ports					
Auto Warning Settings	Ladbh an and here an and here					
Monitor		Submit				

-Serial Settin	gs			
Port 1				
Port alias				
Serial Settings				
Baud rate	115200 \$			
Data bits	8 \$			
Stop bits	1 🗘			
Parity	None ¢			
Flow control	RTS/CTS \$			
FIFO	<ul> <li>Enable</li> <li>Disable</li> </ul>			
Interface	RS-232			
Apply the above settings to	<ul><li>✓ P1</li><li>☐ P2</li><li>☐ All ports</li></ul>	<b>P3</b>	_ P4	



#### ATTENTION

It is critical that the device port's serial communication settings match the attached device. Refer to the user's manual for your serial device for the correct serial communication settings.

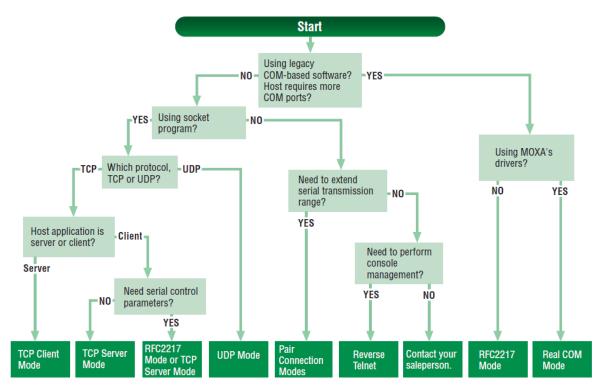
Parameter	Setting	Factory	Description	Necessity	
		Default			
Port Alias	1 to 15 characters	None	Port Alias is specially designed to allow easy	Optional	
	(E.g., PLC-No.1)		identification of the serial devices that are		
			connected to the NPort's serial port.		
Baud rate	Support standard	115200 bps	The rate of data transmission to and from	Required	
	baudrates (bps):		the attached serial device.		
	50/ 75/ 110/ 134/				
	150/ 300/ 600/				
	1200 1800/ 2400/				
	4800/ 7200/				
	9600/ 19200/				
	38400/ 57600/				
	115200/ 230.4k/				
	460.8k/ 921.6k				
	* The NPort				
	5110/5210/				
	5230/52321				
	Series, and IA				
	5000 series are as				
	low as 110 bps,				
	and up to 230.4				
	kbps				
Data bits	5, 6, 7, 8	8	When Data bits is set to 5 bits, the stop bits	Required	
			setting will automatically change to 1.5		
			bits.		
Stop bits	1, 1.5, 2	1	The size of the stop character.	Required	

Parameter	Setting	Factory Default	Description	Necessity
Parity	None, Even, Odd, Space, Mark	None	Even and Odd parity provide rudimentary error-checking; Space and Mark parity are rarely used.	Required
Flow control	None, RTS/CTS, DTR/DSR, Xon/Xoff	RTS/CTS	The method used to suspend and resume data transmission to ensure that data is not lost. If you can use it, <b>RTS/CTS</b> (hardware) flow control is recommended.	Required
FIFO	Enable, Disable	Enable	Controls whether or not the device port's built-in 128-byte FIFO buffer is used. When enabled, the FIFO helps reduce data loss regardless of direction.	Required
Interface*	RS-232 RS-422 2-wire RS-485 4-wire RS-485	RS-232	The serial interface that will be used. The options that are available depend on the specific model of device server.	Required

\*Supported interfaces vary by model. Refer to the datasheet of your NPort device to see which serial interface it supports.

## **Operating Settings**

Operating Settings is where each device port's operation mode and associated parameters are configured. Use the chart provided below to select the operation mode that is most suitable for your application and refer to **Chapters 4 and 5** for a detailed explanation of different operating modes and parameters.



Click on **Operating Settings** under **Main Menu** to display the operating settings for the NPort's serial ports. To modify operating settings for a particular port, click on the **Port Number** under **Operating Settings**, located under **Main Menu** on the left side of the browser window.

One	rating Settings								
spc.	and beenings								
1				Operating Se	ttings				
Port	Operating mode		Packing length	Delimiter 1	Delimiter 2	Delimiter p	rocess	Force transmit	
1 1		0	1 28 3	0 (Disable) 0	(Disable)	Do Nothing		0	
L.	Real COM Mode	1.00	CP alive che ax connectio						
		0	i (i	0 (Disable) 0	(Disable)	Do Nothing		0	
2	Real COM Mode	1.33	CP alive che	N N N N N N N N N N N N N N N N N N N					
		Ma	ax connection	on: 1					
e <b>b</b>	Interface for th	יO פו			ies				
		ne Or		Port 5000 Seri	ies				
Overvi	ew	ne Or Port		ation Modes		Delimiter 2	De	limiter Process	Force Transmit
Overvi Quick :	ew	Port	• Operating Mod	tion Modes Packing Length 0	Delimiter 1 0 (Disable)	0 (Disable)		limiter Process Nothing	Force Transmit
Overvi Quick 3 Basic 5 Netwol	ew Setup Settings rk Settings		:•Opera	ation Modes	Delimiter 1 0 (Disable) time: 7	0 (Disable)			
Overvi Quick S Basic S Netwol	ew Setup Settings rk Settings I Settings	Port	• Operating Mod	tion Modes Packing Lengtl 0 TCP alive check	Delimiter 1 0 (Disable) time: 7	0 (Disable)	Do		
Overvi Quick 3 Basic 5 Netwol	ew Setup Settings K Settings I Settings	Port	• Operating Mod	ie Packing Lengt 0 TCP alive check Max connection:	Delimiter 1 0 (Disable) time: 7 0 (Disable) time: 7	0 (Disable)	Do	Nothing	0
Overvie Quick : Basic : Networ - Seria Port	ew Setup Settings rk Settings Settings Settings 2	Port 1	Operating Mod	ie Packing Length 0 TCP alive check Max connection: 0 TCP alive check	Delimiter 1 0 (Disable) time: 7 0 (Disable) time: 7	0 (Disable)	Do I	Nothing	0
Overvie Quick 3 Basic 5 Networ - Seria Port Port Port	ew Setup Settings rk Settings I Settings 1 Settings 1 2 3	Port 1	Operating Mod	te Packing Lengtl 0 TCP alive check Max connection: 0 TCP alive check Max connection:	Delimiter 1           0 (Disable)           time:         7           0 (Disable)           time:         7           0 (Disable)           time:         7           1         0 (Disable)           1         0 (Disable)           1         1	0 (Disable) 0 (Disable) 0 (Disable)	Do I	Nothing	0
Overvii Quick 3 Basic 3 Networ - Seria Port Port Port - Opera	ew Setup Settings I Settings 1 2 3 4	Port 1 2	Coperating Mod RealCOM	tion Modes Packing Lengt 0 TCP alive check Max connection: 0 TCP alive check Max connection: 0 TCP alive check TCP alive check	Delimiter 1           0 (Disable)           time:         7           0 (Disable)           time:         7           0 (Disable)           time:         7           1         0 (Disable)           1         0 (Disable)           1         1	0 (Disable) 0 (Disable) 0 (Disable)	Do I Do I	Nothing	0
Overvia Quick : Basic S Networ - Seria Port Port - Opera Access	ew Setup Settings I Settings I Settings I 3 4 4 ating Settings	Port 1 2	Coperating Mod RealCOM	ie Packing Length 0 TCP alive check Max connection: 0 TCP alive check Max connection: 0 TCP alive check Max connection: 1 CP alive check Max connection:	n Delimiter 1 0 (Disable) time: 7 0 (Disable) time: 7 0 (Disable) time: 7 0 (Disable) time: 7 0 (Disable)	0 (Disable) 0 (Disable) 0 (Disable) 0 (Disable) 0 (Disable) 0 (Disable)	Do I Do I	Nothing Nothing Nothing	0

For each mode, the default settings should work for most applications. Modify these settings only if absolutely necessary for your application. The operation mode and related parameters can be configured through the web console. The same parameters can also be configured using NPort Administrator, the Telnet console, or serial console. Refer to **Chapters 4 and 5** for details.

and a second	Operating Settings	
Main Menu J Overview	operating securitys	
Basic Settings		Port=1
Network Settings	Operation mode	TCP Server Mode
Serial Settings	TCP alive check time	7 (0 - 99 min)
Port 2	Inactivity time	0 (0 - 65535 ms)
Operating Settings	Max connection	1
Port 1 Port 2	Ignore jammed IP	@ No C Yes
Accessible IP Settings	Allow driver control	@ No @ Yes
Auto Warning Settings		Data Packing
Monitor	Packing length	0 (0 - 1024)
Change Password	Delimiter 1	0 (Hex) 🗆 Enable
Save/Restart	Delimiter 2	0 (Hex) T Enable
	Delimiter process	Do Nothing 🔄 (Processed only when Packing length is 0)
	Force transmit	0 (0 - 65535 ms)
		TCP Server Mode
	Local TCP port	4001
	Command port	966
	Apply the above settings	to all serial ports (Local listen port will be enumerated automatically).

• Operation Mo	des				
Port 1					
Operation mode	RealCOM	\$			
TCP alive check time	7 (0 - 99 min)				
Max connection	1 🖨				
Ignore jammed IP	No Yes				
Allow driver control	No Yes				
Data Packing Packing length	0 (0 - 1024)				
Delimiter 1	00 (Hex) 🗌 Enable	•			
Delimiter 2	00 (Hex) Enable				
Delimiter process	Do Nothing 🔶 (Pr	ocessed only when pac	king length is 0)		
Force transmit	0 (0 - 65535 ms	;)			
	✓ P1	P2	□ P3	P4	

# Accessible IP Settings

and all of a second		able the accessible IP		"Enable" will	provide the second s	onnect.)
Serial Settings Operating Settings		Activate the rule	IP Address		Netmask	-
Port 1 Port 2						-
ccessible IP Settings	_	Г.			J	
ito Warning Setting: onitor	_					-
hange Password	- 35					-
ad Factory Default we/Restart		-	1		J	-
a cy i co o con c						-
		-	1		[	-
			1		<u> </u>	-
	-	-	1		<u> </u>	-
	10	E				

	:• A	ccessible I	P List		
Overview	Act	tivate the accessible IP	list (Operation modes are NO	T allowed for the IPs NOT on the list)	
Quick Setup					
Basic Settings		ply additional restriction	ns (All device services are NC	T allowed for the IPs NOT on the list)	
Network Settings	No.	Activate the rule	IP Address	Netmask	
- Serial Settings - Operating Settings			II Address	Houmuon	
Accessible IP Settings	1				
- Administration	2				
- Backup/Restore	3				
Pre-shared Key	4				
Configuration Import	5				
Configuration Export	6				
System Log Settings	7				
	8				
- Auto Warning Settings	9				
Upgrade Firmware - Monitor					
	10				
Change Password	11				
Load Factory Default	12				
Save/Restart	13				
Logout	14				
	15				
	16				

Accessible IP Settings allow you to add or block remote host IP addresses to prevent unauthorized access. Access to the NPort is controlled by an 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. Three setting types are described below:

#### Activate the Accessible IP list

Operation modes are NOT allowed for IPs NOT on the list. IPs that are not on the list will not be granted when communicating with NPort via Operation mode

#### Apply additional restrictions

All device services are NOT allowed for IPs NOT on the list. Services will not be granted for IPs that are not on the list. Please note that all IPs will still have access if the IP list is empty, even though the function is enabled.

Tip: For exact IP identification, the netmask needs to be 255.255.255.255.

- Only one host with a specific IP address can access the NPort Enter "[IP address]/255.255.255.255" (e.g., "192.168.1.1/255.255.255.255").
- Hosts on a specific subnet can access the NPort Enter "[IP address]/255.255.255.0" (e.g., "192.168.1.0/255.255.255.0").

#### Any host can access the NPort

Disable this function. Refer to the following table for more details about the configuration.

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

# **Account Management**

The Account Management setting provides administrators the authority to add/delete/modify an user account, grant access to the device users for specified function groups, and manage password and login policy to ensure device is used by a proper set of people.

## **Notification Message**

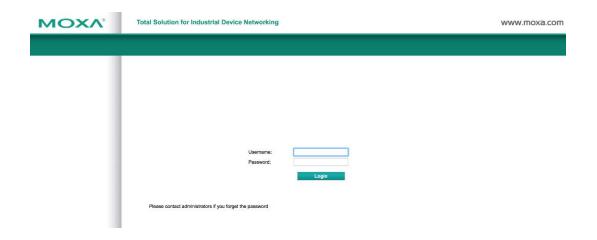
As an administrator, you are allowed to customize your **Login Message** and the **Login Authentication Failure Message** to notify users with information you would like to provide.

#### **:** Notification Message

Notification Message	Welcome to NPort	
ogin Message		
	Please contact administrators if you forget the password	16 characters/Maximum 240 characters
gin Authentication Failure Message		
		56 characters/Maximum 240 characters

The message will appear on the log-in page at the time of a successful login or login failure. Examples are shown below.

Total Solution for Industrial Device Networking	www.moxa.com
Usemame: Password: Login	
	Username: Password: Login



### **User Account**

In the NPort 5000 Series, the main function groups are highly correlated with the **User Level** set by the administrator(s). Administrators are allowed to add user accounts to the NPort 5000 device by clicking the **Add** button on the **User Account** page. You may also click on the current user to **Edit** or Delete the selected account.

:•Use	r Account	
User Acco	unt	
	🔁 Add 💉 Edit 🏢 D	elete 🖹 Save/Restart
Active	Account Name	User Level
$\checkmark$	admin	Read Write
	guest	Read Only
Your chang	es will take effect af	ter save and restart

The **Add Account (Edit Account)** page will show up for you to enter (modify) account information and assign password to this user. Also, the Administrator(s) are allowed to assign proper **User Level** to this user to limit his/her privileges of using NPort 5000.

User	Account

Active	
Account Name	
Password	
Confirm Password	
User Level	Read Write \$

## **Password and Login Policy**

A user with an administrator role is authorized to determine the password and login policy of the NPort 5000 device.

## -Account Password and Login Management

Account Password Policy	
Password minimum length	4 (4-16)
Password complexity strength check	🔵 Enable 🧿 Disable
At least one digit (0~9)	Enable  Disable
Mixed upper and lower case letters (A~Z, a~z)	Enable  Disable
At least one special character (~!@#\$%^&* ;:,.<>[[{}())	Enable  Disable
Password lifetime	0 (0 - 180 day; 0 for Disable
Account Login Failure Lockout	
Account login failure lockout	C Enable O Disable
Retry failure threshold	5 (1 - 10 retry)
Lockout Time	5 (1-60 min)

### Account Password Policy

Submit

Parameter	Setting	Default	Description
Password minimum length	4-16 characters	4	Define the minimum length of login password
Password complexity strength	Enable/Disable	Disable	Enable password complexity strength check
check:			will enforce the password combination setting
At least one digit (0-9)	Enable/Disable	Disable	The password must contain at least one
			number (0-9) when enabling this parameter
Mixed upper and lower case	Enable/Disable	Disable	The password must contain an upper and a
letters (A~Z, a~z)			lower case letter when enabling this
			parameter
At least one special	Enable/Disable	Disable	The password must contain at least one
characters (~!@#\$%^&*-			special character when enabling this
_ ;:,.<>[]{}())			parameter
Password lifetime	0-180 days	90 days	A password lifetime can be specified and a
	(0 for disable)		system notification message will show up to
			remind users to change the password if the
			option is enabled.

### Account Login Failure Lockout

Parameter	Setting	Default	Description
Account Login Failure Lockout	Enable/Disable	Disable	An account login failure lockout rule can be
			defined and enforced when enabled.
Retry failure threshold	1-10 retry	5 if	Number of retries can be determined prior to
		enabled	the lockout
Lockout time	1-60 minute(s)	5 if	Lockout duration can be specified to
		enabled	determine time until next retry.

## **Auto Warning Settings**

The NPort device server can automatically warn administrators of certain system, network, and configuration events. Depending on the event, different options for automatic notification are available. These options are configured in the Auto Warning Settings.

### Auto warning: E-mail and SNMP trap

The Email and SNMP trap parameters are used to configure how e-mail and SNMP traps are sent when an automatic warning is issued by the NPort device server.

Web Interface for the	NPort 5100, 5200, IA5000 Se	ries
мохл	www.moxa.co	om
🔄 Main Menu	Auto warning: Email and SNMP	trap
Overview		
Basic Settings		Mail server
Network Settings	Mail server	
🖻 🔄 Serial Settings	My server requires authentication	
Port 1	User name	
Port 2		
Coperating Settings	Password	
Port 1	From E-mail address NPIA-5250	_525016@moxa.com
Port 2	E-mail address 1	•
🕾 🔄 Auto Warning Settings	E-mail address 2	
😑 E-mail and SNMP Trap		
Event Type	E-mail address 3	
Monitor     Change Password	E-mail address 4	
Load Factory Default	[	SNMP trap server
Save/Restart	SNMP trap server IP or	
	domain name	
		Submit
		Oddrink
Web Interface for the	Overall NPort 5000 Series	
web Interface for the	Overall NPOIL 5000 Series	
	-E-mail and SNMI	P Trap Settings
Overview	Mail Server	
Quick Setup		
Basic Settings Network Settings	Mail server	
- Serial Settings	My server requires authentication	
- Operating Settings	User name	
Accessible IP Settings	Password	
- Administration	From E-mail address	NPort@moxa
- Backup/Restore	E-mail address 1	
System Log Settings - Auto Warning Settings	E-mail address 2	
System Log Event settings	E-mail address 3	
E-mail and SNMP Trap	E-mail address 4	
Event Type	E-Indi dutress 4	
Upgrade Firmware		
- Monitor	SNMP Trap Server	
Line	SNMP trap server IP or domain name	
Async	Trap version	<b>○</b> v1 ○ v2c
Async-Settings	Trap community	public
Relay Output		k
System Log Change Password	Submit	
Change Password		

#### Mail Server

Parameter	Setting	Factory	Description	Necessity
		Default		
Mail server	IP or Domain	None	This optional field is for the IP address or	Optional
	Name		domain name of your network mail server, if	
			applicable. A mail server is required for the	
			NPort to send e-mail warnings of	
1			administrative events.	
User name	1 to 15	None	This optional field is used if your mail server	Optional
	characters		requires it.	
Password	1 to 15	None	This optional field is used if your mail server	Optional
	characters		requires it.	
From E-mail	1 to 63	None	This optional field sets the "from" e-mail	Optional
address	characters		address that will show up in an automatic	
			warning e-mail.	
E-mail address	1 to 63	None	These optional fields set the "destination" e-	Optional
1/2/3/4	characters		mail address for automatic e-mail warnings.	

### SNMP Trap Server

Parameter	Setting	Factory	Description	Necessity
		Default		
SNMP trap server	IP address or	None	Selecting the version based on your	Optional
IP or domain	Domain		environmental needs. We strongly suggest to	
name	Name		that you change the community name from	
			the default <b>public</b> to another name; it is for	
			security prevention reasons.	



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

### **Event Type**

Event Type			
Cold start	🗖 Mail	Trap	
Warm start	🗆 Mail	Г Тгар	
Authentication failure	🗖 Mail	Trap	
IP address changed	🗆 Mail		
Password changed	Mail		
Power failure	🗆 Mail		🗖 Relay Output
Ethernet1 link down	🗖 Mail	Trap	Relay Output
Ethernet2 link down	🗖 Mail	🗖 Тгар	Relay Output
	D	CD changed	
Port 1	🗖 Mail	Trap	T Relay Output
Port 2	T Mail	T Trap	🗖 Relay Output
	D	)SR changed	
Port 1	I Mail	Trap	Relay Output
Port 2	🗖 Mail	Trap	Relay Output

	-Event Setting	gs		
verview uick Setup	System Event			
sic Settings	Cold start	🗆 Mail	Trap	
etwork Settings Serial Settings	Warm start	🗆 Mail	Trap	
operating Settings cessible IP Settings	Config Event			
dministration	Authentication failure	Mail	Trap	
ackup/Restore	IP changed	Mail		
stem Log Settings uto Warning Settings	Password changed	Mail		
System Log Event settings	Power failure	Mail		Relay output
E-mail and SNMP Trap	Ethernet1 link down	Mail	Trap	<ul> <li>Relay output</li> </ul>
Event Type grade Firmware	Ethernet2 link down	Mail	<ul> <li>Trap</li> </ul>	Relay output
lonitor	DCD Changed			
Line Async	_			
Async-Settings	Port 1	🗆 Mail	Trap	Relay output
Relay Output	Port 2	Mail	Trap	Relay output
System Log	Port 3	🗆 Mail	Trap	Relay output
ange Password ad Factory Default	Port 4	🗌 Mail	🗌 Trap	Relay output
ve/Restart	DSR Changed			
gout	Port 1	Mail	🗌 Trap	Relay output
	Port 2	🗌 Mail	Trap	Relay output
	Port 3	🗆 Mail	Trap	Relay output
	Port 4	🗆 Mail	Trap	Relay output

The Event Type parameters are used to configure which events will generate an automatic warning from the NPort device server, and how that warning will be issued. For each listed event, certain automatic warning options are available. If Mail is selected, an e-mail will be sent. If Trap is selected, an SNMP trap will be sent. The **Relay Output** option is available for NPort IA5000/IA5000A series.

#### Cold start

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

#### Warm start

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

#### Authentication failure

An authentication failure event is triggered when the user inputs an incorrect password from the Console or Administrator. When an authentication failure occurs, the NPort will immediately send an e-mail or SNMP trap.

#### IP address changed

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

#### Password changed

A password changed event is triggered when the user has changed the NPort's password. When the password changes, the NPort will send an e-mail with the password changed notice before the NPort reboots. If the NPort is unable to send an e-mail message to the mail server within 15 seconds, the NPort will reboot anyway, and abort the e-mail auto warning.

#### Power failure (this event type is only applicable to NPort IA5000/IA5000A series)

NPort IA5000/IA5000A series NPorts have two DC power inputs for redundancy. Different approaches are used to warn engineers automatically, including by email and by relay output. Users can connect to **Monitor** → **Relay Output** from the web console to check which event caused the warning. The relay output will be canceled after the power recovers, or by selecting "acknowledge event" using the web console or Telnet. When the Relay Output is sending a warning, the Ready LED will flash red until the warning event ceases.

MOX/			
		om	
Main Menu Overview	Monitor Relay Output		
Basic Settings		Relay Output Status	
Network Settings	Power failure		Acknowledge Event
Serial Settings	Ethernet1 link down		Acknowledge Event
Operating Settings Accessible IP Settings	Ethernet2 link down		Acknowledge Event
Auto Warning Settings	DCD changed (Port 1)		Acknowledge Event
Monitor	DCD changed (Port 2)		Acknowledge Event
	DSR changed (Port 1)		Acknowledge Event
Async Async-Setting	DSR changed (Port 2)		Acknowledge Event
Relay Output	por changes (i or i of		
Overview	Dout Status		
Quick Setup			
Basic Settings	Power failure		Acknowledge Event
Network Settings - Serial Settings	Ethernet1 link down	-	Acknowledge Event
- Operating Settings	Ethernet2 link down		Acknowledge Event
Accessible IP Settings	DCD changed (Port 1)	-	Acknowledge Event
- Administration	DSR changed (Port 1)		
, and a contract of the second s	bort changed (Fort 1)	-	Acknowledge Event
- Account Management	DCD changed (Port 2)	-	Acknowledge Event Acknowledge Event
- Account Management SNMP Agent	- · · ·	-	
- Account Management SNMP Agent - Backup/Restore	DCD changed (Port 2)	-	Acknowledge Event
- Account Management SNMP Agent	DCD changed (Port 2) DSR changed (Port 2)		Acknowledge Event Acknowledge Event
- Account Management SNMP Agent - Backup/Restore System Log Settings	DCD changed (Port 2) DSR changed (Port 2) DCD changed (Port 3)	- - - - -	Acknowledge Event Acknowledge Event Acknowledge Event
- Account Management SNMP Agent - Backup/Restore System Log Settings - Auto Warning Settings	DCD changed (Port 2) DSR changed (Port 2) DCD changed (Port 3) DSR changed (Port 3)		Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event
<ul> <li>Account Management SNMP Agent</li> <li>Backup/Restore</li> <li>System Log Settings</li> <li>Auto Warning Settings</li> <li>System Log Event settings</li> <li>E-mail and SNMP Trap</li> <li>Event Type</li> </ul>	DCD changed (Port 2) DSR changed (Port 2) DCD changed (Port 3) DSR changed (Port 3) DCD changed (Port 4)		Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event
<ul> <li>Account Management SNMP Agent</li> <li>Backup/Restore</li> <li>System Log Settings</li> <li>Auto Warning Settings</li> <li>System Log Event settings</li> <li>E-mail and SNMP Trap</li> <li>Event Type</li> <li>Upgrade Firmware</li> </ul>	DCD changed (Port 2) DSR changed (Port 2) DCD changed (Port 3) DSR changed (Port 3) DCD changed (Port 4)		Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event
<ul> <li>Account Management SNMP Agent</li> <li>Backup/Restore</li> <li>System Log Settings</li> <li>Auto Warning Settings</li> <li>System Log Event settings</li> <li>E-mail and SNMP Trap</li> <li>Event Type</li> </ul>	DCD changed (Port 2) DSR changed (Port 2) DCD changed (Port 3) DSR changed (Port 3) DCD changed (Port 4)		Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event
- Account Management SNMP Agent - Backup/Restore System Log Settings - Auto Warning Settings System Log Event settings E-mail and SNMP Trap Event Type Upgrade Firmware - Monitor	DCD changed (Port 2) DSR changed (Port 2) DCD changed (Port 3) DSR changed (Port 3) DCD changed (Port 4)		Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event
- Account Management SNMP Agent - Backup/Restore System Log Settings - Auto Warning Settings System Log Event settings E-mail and SNMP Trap Event Type Upgrade Firmware - Monitor Line	DCD changed (Port 2) DSR changed (Port 2) DCD changed (Port 3) DSR changed (Port 3) DCD changed (Port 4)		Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event
- Account Management SNMP Agent - Backup/Restore System Log Settings - Auto Warning Settings System Log Event settings E-mail and SNMP Trap Event Type Upgrade Firmware - Monitor Line Async	DCD changed (Port 2) DSR changed (Port 2) DCD changed (Port 3) DSR changed (Port 3) DCD changed (Port 4)		Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event
- Account Management SNMP Agent - Backup/Restore System Log Settings - Auto Warning Settings System Log Event settings E-mail and SNMP Trap Event Type Upgrade Firmware - Monitor Line Async Async-Settings	DCD changed (Port 2) DSR changed (Port 2) DCD changed (Port 3) DSR changed (Port 3) DCD changed (Port 4)		Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event

#### Ethernet link down

The NPort device server provides system maintainers with real-time alarm messages for Ethernet link down. Even when control engineers are out of the control room for an extended period of time, they can still be informed of the status of devices almost instantaneously when exceptions occur. The NPort device server supports different methods for warning engineers automatically, such as by email, SNMP trap, and relay output\*.

#### DCD changed

A DCD (Data Carrier Detect) signal change indicates that the modem connection status has changed. For example, a DCD change to high indicates that the local modem and remote modem are connected. A DCD signal change to low indicates that the connection line is down. When the DCD changes, the NPort will immediately send an e-mail, send an SNMP trap, or trigger the relay output<sup>\*</sup>.

#### DSR changed

A DSR (Data Set Ready) signal change indicates that the data communication equipment's power is off. For example, a DSR change to high indicates that the DCE is powered ON. A DSR signal changes to low indicates that the DCE is powered off. When the DSR changes, the NPort will immediately send an e-mail, send an SNMP trap, or trigger the relay output\*.

\*Relay output is only supported by the NPort IA5000/IA5000A series.

NOTE Relay Output is only available for the NPort IA5000/IA5000A series. Users can connect to Monitor → Relay Output from the web console to check which event is causing the warning. The relay output will be canceled if the abnormal state is restored, or if Acknowledge Event is selected from the web or Telnet console. When the Relay Output is issuing a warning, the Ready LED will flash red until the warning event ceases.

Parameter	Setting	Factory	Description	Necessity
		Default		
Mail	Enable, Disable	Disable	This feature helps the administrator manage	Optional
			how the NPort sends e-mail to pre-defined e-	
			mail boxes when the enabled events (Cold	
			start, Warm start, Authentication failure, etc.)	
			occur. To configure this feature, click the	
			Event Type Mail checkbox.	
Trap	Enable, Disable	Disable	This feature helps the administrator manage	Optional
			how the NPort IA5000A sends an SNMP Trap	
			to a pre-defined SNMP Trap server when the	
			enabled events (Cold start, Warm start,	
			Authentication failure, etc.) occur. To	
			configure this feature, click the Event Type	
			Trap checkbox.	



### ATTENTION

DCD and DSR signal changes are only applicable for the RS-232 interface.

## Monitor

### **Monitor Line**

Click **Line** under **Monitor** to show the operation mode and status of each connection (IPx), for each of the four serial ports.

MOXA	V	www.moxa.com							
Main Menu	Monitor Line								
Overview									
Basic Settings	Dent	P Mode	IP1	Line IP2	IP3	IP4			
Network Settings		eal COM Mode	Listen	IP2	IP3	194			
Serial Settings		eal COM Mode	Listen						
Operating Settings		eal COM Mode	Listen		-				
Accessible IP Settings Auto Warning Settings		eal COM Mode	Listen						
Monitor					.,				
Dverview		:• Monito	r Line						
Quick Setup	Po	ort Operation Mode	Connections						
Basic Settings	1	RealCOM	[Listen]	[]	[]	[]			
Network Settings		RealCOM	[]	[]	[]	[]			
- Serial Settings	2	RealCOM	[Listen]	[]	[]	[]			
Port 1			[ ]	[]	[]	[]			
Port 2	3	RealCOM	[Listen]		[]				
Port 3			[ ] [Listen]			[] []			
Port 4	4	RealCOM	[ ]	[]	[]	[ ]			
- Operating Settings									
Port 1									
Port 2									
Port 2 Port 3									
Port 3 Port 4									
Port 3									
Port 3 Port 4 Accessible IP Settings - Administration	L								
Port 3 Port 4 Accessible IP Settings Administration Backup/Restore	L								
Port 3 Port 4 Accessible IP Settings Administration Backup/Restore System Log Settings	L								
Port 3 Port 4 Accessible IP Settings - Administration - Backup/Restore System Log Settings	L								
Port 3 Port 4 Accessible IP Settings - Administration - Backup/Restore System Log Settings - Auto Warning Settings	l								
Port 3 Port 4 Accessible IP Settings Administration Backup/Restore System Log Settings Auto Warning Settings System Log Event settings	l								
Port 3 Port 4 Accessible IP Settings - Administration - Backup/Restore System Log Settings - Auto Warning Settings System Log Event settings E-mail and SNMP Trap Event Type	l								
Port 3 Port 4 Accessible IP Settings - Administration - Backup/Restore System Log Settings - Auto Warning Settings System Log Event settings E-mail and SNMP Trap	l								

## **Monitor Async**

Click Async under Monitor to show the current status of each of the four serial ports.

MOXA		www.n	noxa.co	m				
Main Menu	Monito	r Async						
Basic Settings	Async							
Network Settings	Port	TxCnt	RxCnt	TxTotalCnt	RxTotalCnt	DSR	CTS	DCD
Serial Settings	1	0	0	0	0	OFF	OFF	OFF
Operating Settings	2	0	0	0	0	OFF	OFF	OFF
ccessible IP Settings	3	0	0	0	0	OFF	OFF	OFF
Auto Warning Settings	4	0	0	0	0	OFF	OFF	OFF

		:•Mon	itor Asy	nc						
Main Menu	Dest	Turcent	RxCnt	TuTatalCat	DuTatalCut	DCD	DTD	DTC	OTO	Dep
Overview	Port	TxCnt		TxTotalCnt	RxTotalCnt	DSR		RTS	CTS	DCD
Quick Setup	1	0	0	0	0	•			۰	
Export/Import	2	0	0	0	0	•		۲	۹	
Basic Settings										
Network Settings										
- Serial Settings										
- Operating Settings										
Accessible IP Settings										
- Auto Warning Settings										
Upgrade Firmware										
- Monitor										
Line										
Asynd										

## Monitor Async-Settings

Click Async Setting under Monitor to show the run-time settings for each of the four serial ports.

MOXA		wv	vw.m	oxa.	com						
Main Menu	Monito	or Asy	nc-Setti	ngs							
Overview							0-11				
Basic Settings	Port	Ba	ud rate	0	ata bits	Stop bits	-Setting Parity	FIFO	RTS/C	TE VON	XOFF DTR/DSR
Network Settings	1		5200	8		1	None	Enable	OFF	OFF	OFF
Serial Settings Operating Settings	2		5200	8		1	None	Enable	OFF	OFF	OFF
Accessible IP Settings	3		5200	8		1	None	Enable	OFF	OFF	OFF
Auto Warning Settings	4		5200	8		1	None	Enable	OFF	OFF	OFF
Monitor											
eb Interface for t	he O	vera	II NPo	rt 5000	Series	;					
			- Mo	nitor A	Asvnc-	-Setti	ngs				
Overview		1		1							I
Quick Setup		Port	Baud	Data Bits	Stop Bits	Parity		Flow Contro		FIFO	Interface
Basic Settings			Rate				RTS/CTS	XON/XOFF	DTR/DSR		
Network Settings		1	115200	8	1	None	OFF	OFF	OFF	Enable	RS-232
- Serial Settings		2	115200	8	1	None	ON	OFF	OFF	Enable	RS-232
Port 1		3	115200	8	1	None	ON	OFF	OFF	Enable	RS-232
Port 2		4	115200	8	1	None	ON	OFF	OFF	Enable	RS-232
Port 3											
Port 4											
- Operating Settings											
Port 1											
Port 2											
Port 3											
Port 4											
Accessible IP Settings											
- Administration											
- Backup/Restore											
System Log Settings											
<ul> <li>Auto Warning Settings</li> </ul>											
System Log Event settings											
E-mail and SNMP Trap											
Event Type											
Upgrade Firmware											
- Monitor											
Line											
Async											
Async											
Async-Settings											

# System Log Settings

### System Log Settings

Event Group	Local Log	Summary
System		System Cold Start, System Warm Start
Network		DHCP/BOOTP Get IP/Renew, NTP, Mail Fail, NTP Connect Fail, IP Conflict, Network Link Up, Network Link Down
Config		Login Fail, IP Changed, Password Changed, Config Changed, Firmware Upgrade, Config Import, Config Export
OpMode		Connect, Disconnect

#### NOTE The NPort 5100, NPort 5200, and NPort IA5000 Series don't support this function.

System Log Settings allow NPort users to customize network events that are logged by the NPort 5000. Events are grouped into four categories, known as event groups, and the user selects which groups to log as Local Log (on NPort 5000). The actual system events that would be logged for each system group are listed under the column "Summary". For example, if **System** was enabled, then System Cold Start events and System Warm Start events would be logged.

Local Log	Keep the log in the flash of NPort 5000 up to 512 items.
-----------	----------------------------------------------------------

#### System

System Cold Start	NPort 5000 cold start.
System Warm Start	NPort 5000 warm start.

#### Network

DHCP/BOOTP/PPPoE Get	IP of the NPort 5000 is refreshed.
IP/Renew	
NTP	Time synchronization successful.
NTP Connect Fail	The NPot 5000 failed to connect to the NTP Server.
Mail Fail	Failed to deliver the email.
IP Conflict	There is an IP conflict on the local network.
Network Link Down	LAN 1 Link is down.

### Config

Login Fail	
IP Changed	Static IP address was changed.
Password Changed Administrator Password was changed.	
Config Changed The NPort 5000's configuration was changed.	
Firmware Upgrade	Firmware was upgraded.
SSL Certificate Import	SSL Certificate was impoted.
Config Import	Config was impoted.
Config Export	Config was expoted.

#### OpMode

Connect	Op Mode is in use			
Disconnect	Op Mode switched from in use to disconnect.			
Authentication Fail	The Authentication failed in terminal; reverse terminal; or dial in/out operation			
	modes			
Restart	Serial port was restarted.			

## **Change Password**

You can set a password to restrict access to the NPort's configuration parameters. (The default password for NPort is **moxa**.) If a user does not enter the correct password when accessing the NPort through one of the consoles (e.g., web console), access to the NPort configuration settings will be denied.

Web Interface for t	he NPort 5100, 5200, IA5000 Series Only
ΜΟΧΛ	www.moxa.com
Overview     Basic Settings     Network Settings     Serial Settings	Change password :
Web Interface for t	he Overall NPort 5000 Series
	- Change Password
Overview         Quick Setup         Basic Settings         Network Settings         - Serial Settings         Port 1         Port 2         Port 3         Port 1         Port 2         Port 3         Port 4         - Operating Settings         Port 1         Port 2         Port 3         Port 4         Accessible IP Settings         - Administration         - Backup/Restore         System Log Settings         - Auto Warning Settings         System Log Settings         E-mail and SNMP Trap         Event Type         Upgrade Firmware         - Monitor         Line         Async         Async-Settings         Relay Output         System Log         Change Password         Load Factory Default	Password         More password         Retype password             Submt



### ATTENTION

If you forget the NPort's password, the ONLY way to configure the NPort is by using the hardware reset button to load the factory defaults. Before you set a password for the first time, it is a good idea to export the NPort's complete configuration to a file. Your configuration can then be easily restored if necessary.

## Load Factory Default

Web Interface for the NPort 5100, 5200, and IA5000 Series Only



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

# **Configuration by Telnet Console**

You can update your NPort's IP address by using Telnet to connect to your NPort IA5000A over the network. (Figures in this section were generated using the NPort IA5450AI).

- 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**.

Run	? 🔀
-	Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.
Open:	telnet 192. 168. 127. 254
	OK Cancel Browse

3. When the Telnet window opens, you will be prompted to input the Console password (the default username is **admin** and password is **moxa**; for the NPort 5100/5200/IA5000, it only requires the default password **moxa**); input the password and then press **Enter**.

Trying 192.168.127.254	
Connected to 192.168.127.254.	
Escape character is '^]'.	
Model name : NPort 5250A	
(Please keyin your username:admin	
Please keyin your password:****	

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

lodel name	
	: 00:90:E8:63:50:FD
Serial No.	
	n : 1.5 Build 19013022
System uptime	: 0 days, 01h:59m:07s
< Main menu >>	
(1) Basic set	tings
(2) Network se	ettings
(3) Serial set	ttings
<pre>(4) Operating</pre>	settings
<pre>(5) Accessible</pre>	e IP settings
(6) Account Ma	anagement
(7) Auto warn:	ing settings
(8) Monitor	
(9) Ping	
(a) Change pag	ssword
(b) Load fact	bry default
<pre>(v) View sett:</pre>	ings
(s) Save/Resta	art
(q) Quit	

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

```
<< Main menu->Network settings >>
  (1) IP address
(2) Netmask

  (3) Gateway
  (4) IP configuration
  (5) DNS server 1
  (6) DNS server 2
  (7) SNMP
  (8) SNMP community name
  (9) SNMP contact
  (a) SNMP location
  (b) Auto IP report to IP(c) Auto IP report to UDP port
  (d) Auto IP report period
  (v) View settings
  (m) Back to main menu
  (q) Quit
Key in your selection: 1
                                                                                            •
```

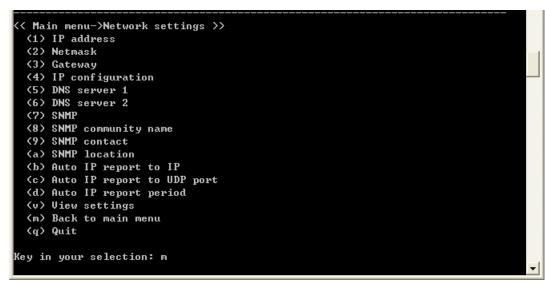
6. Use the **Backspace** key to erase the current IP address, type in the new IP address, and then press **Enter**.

```
K Main menu->Network settings >>
  (1) IP address
  (2) Netmask
  (3) Gateway
  (4) IP configuration
  (5) DNS server 1
  (6) DNS server 2
  (7) SNMP
  (8) SNMP community name
  (9) SNMP contact
  (a) SNMP location
  (b) Auto IP report to IP
  (c) Auto IP report to UDP port
  (d) Auto IP report period
  <u>View settings
  (m) Back to main menu
  (q) Quit
Key in your selection: 1
IP address: 192.168.127.253
```

7. Press any key to continue...

```
<< Main menu->Network settings >>
  (1) IP address
  (2) Netmask
  (3) Gateway
  (4) IP configuration
  (5) DNS server 1
  (6) DNS server 2
  (7) SNMP
  (8) SNMP community name
  (9) SNMP contact
(a) SNMP location
  (b) Auto IP report to IP
  (c) Auto IP report to UDP port
  (d) Auto IP report period
  (v) View settings
  (m) Back to main menu
  (q) Quit
Key in your selection: 1
IP address: 192.168.127.253
Set IP address success
Press any key to continue..._
```

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



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

MAC address Serial No. Firmware version	: NPort IA5450AI : 00:90:E8:12:34:57 : 2 : 1.0 Build 10032318 : 0 days, 00h:06m:48s	
 << Main menu >>		
(1) Basic setti	ngs	
(2) Network set	ings	
(3) Serial sett	ings	
(4) Operating s		
(5) Accessible		
(6) Auto warnin	y settings	
(7) Monitor		
(8) Ping		
(9) Change pass		
(a) Load factor	•	
(v) View settin (s) Saue/Restar		
(g) Quit		
ւմչ ձայր		
Key in your selec	ion: s	
		-

10. Type **y** and then press **Enter** to save the new IP address and restart the NPort.

Save change?	
(y) Yes	
(n) No	
Key in your selection: y	-

# **Configuration by Serial Console**

## Serial Console (19200, n, 8, 1)

You may use the RS-232 console port to configure your NPort's IP address. We suggest using PComm Terminal Emulator, which is available free of charge as part of the PComm Lite program suite, to carry out the installation procedure, although other similar utilities may also be used.

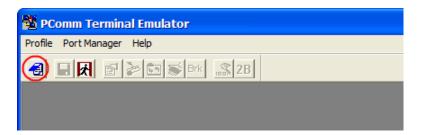


### ATTENTION

The serial console port is an RS-232 port.

Before you configure the NPort device server over the serial console, turn off the power and connect the serial cable from the NPort to your computer's serial port.

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



3. 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.

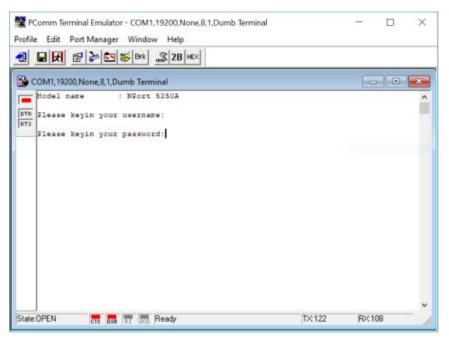
Property	X
Communication Paramete	r Terminal File Transfer Capturing
COM Options	
Ports :	COM1 -
Baud Rate :	19200 💌
Data Bits :	8 💌
Parity :	None
Stop Bits :	1 •
Flow Control	Output State DTR I ON C OFF RTS I ON C OFF
	OK Cancel

- 4. From the **Property** window's **Terminal** page, select ANSI or VT100 for **Terminal Type** and then click **OK**.
- 5. If you select **Dumb Terminal** as the terminal type, some of the console functions—especially the **Monitor** function—may not work properly.
- 6. Press the "`" key continuously and then power on the NPort.



The NPort will automatically switch from data mode to console mode as it receives a continuous string of
 " ` " characters.

8. The default username is **admin**, and the password is **moxa**.



9. Start configuring the IP address under **Network Settings**. Refer to step 4 in the Telnet Console section for the rest of the IP settings.

💆 PComm Terminal Emulator - COM1,19200,None,8,1,Dumb Terminal	<u>84</u>		×
Profile Edit Port Manager Window Help			
🚭 🖬 🕅 😰 📚 🖼 😹 Brk 🔐 28 HEX			
S COM1, 19200, None, 8, 1, Dumb Terminal			×
Model name         : NFort 5250A           MAC address         : 00:90:E8:63:50:FD           DTR         Serial No.         : 7162           RTS         Firmware version : 1.5 Build 19013022         : System uptime			^
<< Main menu >> (1) Basic settings (2) Network settings (3) Serial settings (4) Operating settings (5) Accessible IP settings (6) Account Management (7) Auto warning settings (8) Monitor (9) Fing (a) Change password (b) Load factory default (v) View settings (s) Save/Restart (q) Quit			
Key in your selection:			~
State:OPEN CTS DSR RI DCD Ready TX:137	RX:85	95	- //

# **Testing Your NPort**

After completing installation and configuration, you can do a simple test to ensure that your NPort will communicate successfully. Click on the appropriate link below to view a technical note that explains how to test your NPort one of four common operation modes: Real COM, TCP client, TCP server, and UDP.

- <u>Real COM Mode for NPort</u>
- <u>TCP Client Mode for NPort</u>
- <u>TCP Server Mode for NPort</u>
- UDP Mode for NPort

# **Cybersecurity Considerations**

With cyberattacks growing in number and sophistication, network device vendors are adding functions geared towards protecting sensitive business and personal information. Moxa has dedicated itself in this area by developing measure to make sure all the products can and will meet the security standard, so customers will use Moxa's product without too much to worry about. There are certain details that Moxa cannot do alone; customers and Moxa need to work together to build up a much secured environment to defend against all kinds of cyberthreats. This chapter introduces the essential steps to enhance the cybersecurity of Moxa's products. Customers may need to refer to other sections in the user manual for exact settings or commands. The following topics are covered in this chapter:

- Updating Firmware
- Turn Off Unused Service and Ports
  - > Turn Off Moxa Service After Installation
  - Turn On Services That Are Necessary
- Limited IP Access
- Account and Password
- System Log
- Testing the Security Environment

# **Updating Firmware**

When a customer buys a product from Moxa or reseller, Moxa may have already pushed out a newer version of firmware and that is likely to have enhanced the security features included. It is suggested to always update to latest firmware. Please check with Moxa's support website for further details.

# **Turn Off Unused Service and Ports**

Imagine living in a house that has many entrances. If all the doors and windows are left unlocked or even open, it sends a message of welcoming to intruders out there. It is always recommended to turn off services and ports that are not in use to reduce the chances of being attacked.

## **Turn Off Moxa Service After Installation**

Moxa Service is extremely helpful for first-time installation as it helps the device to be discovered in a local area network (LAN). Once the installation is completed, this service should be turned off for safety reasons; however, once it is turned off, a utility such as Moxa's DSU (Device Search Utility) is no longer seeking for the device, and only by the IP and login with username and password will have the access to the product.

## **Turn On Services That Are Necessary**

There are services that were designed some while ago, but then cybersecurity wasn't much of an issue, therefore the design's considerations didn't quite cover cybersecurity. Below is a list of services that are recommended to turn on only when necessary:

- HTTP/HTTPS: If the web console is required to access the product, it is recommend to use HTTPS over HTTP
- · Telnet: Only enable Telnet if command line is required to manage the product
- SNMP: If using Simple Network Management Protocol for remote device monitoring and management, this should be turned on. It is strongly advised to change the default community name once enabled and also set SNMP to send a trap if authentication failures happen.
- **NOTE** Once all the settings are configured according to your needs, remember to save and restart the device so that all the new settings are effective.

**NOTE** If all HTTP/HTTPS/Telnet/SSH/Serial consoles are turned off, then there is no other route to access the product. The only way to recover it is to reset the device and start from the beginning. Please refer to the user manual on how to reset the device

# Limited IP Access

Limiting the number of IP addresses that can access the product is one of the most effective way of blocking unwanted intruders. If there are only limited desktop/notebook/mobile devices that would access the product, grant those IPs access.

# **Account and Password**

- There is a default username and password for first-time installation; it is strongly suggested to change the password after installation has been done.
- Use your own passwords for users of the devices. If possible, also change the default name of the account, for example, don't name admin group "admin" before the device is deployed.
- Use strong passwords. The devices support a function to check if the passwords are strong enough. You can enable the function to help you check whether the passwords are strong enough.
- Use account login failure lockout feature to prevent unwelcome access

# System Log

System log can contain all kinds of activities that are happening on your NPort, such as Login Fail, IP Changed, Password Changed, Config Changed, etc. Check the log periodically to examine any abnormal behavior.

# **Testing the Security Environment**

Besides these devices that support those protective functions, network managers can follow a number of recommendations to protect their network and devices.

To prevent unauthorized access to a device, follow these recommendations:

- Testing tools for cybersecurity environment checks are available. Some may provide limited free use, for example, Nessus. These tools help identify possible security leaks in the environment.
- The device should be operated inside a secure network, protected by a firewall or router that blocks attacks via the Internet.
- · Control access to the serial console as with any physical access to the device.
- Avoid using insecure services such as Telnet and TFTP; the best way is to disable them completely.
- · Limit the number of simultaneous Web Server, Telnet, and SSH sessions allowed.
- Periodically, change the passwords.
- Backup the configuration files periodically and compare the configurations to make sure the devices work
  properly.
- Audit the devices periodically to make sure they comply with these recommendations and/or any internal security policies.
- If there is a need to return the unit to Moxa, make sure encryption is disabled and that you had already backup the current configuration before returning it.
- **NOTE** DISCLAIMER: Please note that above information and guide (the "information") are for the purpose of your reference only. We do no guarantee a cyberthreat-free environment; these guidelines are to increase security level to defend against cyberintrusions and do not guarantee that the above information will meet your specific requirements. Furthermore, the above information is provided "as is", and we make no warranties, express, implied or otherwise, regarding its accuracy, completeness, or performanc

# **Choosing the Proper Operation Mode**

In this chapter, we describe the NPort device server's various 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.

The following topics are covered in this chapter:

- Overview
- Real COM Mode
- RFC2217 Mode
- **TCP Server Mode**
- **TCP** Client Mode
- UDP Mode
- Pair Connection Mode
- Ethernet Modem Mode
- Reverse Telnet Mode
- Disabled Mode

## **Overview**

NPort serial device servers network-enable traditional RS-232/422/485 devices. A serial device server is a small computer equipped with a CPU, real-time OS, and TCP/IP protocols that can bi-directionally translate data between the serial and Ethernet formats. NPort device servers that are connected to a network that with access to the Internet can be accessed from a computer located anywhere in the world.

Traditional SCADA and data collection systems rely on serial ports (RS-232/422/485) to collect data from various kinds of instruments. Since NPort 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.

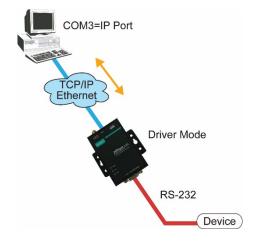
An NPort serial device server is an external IP-based network device that allows you to expand the number of serial ports for a host computer on demand. As long as your host computer supports the TCP/IP protocol, you won't be limited by the host computer's bus limitation (such as ISA or PCI), or lack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

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

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

# **Real COM Mode**

The NPort comes equipped with COM drivers that work with Windows systems, and also TTY drivers for Linux systems. The driver establishes a transparent connection between host and serial device by mapping the IP:Port of the NPort's serial port to a local COM/TTY port on the host computer. Real COM Mode also supports up to 4 simultaneous connections, so that multiple hosts can collect data from the same serial device at the same time.





### ATTENTION

The driver used for Real COM Mode is bundled with NPort Administrator. The driver is installed on your computer automatically when you install NPort Administration Suite.

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



#### ATTENTION

Real COM Mode allows several hosts to access the same NPort. The driver that comes with your NPort controls host access to attached serial devices by checking the host's IP address. Refer to the **Accessible IP Settings** section in **Chapter 2** for details.

# RFC2217 Mode

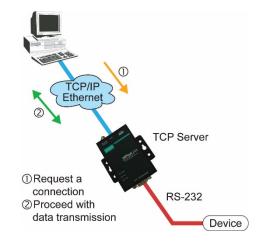
RFC2217 Mode is only supported by the NPort 5000A, NPort 5000AI-M12, NPort IA5000A, NPort 5600, and NPort 5600-8-DT/DTL Series.

RFC 2217 mode is similar to Real COM mode in that a driver is used to establish a transparent connection between a host computer and a serial device by mapping the serial port on the NPort to a local COM port on the host computer. RFC2217 defines general COM port control options based on the Telnet protocol. Third party drivers supporting RFC2217 are widely available on the Internet and can be used to implement Virtual COM mapping to your NPort serial port(s).

# **TCP Server Mode**

In **TCP Server Mode**, the NPort is configured with a unique IP:Port combination on a TCP/IP network. In this case, the NPort waits passively to be contacted by the host computer. After the host computer establishes a connection with the serial device, it can then proceed with data transmission. TCP Server 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:

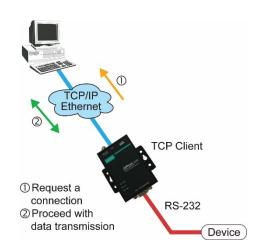
- 1. The host requests a connection from the NPort configured for TCP Server Mode.
- Once the connection is established, data can be transmitted in both directions—from the host to the NPort, and from the NPort to the host.



# **TCP Client Mode**

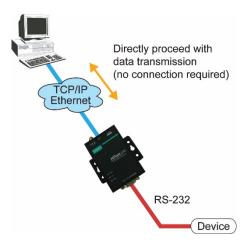
In TCP Client Mode, the NPort can actively establish a TCP connection with a pre-determined host computer when serial data arrives. After the data has been transferred, the NPort can disconnect automatically from the host computer by using the **TCP alive check time** or **Inactivity time** settings. Refer to **Chapter 4** for detailed configuration instructions. As illustrated in the figure, data transmission proceeds as follows:

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



## **UDP Mode**

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



# **Pair Connection Mode**

Pair Connection Mode employs two NPort units in tandem, and can be used to remove the 15-meter distance limitation imposed by the RS-232 interface. One NPort is connected from its RS-232/422/485 port to the COM port of a PC or other type of computer, such as hand-held PDAs that have a serial port, and the serial device is connected to the RS-232/422/485 port of the other NPort. The two NPort units are then connected to each other with a cross-over Ethernet cable, both are connected to the same LAN, or in a more advanced setup, they communicate with each other over a WAN (i.e., through one or more routers). Pair Connection Mode transparently transfers both data and modem control signals (although it cannot transmit the DCD signal) between the two NPorts.

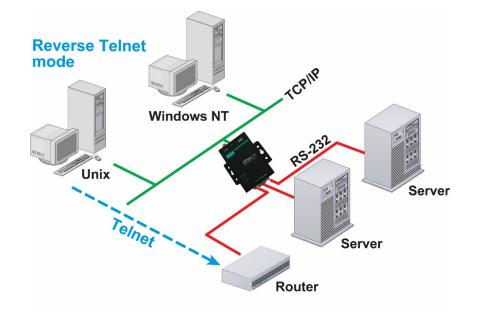
## **Ethernet Modem Mode**

Ethernet Modem Mode is only supported by the NPort IA5000/IA5000A, NPort 5000A, NPort 5000AI-M12, and NPort 5100 series.

Ethernet Modem Mode is designed for use with legacy operating systems, such as MS-DOS, that do not support TCP/IP Ethernet. By connecting one of NPort's serial ports to the MS-DOS computer's serial port, it is possible to use legacy software originally designed to transmit data via modem, but now transmit the data over the Ethernet.

# **Reverse Telnet Mode**

Console management is commonly used by connecting to Console/AUX or COM ports of routers, switches, and UPS units. Rtelnet works the same as TCP Server mode in that only one TCP port is listened to after booting up. The system then waits for a host on the network to initiate a connection. The difference is that the TCP Server mode does not provide the conversion function provided by Telnet. If the connected devices need to use the CR/LF conversion function when controlling, then users must choose Reverse Telnet mode.



# **PPP Mode**

PPP Mode is only supported by the NPort 5600 Series.

The NPort 5000 provides dial-in access for ISPs and enterprises that need a remote access solution. When a user at a remote site uses a PPP dial-up connection to access the NPort 5600, the NPort 5600 plays the role of a dial-up server, but also ensures that the user has legal access to the network by verifying the user's identity with the NPort 5600 User Table.

## **Disabled Mode**

When the Operation Mode for a particular port is set to **Disabled**, that port will be disabled.

# **Advanced Operation Mode Settings**

Your NPort's serial ports can be configured to use one of several operation modes, such as Real COM mode or Reverse Telnet mode. In this chapter, we explain the settings for every parameter of every operation mode.

The following topics are covered in this chapter:

#### Overview

- List of Parameters
- > When to Make Adjustments

#### Using Pair Connection Modes

#### Parameter Summary

- Connection Management Parameters
- > Data Packing Parameters
- > Other Parameters
- Web Console

## **Overview**

A device port's operation mode determines how the port interacts with the network. Depending on your application and device, you may have the option of choosing between two or more operating modes. For each mode, the default settings should work for most applications. Modify these settings only if absolutely necessary for your application. The operation mode and related parameters can be configured through NPort Administrator. The same parameters may also be configured using the web console, Telnet console, or serial console.

## List of Parameters

Real COM Mode	TCP Server Mode	TCP Client Mode	UDP Mode	Reverse Telnet Mode	Pair Connection Mode	RFC2217 Mode	
							Connection Management Parameters
✓	✓	✓		✓	✓	✓	TCP alive check time
	✓	✓		✓			Inactivity time
✓	✓	✓					Max connection
✓	✓	✓					Ignore jammed IP
✓	✓						Allow driver control
							Data Packing Parameters
✓	✓	✓	✓			✓	Packing length
✓	✓	✓	~			✓	Delimiter 1 and 2
✓	~	✓	~			✓	Delimiter process
✓	>	✓	>			✓	Force transmit
							Other Parameters
	~			>	✓		Local TCP port
							Commendation
	✓						Command port
	✓				✓		Destination IP address
	✓	✓	~		✓		
	✓ 	✓ ✓	✓		✓ 		Destination IP address
	✓		<ul> <li>✓</li> <li>✓</li> </ul>		✓ 		Destination IP address Destination IP address 1 through 4
	✓				✓		Destination IP address Destination IP address 1 through 4 Designated local port 1 through 4

## When to Make Adjustments

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The default settings for each operation mode are designed to work for most applications and usually do not need to be modified. However, adjustments may be required for the following situations:

• You need to control network data packing using specific delimiter characters.

#### Adjust Delimiters 1 and 2 and Delimiter process.

• Multiple hosts will simultaneously access the attached device.

#### Adjust Max Connection, Ignore Jammed IP, and Allow driver control.

Data will be broadcast from the serial device to multiple network destinations.

#### Adjust Destination IP 1 through 4.

• You are using Pair Connection modes to connect two serial devices over Ethernet.

Adjust Local TCP port and Destination IP Address

# **Using Pair Connection Modes**

For some applications, you may want to configure two serial devices to communicate directly with each other over the network. This can be done with a pair of NPort device servers configured for Pair Connection Master/Slave modes. Configure one device port on one of the NPorts to Pair Connection Master mode, and one device port on the other NPort to Pair Connection Slave mode. It doesn't matter which NPort is the master and which NPort is the slave.

For the device port configured for Pair Connection Slave mode, designate a Local TCP port to be used for communication. For the device port configured for Pair Connection Master mode, enter the slave's IP address and Local TCP port as the **Destination IP**.

Once both device ports have been configured, the attached serial devices will communicate over Ethernet as if they were connected by a serial cable. The two NPorts can be connected by an Ethernet cable, or they can be connected to the same network.

# Parameter Summary

## **Connection Management Parameters**

✓	✓ ✓		✓	✓	✓		Inactivity time
Real COM Mode	TCP Server Mode <	UDP Mode	Reverse Telnet Mode	Pair Connection Mode	RFC2217 Mode	PPP Mode	Inactivity timeSetting Options: 0 to 99 minutesDefault: 7 minutesDescription: Specifies the time limit for keeping the connection open ifno data flows to or from the serial device. If there is no activity for thespecified time, the connection will be closed. A setting of 0 means thatthe connection will remain open even if data is never received.For many applications, the serial device may be idle for long periods oftime, so 0 is an appropriate setting. If you wish to use Inactivity timewith TCP Client mode, you must set Connection Control to AnyCharacter/Inactivity Time (see Connection Control).When adjusting Inactivity time, make sure that it is greater than theForce transmit time. Otherwise, the TCP connection may be closedbefore data in the buffer can be transmitted.

	✓	✓		✓			✓	Inactivity time
de	de	de	de	de	de	de	de	Setting Options: 0 to 65535 ms
Mode	Mode	Mode	Mode	Mode	Mode	Mode	Mode	Default: 0
Real COM N	TCP Server N	TCP Client N	UDP N	Reverse Telnet N	Pair Connection N	RFC2217 N	N ddd	Description: Specifies the time limit for keeping the connection open if no data flows to or from the serial device. If there is no activity for the specified time, the connection will be closed. A setting of 0 means that the connection will remain open even if data is never received. For many applications, the serial device may be idle for long periods of time, so 0 is an appropriate setting. If you wish to use Inactivity time with TCP Client mode, you must set Connection Control to Any
								Character/Inactivity Time (see Connection Control). When adjusting Inactivity time, make sure that it is greater than the Force transmit time. Otherwise, the TCP connection may be closed before data in the buffer can be transmitted.

✓	✓ ✓						Max connection
Real COM Mode	TCP Server Mode TCP Client Mode	UDP Mode	Reverse Telnet Mode	Pair Connection Mode	RFC2217 Mode	PPP Mode	Setting Options: 1 to 4 Default: 1 Description: Specifies the maximum number of simultaneous connections that the port will accept. When adjusting Max connection, make sure that Ignore jammed IP and Allow driver control are also configured correctly.

✓	✓	√						Ignore jammed IP
de	de	de	de	de	de	de	de	Setting Options: Yes or No
Mode	Mode	Mode	Mode	Mode	Mode	Mode	Mode	Default: No
COM	ver	lient	UDP	elnet	ection	C2217	ЬРР	Description: This field specifies how an unresponsive IP address is
	Ser	CII	ر	Tel	ect	023		handled when there are simultaneous connections to the device port
Real	CP 3	Ъ		se	Conne	RF		(see Max connection). Yes means that transmission to the other hosts
	тс	TC		'ers	ပိ			will not be suspended if one IP address becomes unresponsive. No
				Rev	air			means that all transmission will be suspended if one IP address
				-	٩			becomes unresponsive, and will resume when all hosts have
								responded. Yes is the recommended setting when Max connection is 2
								or more.

✓	✓							Allow driver control
Real COM Mode	TCP Server Mode	TCP Client Mode	UDP Mode	Reverse Telnet Mode	Pair Connection Mode	RFC2217 Mode	PPP Mode	Setting Options: Yes or No Default: No Description: Specifies whether or not the device port will respond to driver control commands when multiple simultaneous connections are enabled (see Max connection).

# **Data Packing Parameters**

✓	✓	✓	√			✓		Packing length
de	de	de	de	de	de	de	de	Setting Options: 0 to 1024
Mode	Mode	Mode	Mode	Mode	Mode	Mode	Moe	Default: 0
COM	ver	lient	UDP	net	ion	RFC2217	ЬРР	Description: Controls data packing by the amount of data received.
	Ser	Cli		Teln	onnect	C22		Serial data accumulates in the device port's buffer until it reaches the
Real		СР		se	uu	RF		specified length. When the specified amount of data has accumulated
Ľ.	тср	Ĕ		/ers	ပိ			in the buffer, the data is packed for network transmission. A setting of
				Rev	Pair			0 means that data will not be packed until the buffer is full. 0 is the
					Ч			recommended setting, unless your application has a specific need to
								limit packet sizes or improve response times.

✓	✓	~	~			✓		Delimiter 1 and 2
de	de	de	de	de	de	de	de	Setting Options: Enable, 0 to FF
Mode	Mode	Mode	Mode	Mode	Mode	Mode	Mode	Default: Disable
COM	Server	Client	UDP	elnet	Connection	RFC2217	ррр	Description: Controls data packing using special delimiter character(s).
Real	Se			F	nec	EC.		Serial data accumulates in the device port's buffer until the delimiter
Re	тср	тср		Reverse	no	2		character(s) are received, after which the data is packed for network
	-	-		eve	air C			transmission. If only one delimiter character is needed, be sure to
				Å	Ра			enable Delimiter 1 only. If both Delimiter 1 and 2 are enabled, both
								characters must be received in sequence for data packing to occur. For
								example, the carriage return character could be used as a delimiter in
								order to transmit each sentence or paragraph in a separate packet.
								Data is packed according to the Delimiter process parameter.
								Delimiters must be incorporated into the data stream at the software or
								device level.



### ATTENTION

When the device port buffer is full, the data will be packed for network transmission, regardless of the settings for Delimiter 1, Delimiter 2, and Force transmit.

✓	✓	✓	✓			✓		Delimiter process
Real COM Mode	TCP Server Mode	TCP Client Mode	UDP Mode	Reverse Telnet Mode	Pair Connection Mode	RFC2217 Mode	PPP Mode	Setting Options: Do Nothing, Delimiter + 1, Delimiter + 2, Strip Delimiter Default: Do Nothing Description: Controls how data is packed when delimiter characters are received. Note that this field has no effect if delimiters are not enabled (see Delimiters 1 and 2). "Do nothing" will pack the accumulated data including delimiters. "Delimiter + 1" will wait for an additional character before packing the accumulated data. "Delimiter + 2" will wait for two additional characters before packing the accumulated data. "Strip Delimiter" will pack the accumulated data but will not include the delimiter characters in the packet.

✓	~	✓	✓			✓		Force transmit
Real COM Mode	TCP Server Mode	TCP Client Mode	abom qau	Reverse Telnet Mode	Pair Connection Mode	RFC2217 Mode	abom qqq	Setting Options: 0 to 65535 ms Default: 0 ms Description: Controls data packing by the amount of time that elapses between bits of data. As serial data is received, it accumulates in the device port's buffer. If serial data is not received for the specified amount of time, the data that is currently in the buffer is packed for network transmission. A setting of 0 means that data in the buffer will not be automatically packed when additional data is not received from the device. When using this field, make sure Inactivity time is disabled or set to a larger value. Otherwise, the connection may be closed before the data in the buffer can be transmitted.

# **Other Parameters**

	✓			✓	✓			Local TCP port
Real COM Mode	TCP Server Mode	TCP Client Mode	UDP Mode	Reverse Telnet Mode	Pair Connection Mode	RFC2217 Mode	PPP Mode	Setting Options: 1 to 65535 Default: 4001 for port 1, 4002 for port 2, etc. Description: Specifies the TCP port number for communicating with the attached device. Socket applications will need to use this port number to refer to the device. For Pair Connection modes, this field specifies the slave's port number, and the same value must be used for the master's Destination IP parameter.
[]		1	1	1	1			
	✓							Command port
Real COM Mode	TCP Server Mode	TCP Client Mode	UDP Mode	Reverse Telnet Mode	Pair Connection Mode	RFC2217 Mode	aboM qqq	Setting Options: 1 to 65535 Default: 966 Description: Specifies the TCP port number for Moxa IP-Serial Library commands. You do not need to reference this port number in your application when using the Moxa IP-Serial Library, since the library automatically obtains the number from the device server. Only change this setting if there is a port number conflict with another application or device.
					✓		✓	Destination IP address
Real COM Mode	TCP Server Mode	TCP Client Mode	UDP Mode	Reverse Telnet Mode	Pair Connection Mode	RFC2217 Mode	PPP Mode	Setting Options: N/A Default: none Description: Specifies the IP address for the slave end of a pair connection.
		✓	✓					Destination IP address 1 through 4
A Mode	r Mode	t Mode	o Mode	t Mode	Mode r	7 Mode	Mode	Setting Options: N/A Default: none

de	de	de	qe	qe	qe	- Be	e e	Setting Options: N/A
Mode	Moe	Mod	Mod	Mod	Moe	Mo	Mode	Default: none
Real COM I	TCP Server I	TCP Client I	I dan	Reverse Telnet I	Pair Connection	RFC2217	l ddd	Description: Specifies the network host(s) that will access the device. Serial data will be transmitted to every address listed, and network data will be sent to the device on a first-in-first-out basis.

		✓						Designated local port 1 through 4
Real COM Mode	TCP Server Mode	TCP Client Mode	UDP Mode	Reverse Telnet Mode	Pair Connection Mode	RFC2217 Mode	PPP Mode	Setting Options: 1 to 65535 Default: none Description: Specifies the TCP port number that will be used for data transmission with the device port.
			~					Local listen port
Real COM Mode	TCP Server Mode	TCP Client Mode	UDP Mode	Reverse Telnet Mode	Pair Connection Mode	RFC2217 Mode	PPP Mode	Setting Options: 1 to 65535 Default: 4001 for port 1, 4002 for port 2, etc. Description: Specifies the UDP port number for network communication to the serial device. Socket applications will need to use this port number to refer to the device.

		✓						Connection Control
Real COM Mode	TCP Server Mode	TCP Client Mode <	UDP Mode	Reverse Telnet Mode	Pair Connection Mode	RFC2217 Mode	PPP Mode	Connection ControlSetting Options: Startup/None, Any Character/None, Any Character/Inactivity Time, DSR On/DSR Off, DSR On/None, DCD On/DCD Off, DCD On/None Default: Startup/NoneDescription: Specifies how connections to the device are established and closed.For example, "Startup/None" means that as soon as the device server starts up, the TCP connection is opened, and the connection can only be closed manually. "DCD On/DCD Off" means that the TCP connection is opened when the DCD signal is on, and closed when the DCD signal is off.If you want to use the Inactivity Time parameter to close the

				~				Map <cr-lf></cr-lf>
Real COM Mode	TCP Server Mode	TCP Client Mode	UDP Mode	Reverse Telnet Mode	Pair Connection Mode	RFC2217 Mode	PPP Mode	Setting Options: CR, LF, or CR-LF Default: CR-LF Description: Specifies how the ENTER key is mapped from the Ethernet port through the serial port. For certain terminal applications, the Enter key needs to be translated specifically as a CR character rather than CR-LF.

# Web Console

Click **Operating Settings** to display the operating settings for each of the NPort's serial ports.

	Operating mode al COM Mode al COM Mode	0 TCP Max 0 TCP	okina	able) 0 (Disab e: 7 1		elimiter process othing	Force transmit	
1 Rea	al COM Mode	0 TCP Max 0 TCP	alive check tim connection:	able) 0 (Disab e: 7 1				
2 Rea		TCP Max 0 D TCP	alive check tim connection: 0 (Dis	e: 7 1	le) Do N	othing	0	
2 Rea		Max 0 0 TCP	connection:	1				
	al COM Mode	TCP	1 .	able) 0 (Disab				
	al COM Mode		alling all and the		le) Do N	othing	0	
/eb Int		A dames -	alive check tim connection:	e: 7 1				
Overview		Port	• Operating Mode	on Modes	Delimiter 1	Delimiter 2	Delimiter Process	Force Transm
Quick Setu				0	0 (Disable)	0 (Disable)	Do Nothing	0
Basic Setti Network Se	iettings	1	RealCOM	TCP alive check time Max connection:	7			
- Serial Sel Port 1	aungs	2	RealCOM	0 TCP alive check time Max connection:	0 (Disable) 7	0 (Disable)	Do Nothing	0
Port 2				0	0 (Disable)	0 (Disable)	Do Nothing	
Port 3							Do Nothing	0
	g Settings	3	RealCOM	TCP alive check time Max connection:	: 7 1		Do Nothing	0

# **Real COM Mode**

rview		
ic Settings		Port=01
norn occurigo	Operation mode	Real COM Mode
A MARKET AND A MARKET A	TCP alive check time	7(0 - 99 min)
rating Settings ort 1	Max connection	1 🗙
	Ignore jammed IP	No Yes
ort 3	Allow driver control	No Yes
ort 4		Data Packing
essible IP Settings Warning Settings	Packing length	0 (0 - 1024)
itor	Delimiter 1	0 (Hex) Enable
2.2.1.2	Delimiter 2	0 (Hex) Enable
	Delimiter process	Do Nothing Y (Processed only when Packing length is 0)
e/Restart	Force transmit	0 (0 - 65535 ms)
	Apply the above settings	to all serial ports
		Submit

• Operation Mo	des				
Port 1					
Operation mode	RealCOM	\$			
TCP alive check time	7 (0 - 99 min)				
Max connection	1 🛊				
Ignore jammed IP	No Yes				
Allow driver control	No Yes				
Data Packing Packing length	0 (0 - 1024)				
Delimiter 1	00 (Hex) C Enable	I.			
Delimiter 2	00 (Hex) Enable	I.			
Delimiter process	Do Nothing \$ (Pr	ocessed only when pac	king length is 0)		
Force transmit	0 (0 - 65535 ms	)			
Apply the above settings to	✓ P1 All ports	□ P2	□ P3	□ P4	

Parameter	Setting	Factory	Description	Necessity
		Default		
TCP Alive	0 to 99 min	7 min	<b>0 min:</b> TCP connection is not closed due to an	Optional
Check Time			idle TCP connection.	
			1 to 99 min: The NPort automatically closes	
			the TCP connection if there is no TCP activity	
			for the given time. After the connection is	
			closed, the NPort starts listening for another	
			Real COM driver connection.	
Max	1, 2, 3, 4	1	Max connection is set to 2, 3, or 4 when the	Required
Connection			user needs to receive data from different hosts	
			simultaneously. The factory default only allows	
			1 connection at a same. When Max Connection	
			is set to 1, the Real COM driver on the specific	
			host has full control.	
			Max. Connection 1: Allows only 1 host's Real	
			COM driver to open the specific NPort serial	
			port.	
			Max Connection 2 to 4: Allows 2 to 4 host's	
			Real COM drivers to open the specific NPort	
			serial port, at the same time. When multiple	
			hosts' Real COM drivers open the serial port at	
			the same time, the COM driver only provides a	
			pure data tunnel without control ability. That is,	
			this serial port parameter will use the	
			firmware's settings, not the settings of your	
			application program (AP).	
			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 from the Ethernet	
			interface.	
Ignore	No or Yes	No	No: When Max connections > 1, and the serial	Optional
jammed IP			device is transmitting data, if any one of the	
			connected hosts is not responding, it will wait	
			until the data has been transmitted successfully	
			before transmitting the second group of data to	
			all hosts.	
			Yes: If you select Yes for "Ignore jammed IP,"	
			the host that is not responding will be ignored,	
			but the data will still be transmitted to the	
			other hosts.	
Packing length	0 to 1024	0	0: The Delimiter Process will be followed,	Optional
			regardless of the length of the data packet.	
			Greater than 0: If the data length (in bytes)	
			matches the configured value, the data will be	
			forced out.	
Delimiter 1	00 to FF	None	Once the NPort receives both delimiters	Optional
			through its serial port, it immediately packs all	
Delimiter 2	00 to FF	None	data currently in its buffer and sends it to the	Optional
			NPort's Ethernet port.	

Parameter	Setting	Factory	Description	Necessity
		Default		_
Delimiter	Do nothing,	Do	[Delimiter + 1] or [Delimiter + 2]: The data	Optional
process	Delimiter + 1,	nothing	will be transmitted when an additional byte (for	
	Delimiter + 2,		Delimiter +1), or an additional 2 bytes (for	
	Strip Delimiter		Delimiter +2) of data is received after receiving	
			the Delimiter.	
			[Strip Delimiter]: When the Delimiter is	
			received, the Delimiter is deleted (i.e.,	
			stripped), and the remaining data is	
			transmitted.	
			[Do nothing]: The data will be transmitted	
			when the Delimiter is received.	
Force	0 to 65535 ms	0 ms	<b>0:</b> Disable the force transmit timeout.	Optional
Transmit			1 to 65535: Forces the NPort'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 the NPort fetches the serial data from its	
			internal buffer. If data is incoming through the	
			serial port, the NPort stores the data in the	
			internal buffer. The NPort 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.	



### ATTENTION

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

NOTE Optimal force transmit timeout differs according to your application, but it must be at least larger than one character interval within the specified baudrate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is:

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

Therefore, you should set Force Transmit timeout greater than 8.3 ms. Force Transmit timeout is specified in milliseconds and must be greater than 10 ms.

If you want to send the series of characters in a packet, the serial device attached to the NPort should send characters with time delay less than Force Transmit timeout between characters and the total length of data must be smaller than or equal to the NPort's internal buffer size. The serial communication buffer size of the NPort is 1 Kbyte per port.

# RFC2217 Mode

Main Menu	Operating Settings	
Overview Basic Settings		Port 1
Network Settings	Operation mode	RFC 2217 Mode
Serial Settings	TCP alive check time	7 (0 - 99 min)
Operating Settings		Data Packing
Port 1	Packing length	0 (0 - 1024)
Port 2	Delimiter 1	0 (Hex) Enable
Port 4	Delimiter 2	(Hex) Enable
Dort 5		
Dort 6	Delimiter process	(Processed only man rocking length is of
Port 7	Force transmit	0 (0 - 65535 ms)
Accessible IP Settings	Apply the above sett	ings to all serial ports
Accessible IP Settings PPP User Table Settings		Submit
Auto Warning Settings		Summ
Monitor		
📔 Change Password		
Load Factory Default		
Save/Restart		

b Interface for the	Overall I	NPort 5000	Series	
• Operation M	lodes			
Port 1				
Operation mode TCP alive check time Local TCP port	RFC2217 7 (0 - 99 min 4001	¢)		
Data Packing				
Packing length	0 (0 - 102	4)		
Delimiter 1	00 (Hex)	Enable		
Delimiter 2	00 (Hex)	Enable		
Delimiter process	Do Nothing	(Processed only v)	when packing length is	s 0)
Force transmit	0 (0 - 65	535 ms)		
Apply the above settings to	<ul> <li>P1</li> <li>All ports</li> </ul>	P2	□ P3	P4
Submit				

Parameter	Setting	Factory	Description	Necessity
		Default		
TCP Alive	0 to 99 min	7 min	<b>0 min:</b> TCP connection is not closed due to an	Optional
Check Time			idle TCP connection.	
			1 to 99 min: The NPort automatically closes	
			the TCP connection if there is no TCP activity	
			for the given time. After the connection is	
			closed, the starts listening for another TCP	
			connection.	
Local TCP Port	1 to 65535	4001	The TCP port that the NPort uses to listen to	Required
			connections, and that other devices must use	
			to contact the NPort. To avoid conflicts with	
			well- known TCP ports, the default is set to	
			4001.	
Packing length	0 to 1024	0	0: The Delimiter Process will be followed,	Optional
			regardless of the length of the data packet.	
			Greater than 0: If the data length (in bytes)	
			matches the configured value, the data will be	
			forced out.	
Delimiter 1	00 to FF	None	Once the NPort receives both delimiters	Optional
			through its serial port, it immediately packs all	
Delimiter 2	00 to FF	None	data currently in its buffer and sends it to the	Optional
			NPort's Ethernet port.	
Delimiter	Do nothing,	Do	[Delimiter + 1] or [Delimiter + 2]: The data	Optional
process	Delimiter + 1,	nothing	will be transmitted when an additional byte (for	
	Delimiter + 2,		Delimiter +1), or an additional 2 bytes (for	
	Strip Delimiter		Delimiter +2) of data is received after receiving	
			the Delimiter.	
			[Strip Delimiter]: When the Delimiter is	
			received, the Delimiter is deleted (i.e.,	
			stripped), and the remaining data is	
			transmitted.	
			[Do nothing]: The data will be transmitted	
			when the Delimiter is received.	

Force	0 to 65535 ms	0 ms	<b>0:</b> Disable the force transmit timeout.	Optional
Transmit			1 to 65535: Forces the NPort'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 the NPort fetches the serial data from its	
			internal buffer. If data is incoming through the	
			serial port, the NPort stores the data in the	
			internal buffer. The NPort 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.	

NOTE Optimal force transmit timeout differs according to your application, but it must be at least larger than one character interval within the specified baudrate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is:

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

Therefore, you should set Force Transmit timeout to be larger than 8.3 ms. Force Transmit timeout is specified in milliseconds and must be larger than 10 ms.

If you want to send the series of characters in a packet, the serial device attached to the NPort should send characters with time delay less than Force Transmit timeout between characters and the total length of data must be smaller than or equal to the NPort's internal buffer size. The serial communication buffer size of the NPort is 1 Kbyte per port.

Web Interface for	the NPort 5100, 5	5200, and IA5000 Series Only
ΜΟΧΛ	www.mo	xa.com
<ul> <li>Main Menu</li> <li>Overview</li> <li>Basic Settings</li> <li>Network Settings</li> <li>Serial Settings</li> <li>Operating Settings</li> <li>Port 1</li> <li>Port 2</li> <li>Port 3</li> <li>Port 4</li> <li>Accessible IP Settings</li> <li>Monitor</li> <li>Change Password</li> <li>Load Factory Default</li> <li>Save/Restart</li> </ul>	Operating Settings Operation mode TCP alive check time Inactivity time Max connection Ignore jammed IP Allow driver control Packing length Delimiter 1 Delimiter 2 Delimiter 2 Delimiter process Force transmit Local TCP port Command port	Port=01         TCP Server Mode       Image: Colspan="2">Image: Colspan="2" Image: Cols
		Submit

## **TCP Server Mode**

• Operation N	lodes
Port 1	
Operation mode	TCP Server
TCP alive check time	7 (0 - 99 min)
Inactivity time	0 (0 - 65535 ms)
Max connection	1¢
Ignore jammed IP	⊙ No ◯ Yes
Allow driver control	⊙ No ◯ Yes
Local TCP port	4001
Command port	966
Data Packing	
Packing length	0 (0 - 1024)
Delimiter 1	00 (Hex)  Enable
Delimiter 2	00 (Hex) Enable
Delimiter process	Do Nothing (Processed only when packing length is 0)
Force transmit	0 (0 - 65535 ms)
Apply the above settings to	P1     P2     P3     P4     All ports

Parameter	Setting	Factory	Description	Necessity
		Default		
TCP Alive	0 to 99 min	7 min	<b>0 min:</b> TCP connection is not closed due to an	Optional
Check Time			idle TCP connection.	
			1 to 99 min: The NPort automatically closes	
			the TCP connection if there is no TCP activity	
			for the given time. After the connection is	
			closed, the NPort starts listening for another	
			Real COM driver connection.	
Inactivity	0 to 65535 ms	0 ms	<b>0 ms:</b> TCP connection is not closed due to an	Optional
Time			idle serial line.	
			0-65535 ms: The NPort automatically closes	
			the TCP connection if there is no serial data	
			activity for the given time. After the connection	
			is closed, the NPort starts listening for another	
			TCP connection.	
			This parameter determines when the TCP	
			connection is in Closed or Listen status. 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 maintained until there is a	
			connection close request. Although inactivity	
			time is disabled, the NPort will check the	
			connection status between the NPort and	
			remote host by sending "keep alive" packets	
			periodically. If the remote host does not	
			respond to the packet, it assumes that the	
			connection was closed down unintentionally.	

Parameter	Setting	Factory	Description	Necessity
		Default		
			The NPort will then force the existing TCP	
			connection to close.	
Max	1, 2, 3, 4	1	Max connection is set to 2, 3, or 4 when the	Required
Connection			user needs to receive data from different hosts	
			simultaneously. The factory default only allows	
			1 connection at a same. When Max Connection	
			is set to 1, the Real COM driver on the specific	
			host has full control.	
			Max. Connection 1: Allows only 1 host's Real	
			COM driver to open the specific NPort serial	
			port.	
			Max Connection 2 to 4: Allows 2 to 4 host's	
			Real COM drivers to open the specific NPort	
			serial port, at the same time. When multiple	
			hosts' Real COM drivers open the serial port at	
			the same time, the COM driver only provides a	
			pure data tunnel without control ability. That is,	
			this serial port parameter will use firmware's	
			settings, not the settings of your application	
			program (AP).	
			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 from the Ethernet	
			interface.	
Ignore	No or Yes	No	No: When Max connections > 1, and the serial	Optional
jammed IP			device is transmitting data, if any one of the	
			connected hosts is not responding, it will wait	
			until the data has been transmitted successfully	
			before transmitting the second group of data to	
			all hosts.	
			Yes: If you select Yes for "Ignore jammed IP,"	
			the host that is not responding will be ignored,	
			but the data will still be transmitted to the	
			other hosts.	
Allow Driver	No or Yes	No	If "max connection" is greater than 1, the NPort	Optional
Control			will ignore driver control commands from all	
			connected hosts. However, if you set "Allow	
			driver control" to Yes, control commands will be	
			accepted. Note that since the NPort may get	
		1		
			configuration changes from multiple hosts, the	
			configuration changes from multiple hosts, the most recent command received will take	
			most recent command received will take	
Packina lenath	0 to 1024	0	most recent command received will take precedence.	Optional
Packing length	0 to 1024	0	most recent command received will take precedence. 0: The Delimiter Process will be followed,	Optional
Packing length	0 to 1024	0	<ul><li>most recent command received will take precedence.</li><li>0: The Delimiter Process will be followed, regardless of the length of the data packet.</li></ul>	Optional
Packing length	0 to 1024	0	<ul><li>most recent command received will take precedence.</li><li>0: The Delimiter Process will be followed, regardless of the length of the data packet.</li><li>Greater than 0: If the data length (in bytes)</li></ul>	Optional
Packing length	0 to 1024	0	<ul><li>most recent command received will take precedence.</li><li>0: The Delimiter Process will be followed, regardless of the length of the data packet.</li></ul>	Optional

Parameter	Setting	Factory	Description	Necessity
		Default		
Delimiter 2	00 to FF	None	Once the NPort receives both delimiters	Optional
			through its serial port, it immediately packs all	
			data currently in its buffer and sends it to the	
			NPort's Ethernet port.	
Delimiter	Do nothing,	Do	[Delimiter + 1] or [Delimiter + 2]: The data	Optional
process	Delimiter + 1,	nothing	will be transmitted when an additional byte (for	
	Delimiter + 2,		Delimiter +1), or an additional 2 bytes (for	
	Strip Delimiter		Delimiter +2) of data is received after receiving	
			the Delimiter.	
			[Strip Delimiter]: When the Delimiter is	
			received, the Delimiter is deleted (i.e.,	
			stripped), and the remaining data is	
			transmitted.	
			[Do nothing]: The data will be transmitted	
			when the Delimiter is received.	
Force	0 to 65535 ms	0 ms	<b>0:</b> Disable the force transmit timeout.	Optional
Transmit			1 to 65535: Forces the NPort'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 the NPort fetches the serial data from its	
			internal buffer. If data is incoming through the	
			serial port, the NPort stores the data in the	
			internal buffer. The NPort 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.	
Local TCP port	1 to 65535	4001	The TCP port that the NPort uses to listen to	Required
			connections, and that other devices must use	
			to contact NPort. To avoid conflicts with well-	
			known TCP ports, the default is set to 4001.	
Command	1 to 65535	966	The command port is a listen TCP port for IP-	Optional
port			Serial Lib commands from the host. In order to	
			prevent a TCP port conflict with other	
			applications, the user can adjust the command	
			port to another port if needed.	



## ATTENTION

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



## ATTENTION

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 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.

# **TCP Client Mode**

NOXV	www.mo	xa.com					
n Menu	Operating Settings						
Overview     Basic Settings     Network Settings		Port=01					
	Operation mode	TCP Client Mode					
erial Settings	TCP alive check time	7 (0 - 99 min)					
Operating Settings Port 1	Inactivity time	0 (0 - 65535 ms)					
Port 2	Ignore jammed IP	⊙No OYes					
Port 3		Data Packing					
Port 4 Accessible IP Settings	Packing length	0 (0 - 1024)					
Auto Warning Settings	Delimiter 1	0 (Hex) Enable					
Monitor Change Password	Delimiter 2	0 (Hex) Enable					
	Delimiter process	Do Nothing Y (Processed only when Packing length is 0)					
oad Factory Default Save/Restart	Force transmit	0 (0 - 65535 ms)					
and the property of		TCP Client Mode					
	Destination ID address of	Destination IP Address					
	Destination IP address 1	: 4001					
	Destination IP address 2	: 4001					
	Destination IP address 3	: 4001					
	Destination IP address 4	; 4001					
	Designated Local Port 1	5011 (0 - 65535, 0 represents assigned automatically.)					
	Designated Local Port 2	5012 (0 - 65535)					
	Designated Local Port 3	5013 (0 - 65535)					
	Designated Local Port 4	5014 (0 - 65535)					
	Connection control	Startup/None (Connect on/Disconnect by)					
	Apply the above settings to	o all serial ports					

Interface for the • Operation M	Overall NPort 5000 Series	5		
Port 1				
Operation mode	TCP Client			
TCP alive check time	7 (0 - 99 min)			
Inactivity time	0 (0 - 65535 ms)			
Ignore jammed IP	💿 No 🔵 Yes			
Destination IP address 1		Port 400	1	
Destination IP address 2		Port 400	1	
Destination IP address 3		Port 400	1	
Destination IP address 4		Port 400	1	
Designated local port 1	5011			
Designated local port 2	5012			
Designated local port 3	5013			
Designated local port 4	5014			
Connection control	Startup/None			
Data Packing				
Packing length	0 (0 - 1024)			
Delimiter 1	00 (Hex) 🗌 Enable			
Delimiter 2	00 (Hex) Enable			
Delimiter process	Do Nothing \$ (Processed only when packing	ig length is 0)	1	
Force transmit	0 (0 - 65535 ms)			
Apply the above settings to	<ul> <li>✓ P1</li> <li>→ P2</li> <li>→ All ports</li> </ul>	P3	🗆 P4	

Parameter	Setting	Factory	Description	Necessity
		Default		
TCP Alive	0 to 99 min	7 min	<b>0 min:</b> TCP connection is not closed due to an	Optional
Check Time			idle TCP connection.	
			1 to 99 min: The NPort automatically closes	
			TCP connection if there is no TCP activity for the	
			given time. After the connection is closed, the	
			NPort starts listening for another Real COM	
			driver connection.	
Inactivity	0 to 65535 ms	0 ms	0 ms: TCP connection is not closed due to an	Optional
Time			idle serial line.	
			0-65535 ms: The NPort automatically closes	
			the TCP connection if there is no serial data	
			activity for the given time. After the connection	
			is closed, the NPort starts listening for another	
			TCP connection.	
			This parameter determines when the TCP	
			connection is in Closed or Listen status. 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 maintained until there is	
			connection close request. Although inactivity	
			time is disabled, the NPort will check the	
			connection status between the NPort and remote	

Parameter	Setting	Factory Default	Description	Necessity
		Default		
			host by sending "keep alive" packets	
			periodically. If the remote host does not respond	
			to the packet, it assumes that the connection	
			was closed down unintentionally. The NPort will	
			then force the existing TCP connection to close.	
Ignore	No or Yes	No	No: When Max connections $> 1$ , and the serial	Optional
jammed IP			device is transmitting data, if any one of the	
			connected hosts is not responding, it will wait	
			until the data has been transmitted successfully	
			before transmitting the second group of data to	
			all hosts.	
			Yes: If you select Yes for "Ignore jammed IP,"	
			the host that is not responding will be ignored,	
			but the data will still be transmitted to the other	
			hosts.	
Allow Driver	No or Yes	No	If "max connection" is greater than 1, the NPort	Optional
Control			will ignore driver control commands from all	
			connected hosts. However, if you set "Allow	
			driver control" to Yes, control commands will be	
			accepted. Note that since the NPort may get	
			configuration changes from multiple hosts, the	
			most recent command received will take	
			precedence.	
Packing length	0 to 1024	0	0: The Delimiter Process will be followed,	Optional
			regardless of the length of the data packet.	
			Greater than 0: If the data length (in bytes)	
			matches the configured value, the data will be	
			forced out.	
Delimiter 1	00 to FF	None	Once the NPort receives both delimiters through	Optional
			its serial port, it immediately packs all data	
Delimiter 2	00 to FF	None	currently in its buffer and sends it to the NPort's	Optional
			Ethernet port.	
Delimiter	Do nothing,	Do nothing	[Delimiter + 1] or [Delimiter + 2]: The data	Optional
process	Delimiter + 1,		will be transmitted when an additional byte (for	
	Delimiter + 2,		Delimiter +1), or an additional 2 bytes (for	
	Strip Delimiter		Delimiter +2) of data is received after receiving	
			the Delimiter.	
			[Strip Delimiter]: When the Delimiter is	
			received, the Delimiter is deleted (i.e., stripped),	
			and the remaining data is transmitted.	
			[Do nothing]: The data will be transmitted	
			when the Delimiter is received.	
Force	0 to 65535 ms	0 ms	<b>O</b> : Disable the force transmit timeout.	Optional
Transmit			1 to 65535: Forces the NPort'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 the NPort fetches the serial data from its	
			internal buffer. If data is incoming through the	
			serial port, the NPort stores the data in the	
			internal buffer. The NPort transmits data stored	

Parameter	Setting	Factory Default	Description	Necessity
			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.	
Destination IP	IP address or	None	Allows the NPort to connect actively to the	Required
address 1	Domain Name		remote host (up to 4 hosts) whose IP address is	
	(E.g.,		set by this parameter.	
Destination (D	192.168.1.1)		The "Destination IP address" parameter can use	
Destination IP			either IP address or Domain Name. For some	
address 2/3/4			applications, the user may need to send the	
			data actively to the remote destination domain	
			name.	
Designated	TCP Port No.	5011 (Port	N/A	Required
Local Port		1)		
1/2/3/4		5012 (Port		
		2)		
		5013 (Port		
		3)		
		5014 (Port		
		4)		
Connection	Startup/None,	Startup/Non	The meaning of each of the above settings is	Required
control	Any Character/	е	given in the table below. In general, both the	
	None,		Connect condition and Disconnect condition are	
	Any Character/		given.	
	Inactivity			
	Time,			
	DSR ON/			
	DSR OFF,			
	DSR ON/None,			
	DCD ON/			
	DCD OFF,			
	DCD ON/None			

Connect/Disconnect	Description
Startup/None (default)	A TCP connection will be established on startup, and will remain active indefinitely.
Any Character/None	A TCP connection will be established when any character is received from the serial
	interface, and will remain active indefinitely.
Any Character/	A TCP connection will be established when any character is received from the serial
Inactivity Time	interface, and will be disconnected when the Inactivity time out is reached.
DSR On/DSR Off	A TCP connection will be established when a DSR "On" signal is received, and will
	be disconnected when a DSR "Off" signal is received.
DSR On/None	A TCP connection will be established when a DSR "On" signal is received, and will
	remain active indefinitely.
DCD On/DCD Off	A TCP connection will be established when a DCD "On" signal is received, and will
	be disconnected when a DCD "Off" signal is received.
DCD On/None	A TCP connection will be established when a DCD "On" signal is received, and will
	remain active indefinitely.



### ATTENTION

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

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

**NOTE** 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 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.



### ATTENTION

Up to 4 connections can be established between the NPort and hosts. The connection speed or throughput may be low if one of the four connections is slow, since the slow connection will slow down the other 3 connections.

# **UDP Mode**

Web Interface for	the NPort 5100, 5200	D, and IA5000 Series Only
ΜΟΧΛ	www.moxa	.com
Main Menu  Overview  Basic Settings  Serial Settings  Serial Settings  Port 1  Port 2  Port 3  Port 4	Operating Settings Operation mode Packing length Delimiter 1 Delimiter 2	Port=01 UDP Mode Data Packing 0 (0 - 1024) 0 (Hex) Enable 0 (Hex) Enable
Accessible IP Settings     Auto Warning Settings     Monitor     Change Password	Delimiter process Force transmit	Do Nothing     ✓ (Processed only when Packing length is 0)       0     (0 - 65535 ms)       UDP Mode       Begin     End
<ul> <li>Load Factory Default</li> <li>Save/Restart</li> </ul>	Destination IP address 1 Destination IP address 2 Destination IP address 3 Destination IP address 4	
	Local Listen port	4001 erial ports (Local listen port will be enumerated automatically). Submit

• Operation N	lodes					
Port 1						
Operation mode	UDP	\$				
	Begin	End	Port			
Destination IP address 1			: 4001			
Destination IP address 2			: 4001			
Destination IP address 3			: 4001			
Destination IP address 4			: 4001			
Local listen port	4001					
Data Packing					_	
Packing length	0 (0 - 1024)					
Delimiter 1	00 (Hex) Enable					
Delimiter 2	00 (Hex) Enable					
Delimiter process	Do Nothing \$ (Prod	essed only whe	en packing length is 0)			
Force transmit	0 (0 - 65535 ms)					
	✓ P1	P2	P3	<b>P4</b>		
Apply the above settings to	All ports					

Parameter	Setting	Factory	Description	Necessity
		Default		
Packing length	0 to 1024	0	0: The Delimiter Process will be followed,	Optional
			regardless of the length of the data packet.	
			Greater than 0: If the data length (in bytes)	
			matches the configured value, the data will	
			be forced out.	
Delimiter 1	00 to FF	None	Once the NPort receives both delimiters	Optional
			through its serial port, it immediately packs	
Delimiter 2	00 to FF	None	all data currently in its buffer and sends it to	Optional
			the NPort's Ethernet port.	
Delimiter	Do nothing,	Do nothing	[Delimiter + 1] or [Delimiter + 2]: The	Optional
process	Delimiter + 1,		data will be transmitted when an additional	
-	Delimiter + 2,		byte (for Delimiter +1), or an additional 2	
	Strip Delimiter		bytes (for Delimiter +2) of data is received	
			after receiving the Delimiter.	
			[Strip Delimiter]: When the Delimiter is	
			received, the Delimiter is deleted (i.e.,	
			stripped), and the remaining data is	
			transmitted.	
			[Do nothing]: The data will be transmitted	
			when the Delimiter is received.	
Force	0 to 65535 ms	0 ms	0: Disable the force transmit timeout.	Optional
Transmit			1 to 65535: Forces the NPort'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 the NPort fetches the serial data	
			from its internal buffer. If data is incoming	

Parameter	Setting	Factory	Description	Necessity
		Default		
			through the serial port, the NPort stores the	
			data in the internal buffer. The NPort	
			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.	
Destination IP	IP address	Begin: Empty	N/A	Required
address 1	range	End: Empty		
Destination IP	E.g., Begin:	Port: 4001	N/A	Optional
address 2/3/4	192.168.1.1			
	End:			
	192.168.1.10			
Local listen	1 to 65535	4001	The UDP port that the NPort listens to, and	Required
port			that other devices must use to contact the	
			NPort. To avoid conflicts with well-known UDP	
			ports, the default is set to 4001.	

**NOTE** 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 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.

### **UDP Multicast**

A multicast is a packet sent by one host to multiple hosts. In multicast mode, each host that belongs to a specific multicast group will receive multicast packets for that group. For a host to be configured as a multicast receiver over the Internet, the must inform the routers on its LAN. The Internet Group Management Protocol (IGMP) is used to communicate group membership information between hosts and routers on a LAN. The NPort 5000 Series supports IGMP version 2. The NPort 5100, NPort 5200, IA5000 Series do not support IGMP function.

Operation mode	UDP	\$			
	Begin	End		Port	
Destination IP address 1	239.1.1.1		:	4001	
Destination IP address 2			:	4001	
Destination IP address 3			:	4001	
Destination IP address 4			:	4001	
Local listen port	4001				
Data Packing					
Data Packing					
Data Packing Packing length	0 (0 - 1024)				
Data Packing Packing length	0 (0 - 1024)	able			
Data Packing Packing length Delimiter 1	0 (0 - 1024) 00 (Hex) En	able			
Data Packing Packing length Delimiter 1 Delimiter 2	0 (0 - 1024) 00 (Hex) En 00 (Hex) En		vhen packing le	ength is 0)	
Data Packing Packing length Delimiter 1 Delimiter 2 Delimiter process	0 (0 - 1024) 00 (Hex) En 00 (Hex) En	able ) (Processed only v	when packing le	ength is 0)	
	0 (0 - 1024) 00 (Hex) En 00 (Hex) En Do Nothing \$	able ) (Processed only v	vhen packing le	ength is 0)	_ P4

# **:**•Operation Modes

Type the IP address (e.g., 239.1.1.1) assigned to the multicast group in the **Begin** column. The NPort will automatically add the Group, and receive all packets from this group as required by the multicast function.

# **Pair Connection Mode**

Pair Connection Mode employs two NPort device servers in tandem, and can be used to remove the 15meter distance limitation imposed by the RS-232 interface. One NPort is connected from its RS-232 port to the COM port of a PC or other type of computer, such as a hand-held PDA, and the serial device is connected to the RS-232 port of the other NPort. The two NPort device servers are then connected to each other with a cross-over Ethernet cable, both are connected to the same LAN, or in a more advanced setup, they communicate with each other over a WAN (i.e., through one or more routers). Pair Connection Mode transparently transfers both data and modem control signals (although it cannot transmit the DCD signal) between the two NPort device servers.

### Pair Connection Master Mode

When using Pair Connection Mode, you must select **Pair Connection Master Mode** for the Operation mode of one of the NPort device servers. In effect, this NPort will be acting as a TCP client.

Web Interface for	the NPort 5100, 520	00, and IA5000 Series (	Only			
MOX/	www.moxa	a.com				
Main Menu Overview	Operating Settings					
Basic Settings		Port=1				
<ul> <li>Network Settings</li> <li>Serial Settings</li> </ul>	Operation mode	Pair Connection Master Mode 💌				
Coperating Settings	TCP alive check time	7 (0 - 99 min)				
Port 1	Destination IP address	192.168.1.1	: 4001			
Accessible IP Setting	Apply the above setting	is to all serial ports				
Auto Warning Setting	9					
Monitor     Change Password		Submit				
Load Factory Default						

• Operation M	lodes				
Port 1					
Operation mode	Pair Connectio	on Master 🛊			
TCP alive check time	7 (0 - 99 mir	1)			
Destination IP address			Port 40	001	
Apply the above settings to	✓ P1 All ports	P2	P3	_ P4	

Parameter	Setting	Factory	Description	Necessity
		Default		
TCP Alive	0 to 99 min	7 min	<b>0 min:</b> TCP connection is not closed due to	Required
Check Time			an idle TCP connection.	
			1 to 99 min: The NPort closes the TCP	
			connection automatically if there is no TCP	
			activity for the given time.	
Destination IP	IP address or	blank	The Pair Connection "Master" will contact the	Optional
address	Domain		network host that has this IP address. Data	
	Name		will be transmitted through the port No.	

Parameter	Setting	Factory	Description	Necessity
		Default		
	(E.g.,		(4001 by default). Note that you must	
	192.168.1.1)		configure the same TCP port No. for the	
	TCP Port	4001	device server acting as the Pair Connection	Required
			"Slave."	

### Pair Connection Slave Mode

When using Pair Connection Mode, you must select **Pair Connection Slave Mode** for the Operation mode of one of the NPort device servers. In effect, this NPort will be acting as a TCP server.

Web Interface for	r the NPort 5100, 5200, and IA5000 Series Only	
MOX/	www.moxa.com	
Main Menu	Operating Settings	
Basic Settings	Port=1	
Network Settings Serial Settings	Operation mode Pair Connection Slave Mode -	
G Operating Settings	TCP alive check time 7 (0 - 99 min)	
Port 1	Local TCP port 4001	
🗀 Accessible IP Setting	Apply the above settings to all serial ports	
Auto Warning Setting Monitor		
🗀 Change Password	Submit	

Web Interface for the Overall NPort 5000 Series
Operation Modes

Operation mode	Pair Connection	Slave 🛊			
TCP alive check time	7 (0 - 99 min)				
Local TCP port	4001				
Apply the above settings to	✓ P1	P2	□ P3	□ P4	
Apply the above settings to	<ul> <li>All ports</li> </ul>				

Parameter	Setting	Factory	Description	Necessity
		Default		
TCP Alive	0 to 99 min	7 min	<b>0 min:</b> TCP connection is not closed due to	Required
Check Time			an idle TCP connection.	
			1 to 99 min: The NPort closes the TCP	
			connection automatically if there is no TCP	
			activity for the given time.	
Local TCP port	TCP port No.	4001	This Port No. must be the same port No. that	Required
	(e.g.,		you set up for the Pair Connection "Master"	
	4001)		device server.	

# Ethernet Modem Mode (for the NPort IA5000/IA5000A, NPort

# 5000A, NPort 5000AI-M12, NPort 5100 Series only)

MOXA	www.moxa.	om			
I Main Menu	Operating Settings				
Overview Basic Settings		Port=01			
Network Settings	Operation mode	Ethernet Moder 💌			
Serial Settings	TCP alive check time	7 (0 - 99 min)			
Operating Settings Port 1	Local TCP Port	4001			
Accessible IP Settings Auto Warning Settings	Accessible IP Settings Auto Warning Settings Submit				
eb Interface for th	e NPort IA5000A, 50	000A, and 5000AI-M12 Series Only	,		
eb Interface for th		000A, and 5000AI-M12 Series Only			
		000A, and 5000AI-M12 Series Only			
• Operation I		000A, and 5000AI-M12 Series Only			
• Operation I	Modes	00A, and 5000AI-M12 Series Only			
<b>Port 1</b>	Ethernet Modem	000A, and 5000AI-M12 Series Only			
Port 1 Operation mode TCP alive check time	Ethernet Modem         \$           7         (0 - 99 min)           4001         P2	DOOA, and 5000AI-M12 Series Only			

### Dial-in

The NPort listens for a TCP/IP connection request from the remote Ethernet modem or host. The NPort's response depends on the ATSO value, as outlined below.

#### ATS0=0 (default):

The NPort will temporarily accept the TCP connection and then send the **RING** signal out through the serial port. The serial controller must reply with "ATA" within 2.5 seconds to accept the connection request, after which the NPort enters data mode. If no "ATA" command is received, the NPort will disconnect after sending three "RING" signals.

#### ATS0≥0:

The NPort will accept the TCP connection immediately and then send the **CONNECT <baud>** command to the serial port, in which <baud> represents the baudrate of the NPort's serial port. After that, the NPort immediately enters data mode.

### Dial-out

The NPort accepts the AT command **ATD** <**IP**>:<**TCP port**> from the serial port and then requests a TCP connection from the remote Ethernet Modem or PC. This is where <**IP**> is the IP address of the remote Ethernet modem or PC, and <**TCP** port> is the TCP port number of the remote Ethernet modem or PC. Once the remote unit accepts this TCP connection, the NPort will send out the **CONNECT** <**baud>** signal via the serial port and then enter data mode.

#### **Disconnection Request from the Local Site**

When the NPort is in data mode, the user can drive the DTR signal to OFF, or send +++ from the local serial port to the NPort. The NPort will enter command mode and return **NO CARRIER** via the serial port, and then input **ATH** to shut down the TCP connection after 1 second.

**NOTE** The "+++" command cannot be divided. The "+" character can be changed in register S2, and the guard time, which prefixes and suffixes the "+++" in order to protect the raw data, can be changed in register S12.

### Disconnection Request from the Remote Site

After the TCP connection has been shut down by the remote Ethernet modem or PC, the NPort will send the **NO CARRIER** signal via the serial port and then return to command mode.

### AT Commands

The NPort supports the following common AT commands used with a typical modem:

No.	AT command	Description	Remarks
1	ATA	Answer manually	
2	ATD <ip>:<port></port></ip>	Dial up the IP address: Port No.	
3	ATE	ATEO=Echo OFF	
		ATE1=Echo ON (default)	
4	ATH	ATH0=On-hook (default)	
		ATH1=Off-hook	
5	ATI, ATIO, ATI1, ATI2	Modem version	reply "OK" only
6	ATL	Speaker volume option	reply "OK" only
7	ATM	Speaker control option	reply "OK" only
8	ATO	On line command	
9	ATP, ATT	Set Pulse/Tone Dialing mode	reply "OK" only
10	ATQ0, ATQ1	Quiet command (default=ATQ0)	
11	ATSr=n	Change the contents of S register	See "S registers"
12	ATSr?	Read the contents of S register	See "S registers"
13	ATV	Result code type	
		ATVO for digit code	
		ATV1 for text code	
		0=0K	
		1=connect (default)	
		2=ring	
		3=No carrier	
		4=error	
14	ATZ	Reset (disconnect, enter command mode and restore	
		the flash settings)	
15	AT&C	Serial port DCD control AT&C0=DCD always on	
		AT&C1=DTE detects connection by DCD on/off	
		(default)	
16	AT&D	Serial port DTR control AT&D0=recognize DTE always	
		ready AT&D1, AT&D2=reply DTE when DTR On	
		(default)	
17	AT&F	Restore manufacturer's settings	
18	AT&G	Select guard time	reply "OK" only
19	AT&R	Serial port RTS option command	reply "OK" only
20	AT&S	Serial port DSR control	reply "OK" only
21	AT&V	View settings	
22	AT&W	Write current settings to flash for next boot up	

### **S** Registers

No.	S Register	Description & default value	Remarks
1	S0	Ring to auto-answer (default=0)	
2	S1	Ring counter (always=0)	no action applied
3	S2	Escape code character (default=43 ASCII "+")	
4	S3	Return character (default=13 ASCII)	

No.	S Register	Description & default value	Remarks
5	S4	Line feed character (default=10 ASCII)	
6	S5		
7	S6	Wait time for dial tone (always=2, unit=sec)	no action applied
8	S7	Wait time for carrier (default=3, unit=sec)	
9	S8	Pause time for dial delay (always=2, unit=sec)	no action applied
10	S9	Carrier detect response time (always=6, unit 1/10 sec)	no action applied
11	S10	Delay for hang up after carrier	no action applied
		(always=14, unit 1/10 sec)	
12	S11	DTMF duration and spacing (always=100 ms)	no action applied
13	S12	Escape code guard time	
		(default=50, unit 1/50 sec)	
		to control the idle time for "+++"	

Parameter	Setting	Factory Default	Description	Necessity
TCP Alive Check Time	0 to 99 min	7 min	<ul> <li>0 min: TCP connection is not closed due to an idle TCP connection.</li> <li>1 to 99 min: The NPort closes the TCP connection automatically if there is no TCP activity for the given time.</li> </ul>	Required
Local TCP port	port 1 to 65535 4001 The TCP port that contact this device		The TCP port that other devices must use to contact this device. To avoid conflicts with standard TCP ports, the default is set to 4001.	Required

# **Reverse Telnet Mode**

Web Interface for	the NPort 5100, 5200,	and IA5000 Series Only
ΜΟΧΛ	www.moxa	com
Main Menu	Operating Settings	
Basic Settings		Port=01
Network Settings	Operation mode	Reverse Telnet Mode
🖲 🧰 Serial Settings	TCP alive check time	7 (0 - 99 min)
Operating Settings     Port 1	Inactivity time	0 (0 - 65535 ms)
Port 2	Local TCP port	4001
Port 3	Map <cr-lf></cr-lf>	CR-LF
Port 4     Accessible IP Settings	Apply the above settings to all s	erial ports
Auto Warning Settings     Monitor		Submit

• Operation M	lodes			
Port 1				
Operation mode	Reverse Telnet			
TCP alive check time	7 (0 - 99 min)			
Inactivity time	0 (0 - 65535 ms)			
Local TCP port	4001			
Map <cr-lf></cr-lf>	CR-LF \$			
Apply the above settings to	P1 P2 All ports	_ P3	□ P4	

Parameter	Setting	Factory Default	Description	Necessity
TCP Alive Check Time	0 to 99 min	0 min	<ul><li>Specifies the time slice for checking if the TCP connection is alive. If no response is received, the NPort will disconnect the original connection.</li></ul>	Optional
Inactivity time	0 to 65535 ms	0	Idle time setting for auto-disconnection. 0 min. means it will never disconnect.	Optional
Local TCP port	1 to 65535	4001	Each of the NPort's serial ports is mapped to a TCP port. To avoid conflicts with TCP ports, set port numbers to 4001 for port1, 4002 for port 2, etc. (like the default values).	Optional
Map <cr-lf></cr-lf>	CR, LF, or CR- LF	CR-LF	<ul> <li>If data received through the NPort's Ethernet port is sent using the "enter" command, the data will be transmitted out the serial port with an added:</li> <li>1. "carriage return + line feed" if you select the <cr-lf> option (i.e., the cursor will jump to the next line, and return to the first character of the line)</cr-lf></li> <li>2. "carriage return" if you select the <cr> option (i.e., the cursor will return to the first character of the line)</cr></li> <li>3. "line feed" if you select the <lf> option. (i.e., the cursor will jump to the next line, but not move horizontally)</lf></li> </ul>	Optional

### **PPPD Mode**

					>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
A Main Menu	Operation Modes				
Network Configuration	Port 1				
Gerail Port Configuration     Port 1     Operation Modes     Communication Parameters     Data Buffering/Log     Modem Settings     Operation Port 2     Port 3     Vert Table     Vert Table     Vystem Configuration     Administration     Common Settings     Change Password     Save Configuration	Application Mode Destination IP address Source IP address IP netmask TCP/IP compression Inactivity time Link quality report Username Password Authentication type Try next type on authentication denied Disconnect by Apply the above settings to	Dial in/out  PPPD  Control  Co	= P2	<b>8 P3</b>	= P4
Restart	Submit				

PPPD (PPP on demand) is used for dial-in services, since it provides PPP services only when receiving a request from a remote PC.

Destination IP address: This is the IP address of the remote dial-in/ dial-out server.

Source IP address: The Source IP address is IP address assigned to this serial port.

IP netmask: The IP netmask defines the netmask, also known as the subnet mask, for the PPP connection

**TCP/IP compression (default=Disable)**: The setting of this field depends on whether the remote user's application requests compression.

**Inactivity time** (default=0 ms): This field specifies the idle time setting for auto-disconnection. A setting of 0 ms will cause the port to remain connected even if idle.

**Link quality report (default=Disable)**: Setting this field to **Enable** allows the NPort 5000 to disconnect a connection if the link noise exceeds a certain threshold.

Username: This is the dial-out user ID account.

**Password**: This is the dial-out user password.

Authentication type (default=None): This field allows you to configure the method used, if any, to verify a user's ID and authorization.

Option	Description
Local	Verify the ID against the NPort 5000 User Table.
RADIUS	Verify the ID against the external RADIUS server.
RADIUS-Local	Radius authentication is tried first, switching to Local if unsuccessful.
Local-RADIUS	Authentication is performed locally first, switching to Radius if unsuccessful
TACACS+	Verify the ID against the external TACACS+ server.
TACACS+-Local	TACACS+ authentication is tried first, switching to Local if unsuccessful.
Local-TACACS+	Authentication is performed locally first, switching to Radius if unsuccessful
None	Authentication is not required.

**Try next type on authentication denied** (default=Disable): The field enables or disables the system to try next type on first authentication denied.

**Disconnect by** (default=None): If this field is set as **DCD-off**, the connection will be disconnected when the DCD signal is off. If this field is set as **DSR-off**, the connection will be disconnected when the DSR signal is off.

# **Disabled Mode**

MOXA		moxa.	<b>SO</b> III		
ain Menu Ol	perating Setting	gs			
Overview			D	ort=01	
Basic Settings Network Settings	peration mode		Disabled	v	
notwork occurrys	Apply the above se	ettinos to all se	rial ports		
Operating Settings			and particular		
Port 1				Submit	
Interface for th	a Overall NC	lart E000	Samiaa		
Interface for th	e Overall NF	ort 5000	Series		
		Port 5000	Series		
• Interface for th • Operation		Port 5000	Series		
		Port 5000	Series		
		Port 5000	Series		
• Operation 1		Port 5000	Series		
• Operation	Modes Disable	¢		P4	
• Operation	Disable		Series	P4	

When Operation mode is set to Disabled, that particular port will be disabled. Select the **Apply the above settings to all serial ports** checkbox to apply this setting to the other ports.

# **Configuring NPort Administrator**

The following topics are covered in this chapter:

- Overview
- Installing NPort Administrator
- □ Configuration
  - Broadcast Search
  - Unlock Password Protection
  - Configuring NPort
  - Upgrading the Firmware
  - Export Configuration
  - Import Configuration
- Monitor
- Port Monitor

### COM Mapping

- On-line COM Mapping
- Off-line COM Mapping

### COM Grouping

- Creating a COM Group
- Deleting a COM Group
- > Adding a Port to a COM Group
- > Removing a Port from a COM Group
- Modify Ports in a COM Group
- IP Address Report

# **Overview**

Device Server Administrator lets you install and configure your NPort device server easily over the network. Five function groups are provided to ease the installation process, allow off-line COM mapping, and provide monitoring and IP location server functions.

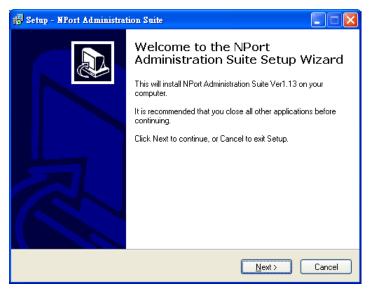


### ATTENTION

Before installing and the configuring the NPort Administration suite, make sure your user privilege is set as system administrator.

# **Installing NPort Administrator**

1. Once the Setup program starts running, click **Next** when the **Welcome** window opens to proceed with the installation.



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

15 Setup - NPort Administration Suite
Select Destination Location Where should NPort Administration Suite be installed?
Setup will install NPort Administration Suite into the following folder.
To continue, click Next. If you would like to select a different folder, click Browse.
C:\Program Files\\PortAdminSuite Browse
At least 2.8 MB of free disk space is required.
< <u>B</u> ack <u>N</u> ext → Cancel

3. Click Next to install the program using the default program name, or select a different name.

🕞 Setup - NPort Administration Suite
Select Start Menu Folder Where should Setup place the program's shortcuts?
Setup will create the program's shortcuts in the following Start Menu folder.
NPort Administration Suite Browse
< <u>B</u> ack <u>N</u> ext> Cancel

4. Click Install to proceed with the installation.

1 <sup>[2]</sup> Setup - NPort Administration Suite	
Ready to Install Setup is now ready to begin installing NPort Administration Suite on your computer.	
Click Install to continue with the installation, or click Back if you want to review or change any settings.	
Destination location: C:\Program Files\NPortAdminSuite	
Start Menu folder: NPort Administration Suite	
<u>×</u>	
< <u>B</u> ack Install	Cancel

5. The  $\ensuremath{\text{Installing}}$  window reports the progress of the installation.

🗊 Setup - NPort Administration Suite	
Installing Please wait while Setup installs NPort Administration Suite on your computer.	
Extracting files C:\WINDOWS\system32\nport.dll -	
l	Cancel

6. Click **Next** to proceed with the installation.

🔂 Setup - NPort Administration Suite	
Information Please read the following important information before continuing.	
When you are ready to continue with Setup, click Next.	
NPort Administration Suite:	<u> </u>
1. Component List         1. Utilities         2. Real Com Mode Support Package         3. IP Serial Lib Package         2. Utilities         Provides Configure, Monitor, and COM mapping administration utilities for         NPort.     3. Real Com Mode Support Package         Provides a misc lib for Real COM management.     4. IP Serial Lib Package         Provides a misc lib for Real COM management.	
Next >	

7. Click **Finish** to complete the installation of NPort Administration Suite.

🔂 Setup - NPort Administrat	ion Suite
	Completing the NPort Administration Suite Setup Wizard Setup has finished installing NPort Administration Suite on your computer. The application may be launched by selecting the installed icons. Click Finish to exit Setup.
	< <u>Back</u> Einish

# Configuration

The Administrator-Configuration window is divided into four parts.

- The top section contains the function list and online help area. (Windows NT does not support this .chm file format.)
- The five Administrator function groups are listed in the left section.
- A list of NPort serial device servers, each of which can be selected to process user requirements, is displayed in the right section.
- The activity Log, which displays messages that record the user's processing history, is shown in the bottom section.

Eile Eunction Configuratio	n ⊻iew <u>H</u> e							_	
👖 🚅 🙎 Exit Search Searc		E Configure	Meb.						
Function	Configuration - 0 NPort(s)								
Ornfiguration     Ornfiguration     Onnitor     Port Monitor     On Mapping     On Address Report	<u>No/</u>	Model	MAC Address	IP Address	IP Address2	Server Name	Status		
	<								
tessage Log ∘0   Monitor Lo No ITime	g-0	Le la							_
		Description							_

# **Broadcast Search**

The **Broadcast Search** function is used to locate all NPort units that are connected to the same LAN as your computer. Since the Broadcast Search function searches by MAC address and not IP address, all NPort units connected to the LAN will be located, regardless of whether or not they are part of the same subnet as the host.

1. Position the cursor in the right middle section of the **Administrator** window and then click right-click, or click the **Search** button on the toolbar.

Exit Search Search		Configure \		Configuration - 0 NPort(s)					
NPort     Ornito     Configuration     Monitor     Det Monitor     Det Monitor     Off Mapping     Off Mapping     Off IP Address Report	No /	Model	MAC Address	IP Address	IP Address2	Server Name	Status		
				dcast Search ify by IP Address					
			堂 Locs 열 Unio 団 Cont 夏 Web	ck igure					
			🖉 Upgr	ade Firmware	-				
	<			rt Configuration ort Configuration	_				
Message Log - 0 Monitor Lo	g.0]		Assig	in IP Address					
No Time		Description							

2. The **Broadcast Search** window will open and display the Model, IP Address, MAC Address, and Progress of the search for that particular device.

	for NPort NPort(s), remain tin	neout = 3 second(s)	Stop
No	Model	MAC Address	IP Address
1	NPort 5250A	00:90:E8:63:50:FD	192.168.127.254
<			

3. When the search is complete, the Broadcast Search window will close, and the NPort units that were located will be displayed in the right panel of the Administrator window. If you found more than one server connected to this network, refer to the MAC address sticker on your server(s) to determine which server(s) are the ones you wish to configure. To configure an NPort, place the cursor over the row displaying that NPort's information, and then double click the left mouse button.

nfiguration					
n <u>V</u> iew <u>H</u> elp					
道 IIP Locate	Configure Web				
		Configuration -	1 NPort(s)		
No 🛆	Model	MAC Address	IP Address	Server Name	Status
1	NPort 5250A	00:90:E8:66:32:52	192.168.127.254	NP5250A_52	Lock
L					
	i <u>V</u> iew <u>H</u> elp ∰ Locate	n <u>V</u> iew <u>H</u> elp IP IPCocate Configure Web	n Yiew Help IP Locate Configure Web Configuration - No △ Model MAC Address	n View Help IP IP Locate Configure Web Configuration - 1 NPort(s) No △ Model MAC Address IP Address	n View Help IP Locate Configure Web Configuration - 1 NPort(s) No △ Model MAC Address IP Address Server Name



### ATTENTION

Before modifying the NPort's configuration, use Broadcast Search to locate all NPort units connected to the LAN, or use Specify by IP Address to locate a particular NPort.

# **Unlock Password Protection**

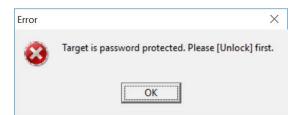
The NPort device server is password protected (the default username is **admin**, password is **moxa**). The status of the NPort device will be indicated by **Lock**. You will receive the following error, and you will not be able to right-click to open the configuration page.

Епот	
8	Target is password protected. Please [Unlock] first.
	OK

**NOTE** Only the NPort 5100/5200/IA5000 Series requires a password.

In this case, proceed as follows to "Unlock" the device server.

1. Select the NPort with "Lock" status, click the right mouse button, and then select Unlock.



2. After inputting the correct password, the Administrator will display an "Unlock ok" message.

Password	×		
User Name		Information	×
Password			k ok.
✓ OK X Cance	4	ОК	

3. The "Lock" status will change to "Unlock," and the Administrator utility will keep this NPort in the Unlock status throughout this Administrator session.

Elle Eunction Configur								_
🚊 🚅 Exit Search Se	💁 🚊 arch IP Local							
Function			Co	nfiguration -	1 NPort(s	)		
NPort	No /	Model	MAC Address	IP Address	IP Address2	Server Name	Status	1
Configuration     Monitor     Monitor     COM Mapping     ·································	1	NPort 5250A	00.90£863:50FD	192.168.127.254		NP5250A_7162	Lock	
Message Log - 2   Monito	<							
No Time		Description						
	10:57:22 AM 10:57:43 AM	Found NPort(s): 1 Found NPort(s): 1						

The meanings of the six "Status" states are given below (note that the term Fixed is borrowed from the standard fixed IP address networking terminology):

#### Lock

The NPort is password protected, "Broadcast Search" was used to locate it, and the password has not yet been entered from within the current Administrator session.

### Unlock

The NPort is password protected, "Broadcast Search" was used to locate it, and the password has been entered from within the current Administrator session. Henceforth during this Administrator session, activating various utilities for this NPort will not require re-entering the server password.

### Blank

The NPort is not password protected, and "Broadcast Search" was used to locate it.

### Fixed

The NPort is not password protected, and "Search by IP address" was used to locate it.

#### Lock Fixed

The NPort is password protected, "Specify by IP address" was used to locate it, and the password has not yet been entered from within the current Administrator session.

#### Unlock Fixed

The NPort is password protected, "Specify by IP address" was used to locate it, and the password has been entered from within the current Administrator session. Henceforth during this Administrator session, activating various utilities for this NPort will not require re-entering the server password.

# **Configuring NPort**

In this section, we illustrate how to access the NPort's configuration utility. You should first make sure that you can connect over the network from your computer to the NPort.

1. To start NPort Administrator, click Start → NPort Administration Suite → NPort Administrator.

🔚 Programs 🕨 🕨	6	Accessories	►		
	6	Startup	►		
	6	UC Finder	►		
	Ē	NPort Administration Suite	►	8	IP Serial Lib Reference
	6	NPort Windows Driver Manager	►	Ś.	NPort Administrator
		¥		۶	Version info

2. Unlock the NPort you wish to configure if it is password protected. Right click the NPort and select **Configure** to start the configuration.

Eile Eunction Configuration	View <u>H</u> el	p							
👖 🔮 😫 Exit Search Search	IP Locate	Configur	re Web	N					
Function				C	onfiguration	- 1 NPort(s	)		
NPort	No / Model			MAC Address	IP Address	IP Address2	Server Name	Status	_
Configuration     Configuration     Antor     Control     Contro     Control     Cont			Broad Froad	:k	192.168.127.254		NP5250A_7162	Unlock	
	<							2	
fessage Log - 5   Monitor Log	-0								
No Time		Descriptio							
1 3/27/2019 10: 2 3/27/2019 10: 3 3/27/2019 11: 4 3/27/2019 11: 5 3/27/2019 11: 5 3/27/2019 11:	57:43 AM 02:07 AM 02:07 AM	Unlock Fa	Port(s): 1 figuration f ait: NPort 5	ail: NPort 5250A (00.9) 250A (00.90.E.8.63.50.) 250A (00.90.E.8.63.50.)	FD)				

3. The progress bar shows that Administrator is retrieving configuration information from the specific NPort.

Processing	×
Please wait	
9 / 46 , 19%	

4. Refer to **Chapter 2** for each parameter's function definition. To modify the configuration, you must first click in the modify box to activate the parameter setting box.

CT T T T T T T T T T T T T T T T T T T	Account Management Configuration Pre-shared Key System Log Settings Auto Warn
Model Name NPort 5250A	Basic Network IP Address Report Serial Operating Mode Accessible I
MAC Address 00:90:E8:63:50:FD	Network Setting SNMP Setting
Serial Number 7162	IP Address         192.168.127.254           Netmask         255.255.0           IP Configuration         Static
Firmware Version Ver 1.5	Gateway
System Uptime 0 days, 00h:01m:39s	DNS Server 1 DNS Server 2
	☐ Modify



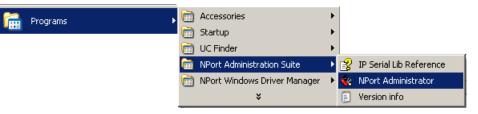
### ATTENTION

You can simultaneously modify the configurations of multiple NPort units that are of the same model. To select multiple NPort units, hold down the Ctrl key when selecting additional NPort units, or hold down the Shift key to select a group of NPort units.

# **Upgrading the Firmware**

Follow these steps to upgrade the firmware of an NPort.

1. To start NPort Administrator, click Start → NPort Administration Suite → NPort Administrator.



2. Unlock the NPort you wish to configure. Right click a specific NPort and select the **Upgrade Firmware** function to start upgrading the firmware.

Exit	nction Configuration	*	<b>P</b> 1	eb.					
F	unction		-		Configuration	- 1 NPort(s	)		
B 🔊 NF		No /	Model	MAC Address	IP Address	IP Address2	Server Name	Status	
	Configuration Monitor Port Monitor COM Mapping	1	NPort 5250A	00:90:68:63:5	<ul> <li>Broadcast Search</li> <li>Specify by IP Address</li> </ul>	ess	NP5250A_7162	Unlock	
-					<ul> <li>▲ Locate</li> <li>☑ Unlock</li> <li>☑ Configure</li> <li>☑ Web</li> </ul>				
					🏙 Upgrade Firmware	<u> </u>			
					Export Configuration				
					Assign IP Address	12			
		<			-				
Message	Log - 5   Monitor Log	-0							
No	Time		Description						
1 2 3 4 5	3/27/2019 10:5 3/27/2019 10:5 3/27/2019 11:0 3/27/2019 11:0 3/27/2019 11:0	57:43 AM 02:07 AM 02:07 AM	Unlock Fail: NPo						

3. Select the correct ROM file to download.

Select File	>	×
Select File File Name:	D:\\NP52004_Ver1.5_Build_19013022.rom	
	Browse	
	V DK X Cancel	

4. Wait while the Upgrade Firmware action is processed.

Processi	ng, please wait				🗙 Cancel
١o	Model	MAC Address	IP Address	IP Address2	Status
	NPort 5250A	00:90:E8:63:50:	192.168.127.2	192.168.127.2	Transmit - 30%



### ATTENTION

You can simultaneously upgrade the firmware of multiple NPort units that are of the same model. To select multiple NPort units, hold down the Ctrl key when selecting an additional NPort, or hold down the Shift key to select a block of NPort units.

### **Export Configuration**

The Export Configuration function is a handy tool that can be used to produce a text file that contains the current configuration of a particular NPort.

If you are using the NPort 5100 Series, NPort 5200 Series, or NPort IA5000 Series and Administration Suite v1.22 or above, to export the configuration of an NPort, right-click **NPort**, select **Export Configuration**. An Export Password window will pop up for the user to assign a password for the exported configuration file. The exported configuration file will be encrypted for security purpose. You will need the same password you use for the exported file to import the same file back into the NPort.

📠 🚅 🧟 Exit Search Search	IP Locate	Configure Wet	)			
Function			<b>Configuration</b> -	1 NPort(s)		
NPort	No /	Model	MAC Address	IP Address	Server Name	Statu
Configuration     Monitor	1	NPort 5630-8	00:90:E8:09:9D:86	192.168.34.68	NP5630-8_40	
∰ COM Mapping (P Address Report		Enter Export	Password	Cancel		

After assigning the export password, click the **Browse** button to set the file name and path, and then click **OK**.

Select File	x
⊤Select File File Name:	Browse
	Cancel

For the overall NPort 5000 Series with security enhanced firmware version, export configuration encryption will be based on the Pre-shared key defined in the NPort (default is empty password, and you may configure the password in **Configuration -> Configuration Pre-shared Key**. So when you are exporting the configuration file, you are only required to select the output file location. You may refer to page 2-21 for the security firmware version for your NPort.

### **Import Configuration**

The Import Configuration function is used to import an NPort configuration from a file into one or more of the same NPort model. To import a configuration, first select the target servers, click the right mouse button, and then select **Import Configuration**. Click on the **Browse** button to locate the configuration file and press **OK**.

Sele	ct File	
	Select File	
	File Name:	[
		Browse
		Cancel

For the NPort 5100 Series, NPort 5200 Series, or NPort IA5000 Series and with NPort Administration Suite v1.22 or above, an **Import Password** window will pop up, and you will need to enter the password that is unique to the configuration file (which is assigned when exporting the configuration file) in order to successfully import the configuration file.

NPort Administrator-Co File Function Configuration File Eurotion Configuration Exit Search Search Exit Search Search	ı ⊻iew <u>H</u> elp <b>≚</b>	Configure Web				×
Function			<b>Configuration</b> -	1 NPort(s)		
□ → NPort	No Z	Model	MAC Address	IP Address	Server Name	Status
Configuration Monitor COM Mapping Mit P Address Report		NPort 5630-8 t Password ter Import Password	00:90:E8:09:9D:86	192.168.34.68	NP5630-8_40	

For the overall NPort 5000 Series with a security enhanced firmware version, importing configuration decryption will be based on the pre-shared key defined in the NPort. If the pre-shared key does not match, you will see an error dialogue box on the screen.

Error	>
۲	Import Configuration failed! Check sum error. The configure file was modified or import password is wrong.
	ОК

You will then need to modify the pre-shared key in **Configuration** to match the encryption password of the configuration file before you can begin to import.

# **NOTE** If you do not remember the password of the encrypted configuration file, there is no alternative way to decrypt the file.

Information Model Name	Accessible IPs		IP Address Report	Password			
NPort 5630-8	Basic	Network	Serial   O	perating Mode			
MAC Address	Modify						
00:90:E8:09:9D:86	Server Name	NP5630-8_40					
Serial Number	Modify						
40	Time Zone	(GMT) Greenwich Mean Ti	ime: Dublin, Edinburgh, Lis	bon, London 💌			
Firmware Version	Local Date	1999/12/31					
Ver 3.6	Local Time	上午 12:00:00		<u>.</u>			
	Time Server						
System Uptime 0 days, 00h:36m:11s	- V Modify						
	Enable W	eb Console					
	Enable Te						
	1						

You will be able to confirm the import content before downloading the file.

Press **OK** to start downloading the configuration file. A window will pop up to indicate that import was successful.

🐇 NPort Administrator-Co	onfiguration					x
	n <u>V</u> iew <u>H</u> elp					
👖 🚅 🖴	n IP Locate	Configure Web				
Function			Configuration -	1 NPort(s)		
□ NPort	No /	Model	MAC Address	IP Address	Server Name	Status
Configuration	1	NPort 5630-8	00:90:E8:09:9D:86	192.168.34.68	NP5630-8_40	
	I	nformation	X			
IP Address Report			OK			
	• [		m			•

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For firmware versions supporting encrypted configuration files, please refer to the table below.

Model Name         Firmware version supporting encrypted configuration files.						
NPort 5000 Series						
NPort 5110	Firmware v2.6 and up with NPort Administration Suite v1.22 and up					
NPort 5130, NPort 5150	Firmware v3.6 and up with NPort Administration Suite v1.22 and up					
NPort 5200 Series	Firmware v2.8 and up with NPort Administration Suite v1.22 and up					
NPort 5400 Series	Firmware v3.11 and up with NPort Administration Suite v1.22 and up					

Model Name	Firmware version supporting encrypted configuration files.					
NPort 5600-8-DT Series	Firmware v2.4 and up with NPort Administration Suite v1.22 and up					
NPort 5600-8-DTL Series	Firmware v1.3 and up with NPort Administration Suite v1.22 and up					
NPort 5600 Series	Firmware v3.7 and up with NPort Administration Suite v1.22 and up					
	NPort 5000A/IA5000A Series					
NDant 51004 Carries	Firmware v1.3 and up (Support with both web console and NPort					
NPort 5100A Series	Administration Suite v1.22 or above)					
NPort 5200A Series	Firmware v1.3 and up (Support with both web console and NPort					
NPOLT 5200A Series	Administration Suite v1.22 or above)					
NPort 5x50AI-M12 Series	Firmware v1.2 and up (Support with both web console and NPort					
NPOIL 5X50AT-WITZ Series	Administration Suite v1.22 or above)					
NPort IA5150A, NPort	Firmware v1.3 and up (Support with both web console and NPort					
IA5250A	Administration Suite v1.22 or above)					
NDort LAE 4E0A	Firmware v1.4 and up (Support with both web console and NPort					
NPort IA5450A	Administration Suite v1.22 or above)					



#### ATTENTION

- You can simultaneously import the same configuration file into multiple NPort units of the same model. To select multiple NPort units, hold down the **Ctrl** key when selecting an additional NPort, or hold down the **Shift** key to select a block of NPort units.
- 2. If you have an encrypted configuration file, you will need to use the NPort Administration Suite V1.22 or above to import an encrypted configuration file. On the other hand, if your configuration file is nonencrypted, it will also be accepted by the NPort Administration Suite V1.22 or above. (i.e. the NPort Administration Suite will not ask you to key in the **Import Password**.

# Monitor

Use the following method to start the Monitor function.

#### Broadcast Search $\rightarrow$ Monitor $\rightarrow$ Add Target

1. With Configuration selected under Function, use Broadcast Search to locate all NPorts on your LAN.

🐝 NPo	🔹 NPort Administrator-Configuration									
<u> </u>	Ele Eunction Configuration View Help									
j	<u>0</u>	onfiguration	L 🛎	Configure Web						
E:	🔁 M	<u>f</u> onitor	Locate	Configure Web						
	Pe 🖸	ort Monitor		Configuration - 1 NPort(s)						
	💰 വ	OM Mapping	Δ	Model	MAC Address	IP Address	Server Name	Status		
	N IF	? Address Report		NPort 5250A	00:90:E8:66:32:52	192.168.127.254	NP5250A_52	Unlock		

2. Next, click Monitor -> Add Target and select your targets from the list, and then click OK.

e <u>F</u> unction Monitor								
Eule A	dd Target				Add NPort			
	emove Target		1 0 10 10		Add APOT			
	oad Configured COM Port	Monitor - Stopp		-	_			
	ettings -	MAC Address	IP Address	Alive	Select From	List	Rescan Sele	st All Clear All
Port Monito	0							
Port N St	top				No	Model	MAC Address	IP Address
COM L	not				<b>⊡</b> 1	NPort 5250A	00:90:E8:66:32:52	192.168.127.254
W. II Address fiel	port							
					1			
					🔘 Input Manu	ally i	P Address	
						ŀ	fodel NPor	5110
			6-14					

#### Once the Monitor function is running:

1. The NPort list will appear on the Monitor screen.

🔹 NPort Administrator-Monitor									
Eile <u>F</u> unction Monitor <u>V</u> iew <u>H</u> elp									
Exit Add Remove Go Stop									
Function		I	Monitor - Stoppe	d - 1 NPort(s)					
⊡- 🔊 NPort	No Z	Model	MAC Address	IP Address	Alive				
Configuration C	1	NPort 5250A	00:90:E8:66:32:52	192.168.127.254	Not Alive				

2. Right click the panel and select **Settings**.

🐝 NPort Administrator-Ma	onitor						
<u>] F</u> ile <u>F</u> unction Monitor ⊻ie	w <u>H</u> elp						
Exit Add Remo	ve Go	Stop					
Function			Mor	nitor - Stopped	d - 1 NPort(s)		
🖃 🔊 NPort	No 🛆	Model		MAC Address	IP Address	Alive	
Configuration	1	NPort 5250A		00-90-E8-66-32-52	192 168 127.254	Not Alive	
Monitor			2	<u>A</u> dd Target			
Port Monitor			<u>~</u>	<u>R</u> emove Target			
COM Mapping				Load Configured C	OM Port		
			<b>F</b>	<u>S</u> ettings			

3. Select or de-select **Monitor I tems**. Use the single arrowhead buttons to move highlighted items from one box to the other. Use the double arrowhead buttons to move all items in one box to the other.

Monitor Settings					
Monitor Settings Monitor Items General Settings De-selected Items Server Name COM Number	Advanced Settings Selected Items Model MAC Address IP Address Alive	×			
Load Default	ОК	X Cancel			

4. Select a Refresh Rate (the default is 3 seconds) on the General Settings page.

Mo	nitor	Settings			
	Mor	nitor Items General Sett	ings Advanced Settings		1
		Refresh Rate:	3	Second(s)	
		Auto save monito	ored NPort list.		
				🗸 ОК 🛛 🗶	Cancel

5. On the Advanced Settings page, select Display warning message for new event and/or Play warning music for new event. In the second case, you must enter the path to the WAV file that you want to be played. "New event" means that one of the NPort units in the monitor is "Alive" or "Not Alive," or has lost connection with the Monitor program.

Mo	nitor Settings	
	Monitor Items General Settings Advanced Settings Monitor and Port Monitor Message Box Setting    Display warning message for new event.   Play warning music for new event.  C:\WINDOWS\Media\notify.wav Browse	
	V OK X Canc	el

6. Right click in the NPort list section and select  ${\bf Go}$  to start Monitoring the NPort.

🐝 NPort .	Administrator-Mo	nitor						
<u> </u>	nction Monitor ⊻ie	w <u>H</u> elp						
Exit Add Remove Go Stop								
Function			Mor	nitor - Stopped	l - 1 NPort(s)			
🖃 🔊 NP	ort	No	Model	1	MAC Address	IP Address	Alive	
	Configuration	1	NPort 5250A		00:90:E8:66:32:52	192.168.127.254	Not Alive	
	Monitor			2	<u>A</u> dd Target			
	Port Monitor			$\ge$	<u>R</u> emove Target			
- <b>*</b>	COM Mapping IP Address Report				Load Configured (	COM Port		
				P	Settings			
				•	<u>G</u> o			

7. For this example, the NPort shown in the list will be monitored.

🔹 NPort Administrator-Monitor						
<u>F</u> ile <u>F</u> unction Monitor <u>V</u> ie	w <u>H</u> elp					
Exit Add Remove Go Stop						
Function		M	onitor - Running	g - 1 NPort(s)		
⊡-  NPort	No 🛆	Model	MAC Address	IP Address	Alive	
Configuration	1	NPort 5250A	00:90:E8:66:32:52	192.168.127.254	Alive	
- Monitor						
Port Monitor						
COM Mapping						
🛛 😽 IP Address Report						

8. When one of the NPort units loses connection with the Monitor program, a warning alert will display automatically. The warning music will be played at the same time.

Alert	×
Alert New Monitor Event : 1 Event(s) Please check Monitor message window for more information.	
2010/7/11 下午 07:37:32 NPort 5250A (192:168:127:254) is lost connection.	
×	
👖 Close	

9. In the Monitor screen, you can see that the NPort units that are "Not Alive" are shown in red color.

🔹 NPort Administrator-Monitor						
<u>File F</u> unction Monitor <u>V</u> ie	ew <u>H</u> elp					
Exit Add Remove Go Stop						
Function		M	onitor - Running	j - 1 NPort(s)		
🖃 🌆 NPort	No 🛆	Model	MAC Address	IP Address	Alive	
Configuration	1	NPort 5250A	00:90:E8:66:3	192.168.127	Not Alive	
Monitor	L					
Port Monitor	L					
COM Mapping	L					
IP Address Report						

10. If the NPort gets reconnected, a warning will be displayed to remind the user that the NPort is now "Alive."

Alert	×
Alert New Monitor Event : 1 Event(s) Please check Monitor message window for more information. 2010/7/11 下午 07:38:15 NPort 5250A (192.168.127.254) is alive again.	

11. The NPort units that were reconnected, and are now "Alive," will be shown in black color.

🐝 NPort Administrator-Me	🔹 NPort Administrator-Monitor					
<u>File F</u> unction Monitor <u>V</u> ie	ew <u>H</u> elp					
Exit Add Remove Go Stop						
Function		м	onitor - Running	g - 1 NPort(s)		
🖃 🌆 NPort	No 🛆	Model	MAC Address	IP Address	Alive	
Configuration	1	NPort 5250A	00:90:E8:66:32:52	192.168.127.254	Alive	
Monitor						
Port Monitor	-					
🛛 🔣 🔣 📶 🔣						
COM Mapping	-					

# **Port Monitor**

The process described here is the same as in the previous "Monitor" section. The only difference is that you can select more items under Port Monitor than under Monitor.

🍓 NPort Administrator-Po	rt Monitor						
<u>File Function</u> Port Monitor	Eile <u>F</u> unction Port Monitor <u>V</u> iew <u>H</u> elp						
Exit Add Remove Go Stop							
Function		Por	t Monitor - Stop	ped - 2 Port(s	)		
- 🔊 NPort	No 🛆	Model	MAC Address	IP Address	Port	OP Mode	
Configuration	<b>1</b>	NPort 5250A	00:90:E8:66:32:52	192.168.127.254	1	Real COM Mode	
Monitor	<b>2</b>	NPort 5250A	00:90:E8:66:32:52	192.168.127.254	2	Real COM Mode	
Port Monitor							
- of the term of term							
W: IP Address Report							

Select or de-select **Monitor I tems**. Use the single arrowhead buttons to move highlighted items from one box to the other. Use the double arrowhead buttons to move all items in one box to the other.

Monitor Settings	Σ
Remote IP Serial Line Status 2 Tx/Rx after Conn. Tx/Rx after Mon Tx/Rx Throu. Tx/Rx Intv Throu. COM Number Server Name Alias	Selected Items   Model MAC Address IP Address Port OP Mode Alive
Load Default	
	V OK X Cancel

# **COM Mapping**

NPort Administration Suite comes with Windows Real COM drivers. After you install NPort Administration Suite, there are two ways to set up the NPort's serial port as your host's remote COM port.

The first way is with On-line COM Mapping. On-line COM Mapping will check to make sure that the NPort is connected correctly to the network and then install the driver on the host computer.

The second way is with Off-line COM Installation, without first connecting the NPort to the network. Off-line COM Mapping can decrease the system integrator's effort by solving different field problems. Via off-line installation, users can first process software installation for the host, and then install the NPort to different fields.

Use the following procedure to map COM ports:

1. On-line COM Mapping:

Connect the NPort to the network  $\rightarrow$  Set the NPort's IP address  $\rightarrow$  Map COMs to your host  $\rightarrow$  Apply Change.

2. Off-line COM Mapping:

Map COMs to your host  $\rightarrow$  Apply Change  $\rightarrow$  Connect the NPort to the network  $\rightarrow$  Configure the NPort's IP address.

### **On-line COM Mapping**

1. Broadcast Search for NPort units on the network.

🐝 NPort Administrator-Co	nfiguration					[	. 🗆 🛛
<u>File Function Configuration</u>	n <u>V</u> iew <u>H</u> elp						
👖 🙅 🔮 Exit Search Search	ilP Locate	Configure \	<b>.</b> Veb				
Function				Configuration -	0 NPort(s)		
- 🔊 NPort	No 🛆	Model		MAC Address	IP Address	Server Name	Status
Configuration     Monitor     Port Monitor     COM Mapping     You IP Address Report				Broadcast Search Specify by IP Address			

2. Select the **COM Mapping** function group.

🐝 NPort Administrator-CC	)М Марј	ing					
<u>File</u> Function COM Mappir	ng ⊻iew	<u>H</u> elp					
Exit Add Remo	we Ap	Configure					
Function			COM Ma	pping - O (	сом		
□ → Dert NPort	No Z	Model	IP Address	Port	COM Port	Mode	
Configuration							
Monitor	L						
Port Monitor	L						
COM Mapping	-						
IP Address Report							

3. Add the target to which you would like to map COM ports.

🐝 NPort Administrator-CC	)M Mapping						X
Eile Eunction COM Mappir	ng ⊻iew <u>H</u> elp	)					
Exit Add Remo		Configure					
Function			COM Mappir	ng - 0 C	юм		
⊡-  NPort	No 🛆	Model	IP Address	Port	COM Port	Mode	_
Configuration							
Monitor		🔬 <u>A</u> dd	Target				_
COM Mapping		<u>A</u> <u>R</u> en	nove Target				

4. The NPort list that appears is the list generated by the previous Broadcast Search. Select the NPort to which you would like to map COM ports.

ld NPo	ort							
۲	Select From L	ist	Re	scan	] [	Select	All	Clear All
	No	Model		MACIA	ddre	ss	IP Ad	ddress
E	<b>v</b> 1	NPort 5250A		00:90:	E8:66	6:32:52	192.1	168.127.254

5. Select **COM Settings** to modify COM No., default setting, etc.

🐝 NPort Administrator-CO	M Mappin;	g					
<u>File</u> Eunction COM Mappin	g <u>V</u> iew <u>H</u>	elp					
Exit Add Remove	e Apply	Configure					
Function				COM Mappir	ng - 2 C	юм	
⊡- 🔊 NPort	No 🛆	Model	1	P Address	Port	COM Port	Mode
🚺 Configuration	1	NPort 5250A	1	192.168.127.254	1	COM8 +	Hi-Performance, FIFO Ena
Monitor	2	NPort 5250A	2	<u>A</u> dd Target		COM9 +	Hi-Performance, FIFO Ena
COM Mapping			<b>~</b>	<u>R</u> emove Target			
······································				<u>E</u> nable			
			-	Disable			
			<b>S</b>	<u>C</u> OM Settings			

#### 6. Select the COM Number.

COM ports that are "In use" or "Assigned" will also be indicated in this drop-down list. If you select multiple serial ports or multiple NPort units, remember to check the "Auto Enumerating" function to use the COM No. you select as the first COM No.

COM Port Settings	COM Port Settings
Port Number: 2 Port(s) Selected. 1st port is Port 1 Basic Settings Advanced Settings Serial Parameters COM Grouping	Port Number: 1 Port(s) Selected. 1st port is Port 1 Basic Settings   Advanced Settings   Serial Parameters   COM Grouping
COM Number COM7  Auto enumerating COM number for selected ports.  Grouping selected port(s) together.	COM Number COM4 (current) (assigned)  COM4 (current) (assigned) COM5 (in use) COM6 COM7 COM7 COM8 COM9 Grouping selec COM10 COM11 V
OK X Cancel	✓ 0K X Cancel

**Hi-performance mode** is the default for Tx mode. If the driver completes sending data out to the NPort 5200A, the driver will respond "Tx Empty" to the program.

Under **classical mode**, the driver will not notify the user's program that Tx is completed until all Tx data has been sent out from the NPort 5200A; this mode will cause lower throughput. If you want to ensure that all data is sent out before further processing, classical mode is recommended.

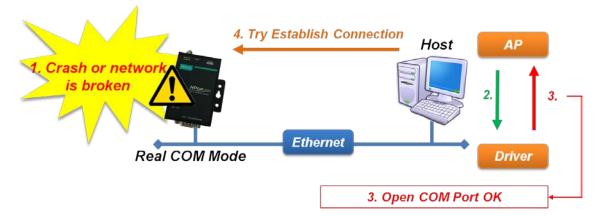
**Enable/Disable Tx/Rx FIFO**. If disabled, the NPort 5200A will send one byte each time the Tx FIFO becomes empty; and an Rx interrupt will be generated for each incoming byte. This will result in a faster response and lower throughput. If you want to use XON/XOFF flow control, we recommend setting FIFO to Disable.

#### Fast Flush (only flush local buffer)

- We have added one optional Fast Flush function to Moxa's new NPort Real COM driver. **NPort Administrator Suite for NPort** adds it after version 1.2.
- For some applications, the user's program will use the Win32 "PurgeComm()" function before it reads or writes data. With our design, after the program uses this Purge Comm() function, the NPort driver will keep querying the NPort's firmware several times to make sure there is really no data queued in the NPort firmware buffer, rather than just flushing the local buffer. This kind of design is used because of some special considerations. However, it might take more time (on the order of 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 the 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.

- 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.
- By default, the optional "Fast Flush" function is disabled. If you would like to enable this function, from the "NPort Administrator," double click 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()."

**Always Accept Open Requests:** Even the driver cannot establish the connection to NPort, user's software still can open the mapped COM port just like a onboard COM port.



**Ignore TX Purge:** The application can use Win32 API PurgeComm to clear the output buffer and terminate outstanding overlapped write operations. Select **Ignore TX Purge** if you do not want the output buffer to be purged.

COM Port Settings
Port Number: 1 Port(s) Selected. 1st port is Port 1
Basic Settings Advanced Settings Serial Parameters COM Grouping
Tx Mode Hi-Performance 💌
FIFO Enable
Network Timeout 5000 (500-20000 ms)
Fast flush (only flush local buffer)     Alway Accept Open Requests     Jonore Tx Purge     Apply all selected ports
OK K Cancel

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

COM Port Settings		
Port Number:	1 Port(s) Select	ed. 1st port is Port 1
Basic Settings Adv	anced Settings	Serial Parameters COM Grouping
Baud Rate	9600	
Parity	None	•
Data Bits	8	•
Stop Bits	1	•
Flow Control	None	•
🔄 Apply Ali Sel	ected Ports	
		V OK X Cancel

 After setting the COM Mapping, remember to select Apply Change to save the information in the host system registry. The host computer will not have the ability to use the COM port until after Apply Change is selected.

🐝 NPort Administrator-CO	OM Mapping	s				
<u>File Function</u> COM Mappi	ing <u>V</u> iew <u>H</u> (	elp				
Exit Add Remov	/e Apply	Configure				
Function			COM Mappir	ng - 2	сом	
⊡ 🔊 NPort	No 🛆	Model	IP Address	Port	COM Port	Mode
Configuration	1	NPort 5250A	192 168 127 254	1	COM11 +	Hi-Performance, FIFO Ena
Monitor	2	NPort 5250A	🔮 Add Target		COM12 +	Hi-Performance, FIFO Ena
Port Monitor			<u> </u>			
IP Address Report	L		<u>E</u> nable			
			Disable			
			COM Settings			
			📕 Apply Change			

9. Select **Discard Change** to tell Administrator NOT to save the COM Mapping information to the host.

🐝 NPort Administrator-C	OM Mapping						
<u>File</u> Function COM Mappi	ing <u>V</u> iew <u>H</u> elp	)					
Exit Add Remov	/e Apply (	Configure					
Function				COM Mappir	ng - 2 C	юм	
⊡- 🔊 NPort	No 🛆	Model		IP Address	Port	COM Port	Mode
🚺 Configuration	1	NPort 5250A		192.168.127.254	1	COM11 +	Hi-Performance, FIFO Ena
- 🖂 Monitor	2	NPort 5250A	2	<u>A</u> dd Target		COM12 +	Hi-Performance, FIFO Ena
Port Monitor     COM Mapping     ·································			<b>~</b>	<u>R</u> emove Target			
				<u>E</u> nable			
				<u>D</u> isable			
			P	<u>C</u> OM Settings			
			H	Apply Change			
				Discard Change			

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.

🔹 NPort Administrator-CC	)M Mapping					
<u>] File</u> Eunction COM Mappir	ng <u>V</u> iew <u>H</u> elj	P				
📄 🔮 🎽 Exit Add Remov	e Apply I	Configure				
Function			COM Mappir	ng - 2 (	сом	
⊡ 🔊 NPort	No 🛆	Model	IP Address	Port	COM Port	Mode
Configuration     Monitor     Port Monitor     OM Mapping     Yok IP Address Report	2	NPort 5250A NPort 5250A	192.168.127.254 <u>A</u> dd Target <u>R</u> emove Target <u>E</u> nable <u>D</u> isable <u>C</u> OM Settings <u>Apply Change</u> <u>D</u> iscard Change <u>Export COM Map</u>	ping	COM11 COM12	Hi-Performance, FIFO Ena Hi-Performance, FIFO Ena

### **Off-line COM Mapping**

1. Add a target by inputting the IP address and selecting the Model Name without physically connecting the NPort to the network.

Select Fro	om List	Rescan	Selec	t All Clear All
No	Model	MAC Ad	dress	IP Address
🖲 Input Mar	nually	IP Address	192.16	68.127.254
	,	Model		5250A
		Ports	2 Port(	

2. Modify the port settings as needed.

🐝 NPort Administrator-CO	)M Mapping										
_File_Function_COM_Mapping_⊻iew_Help											
Exit Add Remove Apply Configure											
Function				COM Mappir	ng - 2 (	сом					
⊡ 🔊 NPort	No 🛆	Model		IP Address	Port	COM Port	Mode				
<ol> <li>Configuration</li> </ol>	1	NPort 5250A		192 168 127 254	1	COM4 +	Hi-Performance, FIFO Ena				
- 🚾 Monitor	2	NPort 5250A	2	<u>A</u> dd Target		COM6 +	Hi-Performance, FIFO Ena				
COM Mapping			<b>×</b>	<u>R</u> emove Target							
			-	<u>E</u> nable							
				<u>D</u> isable							
			<b>S</b>	<u>C</u> OM Settings							

3. Right click in the NPort list section and select Apply Change.

🔹 NPort Administrator-COI	M Mapping									
Eile Eunction COM Mapping View Help										
Exit Add Remove Apply Configure										
Function				COM Mappir	ng - 2 C	юм				
□ → Depoint NPort	No 🛆	Model	IP	Address	Port	COM Port	Mode			
🔢 🔂 Configuration	1	NPort 5250A	19	2 168 127 254	1	COM4 +	Hi-Performance, FIFO Ena			
🔤 Monitor	2	NPort 5250A	2	Add Target		COM6 +	Hi-Performance, FIFO Ena			
Port Monitor			<u>~</u>	<u>R</u> emove Target						
COM Mapping			<u>E</u> nable							
				<u>D</u> isable						
			P	<u>C</u> OM Settings						
			H	Apply Change						

# **COM Grouping**

The "COM Grouping" function is designed to simulate the multi-drop behavior of serial communication over an Ethernet network. COM Grouping allows you to create a COM Group and redirect data from it to several physical COM ports on NPort device servers. With COM Grouping, you will be able to control multiple physical serial ports simultaneously by operating only one COM port.

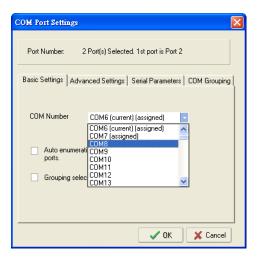
### **Creating a COM Group**

Follow the steps below to add multiple COM ports into one group:

1. Select serial port(s) for the group that you are going to create, and right-click to select **COM Settings**.

🔹 NPort Administrator-CO	)M Mapping									
<u>File</u> <u>F</u> unction COM Mappi	ng <u>V</u> iew <u>H</u> elj	p								
Exit Add Remove Apply Configure										
Function				СОМ Маррії	ng - 3 C	юм				
⊡ NPort	No 🛆	Model	IF	<sup>o</sup> Address	Port	COM Port	Mode			
Configuration	1	NPort 5150A		92.168.127.254	1	COM4	Hi-Performance, FIFO Ena			
Monitor	2	NPort 5110A		92.168.127.253	1	COM6 +	Hi-Performance, FIFO Ena			
Port Monitor	3	NPort 5110A		92.168.127.252	11	COM7 +	Hi-Performance, FIFO Ena			
COM Mapping	L		2	<u>A</u> dd Target						
IP Address Report			<b>~</b>	<u>R</u> emove Target						
				<u>E</u> nable						
				Disable						
			P	<u>C</u> OM Settings						
			H	Apply Change						
				Discard Change						
				Export COM Ma	pping					
	<		-	Import COM Ma	pping		>			

 Select a COM number for this COM group. You may select one of the ports already assigned to a member of the COM Group. However, once the COM Group is configured, all of the original COM number(s) within the group will be released simultaneously.

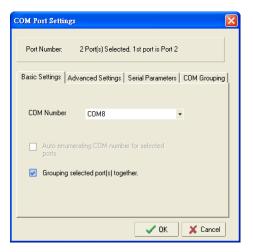




#### ATTENTION

The COM Grouping function only supports Windows NT, 2000, and later. The maximum number of ports for each group is 32.

3. Select the Grouping selected port(s) together checkbox.



4. On the **COM Grouping** page, you can set "Read" and "Write" permissions for every serial port. It is necessary to set **Signal Status** in order to control the data transmission with specified control signals (e.g., DTR/RTS). You can assign one serial port whose signals will be taken into account by the COM Group.

¢	:01	l Port Settings							×
	F	Port Number: 2	Port(s)	Selected	l. 1st port i	is Port 2			
	Ba	sic Settings   Adva	nced S	ettings	Serial Para	ameters	сом с	irouping	
		Serial ports:	Port	Read	Write	Signal	Status		
		192.168.127.253 192.168.127.252		V V	2	 Г			
					<ul> <li>✓</li> </ul>	OK	<b>X</b> (	Cancel	

5. Click **OK**, and confirm that the serial ports that were assigned. The COM Port column confirms that your selected ports are labeled as part of a "Group." You will be able to view the serial ports that were assigned to and removed from the Group. Click **Apply** to apply the settings.

🐝 NPort Administrator-CC	)M Mappin	g				
Eile Eunction COM Mappir	ng <u>V</u> iew <u>H</u>	lelp				
Exit Add Remove		Configure				
Function			COM Mappi	ng - 3 (	сом	
	No 🛆	Model	IP Address	Port	COM Port	Mode
🗌 🚺 Configuration	1	NPort 5150A	192.168.127.254	1	COM4	Hi-Performance, FIFO E
- Monitor	2	NPort 5110A	192.168.127.253	1	COM8 (Group)	Hi-Performance, FIFO E
Port Monitor	3	NPort 5110A	192.168.127.252	1	COM8 (Group)	Hi-Performance, FIFO E
K COM Mapping						
COM Mapping						

6. Finally, click **Yes** to confirm.

Inform	ition	×
(į)	Do you want to apply the change	es?
	Yes Cancel	

### **Deleting a COM Group**

Follow the steps below to delete a COM Group and then auto-assign COM numbers for each port in the Group:

1. Select all serial ports in the Group you are deleting and then right-click to select COM Settings.

🐝 NPort Administrator-CC	🔹 NPort Administrator-COM Mapping										
Eile Eunction COM Mapping View Help											
Exit Add Remove Apply Configure											
Function	Function COM Mapping - 3 COM										
- 🔊 NPort	No 🛆	Model	IP.	Address	Port	COM Port	Mode				
Configuration	1	NPort 5150A	19	2.168.127.254	1	COM4	Hi-Performance, FIFO E				
Monitor	2	NPort 5110A		2.168.127.253	1		Hi-Performance, FIFO E				
- R Port Monitor	3	NPort 5110A	19	2.168.127.252	1	COM8 (Group)	Hi-Performance, FIFO E				
COM Mapping			2	<u>A</u> dd Target		L					
IP Address Report			<u>~</u>	<u>R</u> emove Target							
			Enable								
				<u>D</u> isable							
			<b>F</b>	<u>C</u> OM Settings							
			H	Apply Change							
				Discard Change							

 Select a COM number for this COM group and check the Auto enumerating COM number for selected ports to use the COM number you select as the first starting COM number, and then click OK.

COM Port Settings
Port Number: 2 Port(s) Selected. 1st port is Port 2
Basic Settings   Advanced Settings   Serial Parameters   COM Grouping
COM Number COM9
Auto enumerating COM number for selected ports.     Grouping selected port(s) together.
OK X Cancel

3. You will be able to view the serial ports that were assigned to and removed from the Group. Click **Apply** to apply the settings.

🐝 NPort Administrator-CC	🛠 NPort Administrator-COM Mapping										
Eile Eunction COM Mapping View Help											
	Exit Add Remove Apply Configure										
Function			COM Mappir	ig - 3 (	сом						
🄊 NPort	No 🛆	Model	IP Address	Port	COM Port	Mode					
Configuration	1	NPort 5150A	192.168.127.254	1	COM4	Hi-Performance, FIFO E					
- 🖾 Monitor	2	NPort 5110A	192.168.127.253	1	COM9	Hi-Performance, FIFO E					
- R Port Monitor	3	NPort 5110A	192.168.127.252	1	COM10	Hi-Performance, FIFO E					
COM Mapping											
COM Mapping											
	L										

4. Finally, click Yes to confirm.



### Adding a Port to a COM Group

Follow the steps below to add a serial port into an existing COM Group:

1. Select the serial port that you are adding and right-click to select COM Settings.

🐝 NPort Administrator-CC	)M Ma	pping								
<u>File</u> <u>F</u> unction COM Mapping <u>V</u> iew <u>H</u> elp										
Exit Add Remove Apply Configure										
Function				СОМ Маррі	ing	- 5 C	ОМ			
	No	Δ	Model	IP Address	P	ort	COM Port	Mode		
Configuration	1		NPort 5150A	192.168.127.254	1		COM4	Hi-Performance, FIFO Ena		
- 🖾 Monitor	2		NPort 5110A	192.168.127.253	1		COM8 (Group)	Hi-Performance, FIFO Ena		
Port Monitor	3		NPort 5110A	192.168.127.252	1		COM8 (Group)	Hi-Performance, FIFO Ena		
COM Mapping	4		NPort 5210A	192.168.127.250	1		COM6	Hi-Performance, FIFO Ena		
P Address Report	5		NPort 5210A	192.168.127.250	2		LCOM7	Hi-Performance, FIFO Ena		
All II Hadross Hopert	L				2	<u>A</u> dd (	Farget			
	-				<b>*</b>	<u>R</u> emo	ve Target			
						Enabl	e			
						<u>D</u> isab	le			
					<b>S</b>	<u>C</u> OM	Settings			
					H	Apply	/ Change			
						Disca	rd Change			

2. Select the COM number of the COM Group you are adding and check mark the **Grouping selected port(s) together** check box and then click **OK**.

COM Port Settings
Port Number: 1 Port(s) Selected. 1st port is Port 5
Basic Settings   Advanced Settings   Serial Parameters   COM Grouping
COM Number COM8 (Group) -
<ul> <li>Auto enumerating COM number for selected ports.</li> </ul>
Grouping selected port(s) together.
V DK X Cancel

3. You will be able to view the serial ports that were assigned to and removed from the Group. Click **Apply** to apply the settings.

😵 NPort Administrator-CC	🔹 NPort Administrator-COM Mapping										
Eile Eunction COM Mapping View Help											
Add Remove Apply Configure											
Function			COM Mappir	ng - 5 C	ом						
🖃 🔊 NPort	No 🛆	Model	IP Address	Port	COM Port	Mode					
Configuration	1	NPort 5150A	192.168.127.254	1	COM4	Hi-Performance, FIFO E					
Monitor	2	NPort 5110A	192.168.127.253	1	COM8 (Group)	Hi-Performance, FIFO E					
Port Monitor	3	NPort 5110A	192.168.127.252	1	COM8 (Group)	Hi-Performance, FIFO E					
	4	NPort 5210A	192.168.127.250	1	COM6	Hi-Performance, FIFO E					
COM Mapping	5	NPort 5210A	192.168.127.250	2	COM8 (Group)	Hi-Performance, FIFO E					

4. Finally, click Yes to confirm.



### Removing a Port from a COM Group

Follow the steps below to remove a serial port from a COM Group:

1. Select a serial port in the Group and right-click to select COM Settings.

🐝 NPort Administrator-CC	)M Mapping							
<u><u> </u></u>	ng <u>V</u> iew <u>H</u> elj	р						
Exit Add Remo	ve Apply	Configure						
Function	Function COM Mapping - 5 COM							
>>> NPort	No 🛆	Model	IP Address	Po	rt	COM Port	Mode	
Configuration	1	NPort 5150A	192.168.127.254	1		COM4	Hi-Performance, FIFO E	
Monitor	2	NPort 5110A	192.168.127.253	1		COM8 (Group)	Hi-Performance, FIFO E	
Port Monitor	3	NPort 5110A	192.168.127.252	1		COM8 (Group)	Hi-Performance, FIFO E	
COM Mapping	4	NPort 5210A	192.168.127.250	1		COM6	Hi-Performance, FIFO E	
P Address Report	5	NPort 5210A	192.168.127.250	12		COM8 (Group)	Hi-Performance, FIFO E	
After in Address Hopole				2	<u>A</u> dd	Target		
				≚.	<u>R</u> emo	ove Target		
					Enab	le		
					<u>D</u> isab	le		
				đ	COM	l Settings		
					Apply Change			
				_	Disca	rd Change		

2. Select a COM number that is not in use or assigned to a Group and click **OK**.

COM Port Settings
Port Number: 1 Port(s) Selected. 1st port is Port 5
Basic Settings   Advanced Settings   Serial Parameters   COM Grouping
COM Number COM7 -
<ul> <li>Auto enumerating COM number for selected ports.</li> </ul>
Grouping selected port(s) together.

3. You will be able to view the serial ports that were assigned to and removed from the Group. Click **Apply** to apply the settings.

🔹 NPort Administrator-COM Mapping								
Eile Eunction COM Mapping View Help								
Exit Add Remov	е Арру	Configure						
Function			COM Mappir	ng - 5 C	ом			
	No 🛆	Model	IP Address	Port	COM Port	Mode		
Configuration	1	NPort 5150A	192.168.127.254	1	COM4	Hi-Performance, FIFO Ena		
- 🖾 Monitor	2	NPort 5110A	192.168.127.253	1	COM8 (Group)	Hi-Performance, FIFO Ena		
- R Port Monitor	3	NPort 5110A	192.168.127.252	1	COM8 (Group)	Hi-Performance, FIFO Ena		
	4	NPort 5210A	192.168.127.250	1	COM6	Hi-Performance, FIFO Ena		
COM Mapping	5	NPort 5210A	192.168.127.250	2	COM7	Hi-Performance, FIFO Ena		

4. Finally, click Yes to confirm.

Informa	tion 🔀
į)	Do you want to apply the changes?
	Yes Cancel

### Modify Ports in a COM Group

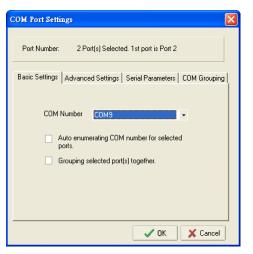
In the following subsections we examine three ways in which the serial ports in a COM Group can be modified:

#### Changing the COM Number of a COM Group

1. Select all serial ports in the Group and right-click to select COM Settings.

🐝 NPort Administrator-CC	M Mapping									
Eile Eunction COM Mappir	ng <u>V</u> iew <u>H</u> elp	)								
Exit Add Remo	ve Apply	Configure								
Function		COM Mapping - 3 COM								
⊡  →  →  NPort	No 🛆	Model		P Address	Port	COM Port	Mode			
Configuration	1	NPort 5150A		192.168.127.254	1	COM4	Hi-Performance, FIFO Ena			
- 🖾 Monitor	2	NPort 5110A		192.168.127.253	1		Hi-Performance, FIFO Ena			
- 🖂 Port Monitor	3	NPort 5110A		192 168 127 252	1	COM8 (Group)	Hi-Performance, FIFO Ena			
COM Mapping			2	<u>A</u> dd Target						
IP Address Report			~	<u>R</u> emove Target						
				<u>E</u> nable						
				Disable						
			đ	<u>C</u> OM Settings						
			H	Apply Change						
				Discard Change						

2. Select a COM number that is not in use or assigned to a Group.



3. Select the Grouping selected port(s) together checkbox and then click OK.

COM Port Settings	×
Port Number: 2 Port(s) Selected, 1st port is Port 2	
Basic Settings Advanced Settings Serial Parameters COM Grouping	
COM Number COM9 -	
<ul> <li>Auto enumerating COM number for selected ports.</li> </ul>	
Grouping selected port(s) together.	
V DK X Cancel	

4. You will be able to view the serial ports that were assigned to and removed from the Group. Click **Apply** to apply the settings.

🔹 NPort Administrator-COM Mapping								
Eile Eunction COM Mapping View Help								
Exit Add Remo		Appy Configure						
Function			COM Mappir	ng - 3 C	ом			
⊡-≫ NPort	No 🛆	Model	IP Address	Port	COM Port	Mode		
🗌 🚺 Configuration	1	NPort 5150A	192.168.127.254	1	COM4	Hi-Performance, FIFO Ena		
Monitor	2	NPort 5110A	192.168.127.253	1	COM9 (Group)	Hi-Performance, FIFO Ena		
- 🖾 Port Monitor	3	NPort 5110A	192.168.127.252	1	COM9 (Group)	Hi-Performance, FIFO Ena		
🔣 📶 COM Mapping								
──mic COM Mapping ○ IP Address Report								

5. Finally, click Yes to confirm.



#### Changing Advanced Settings and Serial Parameters of the COM Group

1. Check the port specified on the **COM Grouping** page as the signal port.

с	OF	f Port Settings							×
	F	Port Number:	2 Port(s)	) Selected	d. 1st port i	is Port 2			
		isic Settings Adv Serial ports:	anced S	ettings	Serial Par	ameters	COM	àrouping	inné.
		IP Address	Port	Read	Write	Signal	Status		
		192.168.127.253 192.168.127.252	1		Write  ₩  ₩		Status	1	
_						OK	×	Cancel	]

2. Select the "Signal Status" controlled port and then right-click and select COM Settings.

🐝 NPort Administrator-CO	)M Mapping							
<u> </u>	Eile Eunction COM Mapping View Help							
📄 🔮 🎽 Exit Add Remo	ve Apply	Configure						
Function				COM Mappir	ng - 3 C	юм		
🖃 🌆 NPort	No 🛆	Model		IP Address	Port	COM Port	Mode	
1 Configuration	1	NPort 5150A		192.168.127.254	1	COM4	Hi-Performance, FIFO Ena	
🔤 Monitor	2	NPort 5110A	_	192.168.127.253	1	COM8 (Group)	Hi-Performance, FIFO Ena	
🛛 💽 Port Monitor	3	NPort 5110A	2	<u>A</u> dd Target		COM8 (Group)	Hi-Performance, FIFO Ena	
COM Mapping			~	<u>R</u> emove Target				
	L			Enable				
			-	<u>D</u> isable				
			P	<u>C</u> OM Settings				
			H	Apply Change				
				D <u>i</u> scard Change				

3. The Advanced Settings and Serial Parameters pages will be available for modification.

COM Port Settings			COM Port Settings			X
Port Number: 1 Port	(s) Selected. 1st port is Port 2		Port Number: 1 Port(s)	Selected. 1st por	t is Port 2	
Basic Settings Advanced	Settings Serial Parameters COM	M Grouping	Basic Settings Advanced Se	ettings Serial Pa	arameters COM	Grouping
Tx Mode	Hi-Performance -		Baud Rate	9600	•	
FIFO	Enable 🔹		Parity	None	•	
N			Data Bits	8	•	
Network Timeout	5000 (500-20000 m	isj	Stop Bits	1	•	
📃 Fast flush (on	y flush local buffer)		Flow Control	None	•	
Apply all selec	ted ports		Apply all selected	l ports		
	🗸 OK 🔰	Cancel			🖊 ОК 🛛 🗙	Cancel

#### Changing the Serial Port Specified as Signal Port for the COM Group

1. Select a serial port in the Group and then right-click and select COM Settings.

😵 NPort Administrator-CO	M Mapping					
<u>File Function</u> COM Mapping	g ⊻iew <u>H</u> elp	)				
Exit Add Remov	/e Apply	Configure				
Function			СОМ Маррі	ng - 3 C	юм	
🖃 🔊 NPort	No 🛆	Model	IP Address	Port	COM Port	Mode
🚺 🗌 Configuration	1	NPort 5150A	192.168.127.254	1	COM4	Hi-Performance, FIFO Ena
Monitor	2	NPort 5110A	192.168.127.253	1	COM8 (Group)	Hi-Performance, FIFO Ena
🔤 Port Monitor	3	NPort 5110A	🔮 Add Target		COM8 (Group)	Hi-Performance, FIFO Ena
COM Mapping			<u>R</u> emove Target			
			<u>E</u> nable		-	
			Disable			
			🛐 🖸 COM Settings			
		[	🚽 Apply Change			
			Discard Change			

2. Check the Grouping selected port(s) together check box.

COM Port Settings
Port Number: 1 Port(s) Selected. 1st port is Port 2
Basic Settings   Advanced Settings   Serial Parameters   COM Grouping
COM Number COM8 (current) (Group) -
Auto enumerating COM number for selected ports.
Grouping selected port(s) together.
OK X Cancel

3. On **COM Grouping** page, you can specify one serial port whose signals will be taken into account by the COM Group and change the Read/Write status for each serial port.

¢	:0M	f Port Settings							X
	F	<sup>9</sup> ort Number:	I Port(s)	Selected	l. 1st port i	is Port 2			
		isic Settings   Adva Serial ports:	inced S	ettings   :	Serial Pari	ameters	СОМ О	àroupir	g
		IP Address	Port	Read	Write	Signal	Status		
		192.168.127.253 192.168.127.252		<ul> <li></li> <li></li> </ul>		Г ▼			
	_					OK	×	Cancel	

# **IP Address Report**

When the NPort is used in a dynamic IP environment, users must spend more time with IP management tasks. NPort serial device servers help out by periodically reporting their IP address to the IP location server, in case the dynamic IP has changed.

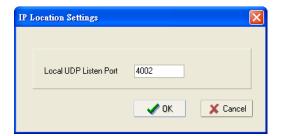
1. Configure the NPort with Dynamic IP settings (DHCP, BOOTP, or DHCP/BOOTP). Assign the remote Auto IP report server's IP address and UDP port.

Configuration		×
Information Model Name NPort 5250A MAC Address 00:90:E8:66:32:52 Serial Number 52 Firmware Version Ver 1.0 System Uptime	Accessible IPs Auto Warning IP Address Report Password Basic Network Serial Operating Mode Modify IP Address 192.168.127.254 Modify Netmask 255.255.255.0 Gateway IP Configuration DHCP DNS Server 1 DNS Server 2	
0 days, 00h:34m:02s	Click the "Modify" check box to modify configuration	ncel

2. Select the IP Address Report, and click the right mouse button to select Settings.

🐝 NPort Administrator-IP	🗱 NPort Administrator-IP Address Report							
<u>File</u> Eunction <u>IP</u> Address R	eport ⊻iew	<u>H</u> elp						
Exit Settings Go	Stop							
Function			IP Address Report - Stopped - Port:4002 - 0					
⊡- 🔊 NPort	No 🛆	Model		MAC Address	IP Address	Count	Previous Time	
Configuration			🗗 <u>S</u> e	ettings				
Port Monitor			• <u>G</u>	0				
COM Mapping			Si Si	op				
			<u>C</u>	lear				

3. Configure the Local Listen Port to be the same as the NPort's "Auto report to UDP port" setting.



4. Click **Go** to start receiving the Auto IP address report from the NPort.

Address Rep	ort				
Report <u>V</u> iew	<u>H</u> elp				
Stop					
	IP Addre	ess Report - Sto	pped - Port:40	02 - 0	
No 🛆	Model	MAC Address	IP Address	Count	Previous Time
L					
	P	Settings			
<u> </u>	•	Go			
		Stop			
		Clear			
	Report View	Stop IP Addre No 🛆 Model	Report View Help Stop IP Address Report - Sto No / Model MAC Address Settings Go Stop	Report View Help Stop IP Address Report - Stopped - Port:40 No / Model MAC Address IP Address Stop Go Stop	Report View Help         Stop         IP Address Report - Stopped - Port:4002 - 0         No       Model       MAC Address       IP Address       Count         Image: Settings       Image: Stop       Image: Stop       Image: Stop         Image: Stop       Stop       Image: Stop       Image: Stop

# **NPort CE Driver Manager for Windows CE**

NPort CE Driver Manager for Windows CE applies to the NPort 5000 and NPort 1A5000 Series only.

The following topics are covered in this chapter:

- Overview
- Installing NPort CE Driver Manager
- Using NPort CE Driver Manager

### Overview



#### ATTENTION

Before installing and the configuring the NPort Administration suite, make sure your user privilege is set as system administrator.

# Installing NPort CE Driver Manager

- 1. Copy "NPortCab.cab" to Windows CE and start to install driver by double clicking on it.
- 2. Click on "OK" to complete the installation when the following screen appears.

Install Default Company Name NP	🗈 💣 🧱 🗰 ? OK 🗙
🔍 \Program Files	
Command Prompt	
Name: NPortCab Type:	7

3. Driver installation is now complete and the "NPortCab.cab" icon disappears from the screen. This is normal when installing drivers in Windows CE.

# **Using NPort CE Driver Manager**

After you install NPort CE Driver Manager, you can set up the NPort's serial ports as remote COM ports for your Windows CE. Make sure that the serial port(s) on your NPort are set to Real COM mode when mapping COM ports with NPort CE Driver Manager.

1. Go to Start → Programs → NPort CE Driver Manager.

N	Port CE D	ок 🗙						
C	COM Setting COM Mapping About							
	СОМ	IP Addr	Data/Cmd	Delete All				
				Delete				
				-				
	Settings —			1				
	T× Mode		Save					
	FIFO	-						
	0 COM port	(s) was found.						

2. Click on the COM Mapping page and then the "Search" button to scan for NPort servers

NPort CE Drive		OK ×						
COM Setting COM Mapping About								
Model	Model IP Addr Ports							
NPort 5110	192.168.127.254	1	Stop					
			Modify IP					
			Search					
Port Index		_	Completed.					
	Add							
	Select the of NPort th want to ad	at you						

- 3. All NPort servers that were located will appear in the NPort CE Driver Manager window. Click on the server whose COM ports you would like to map to and then select the port index. Note that multiple selections are allowed.
- 4. Select the port(s) at the Port Index and then click on the "Add" button to map to the COM Port(s).

NPort CE Drive	ок 🗙		
COM Setting			
Model NPort 5110	IP Addr 192.168.127.254	Ports 1	Search Stop
			Modify IP
Port Index			Search Completed.
Port1 (950/9	66) Add		
	Select the of NPort ti want to ad	•	
NPort 5110 (192	.168.127.254) is sele	ected.	

5. Return to the COM Setting page. You should be able to see the newly mapped COM Port(s).

NPort CE D		ОК 🗙					
COM Setting COM Mapping About							
СОМ	IP Addr	Data/Cmd		Delete All			
COM2	192.168.127.254	950/966		Delete			
Settings —							
T× Mode	•	Save					
FIFO		]					
1 COM port	(s) was found.						

6. To configure the settings for a particular COM Port, select the row of the desired port, and then modify the setting in the "Settings" panel, as shown below.

NPort CE D	Driver Manager		ок 🗙					
COM Settin	COM Setting COM Mapping About							
COM COM2	IP Addr 192.168.127.254	Data/Cmd 950/966	Delete All Delete					
Settings —								
T× Mode	e Hi-performance	- Save						
FIFO	Enable	·						
COM2 is sel	ected.							

#### Tx Mode

"Hi-Performance" is the default for Tx mode. After the driver sends data to the NPort server, the driver immediately issues a "Tx Empty" response to the program. Under "Classical mode," the driver will not send the "Tx Empty" response until after confirmation is received from the NPort server's serial port. This causes lower throughput. Classical mode is recommended if you want to ensure that all data is sent out before further processing.

#### FIFO

If FIFO is disabled, the NPort server 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.

# **Linux Real TTY Drivers**

The following topics are covered in this chapter:

- Basic Procedures
- Hardware Setup
- □ Installing Linux Real TTY Driver Files
- Mapping TTY Ports
  - Mapping tty ports automatically
  - Mapping tty ports manually
- Removing Mapped TTY Ports
- Removing Linux Driver Files

### **Basic Procedures**

To map an NPort 5000 serial port to a Linux host's tty port, follow these instructions:

1. Set up the NPort 5000. After verifying that the IP configuration works and you can access the NPort 5000 (by using ping, telnet, etc.), configure the desired serial port on the NPort 5000 to Real COM mode.

- 2. Install the Linux Real tty driver files on the host
- 3. Map the NPort serial port to the host's tty port

### **Hardware Setup**

Before proceeding with the software installation, make sure you have completed the hardware installation. Note that the default IP address for the NPort 5000 is 192.168.127.254.

**NOTE** After installing the hardware, you must configure the operating mode of the serial port on your NPort 5000 to Real COM mode.

### **Installing Linux Real TTY Driver Files**

NOTE The newest information, please refer to readme.txt on Linux Real TTY Driver

- 1. Obtain the driver file from Moxa's website, at <u>http://www.moxa.com</u>. You may find it in the **Resource** section under your product page.
- 2. Log in to the console as a super user (root).
- 3. Execute cd / to go to the root directory.
- 4. Copy the driver file npreal2xx.tgz to the / directory.
- 5. Execute tar xvfz npreal2xx.tgz to extract all files into the system.
- 6. Execute /tmp/moxa/mxinst.

For RedHat AS/ES/WS and Fedora Core1, append an extra argument as follows: # /tmp/moxa/mxinst SP1

The shell script will install the driver files automatically.

- 7. After installing the driver, you will be able to see several files in the /usr/lib/npreal2/driver folder:
- > mxaddsvr (Add Server, mapping tty port)
- > mxdelsvr (Delete Server, unmapping 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.

# **Mapping TTY Ports**

Make sure that you set the operation mode of the desired NPort 5000 serial port to Real COM

mode. 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 as follows:

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

The mxaddsvr command performs the following actions:

- 1. Modifies npreal2d.cf.
- 2. Creates tty ports in directory /dev with major & minor number configured in npreal2d.cf.
- 3. Restarts the driver.

### Mapping tty ports automatically

To map tty ports automatically, you may execute mxaddsvr with just the IP address and

the number of ports, as in the following example:

# cd /usr/lib/npreal2/driver

# ./mxaddsvr 192.168.3.4 16

In this example, 16 tty ports will be added, all with IP 192.168.3.4, with data ports from 950

to 965 and command ports from 966 to 981.

### Mapping tty ports manually

To map tty ports manually, you may execute mxaddsvr and manually specify the data and command ports, as in the following example:

# cd /usr/lib/npreal2/driver

# ./mxaddsvr 192.168.3.4 16 4001 966

In this example, 16 tty ports will be added, all with IP 192.168.3.4, with data ports from 4001 to 4016 and command ports from 966 to 981.

# **Removing Mapped TTY Ports**

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 Address]

Example:

# cd /usr/lib/npreal2/driver

# ./mxdelsvr 192.168.3.4

The following actions are performed when executing mxdelsvr:

- 1. Modify npreal2d.cf.
- 2. Remove the relevant tty ports in directory /dev.
- 3. Restart the driver.

If the IP address is not provided in the command line, the program will list the installed servers and total ports on the screen. You will need to choose a server from the list for deletion.

### **Removing Linux Driver Files**

A utility is included that 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, then execute mxuninst to uninstall the driver. This program will perform the following actions:

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

# 9 IP Serial LIB

The following topics are covered in this chapter:

#### Overview

- > What is IP Serial Library?
- > Why Use IP Serial Library?
- ➢ How to Install IP Serial Library
- IP Serial LIB Function Groups
- Example Program

### **Overview**

### What is IP Serial Library?

IP Serial Library is a Windows library with frequently used serial command sets and subroutines. IP Serial Library is designed to reduce the complexity and poor efficiency of serial communication over TCP/IP. For example, Telnet can only transfer data, but it can't monitor or configure the serial line's parameters.

### Why Use IP Serial Library?

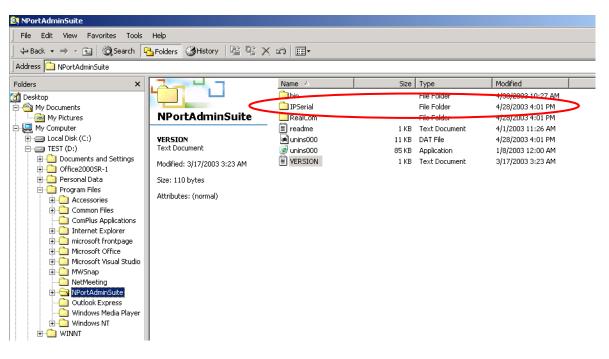
For programmers familiar with serial communication, IP Serial Library provides well-designed function calls that have the same style as Moxa's PComm Library.

IP Serial Library is amazingly simple and easy to understand. By including it in your VB, C, or Delphi programming environment, you can program your own TCP/IP application with the ability to control serial communication parameters.

The NPort serial device server uses 2 TCP ports for communication between the NPort and host computer's Real COM driver. The NPort uses a data port and command port to provide pure data transfer without decode and encode. Compared to using only one TCP port to control serial communication (such as RFC 2217), IP Serial Library uses a command port to communicate with the NPort from the user's program. IP Serial Library not only runs with excellent efficiency but also runs without any decode or encode problems.

### How to Install IP Serial Library

IP Serial Lib comes with the NPort Administration Suite. Refer to the IPSerial directory for more detail about the function definitions.



# **IP Serial LIB Function Groups**

Server Control	Port Control	Input/Output Data	Port Status	Miscellaneous
			Inquiry	
nsio_init	nsio_open	nsio_read	nsio_lstatus	nsio_break
nsio_end	nsio_close	nsio_SetReadTimeouts	nsio_data_status	nsio_break_on
nsio_resetserver	nsio_ioctl	nsio_write		nsio_break_off
nsio_checkalive	nsio_flowctrl	nsio_SetWriteTimeouts		nsio_breakcount
	nsio_DTR			
	nsio_RTS			
	nsio_lctrl			
	nsio_baud			
	nsio_resetport			

# **Example Program**

```
char NPort 5100A-Nip="192.168.1.10";
char buffer[255];
int port = 1;
int portid;
nsio_init();
portid = nsio_open(NPort 5100Aip, port);
nsio_ioctl(portid, B9600, (BIT_8 | STOP_1 |
P_NONE) );
sleep(1000);
nsio_read(port, buffer, 200);
nsio_close(portid);
nsio_end();
```

```
/*data buffer, 255 chars */
/*lst port */
/* port handle */
/*initial IP Serial Library */
/*lst port, NPort 5100A IP=192.168.1.10
*/
/*set 9600, N81 */
/* wait for 1000 ms for data */
/* read 200 bytes from port 1 */
/* close this serial port */
/* close IP Serial Library */
```

10

# **Android API Instructions**

The following topics are covered in this chapter:

#### Overview

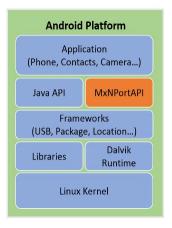
- How to Start MxNPortAPI
- MxNPortAPI Function Groups
- Example Program

### **Overview**

If you want to remote control your serial devices on an Android platform, then the MxNPortAPI is a simple application programming tool that you can use. The MxNPortAPI helps programmers develop an Android application to access the device server by TCP/IP.

The MxNPortAPI provides frequently used serial command sets like port control, input/output, etc., and the style of developed Android application is similiar to MOXA Driver Manager. For more details of the provided functions, please refer the "MxNPortAPI Function Groups" section.

This MxNPortAPI is layered between the Android application and Android network manager framework. This Android library is compatible with Java 1.7, Android 3.1 (Honeycomb - API version 12), and later versions.



#### How to Start MxNPortAPI

You can download the MxNPortAPI from Moxa's website at <u>http://www.moxa.com</u>, and develop the application program in popular Oss, such as Windows, Linux, or Mac. (You may find it in the **Resource** section under your product page.)

(You can refer the Android studio website to see the system requirements for development environment: <u>https://developer.android.com/studio/index.html?hl=zh-tw#Requirements</u>).

Organize 🔻 🛛 🏉 Ope	n ▼ Share with ▼ Print New folder		1		(
🔆 Favorites	Name	Date modified	Туре	Size	
🥅 Desktop	) com	11/22/2017 3:42 PM	File folder		
🝺 Downloads	퉬 index-files	11/22/2017 3:42 PM	File folder		
💹 Recent Places	resources	11/22/2017 3:42 PM	File folder		
	🔊 allclasses-frame	11/8/2017 8:02 PM	HTML Document	2 KB	
🧊 Libraries	🔊 allclasses-noframe	11/8/2017 8:02 PM	HTML Document	2 KB	
Documents	🔊 constant-values	11/8/2017 8:02 PM	HTML Document	19 KB	
🁌 Music	💋 deprecated-list	10/26/2017 5:30 PM	HTML Document	4 KB	
Pictures	🙋 help-doc	11/8/2017 8:02 PM	HTML Document	8 KB	
🚼 Videos	💋 index	11/8/2017 8:02 PM	HTML Document	3 KB	
	💋 index-all	10/26/2017 5:34 PM	HTML Document	46 KB	
👰 Computer	🙋 overview	11/8/2017 3:54 PM	HTML Document	16 KB	
_	🙋 overview-summary	11/8/2017 8:02 PM	HTML Document	20 KB	
🗣 Network	🥙 overview-tree	11/8/2017 8:02 PM	HTML Document	6 KB	
	package-list	11/8/2017 8:02 PM	File	1 KB	
	🖉 script	11/8/2017 8:02 PM	JScript Script File	1 KB	
	erialized-form	11/8/2017 8:02 PM	HTML Document	5 KB	
	atylesheet	9/15/2017 5:41 PM	Cascading Style S	14 KB	

To start your application program, please unzip the MxNPortAPI file and refer to the index (.html) under the Help directory.

For more details about the installation, please refer to the Overview section.

All Classes	JavaScript is disabled on your browser.
McException	DIRINER, PACHAGE CLASS THEE NOEX HELP
Mt/Exception.EmorCode Mt/NPort	PREV NEXT FRAMES ALL CLASSES
Mit/Port.FlowDat Mit/Port.IsetRivole Mit/Port.IsetRivol Mit/Port.ModemStatus Mit/PortService Vention	This document is the programming guide for the MuNPortAPI. See: Description
	Packages
	Paskage Description
	com moxa mxnportapi
	This document is the programming guide for the MaNPortAPI. You can get information about how to code with the MaNPortAPI quickly and how to link the MaNPortAPI Library into your program. <b>Android Platform</b> Application (Phone, Contacts, Camera) Java API MaNPortAPI (USS, Package, Location) Libraries Dalvik Runtime Linux Kernel

## **MxNPortAPI Function Groups**

The supported functions in this API are listed below:

Port Control	Input/Output	Port Status Inquiry	Miscellaneous
open	read	getBaud	setBreak
close	write	getFlowCtrl	
setIoctIMode		getloctlMode	
setFlowCtrl		getLineStatus	
setBaud		getModemStatus	
setRTS		getOQueue	
setDTR			
flush			

### **Example Program**

To make sure this API is workable with the device server on an Android platform, see the example program below:

```
Thread thread = new Thread()
{
   @Override
   public void run() {
      /* Enumerate and initialize NPorts on system */
      List<MxNPort> NPortList = MxNPortService.getNPortInfoList();
      if(NPortList!=null){
       MxNPort.loctlMode mode = new MxNPort.loctlMode();
        mode.baudRate = 38400;
        mode.dataBits = MxNPort.DATA_BITS_8;
        mode.parity = MxNPort.PARITY_NONE;
        mode.stopBits = MxNPort.STOP_BITS_1;
        MxNPort mxNPort = NPortList.get(0); /* Get first NPort device */
        try {
           byte[] buf = { 'H', 'e', 'l', 'l', 'o', ' ', 'W', 'o', 'r', 'l', 'd' };
           mxNPort.open(); /*open port*/
           mxNPort.setIoctIMode(mode); /*serial parameters setting*/
           mxNPort.write(buf, buf.length); /*write data*/
           mxNPort.close(); /*close port*/
        } catch (MxException e){
             /*Error handling*/
         }
      }
   }
};
thread.start();
```

## Introduction to LCM Display

Typically, you will use either NPort Administrator or the web console to configure the **NPort 5600-8-DT** series (standard temperature models), NPort 5600 series (standard temperature models) and **NPort 5410/5430** series (standard temperature models). These are not the only options for configuration. For basic onsite configuration, you can use the LCM console built into the device server, without requiring a connection to the network or a laptop.

In this chapter, we will introduce the basic operation and menu options of LCM display.

The following topics are covered in this chapter:

- Basic Operation
- Detailed Menu Options

### **Basic Operation**

If the NPort is working properly, the LCM panel will display a green color. The red Ready LED will also light up, indicating that the NPort is receiving power. After the red Ready LED turns to green, you will see a display similar to:

N	Ρ	5	4	1	0	_	б	1	4	0	5				
1	9	2		1	6	8		1	2	7		2	5	4	

This is where

- NP5410 is the NPort's name
- 61405 is the NPort's serial number
- 192.168.127.254 is the NPort's IP address

There are four push buttons on the NPort's nameplate. Going from left to right, the buttons are:

Button	ton Name Action			
menu	menu	activates the main menu, or returns to a lower level		
$\bigtriangleup$	up cursor	scrolls up through a list of items shown on the LCM panel's second line		
$\bigtriangledown$	down cursor	scrolls down through a list of items shown on the LCM panel's second line		
sel	select	selects the option listed on the LCM panel's second line		

The buttons are manipulated in a manner similar to the way a modern cellular phone operates. As you move through the various functions and setting options, note that the top line shows the current menu or submenu name, and the bottom line shows the submenu name or menu item which is activated by pressing the SEL button.

### **Detailed Menu Options**

The best way to explain all of the NPort's LCM functions is to refer to the tree graph shown in the next page. There are three main levels—1, 2, and 3—with each level represented by a separate column. The first thing to remember is that the menu button is used to move back and forth between the LCM panel's default screen, and main menu screen:



In addition, you only need to remember to:

- Use the SEL button to move up one level (i.e., left to right on the tree graph)
- Use the MENU button to move down one level (i.e., right to left on the tree graph)
- Use the cursor keys, △ and ▽, to scroll between the various options within a level (i.e., up and down on the tree graph).

As you use the buttons to operate the LCM display, you will notice that with very few exceptions, moving up one level causes the bottom line of the display to move to the top line of the display. You will also notice that the bottom three options in level 2, and all of the options in level 3 have either a C or D attached. The meaning is as follows:

• C = configurable

- I.e., you are allowed to change the setting of this option
- D = display only

I.e., the setting for this option is displayed, but it cannot be changed (This does NOT necessarily mean that the number does not change; only that you cannot change it)

Main Menu						
	Server setting	Serial number				D
		Server name				С
		Firmware ver				D
		Model name				D
	Network	Ethernet status				D
	setting	MAC address				D
		IP config				С
		IP address				С
		Netmask				С
		Gateway				С
		DNS server 1				С
		DNS server 2				С
	Serial set	Select port				С
		Baudrate				С
		Data bit				С
		Stop bit				С
		Parity				С
		Flow control				С
		Tx/Rx fifo				С
		Interface				С
		Tx/Rx bytes				D
		Line status				D
	Op Mode set	Select port				С
		Select mode				С
		[mode]				
		Real COM	TCP server	TCP client	UDP svr/cli	
		Alive timeout	Alive timeout	Alive timeout	Delimiter 1	С
		Max connection	Inact. time	Inact. time	Delimiter 2	С
		Delimiter 1	Max connection	Delimiter 1	Force Tx	С
		Delimiter 2	Delimiter 1	Delimiter 2	Dest IP start-1	С
		Force Tx	Delimiter 2	Force Tx	Dest IP end-1	С
			Force Tx	Dest IP-1	Dest port-1	С
			Local TCP port	TCP port-1	Dest IP start-2	С
			Command port	Dest IP-2	Dest IP end-2	С
				TCP port-2	Dest port-2	С
				Dest IP-3	Dest IP start-3	С
				TCP port-3	Dest IP end-3	С
				Dest IP-4	Dest port-3	С
				TCP port-4	Dest IP start-4	С
				TCP connect	Dest IP end-4	С
					Dest port-4	С
					Local port	С
	Console	Web console				С
		Telnet console				С
	Ping					С
	Save/Restart					С

The part of the LCM operation that still requires some explanation is how to edit the configurable options. In fact, you will only encounter two types of configurable options.

The first type involves entering numbers, such as IP addresses, Netmasks, etc. In this case, you change the number one digit at a time. The up cursor ( $\triangle$ ) is used to decrease the highlighted digit, the down cursor ( $\bigtriangledown$ ) is used to increase the highlighted digit, and the SEL button is used to move to the next digit. When the last digit has been changed, pressing SEL simply enters the number into the NPort's memory. The second type of configurable option is when there are only a small number of options from which to choose (although only one option will be visible at a time). Consider the PARITY attribute under PORT SETTING as an example. Follow the tree graph to arrive at the following PARITY screen. The first option, NONE, is displayed, with a down arrow all the way to the right. This is an indication that there are other options from which to choose.

P	a	r	i	t	Y	
N	0	n	е			$\downarrow$
Press	the dow	n curs	or butto	n once	e to see Odd as the second option.	
P	а	r	i	t	Y	$\uparrow$
0	d	d				$\downarrow$
Press	the dow	n curs	or butto	n aga	in to see Even as the third option.	
P	а	r	i	t	Y	$\uparrow$
Ε	v	е	n			$\downarrow$
Press	the dow	n curs	or butto	n aga	in to see Space as the fourth option.	
P	а	r	i	t	Y	$\uparrow$
Μ	а	r	k			$\downarrow$
Press	the dow	n curs	or butto	n yet	again to see the last option, Space.	
P	а	r	i	t	Y	$\uparrow$
S	р	а	C	Е		

To choose the desired option, press the SEL button when the option is showing on the screen.

A

## **Pinouts and Cable Wiring**

The following topics are covered in this appendix:

#### Port Pinout Diagrams

- Ethernet Port Pinouts
- Serial Port Pinouts

#### **Cable Wiring Diagrams**

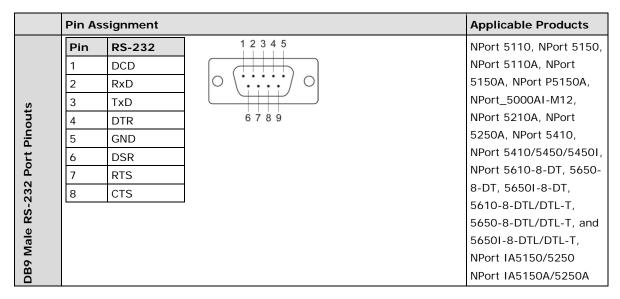
- Ethernet Cables
- Serial Cables

## **Port Pinout Diagrams**

### **Ethernet Port Pinouts**

Ethern	net RJ45		Ethern	et M12 (	(For NPc	rt 5000AI-M12 o	only)
Pin	Signal		Ethern	et M12:			
1	Tx+		PIN	ТΧ			
2	Tx-						
3	Rx+		1	TD+	2	7 3	
6	Rx-		2	RD+	- (10		
			3	TD-	10	24	
			4	RD-		- 4	
			Housing	g: shield			
			Power	M12·			
			3	2	PIN	Description	
			1.	•	1	Input V+	
			(( .	<b>1</b> - 5)	2	Not assigned	
			4	21	3	Input V-	
			-	· ·	4	Not assigned	
			;	5	5	Function ground	

### Serial Port Pinouts



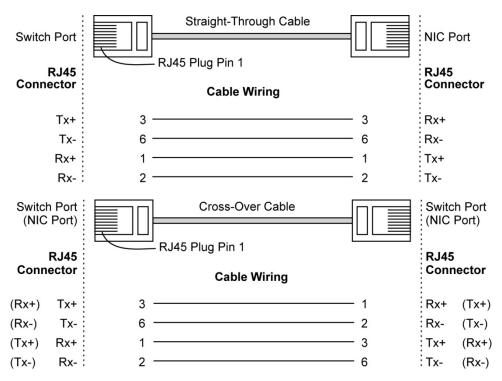
	Pin	RS-422 / 4-wi	re 2-wire RS-	<b>485</b> 1 2 3 4 5	NPort 5130, NPort 5150,
s		RS-485			NPort 5130A, NPort
out	1	TxD-(A)	_	$\circ$ (·····) $\circ$	5150A, NPort P5150A,
Pin		TxD+(B)	_		NPort_5000AI-M12,
t		RxD+(B)	Data+(B)	6789	NPort 5250A, NPort
PG		RxD-(A)	Data-(A)		5450/5450I, 5650-8-DT,
485		GND	GND		5650I-8-DT, 5650-8-
5/1		_	_		DTL/DTL-T, and
-42		_	_		5650I-8-DTL/DTL-T,
RS		_	_		NPort IA5150/5250,
ale					NPort IA5250A
DB9 Male RS-422/485 Port Pinouts	Note: signal		150A Series's D	B9 ports only support RS-232	
	Pin	RS-232			NPort 5210/5210I,
t	1	DSR		8	NPort 5610-8-DT-J,
8-pin RJ45 RS-232 Port Pinouts	2	RTS			NPort 5610, NPort 5650-
232	3	GND			8-DT-J
SS-S	4	TxD			
ы Ц	5	RxD			
RJ4 S	6	DCD			
8-pin R. Pinouts	7	CTS			
8-p Pin	8	DTR			
t	Pin	RS-422 4-wire RS-	2-wire RS- 485		NPort 5630
Ро		485			
185	1			_	
5/1	2			_	
42	3	TxD+		_	
RS-	4	TxD-		_	
45	5	RxD-	Data-	_	
n RJ45 RS-422/485 Port outs	6	RxD+	Data+	4	
8-pin RJ Pinouts	7	GND	GND	4	
∞ ∟	8				
	Pin	RS-232	RS-422 4-wire RS-485	2-wire RS- 485	NPort 5650, NPort 5650- 8-DT-J
				2-wire RS- 485	
	Pin	RS-232	4-wire RS-485	<b>485</b>	
	<b>Pin</b>	RS-232	4-wire RS-485	<b>485</b>	
	<b>Pin</b> 1 2	RS-232 DSR RTS	<b>4-wire RS-485</b>  TxD+	485 	
	Pin 1 2 3	RS-232 DSR RTS GND	<b>4-wire RS-485</b>  TxD+ GND	485  GND	
	Pin 1 2 3 4	RS-232 DSR RTS GND TxD	4-wire RS-485  TxD+ GND TxD-	485  GND 	
	Pin 1 2 3 4 5	RS-232 DSR RTS GND TxD RxD	4-wire RS-485  TxD+ GND TxD- RxD+	485  GND  Data+	
8-pin RJ45 RS-232/422/ 485 8 Port Pinouts P	Pin 1 2 3 4 5 6	RS-232 DSR RTS GND TxD RxD DCD	4-wire RS-485  TxD+ GND TxD- RxD+ RxD+ RxD-	485          GND          Data +       Data-	

Terminal Block RS-232 & RS-422/485 Pinouts	Serial Device Signals     NPo       RxD     I       TxD     I       TxD     I       CTS     I       GND     I       Rx+     I       Rx-     I       Tx+ / Data+     I       GND     I       GND     I	Tx Rx Rx RTS GND T+ T- R*/D+ 485/4222 GND GND H/D+ 485/4222 GND H/D+ 485/4222 H/D+ 485/4222 H	NPort 5230
Terminal Block RS-422/ 485 Port Pinouts	Pin       2-wire       RS-485         1       -         2       -         3       Data+(B)         4       Data-(A)         5       GND	RS-422, 4-wire RS-485           TxD+(B)           TxD-(A)           RxD+(B)           RxD-(A)           GND	NPort 5230A, NPort IA5150, NPort IA5150A
Terminal Block RS-	Serial Device Signals Rx+ Rx- Tx+ / Data+ GND Serial Device Terminal E Terminal E C Terminal E C C C C C C C C C C C C C C C C C C C		NPort 5430/5430I
Console Port Pinouts	RJ45 Connector	Pin         RS-232           1         DSR           2         RTS           3         GND           4         TxD           5         RxD           6         DCD           7         CTS           8         DTR	Applies only to DT models.

Power Input and Relay Output Pinouts	0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	сю о о	o					NPort IA5150/5250
Power Input ar Output Pinouts	щ	V2+	V2-	Г	t l	V1+	V1-	
r In It Pi	Shielded	DC	DC	Relay	Relay	DC	DC	
wei	Ground	Power	Power	output	output	Power	Power	
Po		input 1	input 1			input 2	input 2	
Power Input and Relay Output Pinouts	r                   	V2- DPWR2 NO D L L	NPort IA5000A					
Inpu ts	Ŧ	PWR	1	PWR2	REL	AΥ		
Power I Pinouts	Shielded	DC P	ower	DC Power	Norm	nal Open/C	lose, Relay	
Por	Ground	Input		Input	outp	ut		

## **Cable Wiring Diagrams**

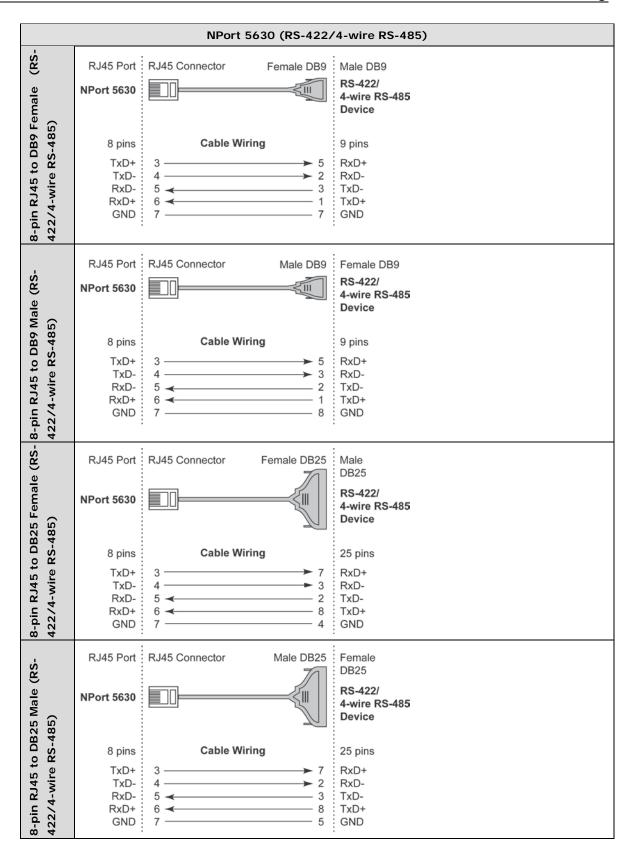
### **Ethernet Cables**

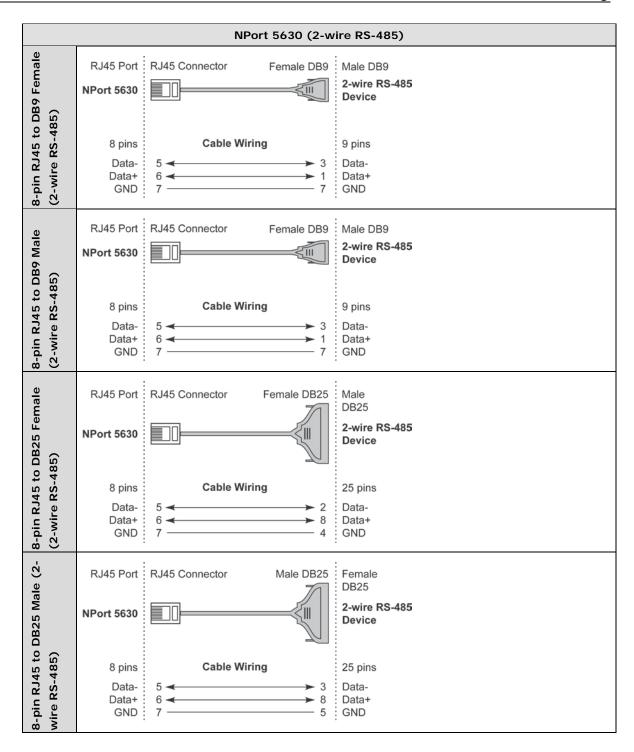


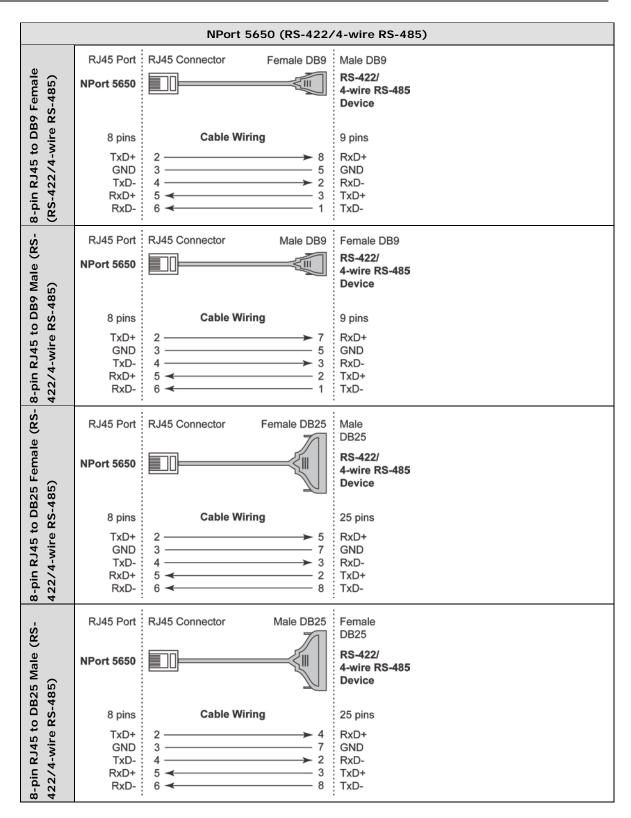
### **Serial Cables**

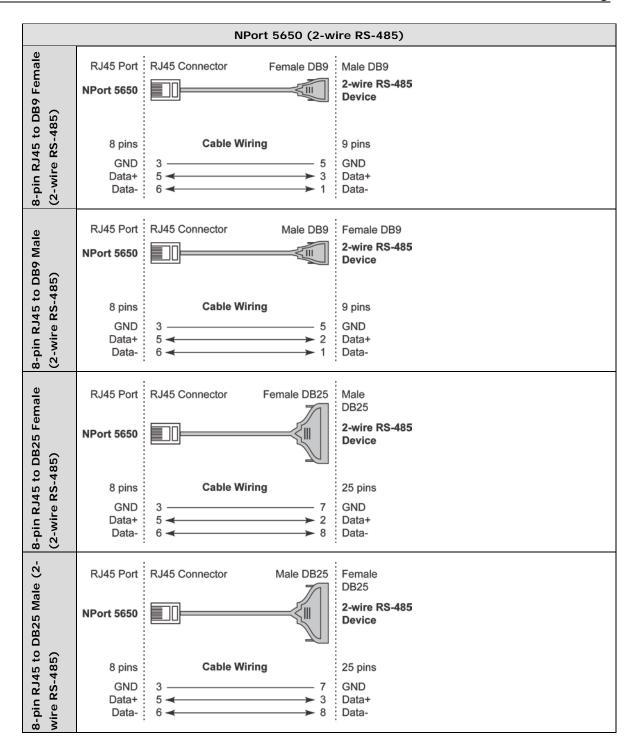
	Serial Cab	ble Wiring Diagrams		
	Male DB9	Female DB9 Male	e DB9	Female DB9
(RS-232)	NPort			RS-232 Device
DB9	9 pins	Cable Wiring		9 pins
Female DB9 to Male DB9	DCD RxD TxD DTR GND DSR RTS CTS	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	- 2 - 3 - 4 - 5 - 6 - 7	DCD TxD RxD DSR GND DTR CTS RTS
5)	Male DB9	Female DB9 Male	DB25	Female DB25
25 (RS-232)	NPort			RS-232 Device
DB	9 pins	Cable Wiring		25 pins
Female DB9 to Male DB25	DCD RxD TxD DTR GND DSR RTS CTS	1 <del> 2</del> 2 <del> 3</del> 3	- 3 - 2 - 20 - 7 - 6 - 4	DCD TxD RxD DSR GND DTR CTS RTS

		NPort 5210, NPort 5610/56	50 (RS-232)
	RJ45 Port	RJ45 Connector Female DB9	Male DB9
-rs-	NPort		RS-232
8-pin RJ45 to DB9 Female (RS- 232)			Device
ema	8 pins	Cable Wiring	9 pins
9 Fe	DSR	1 <del>&lt; 4</del> 2 <del>8</del>	DTR
DB	RTS GND	2	CTS GND
5 to	TxD	4 ─── 2	RxD
RJ4	RxD DCD	5 <del>&lt; 3</del> 6 <del>&lt; 1</del>	TxD DCD
2) 2	CTS	7 - 7	RTS
8-F 23.	DTR	8	DSR
5)	RJ45 Port	RJ45 Connector Male DB9	Female DB9
-23	NPort		RS-232
(RS			Device
8-pin RJ45 to DB9 Male (RS-232)	8 pins	Cable Wiring	9 pins
M 63	DSR	$\begin{array}{c}1 \\ 4 \\ 2 \\ \hline \end{array} \begin{array}{c}6 \\ 7 \\ 7 \end{array}$	DTR
DB	RTS GND	3 5	CTS GND
5 to	TxD	4 ─── > 3	RxD
RJ4	RxD DCD	5 <b>~</b> 2 6 <b>~</b> 1	TxD DCD
pin	CTS	7 - 8	RTS
-8	DTR	8	DSR
	RJ45 Port	RJ45 Connector Female DB25	Male
(32)		7	DB25
S-2	NPort		RS-232
e (F			Device
Female (RS-232)	8 pins	Cable Wiring	25 pins
5 Fe	DSR	1 🔫 20	DTR
<b>0B2</b>	RTS GND	2	CTS GND
to [	TxD	4> 3	RxD
145	RxD	5 <del>&lt;</del> 2 6 <del>&lt;</del> 8	TxD
n RJ	DCD CTS	7 🗲 4	DCD RTS
8-pin RJ45 to DB2	DTR	8 6	DSR
			i
	RJ45 Port	RJ45 Connector Male DB25	Female DB25
32)			RS-232
S-2	NPort		Device
е (R	8 pins	Cable Wiring	25 pipe
8-pin RJ45 to DB25 Male (RS-232)	DSR		25 pins DTR
325	RTS	2 4	CTS
o DI	GND TxD	$3 \xrightarrow{} 7 \\ 4 \xrightarrow{} 2$	GND RxD
45 ti	RxD	5 \prec 3	TxD
RJ	DCD	6 <b>≺</b> 8 7 <b>≺</b> 5	DCD
pin	CTS DTR	$\begin{array}{c}7 \\ 8 \end{array} \xrightarrow{5} 20$	RTS DSR
å	Dire	20	· ·







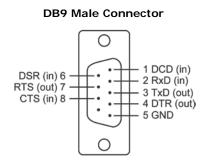


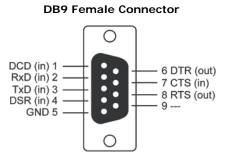
	Serial C	able W	iring Diag	rams				
	NPort							Serial Device
		RJ45	DB9(F)		DB9(M)	DB25(M)	DB25(F)	
	DSR	1	6	◄	4	6	20	DTR
	RTS	2	7	$\longrightarrow$	8	4	5	CTS
	GND	3	5		5	7	7	GND
les	TxD	4	3	$\longrightarrow$	2	2	3	RxD
Cab	RxD	5	2	◄	3	3	2	TxD
RS-232 Cables	DCD	6	1	◄	1	8	8	DCD
-23	CTS	7	8	◄	7	5	4	RTS
RS	DTR	8	4	$\longrightarrow$	6	20	6	DSR
RS-422, 4-wire RS-485 Cables	NPort							Serial Device
ŝ		RJ45	DB9(F)		DB9(M)	DB25(M)	DB25(F)	
vire	TxD+	2	2	$\longrightarrow$	3	3	2	RxD+
4-v	GND	3	5		5	7	7	GND
s 12	TxD-	4	1	>	1	8	8	RxD-
RS-422 Cables	RxD+	5	3	◄	2	2	3	TxD+
RS Cal	RxD-	6	4	◄	6	20	6	TxD-
85	NPort							Serial Device
5-4		RJ45	DB9(F)		DB9(M)	DB25(M)	DB25(F)	
S K	GND	3	5		5	7	7	GND
2-wire RS-485 Cables	Data+	5	3	$\longleftrightarrow$	2	2	3	Data+
2-wire Cables	Data-	6	4	$\longleftrightarrow$	6	20	6	Data-

### Cable Wiring for NPort 5600-8-DT/DTL Series

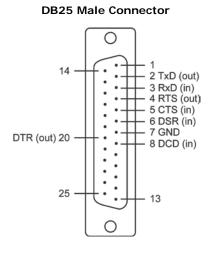
#### Pin Assignments for DB9 and DB25 Connectors

#### Pin Assignments for DB9 Male and Female Connectors

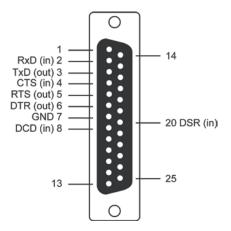




#### Pin Assignments for DB25 Male and Female Connectors



**DB25** Female Connector



# Adjustable Pull High/low Resistors for the RS-485 Port

In some critical environments, you may need to add termination resistors to prevent the reflection of serial signals. When using termination resistors, it is important to set the pull high/low resistors correctly so that the electrical signal is not corrupted. Since there is no resistor value that works for every environment, DIP switches or Jumpers are used to set the pull high/low resistor values for each RS-485 port.



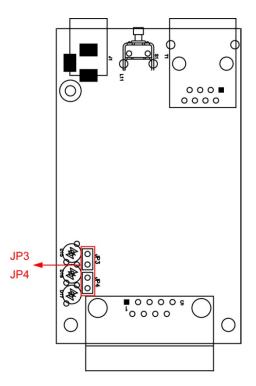
#### ATTENTION

Do not use the 1 k $\Omega$  setting on NPorts when using the RS-232 interface. Doing so will degrade the RS-232 signals and shorten the maximum allowed communication distance.

#### NPort 5130/5150 Series (Jumpers)

**To set a termination resistor to 150 k** $\Omega$ , make sure that the two jumpers (JP3 and JP4) assigned to the serial port are not shorted by jumper caps. This is the default setting.

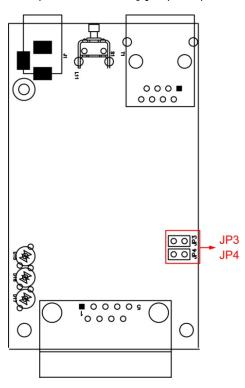
To set a termination resistor to 1 k $\Omega$ , make sure that the two jumpers (JP3 and JP4) assigned to the serial port are shorted by jumper caps.



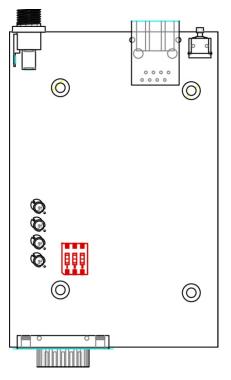
#### NPort 5130A/5150A (Jumpers)

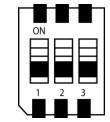
To set a pull high/low resistor to 150 k $\Omega$ , make sure that the two jumpers (JP3 and JP4) assigned to the serial port are not shorted by jumper caps. This is the default setting.

To set a pull high/low resistor to 1 k $\Omega$ , make sure that the two jumpers (JP3 and JP4) assigned to the serial port are shorted by jumper caps.



NPort P5150A (DIP Switches)





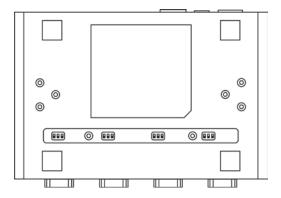
SW	1	2	3
	Pull-high	Pull-low	Terminator
	resistor	resistor	
ON	1 kΩ	1 kΩ	120 Ω
OFF	150 kΩ*	150 kΩ*	-*

\* Default

#### NPort 5400 Series (DIP Switches)

To set the pull high/low resistors to 150 K $\Omega$ , make sure both of the assigned DIP switches are in the OFF position. This is the default setting.

To set the pull high/low resistors to 1 K $\Omega$ , make sure both of the assigned DIP switches are in the ON position.



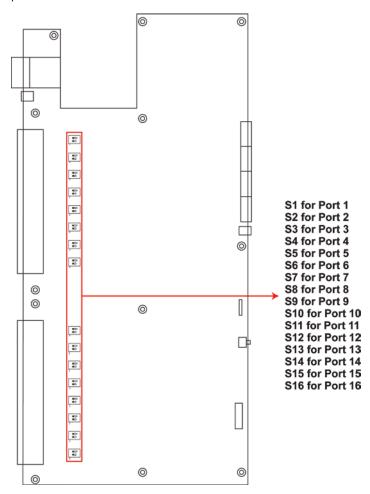
#### Pull high/low resistors for the RS-485 Port

	CW/	1	2	3
	SW	Pull High	Pull Low	Terminator
	ON	1 ΚΩ	1 ΚΩ	120 Ω
Default	OFF	150 KΩ	150 KΩ	

#### NPort 5650 Series (DIP Switches)

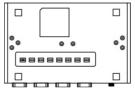
To set the pull high/low resistors to 150 K $\Omega$ , make sure both of the assigned DIP switches are in the OFF position. This is the default setting.

To set the pull high/low resistors to 1 K $\Omega$ , make sure both of the assigned DIP switches are in the ON position.

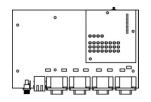


#### NPort 5600-8-DT/DTL Series (DIP Switches)

**NPort 5600-8-DT:** Use the DIP switches on the bottom panel to configure each device port's pull high/low resistors. You will need to unscrew the DIP switch cover to access the DIP switches.



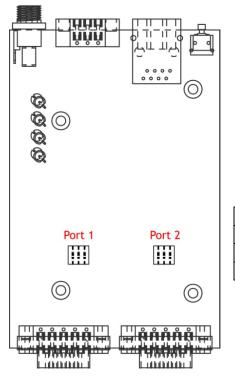
• **NPort 5600-8-DTL:** Remove the top cover to access the DIP switches used to configure each device port's pull high/low resistors (note that SW4 is reserved for future use).



The pull high/low resistor values for each device port are set as follows:

	SW	1	2	3
		Pull High	Pull Low	Terminator
	ON	1 ΚΩ	1 ΚΩ	120 Ω
Default	OFF	150 ΚΩ	150 ΚΩ	-

#### NPort 5230A/5250A (DIP Switches)

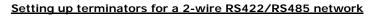


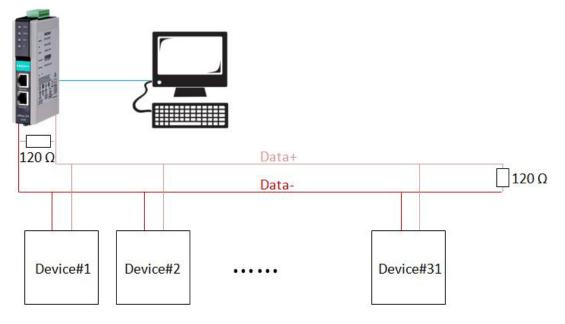
011		
	$\square$	$\square$
1	2	3

SW	1	2	3	
	Pull-high resistor	Pull-low resistor	Terminator	
ON	1 ΚΩ	1 ΚΩ	120 Ω	
OFF	150 KΩ*	150 KΩ*	-*	
* Default				

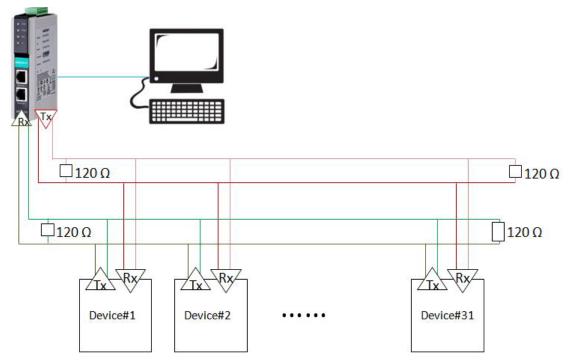
#### NPort IA5000 Series

When setting up your RS-485 and RS-422 networks, you should use termination resistors to prevent signal reflections. The NPort IA5000 Series does not come with pull high/low resistors and terminators, so you will need to obtain and configure the termination yourself. The following figures illustrate how to properly configure termination for a 2-wire RS-422/RS485 network, and a 4-wire RS485 network. You will usually only need to install termination resistors (typically 120  $\Omega$ ) on the first and last devices on your network.



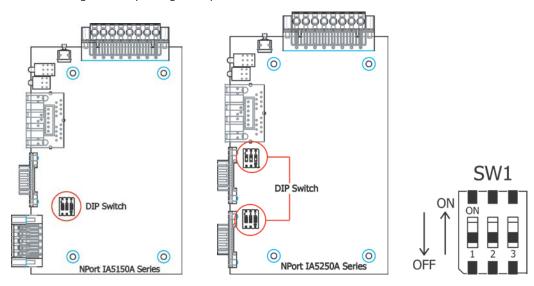


#### Setting up terminators for a 4-wire RS485 network



#### NPort IA5000A Series (DIP Switches)

The DIP switches are located on the PCB board; you will need to take off the covers to access them. To set the pull-high resistor to 150 K $\Omega$ , flip DIP1 to "OFF," and then set the pull-low resistor to 150 K $\Omega$ , and then flip DIP2 to "OFF." To set the pull-high resistor to 1 K $\Omega$ , flip DIP1 to "ON," and then set the pull-low resistor to 1 K $\Omega$ , and then flip DIP2 to "ON." Make sure that DIP3 is "ON" to enable the 120 $\Omega$  terminator. The default settings for the pull-high and pull-low resistors, and the terminators are all at "OFF."



## **Well-Known Port Numbers**

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

The port numbers are divided into three ranges: the well-known Ports, the Registered Ports, and the Dynamic and/or Private Ports.

- The Well-Known Ports range from 0 through 1023.
- The Registered Ports range from 1024 through 49151.
- The Dynamic and/or Private Ports range from 49152 through 65535.

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

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

D

# SNMP Agents with MIB II & RS-232/422/485 Link Groups

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

System MIB	Interfaces MIB	IPMIB	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
	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	

#### **RFC1213 MIB-II Supported SNMP Variables:**

UDP MIB	ТСР МІВ	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
AtlfIndex	tcpCurrEstab	snmpInReadOnlys
AtPhysAddress	tcpInSegs	snmpInGenErrs
AtNetAddress	tcpOutSegs	snmpInTotalReqVars
AtNetAddress	tcpRetransSegs	snmpInTotalSetVars
	tcpConnState	snmpInGetRequests
	tcpConnLocalAddress	snmpInGetNexts
	tcpConnLocalPort	snmpInSetRequests
	tcpConnRemAddress	snmpInGetResponses
	tcpConnRemPort	snmpInTraps
	tcpInErrs	snmpOutTooBigs
	tcpOutRsts	snmpOutNoSuchNames
		snmpOutBadValues
		snmpOutGenErrs
		snmpOutGetRequests
		snmpOutGetNexts
		snmpOutSetRequests
		snmpOutGetResponses
		snmpOutTraps
		snmpEnableAuthenTraps

#### RFC1317: RS-232 MIB objects

Generic RS-232-like Group	RS-232-like General Port	RS-232-like Asynchronous Port
Generic K3-232-like Group	Table	Group
rs232Number	rs232PortTable	rs232AsyncPortTable
	rs232PortEntry	rs232AsyncPortEntry
	rs232PortIndex	rs232AsyncPortIndex
	rs232PortType	rs232AsyncPortBits
	rs232PortInSigNumber	rs232AsyncPortStopBits
	rs232PortOutSigNumber	rs232AsyncPortParity
	rs232PortInSpeed	
	rs232PortOutSpeed	

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

## **Auto IP Report Protocol**

The NPort Series provides several ways to configure Ethernet IP addresses. One of them is DHCP Client. When you set up the NPort to use DHCP Client to configure Ethernet IP addresses, it will automatically send a DHCP request over the Ethernet to find the DHCP Server. And then the DHCP Server will send an available IP address to the NPort. The NPort will use this IP address for a period of time after receiving it. But the NPort will send a DHCP request again to the DHCP Server. Once the DHCP Server realizes that this IP address is to be released to another DHCP Client, the NPort then will receive a different IP address. For this reason, users sometimes find that the NPort will use different IP addresses, not a fixed IP address.

In order to know what IP address the NPort is using, you need to set up parameters in Network Settings via the Web browser. The figure below is the NPort Web console configuration window. Enter the IP address and the Port number of the PC that you want to send this information to.

#### **Network Settings**

LAN1 IP address	192.168.127.254
LAN1 Netmask	255.255.255.0
LAN1 Gateway	
LAN1 IP configuration	Static \$
Multi-LAN mode	Switch \$
LAN2 IP address	192.168.126.254
LAN2 Netmask	255.255.255.0
LAN2 Gateway	
LAN2 IP configuration	Static \$
DNS server 1	
DNS server 2	
IP Address Report	
Auto report to IP (LAN2)	
	1000
Auto report to UDP port	4002
Auto report period	10 (0~99 secs)
LLDP Settings	
LLDP	💿 Enable 🔵 Disable

And then you can develop your own programs to receive this information from the NPort. Here is NPort's Auto IP Report Protocol. We provide an example for you to easily develop your own programs. You can find this example on Moxa's website.

#### Auto IP Report Format

"Moxa", 4 bytes	Info[0]	Info[1]		Info[n]
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#### Info [n]

	Field	ID	Length	Data
	Length	1	1	Variable, Length is "Length Field"

### ID List

ID Value	Description	Length	Note
1	Server Name	Variable	ASCII char
2	Hardware ID	2	Little-endian
3	MAC Address	6	6 bytes MAC address. If the MAC address is
			"00-90-E8-01-02-03", the MAC[0] is 0,
			MAC[1] is 0x90(hex), MAC[2] is 0xE8(hex),
			and so on.
4	Serial Number	4, DWORD	Little-endian
5	IP Address	4, DWORD	Little-endian
6	Netmask	4, DWORD	Little-endian
7	Default Gateway	4, DWORD	Little-endian
8	Firmware Version	4, DWORD	Little-endian
			Ver1.3.4= 0x0103040
9	AP ID	4, DWORD	Little-endian

#### AP ID & Hardware ID Mapping Table

AP ID	Device ID	Product
0x80015100	0x511A	NPort 5110A
0x80015100	0x513A	NPort 5130A
0x80015100	0x515A	NPort 5150A
0x80015200	0x521A	NPort 5210A
0x80015200	0x523A	NPort 5230A
0x80015200	0x525A	NPort 5250A
0x80005110	0x5110	NPort 5110
0x80005100	0x5130	NPort 5130
0x80005100	0x5150	NPort 5150
0x80005000	0x0504	NPort 5410
0x80005000	0x0534	NPort 5430
0x80005000	0x1534	NPort 5430I
0x80000312	0x0312	NPort 5230
0x80000312	0x0322	NPort 5210
0x80000312	0x0332	NPort 5232
0x80000312	0x1332	NPort 5232I
0x80005610	0x5618	NPort 5610-8
0x80005610	0x5613	NPort 5610-16
0x80005610	0x5638	NPort 5630-8
0x80005610	0x5633	NPort 5630-16
0x80015100	0x5157	NPort P5150A

AP ID	Device ID	Product
0x80015100	0x511A	NPort 5110A
0x80015100	0x513A	NPort 5130A
0x80015100	0x515A	NPort 5150A
0x80015200	0x521A	NPort 5210A
0x80015200	0x523A	NPort 5230A
0x80015200	0x525A	NPort 5250A
0x80005110	0x5110	NPort 5110
0x80005100	0x5130	NPort 5130
0x80005100	0x5150	NPort 5150
0x80005000	0x0504	NPort 5410
0x80005000	0x0534	NPort 5430
0x80005000	0x1534	NPort 5430I
0x80000312	0x0312	NPort 5230
0x80000312	0x0322	NPort 5210
0x80000312	0x0332	NPort 5232
0x80000312	0x1332	NPort 52321
0x80005610	0x5618	NPort 5610-8
0x80005610	0x5613	NPort 5610-16
0x80005610	0x5638	NPort 5630-8
0x80005610	0x5633	NPort 5630-16
0x80015100	0x5157	NPort P5150A

#### AP ID & Hardware ID Mapping Table

## **Compliance Notice**



#### **CE Warning**

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take appropriate measures.

#### **Federal Communications Commission Statement**

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 Warning**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his or her own expense.