NPort 5000 Series User's Manual

NPort 5000/5000A/IA5000/IA5000A Series

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NPort 5000 Series User's Manual

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About This Manual

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:

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.

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
± ± τγ τ ± τ +	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 L L L L L L L L L L L L L L L L L L L	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	
$\square \square \sqcup \sqcup \sqcup \sqcup \sqcup \sqcup \sqcup \sqcup \square \square \square \square \square \square \square \square \square \square$	angle shown here. Connect the SG wire to	
– – – – – – – – – – – – – – – – – – –	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	
NPon	shown here. Connect the SG wire to an	
	appropriate grounded metal surface.	
C N1		
	The Shielded Ground (sometimes called	NPort 5600 Series
$ \Theta \otimes \otimes \Theta \Theta $	Protected Ground) contact is the second	
V+ V- 🖨	contact from the right of the 5-pin power	
	terminal block connector located on the	
	rear panel of NPort 5600 VDC models.	
SG-	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.		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.	
Link* Off The fiber port is disconnected.		The fiber port is disconnected.	
	Green	The fiber port is connected, but data is NOT being transmitted.	
	Blinking	The fiber port is connected, and data is being transmitted.	

*The NPort 5650 fiber model is the only model with a Link indicator on the rear panel.

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.		Serial device is receiving data.	
	Off	No data is flowing to or from the serial port.	

NPort 5000AI-M12 Series

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.	
GreenThe serial port is transmitting data.OffData is NOT being transmitted or received through the serial		The serial port is transmitting data.	
		Data is NOT being transmitted or received through the serial port.	

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.

File Eunction Configuratio								
		i ⊇r e Configure \						
Function			(Configuration	- 0 NPort(s)		
Port Configuration Ordinguration Ordinguration	No /	Model	MAC Address	IP Address	IP Address2	Server Name	Status	
	<							
dessage Log - 0 Monitor Lo	g - 0							
No Time		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.

🚉 Exit Search	💁 🕍 Search IP Loca	te Configure We						
Function		-	Co	nfiguration -	1 NPort(s)		
NPort Configuratio Configuratio Monitor Port Monitor Mon, CDM Mappi Sec. IP Address f	g	Model NPort 5250A	MAC Address 00:90:E8:63:50:FD	P Address 192.168.127.254	IP Address2	Server Name NP5250A_7162	Status Unlock	
6 3/21/2 7 3/21/2 8 3/21/2	tor Log - 0] 19 4:51:23 PM 19 4:54:28 PM 19 4:54:33 PM 19 4:57:07 PM 19 4:57:15 PM	Found NPort(s): 1	5650-8-D T-J (00:90:E 8:00 52504 (00:90:E 8:63:50:F(_	

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; the default username and password is **admin** and **moxa** respectively.

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 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.

Configuration × Information Account Management Configuration Pre-shared Key | System Log Settings | Auto Warning Model Name Network IP Address Report Serial Operating Mode Accessible IPs Basic. NPort 5250A Network Setting SNMP Setting MAC Address ✓ Modify 00:90:E8:63:50:FD IP Address 192.168.127.254 Serial Number Netmask 255.255.255.0 7162 IP Configuration Static -Firmware Version Gateway Ver15 - Modify System Uptime 0 days, 00h:01m:39s Modify Enable LLDF 30 🗸 ок Click the "Modify" check box to modify configuration X Cancel

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

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

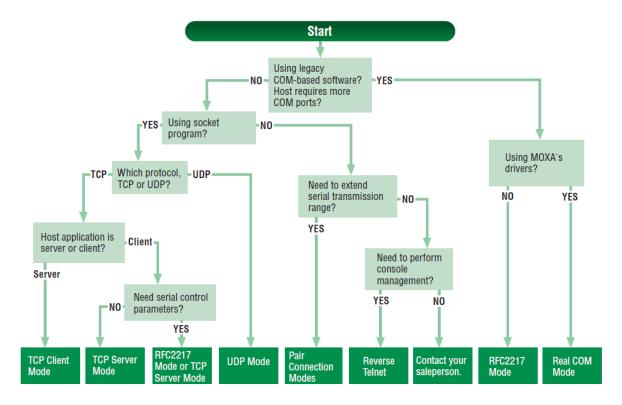
parameters. On the **Operating Mode** screen, select the **Modify** check box and then select the device port that you wish to configure. Click **Settings** to configure the selected device port.

Modify				
ort Alias	 ° Mode			
	View	Settings Se	ettings	
		Real COM Mode Real COM Mode	Real COM Mode	Real COM Mode

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	ort is Port 1 Real COM Mode		
Real COM			
Max. Connection	1	•	
Misc (Optional)			
TCP Alive Check T 7	imeout (0-99 min)		
Allow Driver Co	introl		
Ignore Jammed	IIP		
– Data Packing (Optio	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 🗸		
Demniter Frocess			
Demniter 1 100655			
Demmer 1008ss			

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				
	5110/5210/5230/5232I				
	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

Configuration Information Model Name NPort 5250A		etwork IP Ad	guration Pre-shared Key System Lo dress Report Serial Operatir	g Settings AutoWarning ng Mode Accessible IPs
MAC Address 00:90:E8:63:50:FD		Modify -		
00.30.20.03.30.10	Port	Alias	Settings	
Serial Number	1		115200,N,8,1,RTS/CTS 115200,N,8,1,RTS/CTS	
7162	2		113200,10,0,1,1137013	
Firmware Version				
Ver 1.5				
System Uptime				
0 days, 00h:07m:30s				
			View Settings	Settings
	Click the "M	lodifu'' check box t	o modify configuration	VOK X Cancel
	CICK (IC IN	outy chock box t	- moary conniguration	

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	•			

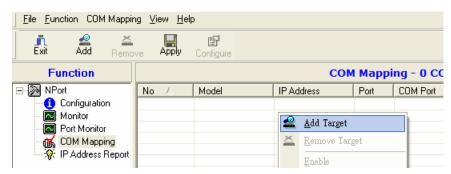
Mapping COM Port to Device (only required when operation mode is set to Real COM or RFC2217)

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**.

<u>File</u> <u>F</u> unction COM Mappir	ng ⊻iew <u>H</u> el	p			
Exit Add Remo		Configure			
Function			COM Mappir	ng - 8 C	юм
⊡ 🔊 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
	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	2						
Exit Add Remo	ve Apply	Configure						
Function			COM	1 Ma	appir	ng - 16 COM	4	
⊡-≫ NPort	No 🛆	Model	IP Address	Po	ort	COM Port	Mode	Parameter
Configuration	1	NPort 5650-16	192.168.16.130	14		Геомо	Lu: Performance, FIFO Ena	9600, None, 8, 1
- 🖾 Monitor	2	NPort 5650-16	192.168.16.130	2	<u>A</u> dd (Farget	Performance, FIFO Ena	9600, None, 8, 1
- Re Port Monitor	3	NPort 5650-16	192.168.16.130	*	n	π	Performance, FIFO Ena	9600, None, 8, 1
	4	NPort 5650-16	192.168.16.130		<u>R</u> emc	ive Target	Performance, FIFO Ena	9600, None, 8, 1
COM Mapping	5	NPort 5650-16	192.168.16.130		Enabl	•	Performance, FIFO Ena	9600, None, 8, 1
W. II Address Treport	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	-5			Performance, FIFO Ena	9600, None, 8, 1
	9	NPort 5650-16	192.168.16.130	ð	COM	Settings	Performance, FIFO Ena	9600, None, 8, 1
	10	NID-A ECEO 10	100.100.10.100		_		Destances FIFO Fac	0000 N 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	
Basic Settings Advanced Settings Serial Parameters COM Grouping	1
COM Number COM7 •	
 Auto enumerating COM number for selected ports. 	
Grouping selected port(s) together.	
V OK X Cancel	J

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 COM Grouping
Baud Rate	9600	-
Parity	None	•
Data Bits	8	•
Stop Bits	1	•
Flow Control	None	•
Apply All Sel	lected 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 (юм	
⊡ 🔊 NPort	No 🛆	Model	IP Address	Port	COM Port	Mode
🔂 Configuration	1	NPort 5610-8-DT	192.168.127.254	1	COM5	Hi-Performance, FIFO End
Monitor	2	NPort 5610-8-DT	192.168.127.254	2	COM6	Hi-Performance, FIFO Env
Port Monitor	3	NPort 5610-8-DT	192.168.127.254	3	COM7	Hi-Performance, FIFO Ena
🔣 COM Mapping	4	NPort 5610-8-DT	192.168.127.254	4	COM8	Hi-Performance, FIFO End
P Address Report	5	NPort 5610-8-DT	192.168.127.254	5	COM9	Hi-Performance, FIFO Ena
Ar in Address hepote	6	NPort 5610-8-DT	192.168.127.254	6	COM10	Hi-Performance, FIFO Ena
	7	NPort 5610-8-DT	192.168.127.254	7	COM11	Hi-Performance, FIFO Ena
	8	NPort 5610-8-DT	192.168.127.254	8	COM12	Hi-Performance, FIFO End
	L					
	L					
	<					>
	p					
Message Log - 28 Monitor Lo	og - O					

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 🔺
	Allow cookies that are stored on your computer Disable
Internet Local intranet Trusted sites Restricted	Enable
sites	O Prompt
Internet	🖉 🖉 Allow per-session cookies (not stored)
	Disable
haven't placed in other zones	Enable
	O Prompt
Security level for this zone	- Downloads
Move the slider to set the security level for this zone.	🔛 📄 File download
- Addium	O Disable
- Safe browsing and still functional Prompts before downloading potentially unsafe content	O Enable
- Unsigned ActiveX controls will not be downloaded	The sect doubles d
Appropriate for most Internet sites	
	Reset custom settings
	Reset to: Medium
Custom Level Default Level	Reset to: Medium Reset
OK Cancel Apply	y 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**.
- For the overall NPort 5000 Series, you will be prompted to enter the username and password to access the NPort web console. (The default username is **admin**; password is **moxa**.) For the NPort 5100/5200/IA5000 series, only the password is requiried (the default password is **moxa**).

Veb Interface for	the NPort 5100, 5200, and IA500	00 Series Only
Input Password -	Microsoft Internet Explorer	
File Edit View	Favorites Tools Help	
	🗿 😰 🚮 🛱 🥘 Search 🛛 🙀 Favorites	③History □ □ + · · ·
Address 🙋 http://19	92.168.127.254/	
Input password Password :	skok	
Submit		
Veb 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.

ort Web Console - Microsoft I	nternet Evolorer			
dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ool				
		es 😢 Media 🧭 🖂 -		
		ba3bb0a27ca8b330c239db85ubmit		
ndb:11192.100.127.204)	ome.nom Password=7.518960841	04300042704003300239406342mil	-30011K	
мохл	www.	moxa.com		
ain Menu				
Overview	weicome to i	VPort's web co	nsole !	
Basic Settings	Model Name	NPort IA-52	50	
Network Settings	MAC Address	00:90:E8:52		
Serial Settings	Serial No.	525016		
Operating Settings Accessible IP Settings	Firmware Version	1.0		
Auto Warning Settings	System Uptime	0 days, 00h		
Monitor	NPort's web console pr	ovide the following function	in groups.	
Change Password Load Factory Default Save/Restart	Basic Settings Server name, rea function.	I time clock, time server I	P address, and Web console, Telnet console Enable, Disable	
	Network Settings IP address, netm Serial Settings		tic IP or dynamic IP, DNS, SNMP, IP location report.	
	Baud rate, start l	bits, data bits, stop bits,	flow control, UART FIFO.	
	Operating Setting		y, delimiters, force transmit timeout.	
	operation mode,	TCP alive check, inactivit	y, deminters, force transmit timeout.	
	Accessible IP Sett			
	"Accessible IP or	Accessible IP group", Disa	ble to accept all IP's connection.	
		Heeessie in group i eist	ble to accept an in a connection.	
	Auto Warning Set		ble to accept an in a connection.	
	Auto Warning Set			
	Auto Warning Set Auto warning E-N	t ings Mail, SNMP Trap server IP	address, Relay Output.	
b Interface	Auto Warning Set Auto warning E-N	tings	address, Relay Output.	
b Interface	Auto Warning Set Auto warning E-N	t ings Mail, SNMP Trap server IP	address, Relay Output.	
b Interface	Auto Warning Set Auto warning E-N	tings Mail, SNMP Trap server IP Prall NPort 5	address, Relay Output.	
b Interface	Auto Warning Set Auto warning E-N	tings Mail, SNMP Trap server IP Prall NPort 5	address, Relay Output.	
b Interface	Auto Warning Set Auto warning E-N	tings Mail, SNMP Trap server IP Prail NPort 5 Velcome to NP	address, Relay Output.	
verview	Auto Warning Set Auto warning E-N	ttings Mail, SNMP Trap server IP Erall NPort 5 Velcome to NP Model	address, Relay Output. 5000 Series ort web console NPort IA5450AI	
rview x Setup ic Settings	Auto Warning Set Auto warning E-N	ttings Mail, SNMP Trap server IP Erall NPort 5 Velcome to NP Model Name	address, Relay Output. 5000 Series ort web console NPort IA5450AI NPIA5450AI_11625	
erview ok Setup iic Settings work Settings	Auto Warning Set Auto warning E-N	ttings Mail, SNMP Trap server IP Erall NPort 5 Velcome to NP Model Name Serial NO.	address, Relay Output. 5000 Series ort web console NPat (As450A) NPIA5450A1_11625 11625	
erview ick Setup sic Settings twork Settings erial Settings	Auto Warning Set Auto warning E-N	tings Aail, SNMP Trap server IP Erall NPort S Velcome to NP Model Name Serial NO. Firmware	address, Relay Output. 30000 Series ort web console NPIA5450AI_11825 11625 1.6 Buld 19013022	
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ervlew sic Settup sic Settings twork Settings erial Settings perating Settings cessible IP Settings dministration	Auto Warning Set Auto warning E-N	tings Aail, SNMP Trap server IP Erall NPort S Velcome to NP Model Name Serial NO. Firmware IP	address, Relay Output. 30000 Series ort web console NPIA5450AI_11625 11625 1.6 Build 19013022 192.168.127.254	
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verview Jok Setup Isic Settings serial Settings beraing Settings peraing Settings cessible IP Settings udministration ackup/Restore restem Log Settings uto Warning Settings System Log Event settings E-mail and SNMP Trap Event Type System SMMP Trap Event Type System Cog Event settings E-mail and SNMP trap Event Type System Cog Event settings Relay Output	Auto Warning Set Auto warning E-N	tings Aail, SNMP Trap server IP Erall NPort S 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. 30000 Series ort web console NPIA5450AI_11825 11625 1.6 Buid 19013022 192.168.127.254 0.099:E84DA9.6F 0.0498.01h.18m.378 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.

Server Settings			
Server name	NPIA5450AI_6671		
Network Settings			
P settings	Static 🔹		
A PORT IN	192.168.127.135		
P address Netmask	192.168.127.135 255.255.255.0		

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.

Real COM			
PC communicate with serial device through COM port.			
Remember to install Real COM/TTY driver on	C. For detail information	lease refer to l	Jser's Manua
Отср			
PC communicate with serial device through TCP port.			
Device is TCP client			
Device is TCP client Destination IP address		Port 4001	
Destination IP address		Port 4001	
		Port 4001	

Step 3/3

• Step 3/3

In Step 3/3, modify the **Serial Settings**.

Serial Settings	
Baud rate	115200 🔻
Data bits	8 🔻
Stop bits	1 •
Parity	None 🔻
Interface	RS-232 T
	Back Next Cancel

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	
Server name	NPIA5450AI_6671
Network Settings	
IP settings	Static
IP	192.168.127.135
Netmask	255.255.255.0
Gateway	
Operation Mode Setting	IS .
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.

erview	Configuration Import	
ick Setup		
Settings	Select configuration file	Choose File No file chosen
rk Settings	IP configuration	Import all configurations including IP configurations.
I Settings		
ating Settings sible IP Settings	Submit	
inistration		
up/Restore		
-shared Key		
figuration Import		
figuration Export		
n Log Settings		
Warning Settings		
le Firmware		
or		
e Password		
Factory Default Restart		
t		
		uration Export
rview		_
rview k Setup	Configuration Ex	_
		_
k Setup		_
k Setup Settings	Configuration Ex	_
: Setup Settings ork Settings	Configuration Ex	_
Setup Settings ork Settings al Settings rating Settings	Configuration Ex	_
Setup Settings rk Settings al Settings ating Settings sible IP Settings	Configuration Ex	_
Setup Settings I Settings ating Settings sible IP Settings nistration	Configuration Ex	_
Setup Settings rk Settings I Settings ating Settings sible IP Settings nistration up/Restore	Configuration Ex	_
Setup Settings rk Settings al Settings rating Settings sible IP Settings inistration up/Restore -shared Key	Configuration Ex	_
Setup Settings rrk Settings al Settings rating Settings sible IP Settings inistration rup/Restore -shared Key ofiguration Import	Configuration Ex	_
Setup Settings rk Settings al Settings rating Settings sible IP Settings inistration rup/Restore -shared Key ofiguration Import afiguration Export	Configuration Ex	_
Setup Setuings ork Settings al Settings rating Settings sible IP Settings inistration cup/Restore -shared Key nfiguration Import nfiguration Export m Log Settings	Configuration Ex	_
Setup Setuings sk Settings al Settings sible IP Settings inistration tup/Restore -shared Key offiguration Import offiguration Export m Log Settings Warning Settings	Configuration Ex	_
Setup Setungs rk Settings al Settings ating Settings sible IP Settings nistration up/Restore -shared Key figuration Import figuration Export in Log Settings Warning Settings de Firmware	Configuration Ex	_
Setup Setungs rk Settings al Settings ating Settings sible IP Settings inistration up/Restore -shared Key infiguration Import infiguration Export in Log Settings Warning Settings de Firmware tor	Configuration Ex	_
Setup Setups Settings sork Settings al Settings rating Settings inistration kup/Restore e-shared Key infiguration Import infiguration Export m Log Settings Warning Settings Warning Settings de Firmware itor ge Password	Configuration Ex	_
Setup Settings ork Settings al Settings	Configuration Ex	_

The exported configuration file can be encrypted for security purposes with a user-specified export password (default is empty password), 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	Pre-shared Key
Quick Setup	-
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 IA5250A	Firmware v1.3 and up
NPort IA5450A	Firmware v1.4 and up

Basic Settings

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

• 🕑 - 💌 🛃 🔮	Search	Favorites Media	a 🚱 🔀 • 🧽 🖂
		7513960841085000827086	5550C2394D854DHIL=54DHIL
10X/	- wi	ww.moxa	a.com
Menu	Basic Settir	ng	
erview sic Settings	Server name		NPIA-5250_525016
twork Settings			Time
rial Settings	Time zone		(GMT)Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London 💌
erating Settings essible IP Settings	Local time		2005 / 8 / 31 5 : 56 : 36 Modify
to Warning Settings nitor	Time server		
ange Password			Settings
ad Factory Default	Web console		
ve/Restart	Telnet consol	e	C Enable C Disable
	Reset button	protect	© No C Yes
			Submit
			Supmit
terface for th		IPort Series	
Server Settings			
-Basic Sett		IPort Series	
Server Settings			
Server Settings		NPIA5450AI_11625	n Time: Dublin, Edinburgh, Lisbon, London ♦
Server Settings		NPIA5450AI_11625	n Time: Dublin, Edinburgh, Lisbon, London 🔹
Server Settings Server name Time Settings		NPIA5450AI_11625 (GMT)Greenwich Mea	n Time: Dublin, Edinburgh, Lisbon, London 🔹
Server Settings Server name Time Settings Time zone Time Time server		NPIA5450AI_11625 (GMT)Greenwich Mea	n Time: Dublin, Edinburgh, Lisbon, London 🔹
Server Settings Server name Time Settings Time zone Time Time Time server Console Settings		NPIA5450AI_11625 (GMT)Greenwich Mea 2019 / 2 / 19 16	n Time: Dublin, Edinburgh, Lisbon, London 🔹 : 6 : 28 Modify
Server Settings Server name Time Settings Time zone Time Time server		NPIA5450AI_11625 (GMT)Greenwich Mea 2019 / 2 / 19 16 Enable	n Time: Dublin, Edinburgh, Lisbon, London 🔹
Server Settings Server name Time Settings Time zone Time Time Time server Console Settings HTTP console		NPIA5450AI_11625 (GMT)Greenwich Mea 2019 / 2 / 19 16	n Time: Dublin, Edinburgh, Lisbon, London 🛊 ; 6 ; 28 Modify
Server Settings Server name Time Settings Time Settings Time cone Time Console Settings HTTP console HTTPS console		NPIA5450AI_11625 (GMT)Greenwich Mea 2019 / 2 / 19 16 • Enable • Enable	In Time: Dublin, Edinburgh, Lisbon, London 🛊 : 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 Mea 2019 / 2 / 19 16 • Enable • Enable • Enable • Enable • Enable	In Time: Dublin, Edinburgh, Lisbon, London 🛊
Server Settings Server name Time Settings Time Settings Time cone Time Console Settings HTTP console HTTPS console Serial console	ings	NPIA5450AI_11625 (GMT)Greenwich Mea 2019 / 2 / 19 16 Enable Enable Enable Enable Enable	In Time: Dublin, Edinburgh, Lisbon, London 🔹 : 6 : 28 Modify Disable Disable Disable Disable Disable
Server Settings Server name Time Settings Time Settings Time zone Time Console Settings HTTP console HTTPS console Telnet console Serial console Moxa Service	or HTTP+HTTPS	NPIA5450AI_11625 (GMT)Greenwich Mea 2019 / 2 / 19 16 Enable Enable Enable Enable Enable Enable	In Time: Dublin, Edinburgh, Lisbon, London 🔹 : 6 : 28 Modify 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)		
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.	

Parameter	Setting	Factory Default	Description	Necessity
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			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

Web Interface for the	NPort 5100, NPort 5200, a	nd NPort IA5	000 Series Only
MOXA	www.moxa	.com	
	Network Settings		
Overview Basic Settings	IP address	192.168.127.254	
Network Settings	Netmask	255.255.255.0	
🖳 Serial Settings		1233.233.233.0	
Operating Settings Accessible IP Settings	Gateway		
Auto Warning Settings	IP configuration	Static -	
Monitor	DNS server 1	ļ	
 Change Password Load Factory Default 	DNS server 2	ļ	
Save/Restart	SNMP	• Enable C Disa	SNMP Setting
	Community name	public	
	Contact		
	Location	J	
	Location	1	Address report
	Auto report to IP		
	Auto report to TCP port	4002	
	Auto report period		
		10 seconds	
			Submit
Web Interface for the	Overall NPort 5000 Series,	excluding th	e NPort IA5000A Series
Network Setting	ork Settings		
IP address	192	2.168.127.254	
Netmask	255	5.255.255.0	
Gateway			
IP configuration	Si	atic 🜲	
DNS server 1		•	
DNS server 2			
DNS Server 2			
IP Address Rep	ort		
Auto report to IP			
Auto report to U	DP port 400)2	
Auto report perio	od 10	(0~99 secs)	
LLDP Settings			
LLDP	0	Enable 🔵 Disable	e
Message Transm	nit Interval 30	(5~32768	3 secs)
Submit			

• Network Se		
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	4002	
Auto report period	10 (0-99 secs)	
LLDP Settings		
LLDP	 Enable Disable 	
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

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
<i>IP</i> <i>Configuration</i>	Static DHCP DHCP/BOOTP BOOTP	Static	N/A	Required
<i>Multi-LAN mode (for the</i>	Switch Redundant LAN	Switch	Dual LAN can be used as a redundant connection or dual	Optional

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.	
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
			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	ttings				
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 to UDP port	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.

	NOX	<u>^</u>	www.	moxa	.com						
Main	Menu	Serial S	Serial Settings								
	erview	Serial Settings									
	ic Settings			lias	Baud rate			Parity	FIFO	Flow ctrl	Interface
	twork Settings rial Settings	Port 1			115200	8	1	None	Enable	RTS/CTS	RS-232
	Port 1	Port 2			115200	8	1	None	Enable	RTS/CTS	RS-232
	Port 2	Port 3			115200	8	1	None	Enable	RTS/CTS	RS-232
	Port 3	Port 4			115200	8	1	None	Enable	RTS/CTS	RS-232
	Port 4	Port 5			115200	8	1	None	Enable	RTS/CTS	RS-232
	Port 5	Port 6			115200	8	1	None	Enable	RTS/CTS	RS-232
	Port 6	Port 7			115200	8	1	None	Enable	RTS/CTS	RS-232
	Port 7	Port 8			115200	8	1	None	Enable	RTS/CTS	RS-232
ep 1	Interface fo	r the Ove	erall NPo	ort 5000	Series						
Port	Alias	Baud rate	Data bits	Stop bits	Parity	FIFO	Flow ctr	Interfa	ce		
Port 1		Baud rate	Data bits	Stop bits	Parity	FIFO	Flow ctrl	Interfa	ce		
									ce		
1		115200	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.

Neb Interface for the NPort 5100, 5200, and IA5000 Series Only							
MOXA	www.moxa	.com					
🔁 Main Menu	Serial Settings						
Overview Basic Settings		Port 1					
Network Settings	Port alias						
🖹 🔄 Serial Settings	Serial Parameters						
Port 1	Baud rate	115200 🗸					
Port 2	Data bits	8 🗸					
Port 3	Stop bits	1 🗸					
Port 5	Parity	None 🗸					
Dort 6	Flow control	RTSACTS					
Port 7	FIFO	⊙ Enable ◯ Disable					
Operating Settings	Interface	RS-232					
Accessible IP Settings	Apply the above settings to all serial ports						
🖲 🗀 Auto Warning Settings							
Monitor	Submit						

Serial Settin					
Port 1					
Port alias					
Serial Settings					
Baud rate	115200 \$				
Data bits	8 \$				
Stop bits	1 🗘				
Parity	None \$				
Flow control	RTS/CTS \$				
FIFO	 Enable 	Disable			
Interface	RS-232 \$				
Apply the above settings to	 P1 All ports 	□ P2	□ P3	□ 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.

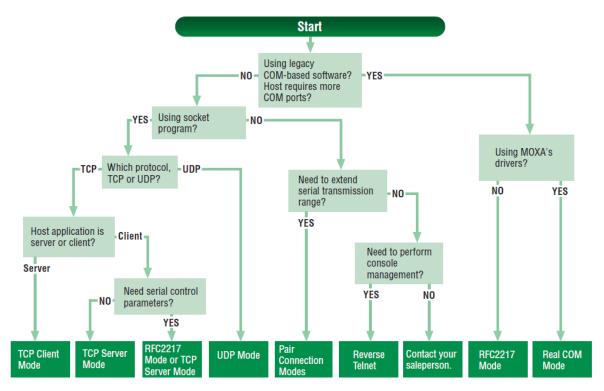
Parameter	Setting	Factory Default	Description	Necessity
Port Alias	1 to 15 characters	None	Port Alias is specially designed to allow easy	Optional
	(E.g., PLC-No.1)		identification of the serial devices that are	
			connected to the NPort's serial port.	
Baud rate	Support standard	115200 bps	The rate 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/			
	5230/5232I			
	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	Description	Necessity
		Default		
Parity	None, Even, Odd,	None	Even and Odd parity provide rudimentary	Required
	Space, Mark		error-checking; Space and Mark parity are	
			rarely used.	
Flow control	None, RTS/CTS,	RTS/CTS	The method used to suspend and resume	Required
	DTR/DSR,		data transmission to ensure that data is not	
	Xon/Xoff		lost. If you can use it, RTS/CTS	
			(hardware) flow control is recommended.	
FIFO	Enable, Disable	Enable	Controls whether or not 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. The	Required
	RS-422		options that are available depend on the	
	2-wire RS-485		specific model of device server.	
	4-wire RS-485			

*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.

Iner	rating Settings								
sper	raung octungs								
				Operating Se	ettings				
Port	Operating mode		Packing length	Delimiter 1	Delimiter 2	Delimiter pro	cess	Force transmit	
		0		0 (Disable)	0 (Disable)	Do Nothing		0	
1	Real COM Mode		P alive che ax connectio						
		0		0 (Disable)	0 (Disable)	Do Nothing		0	
2	Real COM Mode	TO	P alive che	ck time: 7					
		Ma	ax connectio	on: 1					
eb I	Interface for th	ie Ov	verall Nf	Port 5000 Ser	ies				
		ie Ov		Port 5000 Ser ation Modes	ies				
Overvie	ew	Port		ation Modes		Delimiter 2	Deli	niter Process	Force Transmit
Overvie Quick \$	ew		• Operating Mod	ation Modes	th Delimiter 1 0 (Disable)	0 (Disable)	Deli Do N		Force Transmit
Overvie Quick S Basic S Networ	ew Setup Settings rk Settings		:•Opera	ation Modes	th Delimiter 1 0 (Disable) k time: 7	0 (Disable)			
Overvie Quick S Basic S Networ - Serial	ew Setup Settings rk Settings I Settings	Port 1	Operating Mod	ation Modes Packing Lengt 0 TCP alive check Max connection 0	th Delimiter 1 0 (Disable) k time: 7 : 1 0 (Disable)	0 (Disable) 0 (Disable)		othing	
Overvie Quick S Basic S Networ	ew Setup Settings K Settings I Settings	Port	• Operating Mod	ie Packing Lengt 0 TCP alive check Max connection 0 TCP alive check	Delimiter 1 0 (Disable) k time: 7 i: 1 0 (Disable) k time: 7	0 (Disable)	Do N	othing	0
Overvie Quick S Basic S Networ - Serial Port	ew Setup Settings rk Settings I Settings I Settings I 2	Port 1	Operating Mod	ation Modes Packing Lengt 0 TCP alive check Max connection 0	Delimiter 1 0 (Disable) k time: 7 i: 1 0 (Disable) k time: 7	0 (Disable)	Do N	othing	0
Overvie Quick S Basic S Networ - Serial Port Port Port	ew Setup Settings I Settings 1 2 3 4	Port 1	Operating Mod	te Packing Lengt 0 TCP alive check Max connection 0 TCP alive check Max connection 0 TCP alive check Max connection 0 TCP alive check	Delimiter 1 0 (Disable) k time: 7 i: 0 (Disable) k time: 7 i: 1 0 (Disable) (Disable) k time: 7 k time: 7	0 (Disable) 0 (Disable) 0 (Disable)	Do N	othing	0
Overvie Quick S Basic S Networ - Serial Port Port Port - Opera	ew Setup Settings K Settings I Settings 2 3 4 4 ating Settings	Port 1 2	Coperating Mod RealCOM	ie Packing Lengt 0 TCP alive check Max connection 0 TCP alive check Max connection 0 TCP alive check Max connection	Delimiter 1 0 (Disable) k time: 7 0 (Disable) k time: 7 1: 0 (Disable) k time: 7 1: 0 (Disable) k time: 7 1: 1 0 (Disable) 1	0 (Disable)	Do N Do N Do N	othing othing	0
Overvie Quick S Basic S Networ - Serial Port Port Port - Opera Access	ew Setup Settings I Settings 1 2 3 4	Port 1 2	Coperating Mod RealCOM	te Packing Lengt 0 TCP alive check Max connection 0 TCP alive check Max connection 0 TCP alive check Max connection 0 TCP alive check	Delimiter 1 0 (Disable) k time: 7 :: 1 0 (Disable)	0 (Disable) 0 (Disable) 0 (Disable) 0 (Disable) 0 (Disable)	Do N	othing othing	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.

	www.mo	
Main Menu	Operating Settings	
Overview Basic Settings		Port = 1
Network Settings	Operation mode	TCP Server Mode
Serial Settings	TCP alive check time	7 (0 - 99 min)
🗀 Port 1		
Dort 2	Inactivity time	0 (0 - 65535 ms)
Operating Settings	Max connection	1
Port 1 Port 2	Ignore jammed IP	@ No @ Yes
Accessible IP Settings	Allow driver control	@ No C Yes
Auto Warning Settings		Data Packing
Monitor	Packing length	0 (0 - 1024)
Change Password	Delimiter 1	(Hex) 🗆 Enable
 Load Factory Default Save/Restart 	Delimiter 2	0 (Hex) 🗆 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	o all serial ports (Local listen port will be enumerated automatically).
		Submit

• Operation Mo	odes				
Port 1					
Operation mode	RealCOM	\$			
TCP alive check time	7 (0 - 99 min)				
Max connection	1 \$				
gnore jammed IP	No Yes				
Allow driver control	No Yes				
Data Packing Packing length	0 (0 - 1024)				_
Delimiter 1	00 (Hex) 🗌 Enabl	e			
Delimiter 2	00 (Hex) Enabl	е			
Delimiter process	Do Nothing 🔶 (P	rocessed only when pac	king length is 0)		
Force transmit	0 (0 - 65535 m	s)			
	✓ P1	P2	P 3	_ P4	

Accessible IP Settings

letwork Settings erial Settings				able" will allow all IPs to connect.)
perating Settings		Activate the rule	IP Address	Netmask
Port 1 Port 2	_			
cessible IP Settings				
to Warning Setting: Initor	-			
ange Password		–		
ad Factory Default ve/Restart				
	_			
	-			
	9 10			
	10			

Veb Interface for the (Overall NP	rall NPort 5000 Series			
	÷A	ccessible I	P List		
Overview Quick Setup Basic Settings Network Settings	-			OT allowed for the IPs NOT on the list) DT allowed for the IPs NOT on the list)	
- Serial Settings	No.	Activate the rule	IP Address	Netmask	
- Operating Settings	1				
Accessible IP Settings	2				
- Administration	3				
- Backup/Restore	4				
Pre-shared Key	5				
Configuration Import	6				
Configuration Export	7	0			
System Log Settings	8				
- Auto Warning Settings					
Upgrade Firmware - Monitor	9				
- Monitor Change Password	10				
Load Factory Default	11				
Save/Restart	12				
Logout	13				
203001	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]/255.255.0" (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

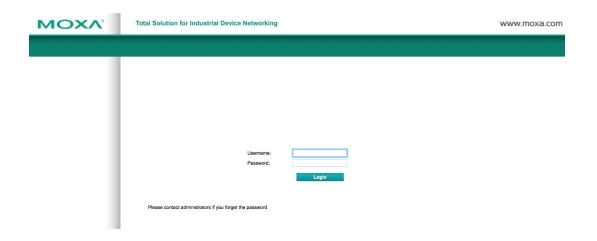
As an administrator, you are allowed to customize your **Login Message** and the **Login Authentication Failure Message** to notify users with information you would like to provide.

*****Notification Message

Notification Message		
Login Message	Welcome to NPort	
	4	16 characters/Maximum 240 characters
	Please contact administrators if you forget the password	
Login Authentication Failure Message		
		56 characters/Maximum 240
		characters
Submit		

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

ΜΟΧΛ	Total Solution for Industrial Device Networking	www.moxa.com
	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.

• User	Account	
User Accou	int	
•	🕽 Add 💉 Edit 拉 D	elete 🖹 Save/Restart
Active	Account Name	User Level
\checkmark	admin	Read Write
	guest	Read Only
Your change	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.

2. T	Ser	Δ	ccc	ount
• •	SCI		u	Jun

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 6000 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	🔵 Enable 💿 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
			for NPort 6000
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 S	eries
мохл	www.moxa.c	om
🔄 Main Menu	Auto warning: Email and SNMI	² trap
🗀 Overview		
Basic Settings		Mail server
Network Settings	Mail server	
Ba Serial Settings	My server requires authentication	
Port 1	User name	
P Operating Settings	Password	
Port 1		2 F2F2400
Port 2	From E-mail address NPIA-525	50_525016@moxa.com
Accessible IP Settings	E-mail address 1	
Auto Warning Settings	E-mail address 2	
Event Type	E-mail address 3	
🗉 🛄 Monitor	E-mail address 4	
Change Password		SNMP trap server
Load Factory Default	SNMP trap server IP or	
- Save/Restart	domain name	
		Submit
web interface for the	Overall NPort 5000 Series	
	*E-mail and SNM	IP Trap Settings
Overview Quick Setup	Mail Server	
Basic Settings	Mail server	
Network Settings	My server requires authentication	
- Serial Settings		
- Operating Settings	User name	
Accessible IP Settings - Administration	Password	
- Backup/Restore	From E-mail address	NPort@moxa
System Log Settings	E-mail address 1	
- Auto Warning Settings	E-mail address 2	
System Log Event settings E-mail and SNMP Trap	E-mail address 3	
Event Type	E-mail address 4	
Upgrade Firmware	Child Tree Conner	
- Monitor	SNMP Trap Server	
Line	SNMP trap server IP or domain name	
Async Async-Settings	Trap version	Sv1 ○ v2c
Relay Output	Trap community	public
System Log		
Change Password	Submit	

Mail Server

Parameter	Setting	Factory Default	Description	Necessity
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	
			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 public 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	🗖 Trap	
Authentication failure	🗖 Mail	🗖 Trap	
IP address changed	🗖 Mail		
Password changed	🗖 Mail		
Power failure	🗖 Mail		E Relay Output
Ethernet1 link down	🗖 Mail	🗖 Trap	E Relay Output
Ethernet2 link down	🗖 Mail	Trap	E Relay Output
	C)CD changed	
Port 1	🗖 Mail	🗖 Trap	🗖 Relay Output
Port 2	🗖 Mail	🗖 Trap	🗖 Relay Output
	E	OSR changed	
Port 1	🗖 Mail	🗖 Trap	Relay Output
Port 2	🗖 Mail	🗖 Trap	🗖 Relay Output

	: •Event Setting	gs		
verview nick Setup	System Event			
sic Settings	Cold start	🗆 Mail	Trap	
twork Settings erial Settings	Warm start	Mail	Trap	
perating 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	 Relay output
Event Type grade Firmware	Ethernet2 link down	Mail	C Trap	 Relay output
lonitor Line	DCD Changed			
Async	Port 1	🗆 Mail	Trap	Relay output
Async-Settings	Port 2	Mail	Trap	Relay output
Relay Output System Log	Port 3	Mail		Relay output
ange Password	Port 4			Relay output
ad Factory Default ve/Restart	DSR Changed			
jout	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.

мохл	www.moxa.c	om	
	Monitor Relay Output		
Overview 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
 Line Async 	DSR changed (Port 1)		Acknowledge Event
Async-Setting	DSR changed (Port 2)		Acknowledge Event
Relay Output			
verview	Development		
verview	Dout Status		
luick Setup	Power failure	-	Acknowledge Event
asic Settings letwork Settings	Ethernet1 link down	-	Acknowledge Event
Serial Settings	Ethernet2 link down		Acknowledge Event
Operating Settings	DCD changed (Port 1)	-	Additioniouge Event
ccessible IP Settings			Acknowledge Event
	DSR changed (Port 1)		Acknowledge Event
	DSR changed (Port 1)	-	Acknowledge Event
- Account Management	DCD changed (Port 2)	-	Acknowledge Event
- Account Management SNMP Agent	DCD changed (Port 2) DSR changed (Port 2)	-	Acknowledge Event Acknowledge Event Acknowledge Event
 Account Management SNMP Agent Backup/Restore 	DCD changed (Port 2) DSR changed (Port 2) DCD changed (Port 3)	- - -	Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event
- Account Management SNMP Agent Backup/Restore ystem 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 Acknowledge Event
- Account Management SNMP Agent Backup/Restore ystem Log Settings Auto Warning Settings System Log Event 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 Acknowledge Event
- Account Management SNMP Agent Backup/Restore ystem Log Settings Auto Warning Settings System Log Event settings E-mail and SNMP Trap	DCD changed (Port 2) DSR changed (Port 2) DCD changed (Port 3) DSR changed (Port 3)		Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event Acknowledge Event
- Account Management SNMP Agent Backup/Restore ystem Log Settings Auto Warning Settings System Log Event settings E-mail and SNMP Trap Event Type	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 Acknowledge Event
- Account Management SNMP Agent Backup/Restore ystem Log Settings Auto Warning Settings System Log Event settings E-mail and SNMP Trap Event Type Ipgrade Firmware	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 Acknowledge Event
- Account Management SNMP Agent Backup/Restore ystem Log Settings Auto Warning Settings System Log Event settings E-mail and SNMP Trap Event Type Ipgrade Firmware	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 Acknowledge Event
- Account Management SNMP Agent Backup/Restore ystem Log Settings Auto Warning Settings System Log Event settings E-mail and SNMP Trap Event Type Ipgrade 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 Acknowledge Event
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 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*.

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	и	ww.mox	a.com							
ain Menu	Monitor Line									
Overview				Line						
Basic Settings Network Settings	Port O	P Mode	IP1	IP2	IP3	IP4				
Serial Settings	1 Re	al COM Mode	Listen							
Operating Settings	2 R6	al COM Mode	Listen							
Accessible IP Settings	3 R6	al COM Mode	Listen							
Auto Warning Settings	4 R6	eal COM Mode	Listen							
Interface for t	the Over	all NPort 500								
verview	De	rt Operation Made	Connections							
uick Setup	PO	rt Operation Mode	Connections							
asic Settings	1	RealCOM	[Listen]	[]	[]					
etwork Settings			[] [Listen]	[]	[]					
Serial Settings	2	RealCOM	[]			[]				
Port 1			[Listen]	[]		[]				
Port 2	3	RealCOM	[]	[]	[]	[]				
Port 3		BaalooM	[Listen]	[]	[]	[]				
Port 4	4	RealCOM	[]	[]	[]	[]				
Operating Settings										
Port 1										
Port 2										
Port 2 Port 3										
Port 1 Port 2 Port 3 Port 4 ccessible IP Settings										
Port 2 Port 3 Port 4 cessible IP Settings	L									
Port 2 Port 3 Port 4 cessible IP Settings dministration	L									
Port 2 Port 3 Port 4 cessible IP Settings dministration ackup/Restore	L									
Port 2 Port 3 Port 4 cessible IP Settings dministration ackup/Restore stem Log Settings	L									
Port 2 Port 3 Port 4 dministration ackup/Restore stem Log Settings uto Warning Settings	L									
Port 2 Port 3 Port 4 cessible IP Settings dministration ackup/Restore stem Log Settings uto Warning Settings System Log Event settings	l									
Port 2 Port 3 Port 4 cessible IP Settings dministration lackup/Restore stem Log Settings uto Warning Settings System Log Event settings E-mail and SNMP Trap	l									
Port 2 Port 3 Port 4 esssible IP Settings dministration ackup/Restore etem Log Settings uto Warning Settings System Log Event settings E-mail and SNMP Trap Event Type	l									
Port 2 Port 3 Port 4 cessible IP Settings dministration ackup/Restore stem Log Settings uto Warning Settings System Log Event settings E-mail and SNMP Trap Event Type grade Firmware	l									
Port 2 Port 3 Port 4										

Monitor Async

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

MOXA		www.n	ioxa.co	m				
Main Menu	Monito	r Async						
Overview								
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
Accessible IP Settings	3	0	0	0	0	OFF	OFF	OFF
Auto Warning Settings	4	0	0	0	0	OFF	OFF	OFF

	Monitor Async									
- Main Menu	Port	TxCnt	RxCnt	TxTotalCnt	RxTotalCnt	DSR	DTR	RTS	CTS	DCD
Overview	Port									
Quick Setup		0	0	0	0					
Export/Import	2	0	0	0	0	•			0	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.

ΜΟΧΛ		w v	<u>vw.m</u>	oxa.	<u>com</u>						
lain Menu	Monito		nc-Setti								
Overview		,		.90							
Basic Settings							-Setting				
Network Settings	Port		ud rate			Stop bits	Parity	FIFO	RTS/0		XOFF DTR/DSR
Serial Settings	1		5200	8	<u></u>	1	None	Enable	OFF	OFF	OFF
Operating Settings	2 3		5200 5200	8		1	None	Enable	OFF	OFF	OFF
Accessible IP Settings	4		5200	8		1	None	Enable	OFF	OFF	OFF
Auto Warning Settings Monitor			200			-	prono	jendbio	1011	jon	1011
Interface for t	he O			rt 5000 nitor A			ngs				
verview			Roud					Flow Control			
luick Setup		Port	Baud Rate	Data Bits	Stop Bits	Parity				FIFO	Interface
sic Settings								XON/XOFF			
ork Settings		1	115200	8	1	None	OFF	OFF	OFF	Enable	RS-232
ial Settings		2	115200	8	1	None	ON	OFF	OFF	Enable	RS-232
ort 1		3	115200	8	1	None	ON	OFF	OFF	Enable	RS-232
rt 2		4	115200	8	1	None	ON	OFF	OFF	Enable	RS-232
ort 3											
ort 4											
erating Settings											
ort 1											
rt 2											
ort 3											
ort 4											
ssible IP Settings											
ninistration											
kup/Restore											
em Log Settings											
Warning Settings											
stem Log Event settings											
nail and SNMP Trap											
ent Type											
ade Firmware											
itor											
е											
ync											
Async-Settings											

System Log Settings

System Log Settings

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

Submit

System Log Settings allow NPort users to customize network events that are logged by the NPort 6000. Events are grouped into four categories, known as event groups, and the user selects which groups to log under either the **Local Log** or **Remote Log** server. 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 6000 up to 512 items.
Remote Log	Keep the log in the remote defined Log Server.
	You will need to assign a remote Log Server in the System Management /
	Misc. Network Settings / Remote Log Settings if remote log is checked.

System

System Cold Start	NPort 6000 cold start.
System Warm Start	NPort 6000 warm start.

Network

DHCP/BOOTP/PPPoE Get	IP of the NPort 6000 is refreshed.
IP/Renew	
NTP	Time synchronization successful.
NTP Connect Fail	The NPot 6000 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 6000'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	the NPort 5100, 5200, IA5000 Series Only
мохл	
Ain Menu	Change password
	Old password :
	New password :
🖲 🧰 Serial Settings	Retype password :
Operating Settings	
Accessible IP Settings	Submit
Web Interface for	the Overall NPort 5000 Series
	- Change Password
Overview	Deserved
Quick Setup	Password
Basic Settings	Old password
Network Settings	New password
- Serial Settings	Retype password
Port 1	
Port 2	Submit
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 Event settings	
E-mail and SNMP Trap	
Event Type	
Upgrade Firmware	
- Monitor	
Line	
Async	
Async-Settings	
Relay Output	
System Log	
Change Password	
Load Factory Default	



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
www.moxa.com
Load Factory Default
This function will reset all MOXA NPort Server settings to their factory default values. Be aware that previous settings will be lost.
Submit
Web Interface for the Overall NPort 5000 Series
-Load Factory Default
This function will reset all MOXA NPort Server settings to their factory default values. Be aware that previous settings will be lost.
Submit

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.



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

```
Model name
                 : NPort 5250A
MAC address
                 : 00:90:E8:63:50:FD
Serial No.
                 : 7162
Firmware version : 1.5 Build 19013022
System uptime
                 : 0 days, 01h:59m:07s
<< 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) Ping
  (a) Change password
  (b) Load factory default
  (v) View settings
  (s) Save/Restart
  (q) Quit
Key in your selection: 2
```

5. Type 1 to select 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
 View settings
 (m) Back to main menu
 (q) Quit
Key in your selection: 1
```

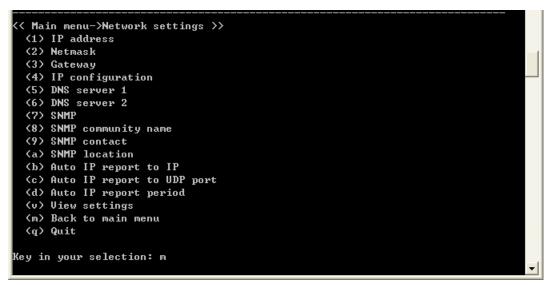
 Use the **Backspace** key to erase the current IP address, type in the new IP address, and then press Enter.

```
< Main menu->Network settings >>
  (1) IP address
  (2) Netmask
  (3) Gateway
  (4) IP configuration
  (5) DNS server 1
  (6) DNS server 2
  (7) SNMP
  (8) SNMP community name
 (9) SNMP contact
  (a) SNMP location
  (b) Auto IP report to IP
 (c) Auto IP report to 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.

Serial No. Firmware version	: 00:90:E8:12:34:57	
<< Main menu >>		
(1) Basic sett:	ings	
(2) Network set	tings	
(3) Serial set	ings	-1
(4) Operating s	ettings	
(5) Accessible	IP settings	
(6) Auto warnin	ng settings	
(7) Monitor		
(8) Ping		
(9) Change pass		
(a) Load factor		
(v) View settin		
(s) Save/Restar	ъс.	
(q) Quit		
Key in your seled	ction: 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.

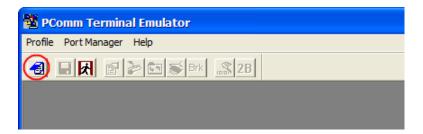


ATTENTION

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.



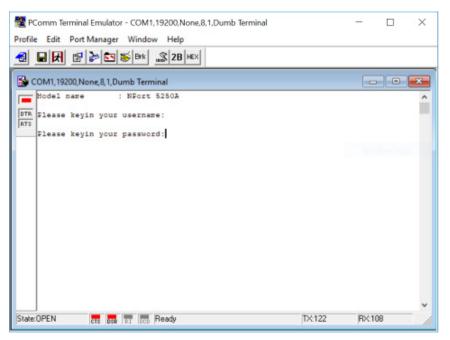
3. The **Property** window opens automatically. From the **Communication Parameter** page, select the appropriate COM port for the connection, COM1 in this example, and 19200 for Baud Rate, 8 for Data Bits, None for Parity, and 1 for Stop Bits.

Property	X
Communication Parameter	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.



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 – × Profile Edit Port Manager Window Help Image: Port Manager Window Help Image: Port Port Manager Window Help Image: Port Port Manager Window Help				
COM1,19200,None,8,1,Dumb Terminal Model name : NFort 5250A Mode address : 00:90:E8:63:50:FD Serial No. : 7162 Firmware version : 1.5 Build 19013022 System uptime : 0 days, 00h:00m:54s (1) Basic settings (2) Network settings (3) Serial settings (4) Operating settings (5) Accessible IF settings (6) Account Management (7) Auto warning settings (8) Monitor (9) Fing (a) Change password (b) Load factory default (v) View settings (c) Save/Restart (d) Quit Key in your selection:	2 PComm Terminal Emulator - COM1,19200,None,8,1,Dumb Terminal	<u></u>		\times
COM1,19200,None,8,1,Dumb Terminal Model name : NFort 5250A MAC address : 00:90:E8:63:50:FD Serial No. : 7162 Firmware version : 1.5 Build 19013022 System uptime : 0 days, 00h:00m:54s 	Profile Edit Port Manager Window Help			
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<pre>(7) Auto warning settings (8) Monitor (9) Ping (a) Change password (b) Load factory default (v) View settings (s) Save/Restart (q) Quit Key in your selection: </pre>				
<pre>(8) Monitor (9) Fing (a) Change password (b) Load factory default (v) View settings (s) Save/Restart (q) Quit Key in your selection: </pre>				
<pre>(9) Ping (a) Change password (b) Load factory default (v) View settings (s) Save/Restart (q) Quit Key in your selection: </pre>				
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(b) Load factory default (v) View settings (s) Save/Restart (q) Quit Key in your selection:				
(v) View settings (s) Save/Restart (q) Quit Key in your selection:				
(s) Save/Restart (q) Quit Key in your selection:	•			
Key in your selection:				
	(q) Quit			
State:OPEN CTS DSR RI DCD Ready TX:137 RX:895	Key in your selection:			~
	State: OPEN CTS DSR RT DCD Ready TX:137	RX:89	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>
- TCP Server Mode for NPort
- 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

I 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.

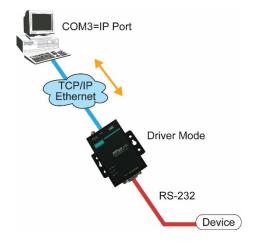
An NPort serial device server is an external IP-based network device that allows you to expand the number of serial ports for a host computer on demand. As long as your host computer supports the TCP/IP protocol, you won't be limited by the host computer's bus limitation (such as ISA or PCI), or lack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

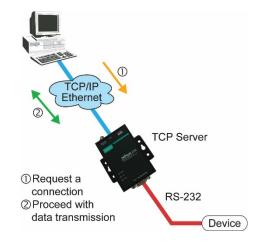
RFC2217 Mode is only supported by the NPort 5000A, NPort 5000AI-M12, NPort IA5000A, NPort 5600, and NPort 5600-8-DT/DTL Series.

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:

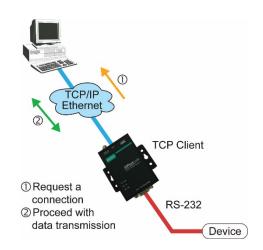
- 1. The host requests a connection from the NPort configured for TCP Server Mode.
- Once the connection is established, data can be transmitted in both directions—from the host to the NPort, and from the NPort to the host.



TCP Client Mode

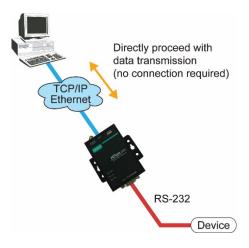
In TCP Client Mode, the NPort can actively establish a TCP connection with a pre-determined host computer when serial data arrives. After the data has been transferred, the NPort can disconnect automatically from the host computer by using the **TCP alive check time** or **Inactivity time** settings. 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.

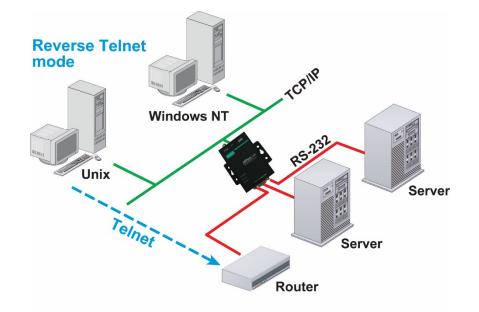
Ethernet Modem Mode

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
	1	✓ ✓		✓			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
	~						Command port
					✓		Destination IP address
		>	>				Destination IP address 1 through 4
		~					Designated local port 1 through 4
			~				Local listen port
		✓					Connection Control
				✓			Map <cr-lf></cr-lf>

When to Make Adjustments

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	TCP Client Mode	UDP Mode	Reverse Telnet Mode	Pair Connection Mode 🔸	RFC2217 Mode	PPP Mode	Setting Options: 0 to 99 minutes Default: 7 minutes 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.

	✓	✓		✓			✓	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	TCP Server	TCP Client	dau	Reverse Telnet	Pair Connection	RFC2217	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	erse Telnet Mode	Connection Mode	RFC2217 Mode	PPP Mode	Max connection 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.
				Reverse	Pair			

✓	✓	✓						Ignore jammed IP
de	de	de	de	de	de	de	de	Setting Options: Yes or No
Mode	Mode	Mode	Mode	Mode	Mode	Mode	Mode Mode	Default: No
Real COM	TCP Server	TCP Client	dan	Reverse Telnet	Pair Connection	RFC2217	ddd	Description: This field specifies how an unresponsive IP address is handled when there are simultaneous connections to the device port (see Max connection). Yes means that transmission to the other hosts will not be suspended if one IP address becomes unresponsive. No means that all transmission will be suspended if one IP address 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	ADP 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	ром	Mode	Mode	ром	Mode	ΨŐ	Default: 0
Real COM	TCP Server	TCP Client	UDP	Reverse Telnet	Pair Connection	RFC2217	ddd	Description: Controls data packing by the amount of data received. Serial data accumulates in the device port's buffer until it reaches the specified length. When the specified amount of data has accumulated in the buffer, the data is packed for network transmission. A setting of 0 means that data will not be packed until the buffer is full. 0 is the recommended setting, unless your application has a specific need to limit packet sizes or improve response times.

✓	~	✓	✓			✓		Delimiter 1 and 2
le	de	le	de	de	de	le	le	Setting Options: Enable, 0 to FF
Mode	Mode	Mode	Mode	Mode	Mode	Mode	Mode	Default: Disable
COM	Server	Client	UDP	elnet	Connection	RFC2217	ЪРР	Description: Controls data packing using special delimiter character(s).
Real	Se			-	nec	EC3		Serial data accumulates in the device port's buffer until the delimiter
Re	тср	тср		Reverse	on	~		character(s) are received, after which the data is packed for network
	F	-		eve	ir 0			transmission. If only one delimiter character is needed, be sure to
				å	Pai			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
COM Mode	Server Mode	Client Mode	UDP Mode	Felnet Mode	ection Mode	2217 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
Real	TCP S	TCP (Reverse T	Pair Connection	RFC		 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	UDP Mode	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

	✓							Command port				
de	de	de	de	de	de	de	e Setting Options: 1 to 65535	Setting Options: 1 to 65535				
Mode	Mod	Mo	Mode	ром	Mode	Mode	Mode	Default: 966				
COM	ver	ent	UDP	Telnet	ion	17	ЬРР	Description: Specifies the TCP port number for Moxa IP-Serial Library				
	Ser	Cli	D	Tel	ection	RFC22	<u>a</u>	commands. You do not need to reference this port number in your				
Real	٩	С		Se	_	RF		application when using the Moxa IP-Serial Library, since the library				
	тс	Ĕ		P	Con			automatically obtains the number from the device server. Only change				
				Rev	air			this setting if there is a port number conflict with another application or				
					4			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
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 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 work 1 through 4
		v						Designated local port 1 through 4
e	le	e	le	le le	e P	le le	le	Setting Options: 1 to 65535
Mode	Mode	Mode	Mode	Mode	Mode	Mode	Mode	Default: none
Real COM I	TCP Server I	TCP Client I		Reverse Telnet I	Pair Connection	RFC2217	l ddd	Description: Specifies the TCP port number that will be used for data transmission with the device port.
			✓					Local listen port
e	le	le	le	le	le	le	le	Setting Options: 1 to 65535
Mode	Mode	Mode	Mode	Mode	Mode	Mode	Mode	Default: 4001 for port 1, 4002 for port 2, etc.
Real COM I	TCP Server I	TCP Client I		Reverse Telnet I	Pair Connection I	RFC2217	l ddd	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	Setting 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/None Description: 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 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 connection when the serial device is inactive, you must set Connection Control to "Any Character/Inactivity time".

				✓				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.

Oper	rating Settings											
				Operating Se	ettings	te aptre						
Port	Operating mode		acking ength	Delimiter 1	Delimiter 2	De	limiter process	Force transmit				
		0		0 (Disable) 0) (Disable)	Do No	thing	0				
1	Real COM Mode	TCP alive check time: 7 Max connection: 1										
		0		0 (Disable) 0) (Disable)	Do No	thing	0				
2	Real COM Mode	TCP	TCP alive check time: 7									
			Max connection: 1									
/eb	Interface for the	e Ovei		ort 5000 Series	•							
/eb _{Over}			:•Ope	ration Modes	5		Definition 2	Dellasitas Decesso				
Over		e Over		ration Modes	Length Delimiter	•	Delimiter 2	Delimiter Process				
Over Quic Basic Netw	view k Setup 2 Settings rork Settings		:•Ope	ration Modes Mode Packing L	Length Delimiter 0 (Disable) check time:	•	Delimiter 2 0 (Disable)	Delimiter Process Do Nothing	Force Transm 0			
Over Quici Basic Netw - Ser	view k Setup c Settings ial Settings	Port	• Operating I	Mode Packing L 0 TCP alive	Length Delimiter 0 (Disable) check time:	7 1						
Over Quicl Basic Netw - Ser Pc	view k Setup 2 Settings rork Settings	Port	• Operating I	Tation Modes Mode Packing L 0 TCP alive Max conne 0 TCP alive TCP alive	Length Delimiter 0 (Disable) check time: section: 0 (Disable) check time:	7 1 7	0 (Disable)	Do Nothing	0			
Over Quicl Basic Netw - Ser Pc	view k Setup 5 Settings ial Settings ial Settings art 1	Port 1	Operating RealCOM	Packing L 0 TCP alive Max conne 0 TCP alive Max conne	Length Delimiter 0 (Disable) check time: ection: 0 (Disable) check time: ection:	7 1 7 1	0 (Disable)	Do Nothing Do Nothing	0			
Over Quicl Basic Netw - Ser Pc Pc	view k Setup c Settings ial Settings ial Settings ort 1 ort 2	Port 1	Operating RealCOM	ration Modes Mode Packing L 0 TCP alive Max conne 0 TCP alive Max conne 0 0	Length Delimiter 0 (Disable) section: 0 (Disable) check time: section: 0 (Disable)	7 1 7 1	0 (Disable)	Do Nothing	L=			
Over Quicl Basic Netw - Ser Pc Pc Pc	view k Setup c Settings ial Settings ial Settings ort 1 ort 2 ort 3	Port 1	Operating I RealCOM	ration Modes Mode Packing L 0 TCP alive Max conne 0 TCP alive Max conne 0 0	Length Delimiter 0 (Disable) check time: ection: 0 (Disable) check time: ection: 0 (Disable) check time:	7 1 7 1	0 (Disable)	Do Nothing Do Nothing	0			
Over Quicl Basic Netw - Ser Pc Pc - Ope	view k Setup s Settings ial Settings ial Settings prt 1 prt 2 prt 3 prt 4	Port 1	Operating I RealCOM	O Packing L 0 TCP alive Max conne 0 TCP alive Max conne 0 TCP alive Max conne 0 TCP alive	Length Delimiter 0 (Disable) check time: ection: 0 (Disable) check time: ection: 0 (Disable) check time:	7 1 7 1 7 1 7	0 (Disable)	Do Nothing Do Nothing	0			
Over Quic Basic Netw - Ser Pc Pc - Ope Acce	view k Setup s Settings ork Settings ial Settings ort 1 ort 2 ort 3 ort 4 erating Settings	Port 1	Operating I RealCOM	Packing I 0 TCP alive Max conne 0 0 0 0	Length Delimiter 0 (Disable) check time: ection: 0 (Disable) check time: ection: 0 (Disable) check time: ection:	7 1 7 1 7 1 7	0 (Disable) 0 (Disable) 0 (Disable)	Do Nothing Do Nothing Do Nothing	0			

Real COM Mode

Main Menu	Operating Settings							
Overview	Port=01							
Basic Settings Network Settings	Operation mode	Real COM Mode						
Serial Settings	TCP alive check time	7 (0 - 99 min)						
Operating Settings	Max connection	1						
Port 1	Ignore jammed IP	🖲 No 🗇 Yes						
- Port 3	Allow driver control	🖲 No 🗇 Yes						
Port 4		Data Packing						
Accessible IP Settings	Packing length	0 (0 - 1024)						
Auto Warning Settings Monitor	Delimiter 1	0 (Hex) Enable						
🔲 Change Password	Delimiter 2	0 (Hex) Enable						
Load Factory Default	Delimiter process	Do Nothing 🕑 (Processed only when Packing length is 0)						
📄 Save/Restart	Force transmit	0 (0 - 65535 ms)						
	Apply the above settings to all serial ports							
		Submit						

• Operation Modes									
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	9							
Delimiter 2	00 (Hex) Enable	e							
Delimiter process	Do Nothing 🔶 (P	rocessed only when pac	king length is 0)						
Force transmit	0 (0 - 65535 m	s)							
Apply the above settings to	✓ P1 All ports	□ P2	🗆 P3	P 4					

Parameter	Setting	Factory	Description	Necessity
		Default		
TCP Alive	0 to 99 min	7 min	0 min: 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	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 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

Basic Settings Port 1 Network Settings Operation mode RFC 2217 Mode Serial Settings TCP alive check time ? (0 - 99 min) Operating Settings TCP alive check time ? (0 - 99 min) Operating Settings Data Packing Port 1 Packing length 0 (0 - 1024) Port 2 Delimiter 1 0 (Hex) Enable Port 3 Delimiter 2 0 (Hex) Enable Port 4 Delimiter process Do Nothing (Processed only when Packing length is 0) Port 6 Port 7 Force transmit 0 (0 - 65535 ms) Port 8	Main Menu	Operating Settings	
Description Operation mode RFC 2217 Mode Network Settings Operation mode RFC 2217 Mode Serial Settings TCP alive check time ? (0 - 99 min) Operating Settings Data Packing Dopt 1 Packing length 0 (0 - 1024) Port 2 Delimiter 1 0 (Hex) Enable Port 3 Delimiter 2 0 (Hex) Enable Port 4 Delimiter process Do Nothing ♥ (Processed only when Packing length is 0) Port 6 Force transmit 0 (0 - 65535 ms) Port 8 Apply the above settings to all serial ports	Overview		Port 1
Serial Settings TCP alive check time ? (0 - 99 min) Operating Settings Data Packing Port 1 Packing length 0 (0 - 1024) Port 3 Delimiter 1 0 (Hex) Enable Port 4 Delimiter 2 0 (Hex) Enable Port 5 Delimiter process DoNothing (Processed only when Packing length is 0) Port 6 Force transmit 0 (0 - 65535 ms) Port 8 Apply the above settings to all serial ports		Operation mode	
Operating Settings Data Packing Port 1 Packing length 0 (0 - 1024) Port 2 Delimiter 1 0 (Hex) Enable Port 3 Delimiter 2 0 (Hex) Enable Port 5 Delimiter process Do Nothing ♥ (Processed only when Packing length is 0) Port 6 Force transmit 0 (0 - 65535 ms) Port 8 Apply the above settings to all serial ports	Serial Settings	-	7 (0 - 00 min)
Port 1 Packing length 0 (0 - 1024) Port 2 Delimiter 1 0 (Hex) Enable Port 3 Delimiter 2 0 (Hex) Enable Port 4 Delimiter 2 0 (Hex) Enable Port 5 Delimiter process Do Nothing (Processed only when Packing length is 0) Port 6 Force transmit 0 (0 - 65535 ms) Port 8 Apply the above settings to all serial ports	Operating Settings		[(0 - 33 mm)
Port 2 Delimiter 1 0 (Hex) Enable Port 3 Delimiter 1 0 (Hex) Enable Port 4 Delimiter 2 0 (Hex) Enable Port 5 Delimiter process Do Nothing (Processed only when Packing length is 0) Port 6 Force transmit 0 (0 - 65535 ms) Port 8 Apply the above settings to all serial ports	Port 1	Packing length	
Port 4 Delimiter 2 0 (Hex) Enable Port 5 Delimiter process Do Nothing V (Processed only when Packing length is 0) Port 6 Force transmit 0 (0 - 65535 ms) Port 8 Apply the above settings to all serial ports Accessible IP Settings Submit	Port 2		
Port 5 Delimiter 2 C (Hex) Enable Port 6 Delimiter process Do Nothing V (Processed only when Packing length is 0) Port 7 Force transmit 0 (0 - 65535 ms) Port 8 Apply the above settings to all serial ports Accessible IP Settings Submit			
Port 6 Delimiter process Do Nothing (Processed only when Packing length is 0) Port 7 Force transmit 0 (0 - 65535 ms) Port 8 Apply the above settings to all serial ports	Port 5	Delimiter 2	(Hex) Enable
Port 8 Apply the above settings to all serial ports Accessible IP Settings Submit	Port 6	Delimiter process	Do Nothing Y (Processed only when Packing length is 0)
Accessible IP Settings PPP User Table Settings Submit	- Port 7	Force transmit	0 (0 - 65535 ms)
PPP User Table Settings Submit	Dort 8	Apply the above setti	ngs to all serial ports
	Accessible IP Settings		
			Submit
	Auto Warning Settings Monitor		
	Change Password		
	Load Factory Default		
Save/Restart Save / Restart	Save/Restart		

• Operation M	odes			
Port 1				
Operation mode	RFC2217	\$		
TCP alive check time	7 (0 - 99 min)		
Local TCP port	4001			
Data Packing				
Packing length	0 - 1024	4)		
Delimiter 1	00 (Hex) 🗆 E	Enable		
Delimiter 2	00 (Hex) 🗆 E	Enable		
Delimiter process	Do Nothing	(Processed only)	when packing length is	s 0)
Force transmit	0 - 655	535 ms)		
Apply the above settings to	P1 All ports	_ P2	P3	P4

Parameter	Setting	Factory Default	Description	Necessity
TCP Alive	0 to 99 min	7 min	0 min: 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	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 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.

MOXA www.moxa.com	
Main Menu Operating Settings Overview Basic Settings Basic Settings Operation mode TCP Server Mode Image: Comparing Settings Operating Settings TCP alive check time Operating Settings TCP alive check time Operating Settings Inactivity time Port 1 Inactivity time Port 2 Max connection Port 3 Ignore jammed IP No Yes Auto Warning Settings Data Packing Monitor Delimiter 1 Change Password Delimiter 1 Load Factory Default Delimiter 2 Delimiter 2 0 (Hex) Delimiter process Do Nothing (Processed only where Force transmit) Force transmit 0 (o - 65535 ms) TCP Server Mode Local TCP port Apply the above settings to all serial ports (Local listen port will be enu	

TCP Server Mode

• Operation M	fodes
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	0 min: 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	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 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.	
<i>Max</i> <i>Connection</i>	1, 2, 3, 4	1	 Max connection is set to 2, 3, or 4 when the 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 	Required
Ignore jammed IP	No or Yes	No	 No: When Max connections > 1, and the serial 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. 	Optional
Allow Driver Control	No or Yes	No	If "max connection" is greater than 1, the NPort 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.	Optional
Packing length	0 to 1024	0	0: The Delimiter Process will be followed, 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.	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	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 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

• Operation N	lodes		
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 4001	
Destination IP address 2		Port 4001	
Destination IP address 3		Port 4001	
Destination IP address 4		Port 4001	
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	g length is 0)	
Force transmit	0 (0 - 65535 ms)		
Apply the above settings to	 ✓ P1 → P2 → All ports 	P3 🗌 P4	

Parameter	Setting	Factory	Description	Necessity
		Default		
TCP Alive	0 to 99 min	7 min	0 min: 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
			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	
5			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
r deking length	0 10 102 1	0	regardless of the length of the data packet.	optional
			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
Demmeri	00 10 11	None	its serial port, it immediately packs all data	optional
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,	Do hothing	will be transmitted when an additional byte (for	Optional
process	Delimiter $+ 2$,		Delimiter +1), or an additional 2 bytes (for	
	Strip Delimiter		Delimiter +2) of data is received after receiving	
	Strip Deminiter		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 65525 mg	0 mg		Ontional
Force Transmit	0 to 65535 ms	0 ms	0 : Disable the force transmit timeout.	Optional
i i ali SIIIIL			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	Description	Necessity	
		Default			
			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 IP	192.168.1.1)		The "Destination IP address" parameter can use		
			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/	e	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
MOXA	www.moxa	.com
🔄 Main Menu	Operating Settings	
Overview		Port=01
 Basic Settings Network Settings 	Operation mode	UDP Mode
Serial Settings		Data Packing
P 🔄 Operating Settings	Packing length	0 (0 - 1024)
Dort 1		
Dort 2	Delimiter 1	(Hex) Enable
Dort 3	Delimiter 2	0 (Hex) Enable
- 🗀 Port 4	Delimiter process	Do Nothing Yerocessed only when Packing length is 0)
📄 Accessible IP Settings	Force transmit	0 (0 - 65535 ms)
Auto Warning Settings		UDP Mode
Monitor Change Password		Begin End Port
Load Factory Default	Destination IP address 1	. 4001
Save/Restart	Destination IP address 2	. 4001
	Destination IP address 3	: 4001
	Destination IP address 4	: 4001
	Local Listen port	4001
	Apply the above settings to all s	erial ports (Local listen port will be enumerated automatically).
		Submit

• Operation M	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) 🗌 Ena	ble			
Delimiter 2	00 (Hex) Ena	ble			
Delimiter process	Do Nothing \$	(Processed only v	when packing length is 0)		
Force transmit	0 (0 - 65535	ms)			
	✓ P1	P2	P3	P4	
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
	001 55		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	
Delin	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					
-					
Packing length	0 (0 - 1024)				
Packing length Delimiter 1	00 (Hex) 🗆 Ena				
Packing length Delimiter 1					
Packing length Delimiter 1 Delimiter 2	00 (Hex) Ena 00 (Hex) Ena		hen packing le	ength is 0)	
Packing length Delimiter 1 Delimiter 2 Delimiter process	00 (Hex) Ena 00 (Hex) Ena	able (Processed only wi	hen packing le	ength is 0)	
Data Packing Packing length Delimiter 1 Delimiter 2 Delimiter process Force transmit Apply the above settings to	00 (Hex) Ena 00 (Hex) Ena Do Nothing \$	able (Processed only wi	nen packing le □ P3	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	0, and IA5000 Series Only		
MOXA				
Main Menu	Operating Settings			
Basic Settings		Port=1		
 Network Settings Serial Settings 	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	
	□ Apply the above setting	s to all serial ports		
Auto Warning Setting				
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 min	1)			
Destination IP address			Port 40	D01	
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	0 min: 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	the NPort 5100, 5200	, and IA5000 Series Only						
MOXA www.moxa.com								
Main Menu	Operating Settings							
Basic Settings		Port=1						
 Network Settings Serial Settings 	Operation mode	Pair Connection Slave Mode 💌						
Coperating Settings	TCP alive check time	⁷ (0 - 99 min)						
Port 1 Port 2	Local TCP port	4001						
Accessible IP Settings	□ Apply the above settings	to all serial ports						
🖻 🗀 Auto Warning Setting								
Change Password		Submit						

Web Interface for the Overall NPort 5000 Series

Port 1				
Operation mode	Pair Connectio	on Slave 🜲		
TCP alive check time	7 (0 - 99 min)		
Local TCP port	4001			
Apply the above settings to	✓ P1 All ports	□ P2	🗆 P3	□ P4

Parameter	Setting	Factory Default	Description	Necessity
TCP Alive	0 to 99 min	7 min	0 min: 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)

ain Menu Overview	Operating Settings						
Basic Settings	Port=01						
Network Settings	Operation mode	Ethernet Moder					
	TCP alive check time	7 (0 - 99 min)					
Operating Settings Port 1	Local TCP Port	4001					
Accessible IP Settings Auto Warning Settings		Submit					
Manitar	NPort IA5000A, 5	000A, and 5000AI-M12 Series Only					
Interface for the							
Interface for the • Operation N Port 1	Iodes						
Interface for the • Operation N Port 1 Operation mode	Todes Ethermet Modem \$						
Interface for the • Operation N Port 1	Iodes						

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	ATE0=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	
		ATV0 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	Backspace character (default= 8 ASCII)	
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	 0 min: TCP connection is not closed due to 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. 	Required
Local TCP port	1 to 65535	4001	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					
MOXA	www.moxa.	com			
Main Menu	Operating Settings				
Basic Settings		Port=01			
Detwork 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 serial ports				
 Auto Warning Settings Monitor 		Submit			

Interface for the		IPort 5000	Series	
• Operation M	odes			
Port 1				
Operation mode	Reverse Telnet	\$		
TCP alive check time	7 (0 - 99 min)			
Inactivity time	0 (0 - 6553	35 ms)		
Local TCP port	4001			
Map <cr-lf></cr-lf>	CR-LF \$			
Apply the above settings to	✓ P1 All ports	□ P2	□ P3	□ P4

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

PPPD Mode

	.com				>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
🖼 Main Menu 🗀 Overview	Operation Modes				
Active Configuration Serial Port Configuration Port 1 Operation Modes Communication Parameters Data Buffering/Log Modem Settings Opher Settings Port 2	Port 1 Application Mode Destination IP address Source IP address IP netmask TCP/IP compression Inactivity time	Dial in/out PPPD Enable * Disable (0 - 65535 ms)			
Poilt 3 Poilt 4 User Table Welcome Message System Configuration Log, Nonitoring and Warning Common Settings Change Password Save Configuration Restart Logout	Link quality report Username Password Authentication type Try next type on authentication denied Disconnect by Apply the above settings to	 ○ Enable * Disable None • ○ Enable = Disable None • ✓ P1 ✓ All ports 	■ P2	■ P3	P4

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 6000 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 6000 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

the NPOIL 5100, 5	200, and IA5000	Series Only	
www.mc	xa.com		
Operating Settings			
Operation mode	Disabled	~	
Apply the above settings	to all serial ports		
	[Submit	
the Overall NPort	5000 Series		
Modes			
Disable)		
i	Operating Settings Operation mode Apply the above settings	Poperation mode Disabled Disab	Operating Settings Port=01 Operation mode Apply the above settings to all serial ports Submit the Overall NPort 5000 Series

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\NPortAdminSuite 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.

15 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. To continue, click Next. If you would like to select a different folder, click Browse.
NPort Administration Suite Browse
< <u>B</u> ack <u>N</u> ext> Cancel

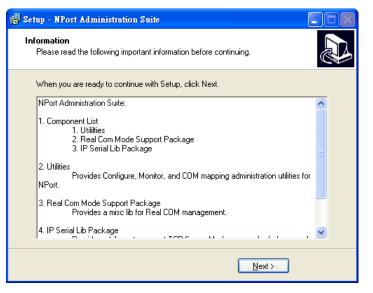
4. Click **Install** to proceed with the installation.

15 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	<u>></u>
Start Menu folder: NPort Administration Suite	
< <u>B</u> ack Install	Cancel

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

1 ⁵⁷ Setup - NPort Administration Suite	
Installing Please wait while Setup installs NPort Administration Suite on your computer.	
Extracting files C:\WINDOWS\system32\nport.dll	
(Cancel

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



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

🔂 Setup - NPort Administrat	tion 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.
	Kack <u>Finish</u>

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.

File Function Configuration	盖	P	Web					
Function			(Configuration	n - O NPort(s)		
NPort Configuration Ornfiguration Monitor Port Monitor Of Mapping V: IP Address Report	No /	Model	MAC Address	IP Address	IP Address2	Server Name	Status	
	<)
Message Log - 0 Monitor Lo	g · 0							
No Time		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.

Function			C	onfiguration	- 0 NPort(s)		
NPort Configuration Monitor	No A	Model	MAC Address	IP Address	IP Address2	Server Name	Status	
Port Monitor COM Mapping Second				dcast Search ify by IP Address				
			▲ Loca 코 Unio 답 Conf	te ck īgure				
			🗳 Upgr	ade Firmware				
	<			rt Configuration ort Configuration				
Message Log - 0 Monitor Log	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		🗸 🖌 Stop
Found 1	NPort(s), remain tin	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.

🐝 NPort Administrator-Co	nfiguration						
] <u>File</u> <u>Function</u> <u>Configuration</u>	i <u>V</u> iew <u>H</u> elp						
📕 🔮 🧟 Exit Search Search	Locate	Configure Web					
Function	Function Configuration - 1 NPort(s)						
⊡- → NPort	No 🛆	Model	MAC Address	IP Address	Server Name	Status	
Configuration	1	NPort 5250A	00:90:E8:66:32:52	192.168.127.254	NP5250A_52	Lock	
- 🖾 Monitor							
- R Port Monitor							
COM Mapping							



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	\times	
Unlock Info. User Name		Information X
Password		Unlock ok.
V OK		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.

Exit Search Sear	ch IP Locate	e Configure We						
Function			Co	nfiguration -	1 NPort(s)		
 Bonford Monitor Monitor Monitor Port Monitor Monitor Monitor Monitor Monitor Monitor Report 	No / 1	Model NPort 5250A	MAC Address 00:90:E8:63:50:FD	P Address 192.168.127.254	IP Address2	Server Name NP52504_7162	Status Lock	
Message Log - 2 Monitor L No Time	< og · 0	Description			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	►		
	(iii)	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.

🐝 NPort Administrator-Co							-	×
File Function Configuration	n ⊻iew <u>H</u> e							
👖 🗳 Я Exit Search Searc	hIP Locate	e Configure Web						
Function			Co	nfiguration -	1 NPort(s)		
⊡- 🔊 NPort	No 🛆	Model	MAC Address	IP Address	IP Address2	Server Name	Status	
Configuration	1	NPort 5250A	1.00-90-59-63-50-50	192.168.127.254		NP5250A_7162	Unlock	
- Monitor		💒 Broad	cast Search					
- Port Monitor	L	🤮 Speci	fy by IP Address					
COM Mapping		🛎 Locat						
IP Address Report								
		Confi	gure					
	L	💻 Web		-				
		🛃 Upgra	de Firmware					
		📥 Expor	t Configuration					
	-		rt Configuration	-				
		Assig	n IP Address					
	<			-				>
Message Log - 5 Monitor Lo	g.0							
No Time		Description						
1 3/27/201910	57:22 AM	Found NPort(s): 1						
2 3/27/201910		Found NPort(s): 1						
3 3/27/2019 11			ail: NPort 5250A (00:90					
4 3/27/201911 5 3/27/201911			250A (00:90:E8:63:50:F 250A (00:90:E8:63:50:FI					
5 5/2//201311	.02.10 AM	OTHOUR OK: NEOR 32	304 (00.30.E 0.63.30.FI	7]				
Now: 3/27/2019 11:03:16 AM								

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.

Information	Account Management Configuration Pre-shared Key System Log Settings Auto Warnin
Model Name NPort 5250A	Basic Network IP Address Report Serial Operating Mode Accessible IP
MAC Address 00:90:E8:63:50:FD Serial Number 7162	Network Setting SNMP Setting V Modify 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



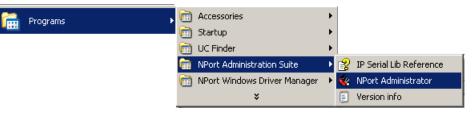
ATTENTION

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.

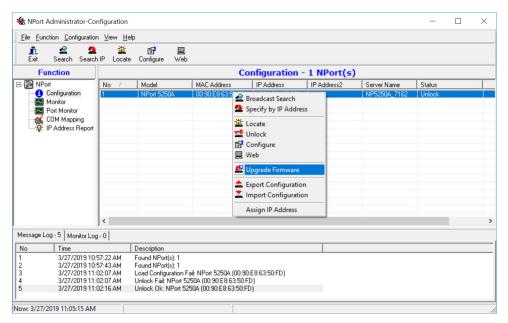
Upgrading the Firmware

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.



3. Select the correct ROM file to download.

Sele	ct File		\times
	-Select File File Name:	D:\\NP52004_Ver1.5_Build_19013022.rom	
		Browse	
		🗸 OK 🛛 🗶 Cancel	

4. Wait while the Upgrade Firmware action is processed.

tus					
Processin	ıg, please wait				X Cancel
No	Model	MAC Address	IP Address	IP Address2	Status
1	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)	0.18-10		
Function			Configuration -	1 NPort(s)		
- NPort	No 🛆	Model	MAC Address	IP Address	Server Name	Statu
	1	NPort 5630-8	00:90:E8:09:9D:86	192.168.34.68	NP5630-8_40	
- 🦝 COM Mapping 🎲: IP 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	×
Select File File Name:	Browse
	OK K 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**.

Select File	X
Select File	Browse
	Ø OK Kancel

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.

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

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	Auto Warning	IP Address Repo				
NPort 5630-8	Basic	Network	Serial	Operating Mode			
MAC Address 00:90:E8:09:9D:86	Server Name NF	5630-8_40					
Serial Number 40	Modify						
		MT) Greenwich Mean Ti	me: Dublin, Edinburgh	n, Lisbon, London 👱			
Firmware Version		1999/12/31					
Ver 3.6	Local Time L·	上午 12:00:00 🔅					
System Uptime O days, 00h:36m:11s	I Modify I Enable Web I I Enable Telne						

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 <u>File Eunction Configuration</u> <u>Eunction Configuration</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u> <u>Eunction</u>	n ⊻iew <u>H</u> elp ≚) Bin Donfigure Web				×
Function			Configuration -	1 NPort(s)		
	No /	Model	MAC Address	IP Address	Server Name	Status
Configuration Monitor Port Monitor COM Mapping Or IP Address Report	1	NP5630-8_40				
	•		OK	J		•

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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
	Firmware v1.3 and up (Support with both web console and NPort
NPort 5100A Series	Administration Suite v1.22 or above)
NPart 52004 Carias	Firmware v1.3 and up (Support with both web console and NPort
NPort 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 5X50AI-MIZ Selles	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)
	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 non-encrypted, 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.

*	🔹 NPort Administrator-Configuration									
].	Eile Function Configuration View Help									
1	j 🖸	<u>Configuration</u>	<u>≭</u>	Configure Web						
1	E 🗖	<u>M</u> onitor	Locate	Configure Web						
] Port Monitor		Configuration - 1 NPort(s)						
	· 🔊 📈	COM Mapping	Δ	Model	MAC Address	IP Address	Server Name	Status		
	??	IP 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**.

<u>File</u> <u>Function</u>	inistrator-Monitor Monitor <u>V</u> iew <u>H</u> elp							
Exit A	Add Target				Add NPort			
Functi		Monitor - Stopp	ed - 0 NPort(s)	-			
NPort	Settings	MAC Address	IP Address	Alive	Select From		Rescan Selec	t All Clear All
- 🖾 Monit	▶ <u>G</u> o				No	Model	MAC Address	
	Go Stop dress Report	ļ				NPort 5250A	00:90:E8:66:32:52	192.168.127.254
					🔿 İnput Manı		P Address Voidel NPort	5110
			6-14					

Once the Monitor function is running:

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

🔹 NPort Administrator-Monitor								
Eile Eunction Monitor <u>V</u> iew <u>H</u> elp								
Exit Add Remove Go Stop								
Function			M	onitor - Stopped	d - 1 NPort(s)			
⊡- 🔊 NPort	No	Δ	Model	MAC Address	IP Address	Alive		
Configuration Monitor Port Monitor COM Mapping	1		NPort 5250A	00:90:E8:66:32:52	192.168.127.254	Not Alive		
COM Mapping								

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

🐝 NPort Administrator-Mo	nitor						
] <u>F</u> ile <u>F</u> unction Monitor <u>V</u> ie	w <u>H</u> elp						
Exit Add Remo	ve Go	Stop					
Function			Moi	nitor - Stopped	l - 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			\simeq	Remove Target			
COM Mapping				Load Configured C	OM Paut		
······································				Loau Configured C	OMITOIL		
			ð	Settings			

3. Select or de-select **Monitor Items**. 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 De-selected Items Server Name COM Number	Advanced Settings Selected Items Model MAC Address IP Address Alive	×
Load Default	<<	X Cancel

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

Mo	nitor	Settings	
	Mor	nitor Items General Settings Advanced S	ettings
		Refresh Rate: 3	Second(s)
		Auto save monitored NPort list.	
			V QK X 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 S	Settings	×
	Monito	itor Items General Settings Advanced Settings Monitor and Port Monitor Message Box Setting I Display warning message for new event. C:\WINDOWS\Media\notify.wav Browse	
		V QK X Cancel	

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

🐝 NPort .	🗞 NPort Administrator-Monitor							
<u> </u>	iction Monitor ⊻ie	w <u>H</u> elp						
Exit Add Remove Go Stop								
Fu	Inction		P	lon	itor - Stopped	d - 1 NPort(s)		
🖃 🔊 NPo	ort	No	Model	N	IAC Address	IP Address	Alive	
	Configuration	1	NPort 5250A	10	0:90:E8:66:32:52	192.168.127.254	Not Alive	
	Monitor			2	<u>A</u> dd Target			
	Port Monitor			\leq	<u>R</u> emove Target			
- \$	COM Mapping IP Address Report				Load Configured (COM Port		
				P	<u>S</u> ettings			
					<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 🔏 🍝	ve 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						
一 (低) 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.	
	,

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 Function Monitor Vie</u>	ew <u>H</u> elp					
📄 🤮 🎽	ve Go	Stop				
Function		M	onitor - Running	g - 1 NPort(s)		
⊡- 🔊 NPort	No 🛆	Model	MAC Address	IP Address	Alive	
Configuration	1	NPort 5250A	00:90:E8:66:3	192.168.127	Not Alive	
Monitor						
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-Monitor							
<u> </u>	ew <u>H</u> e	elp					
Exit Add Remove Go Stop							
Function			M	onitor - Running	g - 1 NPort(s)		
🖃 🌆 NPort	No	Δ	Model	MAC Address	IP Address	Alive	
1 Configuration	1		NPort 5250A	00:90:E8:66:32:52	192.168.127.254	Alive	
Monitor	L						
Port Monitor	L						
COM Mapping	L						
PAddress Report							

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	<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	1	NPort 5250A	00:90:E8:66:32:52	192.168.127.254	1	Real COM Mode
Monitor	2	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 Items**. 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	×
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					
📄 🚊 🔮	nIP Locate	Configure W	l eb			
Function			Configuration -	0 NPort(s)		
⊡- 🔊 NPort	No 🛆	Model	MAC Address	IP Address	Server Name	Status
Configuration Monitor Port Monitor Monitor Monitor Monitor Monitor Monitor Monitor Monitor IP Address Report		4	 Broadcast Search Specify by IP Address 			
IP Address Report				_		

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		
□ D 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					
] <u>File</u> 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><u> </u></u>	10ve 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.

ldd NPo	ort						
()	Select From L	jst F	lescan	Select	All	Clear All	
	lo (Model	MAC Add	ress	IP Add	ress	
Ŀ	2 1	NPort 5250A	00:90:E8	66:32:52	192.16	8.127.254	

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

🐝 NPort Administrator-CO	M Mapping						
Eile Eunction COM Mappin	g <u>V</u> iew <u>H</u> elj	P					
Exit Add Remove	e Apply I	Configure					
Function				COM Mappir	ng - 2 C	юм	
🖃 涵 NPort	No 🛆	Model	1	P Address	Port	COM Port	Mode
🚺 Configuration	1	NPort 5250A		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
Port Monitor			~	<u>R</u> emove Target			
COM Mapping				<u>E</u> nable			
				<u>D</u> isable			
			S	<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 COM6 COM7 COM6 COM7 COM8 COM8 COM9 COM9 COM10 COM11 V
OK X Cancel	OK 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.

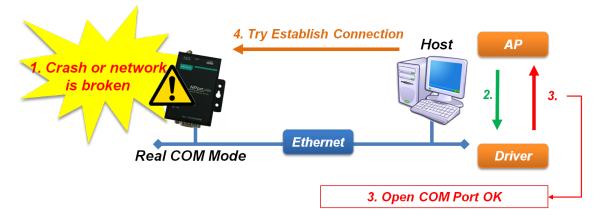
Enable/Disable Tx/Rx FIFO. If disabled, the NPort 5200A will send one byte each time the Tx FIFO becomes empty; and an Rx interrupt will be generated for each incoming byte. This will result in a faster response and lower throughput. If you want to use XON/XOFF flow control, we recommend setting FIFO 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 Ignore Tx Purge Apply all selected ports
OK X 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) Selecto	ed. 1st port is Port 1
Basic Settings Adva	nced Settings	Serial Parameters COM Grouping
Baud Rate	9600	▼
Parity	None	•
Data Bits	8	•
Stop Bits	1	•
Flow Control	None	•
🗌 Apply All Sele	cted 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-CC)M Mappin;	g					
<u> </u>	ng <u>V</u> iew <u>H</u>	elp					
Exit Add Remov	e Apply	Configure					
Function				COM Mappir	ng - 2	сом	
⊡- 🔊 NPort	No 🛆	Model	IF	^o Address	Port	COM Port	Mode
🗌 🚺 Configuration	1	NPort 5250A	1	92 168 127 254	1	COM11 +	Hi-Performance, FIFO Ena
- 🚾 Monitor	2	NPort 5250A	2	Add Target		COM12 +	Hi-Performance, FIFO Ena
Port Monitor			~	<u>R</u> emove Target			
COM Mapping	<u> </u>		_	<u>E</u> nable			
				Disable			
			P	<u>C</u> OM Settings			
				Apply Change			

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

🐝 NPort Administrator-CO	OM Mapping						
<u>File</u> Eunction COM Mappi	ng ⊻iew <u>H</u> e	lp					
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	2	<u>A</u> dd Target		COM12 +	Hi-Performance, FIFO Ena
Port Monitor			~	<u>R</u> emove Target			
COM Mapping	-			<u>E</u> nable			
				<u>D</u> isable			
			P	<u>C</u> OM Settings			
			H	Apply Change			
	L			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 Fr	om List	Rescan	Sele	ect All Clear	All
No	Model	MAC.	Address	IP Address	
Input Ma	nually	IP Address	192.1	168.127.254	
		Model	NPo	rt 5250A	•
		Ports	2 Por	t(s)	

2. Modify the port settings as needed.

🐝 NPort Administrator-CC)M Mapping									
<u>File E</u> unction COM Mapping <u>V</u> iew <u>H</u> elp										
Exit Add Remove 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	COM4 +	Hi-Performance, FIFO Ena			
- 🚾 Monitor	2	NPort 5250A	2	<u>A</u> dd Target		COM6 +	Hi-Performance, FIFO Ena			
Port Monitor			~	<u>R</u> emove Target						
🛶 🔆 IP Address Report	L			<u>E</u> nable						
				<u>D</u> isable						
			s	<u>C</u> OM Settings						

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

🐝 NPort Administrator-CO	M Mapping									
<u>File</u> <u>F</u> unction COM Mapping <u>V</u> iew <u>H</u> elp										
Exit Add Remove Apply Configure										
Function				COM Mappir	ng - 2 C	сом				
- 🔊 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>R</u> emove Target						
COM Mapping				<u>E</u> nable						
				<u>D</u> isable						
			P	<u>C</u> OM Settings						
				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.

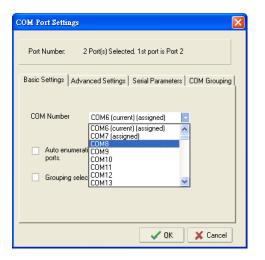
Creating a COM Group

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-CC)M Mapping										
<u>File</u> <u>F</u> unction COM Mappi	ng <u>V</u> iew <u>H</u> elj	D									
Exit Add Remove Apply Configure											
Function COM Mapping - 3 COM											
⊡- 🔊 NPort	No 🛆	Model	IF	^o 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	1	COM7 +	Hi-Performance, FIFO Ena				
COM Mapping	L		2	<u>A</u> dd Target		L					
🔤 🔆 IP Address Report			~	<u>R</u> emove Target							
			-	<u>E</u> nable							
				Disable							
			P	<u>C</u> OM Settings							
			H	Apply Change							
				Discard Change							
				Export COM Ma	apping						
	<		-	Import COM Ma	apping		>				

 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.

c	OM Port Settings						(×
	Port Number: 2	Port(s)	Selected	1. 1st port i	is Port 2			
	Basic Settings Adva Serial ports:	nced S	ettings	Serial Para	ameters	СОМ С	àrouping	
	IP Address	Port	Read	Write	Signal !	Status		
	192.168.127.253 192.168.127.252				F			
_				 ✓ 	OK	× (Cancel	1

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-COM Mapping										
Eile Eunction COM Mapping View Help										
Exit Add Remov		Configure								
Function			COM Mappir	ng - 3 (сом					
- 🔊 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				
📈 COM Mapping										
COM Mapping										

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

Inform	ation 🛛 🔀
(į)	Do you want to apply the changes?
(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										
File Function 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							
👾 🔅 IP Address Report			<u>~</u>	<u>R</u> emove Target							
				<u>E</u> nable							
				Disable							
			P	<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 CDM9
Auto enumerating CDM number for selected pots. Grouping selected port(s) together.
QK 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-COM Mapping									
Eile Eunction COM Mapping View Help									
Exit Add Remove Appy Configure									
Function			COM Mappin	g - 3 (сом				
⊡- 🔊 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			
Port Monitor	3	NPort 5110A	192.168.127.252	1	COM10	Hi-Performance, FIFO E			
COM Mapping									
COM Mapping	-								
.									

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-CO	🔹 NPort Administrator-COM Mapping										
<u>File</u> <u>F</u> unction COM Mapping <u>V</u> iew <u>H</u> elp											
Exit Add Remove Apply Configure											
Function COM Mapping - 5 COM											
⊡- 🔊 NPort	No 🛆	Model	IP Address	Po	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				
- Re 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	12		LCOM7	Hi-Performance, FIFO Ena				
All II Hiddioso Hoport	L			2	<u>A</u> dd 1	Farget					
				~	<u>R</u> emo	ve Target					
					<u>E</u> nabl	le					
					<u>D</u> isab	le					
				P	COM	Settings					
				H	Apply	/ Change					
					Disca	rd Change					



 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) -
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-COM Mapping										
Eile Eunction COM Mapping View Help										
Exit Add Remove Apply Configure										
Function			COM Mappir	ng - 5 C	юм					
⊡ 🔊 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-CO	M Mapping							
<u>File</u> <u>F</u> unction COM Mappin	ng <u>V</u> iew <u>H</u> elj	р						
Exit Add Remo	ve Apply	Configure						
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	2		COM8 (Group)	Hi-Performance, FIFO E	
ARC IT Hadress Treport				2	<u>A</u> dd '	Target		
				~	<u>R</u> emo	ove Target		
					<u>E</u> nab	le		
					<u>D</u> isab	le		
				đ	COM	Settings		
				H	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
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-COM Mapping									
Eile Eunction COM Mapping View Help									
Exit Add Remo	ve Apply	Configure							
Function		COM Mapping - 5 COM							
⊡-≫ 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	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 🔀
٩	Do you want to apply the changes?
	Yes Cancel

Modify Ports in a COM Group

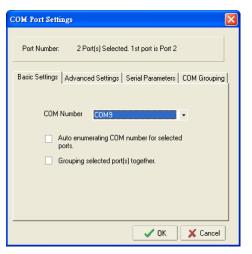
In the following subsections we examine three ways in which the serial ports in a COM Group can be modified:

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-COM Mapping									
Eile Eunction COM Mappir	Eile Eunction COM Mapping View Help								
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 -
 Auto enumerating COM number for selected ports.
Grouping selected port(s) together.
V OK 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		Configure						
Function			COM Mappir	ng - 3 C	ом			
🖃 洒 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	3 NPort 5110A 192.168.127.252 1 COM9 (Group) Hi-Performance, FIFO End						
🔣 📶 COM Mapping								
COM Mapping								

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.

соы	l Port Settings						(×
F	Port Number: 2	2 Port(s)	Selected	l. 1st port i	is Port 2			
	sic Settings Adva Serial ports:	inced S	ettings :	Serial Para	ameters	COM G	àrouping	
1	IP Address	Port	Read	Write	Signal	Status		
	192.168.127.253 192.168.127.252		N	R				
				 ✓ 	OK	×	Cancel	

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

🔹 NPort Administrator-COM Mapping										
<u>File</u> Eunction COM Mappir	Eile Eunction COM Mapping View Help									
Exit Add Remove Apply Configure										
Function		COM Mapping - 3 COM								
	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	2	Add Target		COM8 (Group)	Hi-Performance, FIFO Ena			
COM Mapping			~	<u>R</u> emove Target						
				Enable						
				<u>D</u> isable						
			B	<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	Grouping	Basic Settings Advanced S	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 ms)		Stop Bits	1	-	
📃 Fast flush (only	/ flush local buffer)		Flow Control	None	•	
Apply all selec	ted ports		Apply all selecter	d 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 <u>V</u> iew <u>H</u> elp)							
Exit Add Remove Apply Configure									
Function		COM Mapping - 3 COM							
- → 🔊 NPort	No 🛆	Model	IP.	Address	Port	COM Port	Mode		
1 Configuration	1	NPort 5150A	19	2.168.127.254	1	COM4	Hi-Performance, FIFO Ena		
- 🚾 Monitor	2	NPort 5110A	19	2.168.127.253	1	COM8 (Group)	Hi-Performance, FIFO Ena		
🔤 Port Monitor	3	NPort 5110A	<u>_</u>	Add Target		COM8 (Group)	Hi-Performance, FIFO Ena		
COM Mapping				<u>R</u> emove Target					
				<u>E</u> nable					
				<u>D</u> isable					
			5	<u>C</u> OM Settings					
				Apply Change					
				D <u>i</u> scard 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.

co	M Port Settings							×
	Port Number: 1	Port(s)	Selected	l. 1st port i	is Port 2			
В	asic Settings Adva Serial ports:	nced S	ettings :	Serial Pari	ameters	СОМ С	âroupin	g
	IP Address	Port	Read	Write	Signal S	Status		
	192.168.127.253 192.168.127.252	1	2	₽				
_				 ✓ 	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 Image: Construction	
0 days, 00h:34m:02s	Click the "Modify" check box to modify configuration ✓ 0K ✓ CK	

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

🔹 NPort Administrator-IP Address Report								
<u>File</u> <u>F</u> unction <u>I</u> PAddress Report <u>V</u> iew <u>H</u> elp								
Exit Settings Go Stop								
Function		IP Ad	dress Report - St	opped - Port:40	02 - 0			
⊡ 🔊 NPort	No 🛆	Model	MAC Address	IP Address	Count Pr	evious Time		
		e	Settings					
- Reference Port Monitor		•	Go					
COM Mapping			Stop					
			<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.

🔹 NPort Administrator-IP Address Report								
<u>File</u> <u>Eunction</u> <u>IP</u> Address Report <u>View</u> <u>H</u> elp								
Stop								
Function IP Address Report - Stopped - Port:4002 - 0								
No 🛆	Model	MAC Address	IP Address	Count	Previous Time			
	r 🖓	Settings						
L	•	<u>G</u> o						
		Stop						
		<u>C</u> lear						
	eport ⊻iew Stop	eport View Help Stop IP Addre No 🛆 Model	eport View Help Stop IP Address Report - Sto No 4 Model MAC Address Stop Stop	eport View Help Stop IP Address Report - Stopped - Port:40 No Model MAC Address IP Address Stop Go Stop Stop Stop Stop	eport View Help Stop IP Address Report - Stopped - Port:4002 - 0 No \land Model MAC Address IP Address Count Stop Stop Stop			

NPort CE Driver Manager for Windows CE

NPort CE Driver Manager for Windows CE applies to the **NPort 5000 and NPort IA5000 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	🗈 💣 🏬 🗰 ? ОК 🗵
🔍 \Program Files	
Command Prompt	
Name: NPortCab Type:	7

 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**.

NPort CE D	OK ×							
COM Settin	COM Setting COM Mapping About							
СОМ	IP Addr	Data/Cmd	Delete All					
Settings — T× Mode FIFO	, ·	Save						
	(s) was found.]					

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

NPort CE Drive	ок 🗙		
COM Setting C	ut		
Model	IP Addr	Ports	Search
NPort 5110	192.168.127.254	1	Stop
			Modify IP
			Search
Port Index	·		Completed.
	Add		
	Select the p of NPort th want to ad	iat 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 Driv	ок 🗙		
COM Setting	COM Mapping Abo	out	
Model	IP Addr	Ports	Search
NPort 5110	192.168.127.254	1	Stop
			Modify IP
Port Index —			Search Completed.
Port1 (950	/966) Add		
	Select the of NPort th want to ac	nat you	x
NPort 5110 (19	2.168.127.254) is sele	cted.	

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

NPort CE D	NPort CE Driver Manager OK 🗙								
COM Setting COM Mapping About									
СОМ	IP Addr	Data/Cmd		Delete All					
COM2	192.168.127.254	950/966		Delete					
[Settings —		1							
T× Mode	Tx 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	G COM Mapping	About	
COM COM2	IP Addr 192.168.127.254	Data/Cmd 950/966	Delete All Delete
Settings -	Hi-performance	Save	1
Tx Mode 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.

8

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?

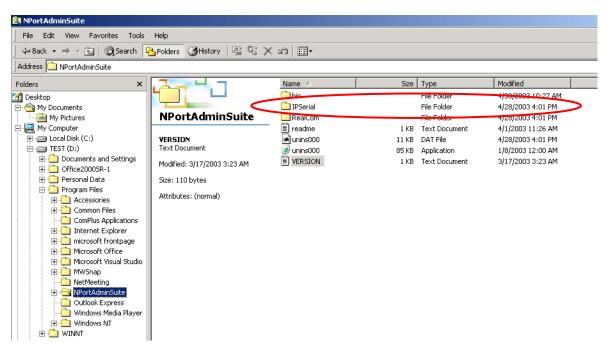
For programmers familiar with serial communication, IP Serial Library provides well-designed function calls that have the same style as Moxa's PComm Library.

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 http://www.moxa.com, 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: https://developer.android.com/studio/index.html?hl=zh-tw#Requirements).

Organize 🔻 🛛 🏉 Ope		v folder	8	-
🔆 Favorites	Name	Date modified	Туре	Size
E Desktop	🚡 com	11/22/2017 3:42 PM	File folder	
洟 Downloads	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
	øverview-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
	🔊 stylesheet	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.
MrException	OVERVEN PACKAGE CLASS TREE INDEX HELP
MuException.ErrorCode Mit/NPort	PREV NEXT FRAMES NO FRAMES ALL CLASSES
MultPort PowCet MultPort loctInde MultPort LineEnor MultPort ModemBatus MultPortService Version	This document is the programming guide for the MaNPortAFI. See: Description
	Packages
	Package Description
	com.moxa.mxnportapi
	This document is the programming guide for the MANNPortAPI. You can get information about how to code with the MANNPortAPI quickly and how to link the MANNPortAPI Library into your program. Android Platform Android Platform Phone, Contracts, Camera) Java API MANNPortAPI Etameworks (US8, Package, Location) Libraries Davide Linux Kernel

MxNPortAPI Function Groups

The supported functions in this API are listed below:

Port Control	ort Control Input/Output		Miscellaneous
open	read	getBaud	setBreak
close	write	getFlowCtrl	
setIoctlMode		getIoctlMode	
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.IoctlMode mode = new MxNPort.IoctlMode();
        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.setIoctlMode(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	P	5	4	1	0	_	6	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

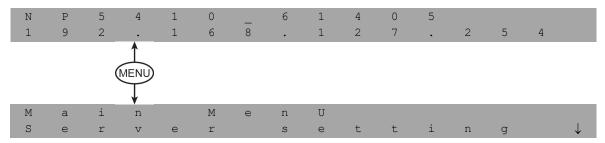
There are four push buttons on the NPort's nameplate. Going from left to right, the buttons are:

Button	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						
	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 down	cursor	button	once	to see Odd as the second option.	
P	a	r	i	t	Y	\uparrow
0	d	d				\downarrow
Press	the down	cursor	button	again	to see Even as the third option.	
P	а	r	i	t	Y	\uparrow
E	V	е	n			\downarrow
Press	the down	cursor	button	again	to see Space as the fourth option.	
P	а	r	i	t	Y	\uparrow
Μ	а	r	k			\downarrow
Press	the down	cursor	button	yet ag	gain to see the last option, Space.	
P	а	r	i	t	Y	\uparrow
S	р	a	С	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	et RJ45		Ethernet M12 (For NPort 5000AI-M12 only)					
Pin	Signal		Ethernet M12:					
1	Tx+		PIN TX					
2	Tx-	1 8						
3	Rx+		1 TD+ 2 3					
6	Rx-		2 RD+ 6 6					
			4 RD-					
			Housing: shield					
			Power M12:					
			3 2 PIN Description					
			1 Input V+					
			2 Not assigned					
			4 1 3 Input V-					
			4 Not assigned					
			5 5 Function ground					

Serial Port Pinouts

	Pin As	signment		Applicable Products
	Pin	RS-232	1 2 3 4 5	NPort 5110, NPort 5150,
	1	DCD		NPort 5110A, NPort
	2	RxD	\circ \circ \circ \circ	5150A, NPort P5150A,
s	3	TxD		NPort_5000AI-M12,
ort	4	DTR	6789	NPort 5210A, NPort
Pinouts	5	GND		5250A, NPort 5410,
	6	DSR		NPort 5410/5450/5450I,
Port	7	RTS		NPort 5610-8-DT, 5650-
-232	8	CTS		8-DT, 5650I-8-DT,
2-2		010		5610-8-DTL/DTL-T,
ß				5650-8-DTL/DTL-T, and
Male				5650I-8-DTL/DTL-T,
				NPort IA5150/5250
DB9				NPort IA5150A/5250A

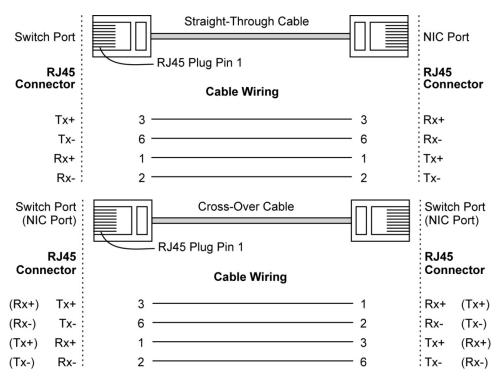
	Pin	RS-422 / 4-w	ire	2-wire RS-4	185	1 2 3 4 5	NPort 5130, NPort 5150,
ts		RS-485					NPort 5130A, NPort
nou	1	TxD-(A)		-	(5150A, NPort P5150A,
Pir	2	TxD+(B)		-			NPort_5000AI-M12,
ort	3	RxD+(B)		Data+(B)		6789	NPort 5250A, NPort
Б Б	4	RxD-(A)		Data-(A)			5450/5450I, 5650-8-DT,
48	5	GND		GND			5650I-8-DT, 5650-8-
22/	6	-		-			DTL/DTL-T, and
4	7	-		-			5650I-8-DTL/DTL-T,
R	8	-		-			NPort IA5150/5250,
DB9 Male RS-422/485 Port Pinouts	Note: signal		5150/	A Series's DB	9 ports onl	y support RS-232	NPort IA5250A
	Pin	RS-232					NPort 5210/5210I,
ť	1	DSR			Г,		NPort 5610-8-DT-J,
8-pin R.145 RS-232 Port Pinouts	2	RTS					NPort 5610, NPort 5650-
232	3	GND					8-DT-J
S-S	4	TxD					
5	5	RxD					
RJ4	6	DCD					
8-pin RJ Pinouts	7	CTS					
8-5 Pin	8	DTR					
		RS-422		2-wire RS-			NPort 5630
ť	Pin	4-wire RS-		485		8	
Ро		485					
185	1				_		
2/4	2				_		
42	3	TxD+			_		
n RJ45 RS-422/485 Port outs	4	TxD-			-		
45	5	RxD-		Data-	-		
in RJ outs	6			Data+			
		RxD+					
pin nou	7	GND		GND	-		
8-pin Pinou]	-	
8-pi Pino	7 8	GND 			2-wire RS-		NPort 5650, NPort 5650-
8-pi Pino	7	GND			2-wire RS- 485		NPort 5650, NPort 5650- 8-DT-J
8-pi Pino	7 8 Pin 1	GND 					
8-pi Pino	7 8 Pin 1 2	GND RS-232	4-v	 422 vire RS-485	485		
8-pi Pino	7 8 Pin 1 2 3	GND RS-232 DSR	4-v	 -422 vire RS-485	485		
8-pi Pino	7 8 Pin 1 2 3 4	GND RS-232 DSR RTS	4-v TxD	 •422 vire RS-485	485 		
8-pi Pino	7 8 Pin 1 2 3 4 5	GND RS-232 DSR RTS GND	4-v TxD GNI	 •422 vire RS-485	485 GND		
8-pi Pino	7 8 Pin 1 2 3 4	GND RS-232 DSR RTS GND TxD	4-v TxD GNI TxD	 •422 vire RS-485 0+ 0- 0- 0+	485 GND 		
8-pin RJ45 RS-232/422/ 485 8-pin Port Pinouts Pinou	7 8 Pin 1 2 3 4 5	GND RS-232 DSR RTS GND TxD RxD	4-v TxD GNI TxD RxD	 •422 vire RS-485 0+ 0- 0- 0+	485 GND Data+		

Terminal Block RS-232 & RS-422/485 Pinouts	Serial Device Signals NPo RxD I TxD I TxD I CTS I RTS I GND I Rx+ I Rx- I Tx+ / Data+ I GND I	Tx Rx P1 Rx P1 RTS % CTS 222 GND T+ T- R* R+/D+ 485/4222 GND GND GND T+ T- R* R+/D+ 485/4222 GND GND CTS 222 CTS 2	NPort 5230
Terminal Block RS-422/ 485 Port Pinouts	I I <thi< th=""> <thi< th=""> <thi< th=""></thi<></thi<></thi<>	RS-422, 4-wire RS-485 TxD+(B) TxD-(A) RxD+(B) RxD-(A) GND	NPort 5230A, NPort IA5150, NPort IA5150A
Terminal Block RS- 1 422/485 Pinouts F	Serial Device Signals NPort 5430/ Terminal E Rx+ 1 Rx- 1 Tx+ / Data+ 1 Tx- / Data- 1 GND 1	54301	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 <i>1 1 1 1 1 1 1 1 1 </i>	۲۲٫٦ <u>۲</u>	0					NPort IA5150/5250
Power Input an Output Pinouts	<i>h</i>	V2+						
r In it Pi	Shielded	DC	DC	Relay	Relay	DC	DC	
we	Ground	Power	Power	output	output	Power	Power	
Po		input 1	input 1			input 2	input 2	
Power Input and Relay Output Pinouts			LW1 LW1 LW1 LW1 LW1 LW1 LW1 LW1					NPort IA5000A
. Inpu	Ŧ	PWR	1	PWR2	REL	AY		
Power I Pinouts	Shielded	DC P	ower	DC Power	Norn	nal Open/C	lose, Relay	
Po' Pin	Ground	Input		Input	outp	ut		

Cable Wiring Diagrams

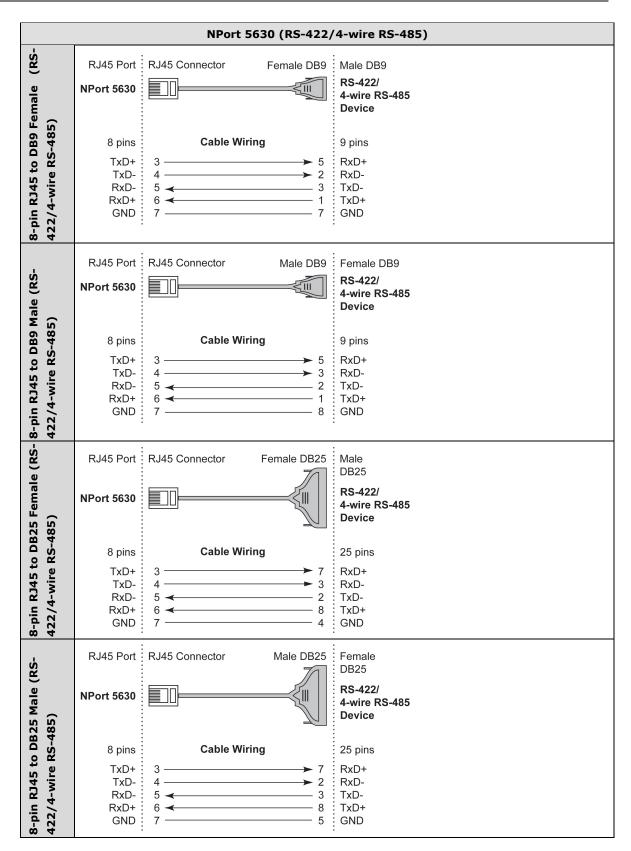
Ethernet Cables

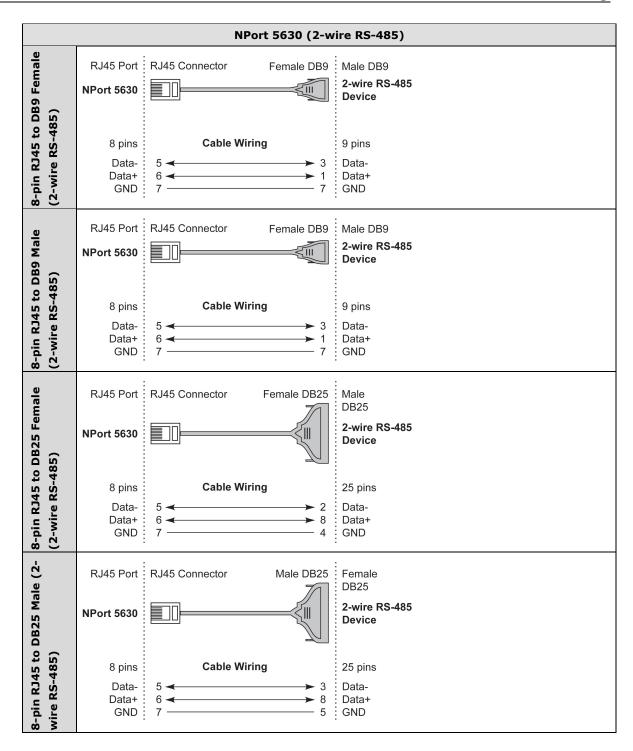


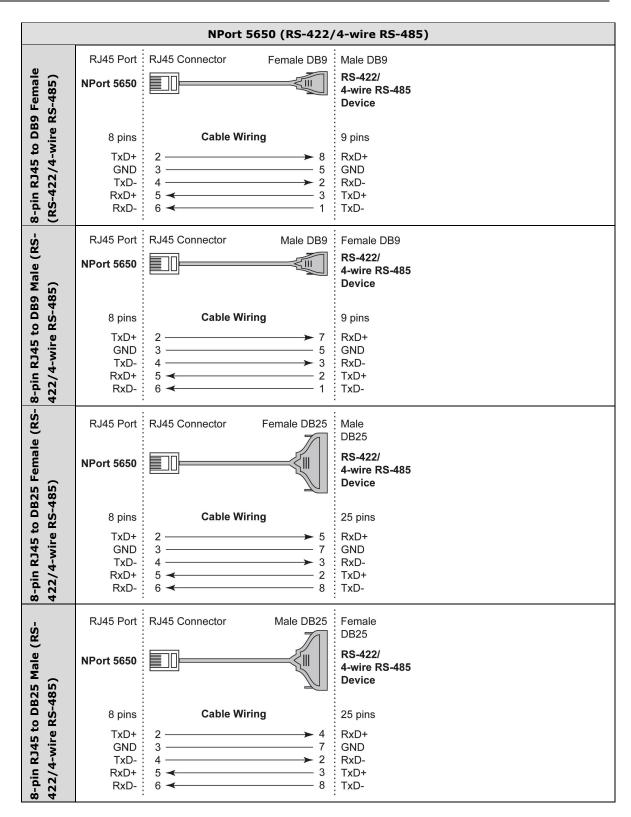
Serial Cables

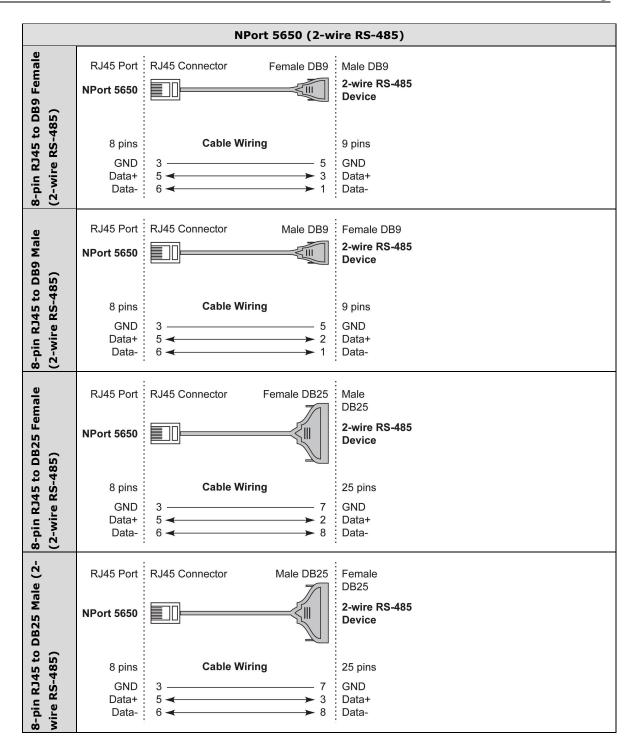
	Serial Cab	ble Wiring Diagrams	
•	Male DB9	Female DB9 Male DE	9 Female DB9
(RS-232)	NPort		RS-232 Device
DB9	9 pins	Cable Wiring	9 pins
Female DB9 to Male I	DCD RxD TxD DTR GND DSR RTS CTS	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	2 TxD 2 TxD 3 RxD 4 DSR 5 GND 6 DTR 7 CTS
(7	Male DB9	Female DB9 Male DB2	25 Female DB25
:5 (RS-232)	NPort		RS-232 Device
DB25	9 pins	Cable Wiring	25 pins
Female DB9 to Male	DCD RxD TxD DTR GND DSR RTS CTS	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	 8 DCD 3 TxD 2 RxD 0 DSR 7 GND 6 DTR 4 CTS 5 RTS

		NPort 5210, NPort 5610/56	50 (RS-232)
	RJ45 Port	RJ45 Connector Female DB9	Male DB9
RS-	NPort		RS-232 Device
8-pin RJ45 to DB9 Female (RS- 232)			Device
ema	8 pins	Cable Wiring	9 pins
39 F	DSR RTS	$\begin{array}{c}1 \longleftarrow 4\\2 \longrightarrow 8\end{array}$	DTR CTS
0 DE	GND	3 5	GND
IS to	TxD	$\begin{array}{c} 4 \\ 5 \\ \hline \end{array} \begin{array}{c} 2 \\ 3 \end{array}$	RxD
RJ4	RxD DCD	6 🗲 1	TxD DCD
8-pin 232)	CTS	$7 \underbrace{4}{8} \xrightarrow{7} 6$	RTS
	DTR RJ45 Port		DSR Female DB9
32)			RS-232
3S-2	NPort		Device
8-pin RJ45 to DB9 Male (RS-232)	8 pins		9 pins
89 N	DSR RTS	$\begin{array}{c}1 \leftarrow 6\\2 \leftarrow 7\end{array}$	DTR CTS
Ō	GND	3 5	GND
45 t	TxD RxD	$\begin{array}{c} 4 \\ 5 \\ \hline \end{array} \begin{array}{c} \end{array} \begin{array}{c} 3 \\ 2 \end{array}$	RxD TxD
ß	DCD	6 🗲 1	DCD
3-pir	CTS DTR	7 ~ 8 8 ~ 4	RTS DSR
~~~			:
32)	RJ45 Port	RJ45 Connector Female DB25	Male DB25
S-23	NPort		RS-232
Female (RS-232)	NPOR		Device
ema	8 pins	Cable Wiring	25 pins
LO LO	DSR		DTR
DB3	RTS GND	$\begin{array}{c} 2 \\ 3 \\ \hline \end{array} \begin{array}{c} 5 \\ 7 \\ \end{array}$	CTS GND
8-pin RJ45 to DB2	TxD	$4 \longrightarrow 3$ $5 \longleftarrow 2$	RxD TxD
345	RxD DCD	6 🗲 8	
oin F	CTS	$7 \longleftarrow 4$	RTS DSR
8-1	DTR	0 - 0	DSK
	RJ45 Port	RJ45 Connector Male DB25	Female DB25
32)			RS-232
8-pin RJ45 to DB25 Male (RS-232)	NPort		Device
ale (	8 pins	Cable Wiring	25 pins
Σ	DSR	1 - 6	DTR
DB2	RTS GND	$\begin{array}{c} 2 \\ 3 \\ \hline \end{array} $	CTS GND
to	TxD	4 ─── 2	RxD
<b>č</b> ]45	RxD DCD	5 <b></b> 3 6 <b></b> 8	TxD DCD
in R	CTS	7 <b>4</b> F	
8-p	DTR	8 → 20	DSR







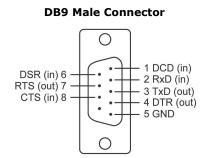


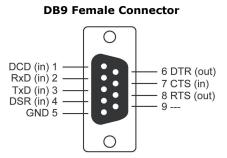
	Serial C	able W	iring Diag	rams				
	NPort							Serial Device
		RJ45	DB9(F)		DB9(M)	DB25(M)	DB25(F)	
	DSR	1	6	◄	4	6	20	DTR
	RTS	2	7	$\longrightarrow$	8	4	5	CTS
	GND	3	5		5	7	7	GND
es	TxD	4	3	$\longrightarrow$	2	2	3	RxD
Cab	RxD	5	2	◄	3	3	2	TxD
RS-232 Cables	DCD	6	1	◄	1	8	8	DCD
-23	CTS	7	8	◄	7	5	4	RTS
RS	DTR	8	4	$\longrightarrow$	6	20	6	DSR
RS-422, 4-wire RS-485 Cables	NPort							Serial Device
RS		RJ45	DB9(F)		DB9(M)	DB25(M)	DB25(F)	
vire	TxD+	2	2		3	3	2	RxD+
4	GND	3	5		5	7	7	GND
s '2'	TxD-	4	1	$\longrightarrow$	1	8	8	RxD-
RS-423 Cables	RxD+	5	3	◄	2	2	3	TxD+
RS Ca	RxD-	6	4	◄	6	20	6	TxD-
85	NPort							Serial Device
2-wire RS-485 Cables		RJ45	DB9(F)		DB9(M)	DB25(M)	DB25(F)	
R C	GND	3	5		5	7	7	GND
2-wire Cables	Data+	5	3	$\checkmark$	2	2	3	Data+
2-v Cat	Data-	6	4	$\longleftrightarrow$	6	20	6	Data-

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

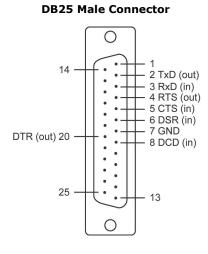
### **Pin Assignments for DB9 and DB25 Connectors**

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

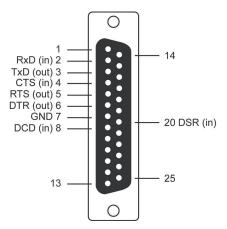




#### Pin Assignments for DB25 Male and Female Connectors



**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.



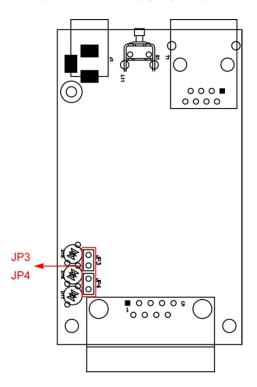
#### ATTENTION

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.

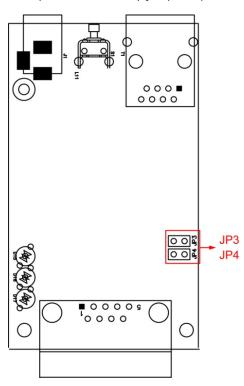
**To set a termination resistor to 1 k** $\Omega$ , make sure that the two jumpers (JP3 and JP4) assigned to the serial port are shorted by jumper caps.



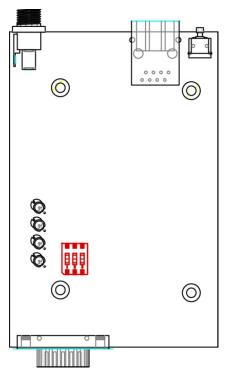
#### NPort 5130A/5150A (Jumpers)

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)



011			
		$\square$	
	2	3	

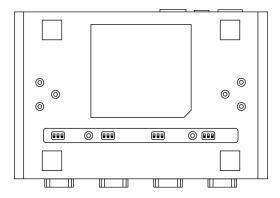
SW	1	2	3
	Pull-high	Pull-low	Terminator
	resistor	resistor	
ON	1 kΩ	1 kΩ	120 Ω
OFF	150 kΩ*	150 kΩ*	_*

* 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.



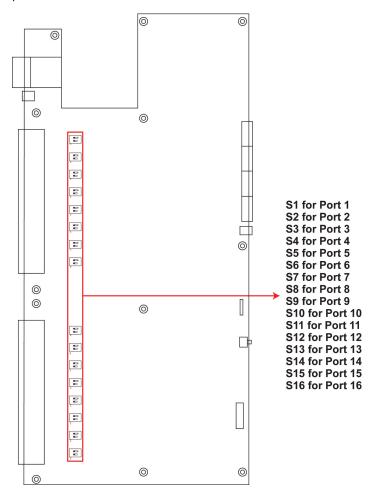
#### Pull high/low resistors for the RS-485 Port

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

#### NPort 5650 Series (DIP Switches)

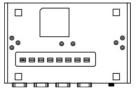
To set the pull high/low resistors to 150 K $\Omega$ , make sure both of the assigned DIP switches are in the OFF position. This is the default setting.

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

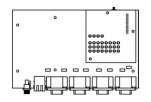


#### NPort 5600-8-DT/DTL Series (DIP Switches)

**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.



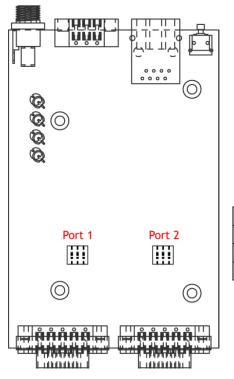
• **NPort 5600-8-DTL:** Remove the top cover to access the DIP switches used to configure each device port's pull high/low resistors (note that SW4 is reserved for future use).



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)

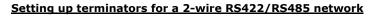


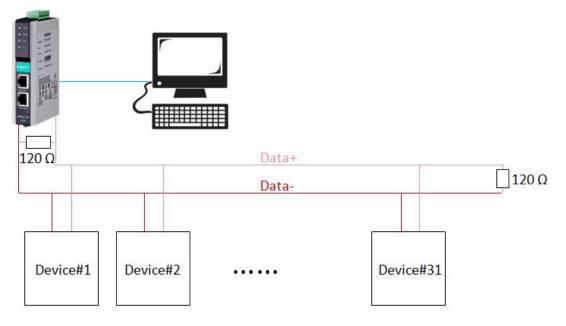
Γ	ON			
		$\square$	$\square$	
	1	2	3	
1				

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

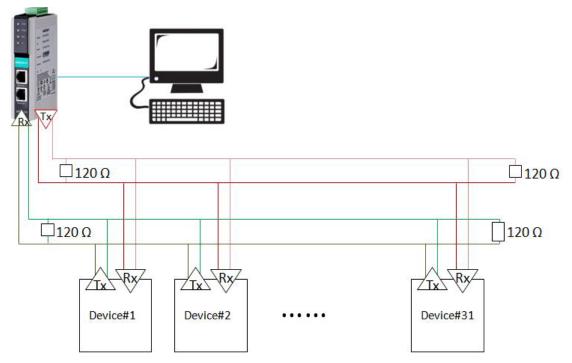
#### NPort IA5000 Series

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.



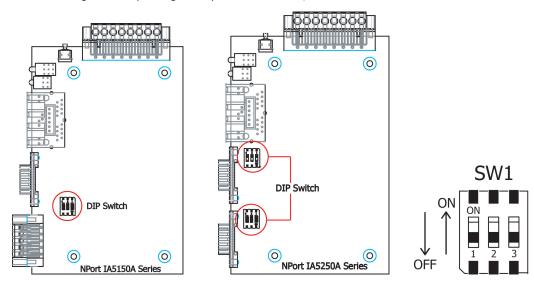


#### Setting up terminators for a 4-wire RS485 network



#### 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	IP MIB	ІСМР МІВ
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
ldpNoPorts tcpRtoMin		snmpOutPkts
UdpInErrors tcpRtoMax		snmpInBadVersions
UdpOutDatagrams	tcpMaxConn	snmpInBadCommunityNames
UdpLocalAddress	tcpActiveOpens	snmpInASNParseErrs
UdpLocalPort	tcpPassiveOpens	snmpInTooBigs
	tcpAttempFails	snmpInNoSuchNames
Address Translation MIB	tcpEstabResets	snmpInBadValues
AtIfIndex	tcpCurrEstab	snmpInReadOnlys
AtPhysAddress	tcpInSegs	snmpInGenErrs
AtNetAddress	tcpOutSegs	snmpInTotalReqVars
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
denenc KS-252-like droup	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	
Divo server z	
IP Address Report	
Auto report to IP	
Auto report to IP (LAN2)	
Auto report to UDP port	4002
Auto report period	10 (0~99 secs)
LLDP Settings	
LLDP Settings	<ul> <li>Enable          Disable</li> </ul>

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

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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 & 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.