NPort W2150A/W2250A Series User's Manual

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NPort W2150A/W2250A Series User's Manual

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с.	ree warning statement	

1 Introduction

The following topics are covered in this chapter:

- Overview
- Package Checklist
- Product Features
- Serial Port Pin Assignments

Overview

In this chapter, we introduce the basic features and specifications of the NPort W2150A/W2250A and NPort W2150A/W2250A-T, referred to collectively as the NPort W2150A/W2250A Series.

The NPort W2150A/W2250A Series of wireless device servers are used to connect RS-232/422/485 serial devices or Ethernet devices, including PLCs, meters, and sensors, to a wireless LAN. Your communications software will be able to access the serial devices or Ethernet devices from anywhere over a local LAN, WLAN, or the Internet. Moreover, the WLAN environment offers an excellent solution for applications in which the serial devices and Ethernet devices are moved frequently from place to place.

The NPort W2150A/W2250A supports both automatic IP configuration protocols (DHCP, BOOTP) and manual configuration using a standard web browser. Both IP configuration methods ensure quick and effective installation. In addition, a utility called "NPort Windows Driver Manager" makes port mapping easy.

The external antenna can be adjusted for maximum signal strength. You can also choose to use your own antenna for additional flexibility and scalability. A signal strength indicator on the front panel makes it easier for you to troubleshoot any connection problems.

The NPort W2150A/W2250A Series offers different operation modes to ensure compatibility with standard network APIs, including TCP Server Mode, TCP Client Mode, and UDP Mode. Real COM/TTY drivers are provided to allow legacy serial-based software to communicate over an IP network instantly. This preserves your software investment while providing all the advantages of networking your serial devices.

For easier management, the NPort W2150A/W2250A includes features such as password authentication, IP filtering, 64-bit and 128-bit WEP encryption, and SNMP support.

Package Checklist

Standard Accessories

- 1 NPort W2150A or NPort W2250A wireless device server
- 1 antenna 2.4/5 GHz: ANT-WDB-ARM-02
- 100 to 240 VAC power adapter (excluding T models)*
- 1 Ethernet cable: CBL-RJ458P-100
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

NOTE The package includes one power adapter suitable for your region.

Optional Accessories

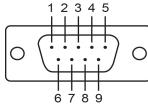
- DK-35A: DIN-rail mounting kit (35 mm)
- Power-jack-to-terminal-block power cable (P/N: 919900000900)

NOTE Please notify your sales representative if any of the above items is missing or damaged.

Product Features

- Instant connection of any serial device to IEEE 802.11a/b/g/n network
- RS-232/422/485 ports supporting baudrates up to 921.6 Kbps
- Web-based configuration over Ethernet or WLAN
- Enhanced remote configuration with HTTPS, SSH
- Secure data access with WEP, WPA, WPA2
- Built-in WLAN site survey tool
- Fast roaming when signal strength is weak
- Per-port offline port buffering and serial data log
- Dual power inputs via power jack and terminal block
- Wireless client

Serial Port Pin Assignments



Pin	RS-232	RS-422/ RS-485 (4W)	RS-485 (2W)
1	DCD	TxD-(A)	-
2	RXD	TxD+(B)	-
3	TXD	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	Data-(A)
5	GND	GND	GND
6	DSR	-	-
7	RTS	-	-
8	CTS	-	-
9	-	-	-
	1 2 3 4 5 6 7 8	1 DCD 2 RXD 3 TXD 4 DTR 5 GND 6 DSR 7 RTS 8 CTS	1 DCD TxD-(A) 2 RXD TxD+(B) 3 TXD RxD+(B) 4 DTR RxD-(A) 5 GND GND 6 DSR - 7 RTS - 8 CTS -

2

Getting Started

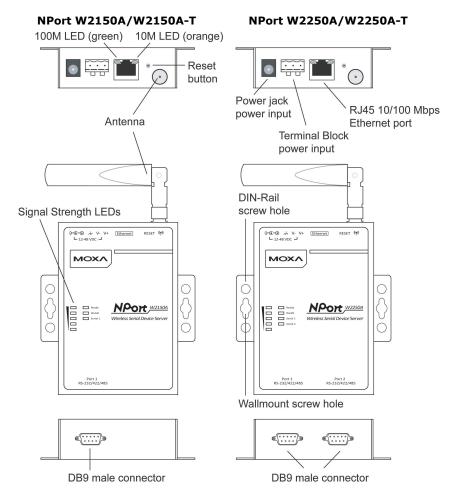
The following topics are covered in this chapter:

- Overview
- Panel Layout
- LED Indicators
 - > Top Panel LED Indicators
 - End Panel LED Indicators
- D Pull High/Low Resistors for RS-422/485
- Placement Options
- **Connecting the Hardware**
 - Connecting to the Network
 - Connecting the Power
 - > Connecting to a Serial Device

Overview

This chapter presents the hardware features of the NPort W2150/W2250A Series and explains how to connect the hardware.

Panel Layout



LED Indicators

Top Panel LED Indicators

Name	Color	Function	
		Steady on: Power is on, and the NPort is booting up.	
	Red	Blinking: An IP conflict exists, or the DHCP/ BOOTP server did not	
Deady		respond properly.	
Ready	Green	Steady on: The NPort is functioning normally.	
	Green	Blinking: The unit is responding to Locate function.	
	Off	Power is off, or a power error condition exists.	
		Steady on: Wireless enabled	
WLAN	Green	Blinking: The NPort can't establish WLAN connection with AP	
WLAN		(Infrastructure) or station (Ad-Hoc)	
	Off	Wireless not enabled.	
Serial 1	Orange	Serial port is receiving data.	
Serial 2	Green	Serial port is transmitting data.	
Senar 2	Off	No data is flowing to or from the serial port.	
	Red	1 Red - the signal strength (RSSI) is worse than -94 dBm	
Signal Strength	2 R	2 Red - the signal strength (RSSI) is between -94 to -87 dBm	
(5 LEDS)		3 Green - the signal strength (RSSI) is between -87 to -79 dBm	
	Green	4 Green - the signal strength (RSSI) is between -79 to -68 dBm	
		5 Green - the signal strength (RSSI) is between -68 to -46 dBm	

End Panel LED Indicators

Name	Color	Function
	Orange	10 Mbps Ethernet connection
Ethernet	Green	100 Mbps Ethernet connection
	Off	Ethernet cable is disconnected

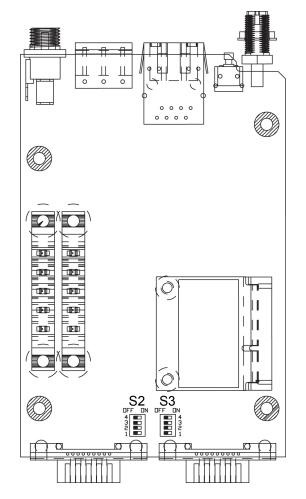
Pull High/Low Resistors for RS-422/485

You may need to set the pull high/low resistors when termination resistors are used for certain RS-422 or RS-485 environments.

S2 (Serial 1)	DIP 1	DIP 2	DIP 3	DIP 4
S3 (Serial 2)	Pull high resistor	Pull low resistor	Terminal resistor	Reserved
ON	1 KΩ	1 KΩ	120 Ω	-
OFF	*150 KΩ	*150 KΩ	*N/A	-

*Default

S3 is for NPort W2250A only



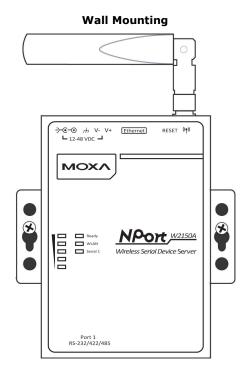


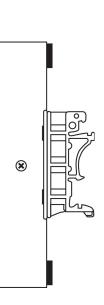
ATTENTION

Do not use the 1 K Ω setting while in RS-232 mode. Doing so will degrade the RS-232 signals and reduce the effective communication distance.

Placement Options

The NPort can be placed on a desktop or other horizontal surface. You can also install the NPort on a DIN-rail or on the wall.





DIN-Rail Mounting

Connecting the Hardware



ATTENTION

Before connecting the hardware, follow these important wiring safety precautions:

Disconnect power source

Do not install or wire this unit or any attached devices with the power connected. Disconnect the power before installation by removing the power cord before installing and/or wiring your unit.

Follow maximum current ratings

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

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

Use caution - unit may get hot

The unit will generate heat during operation, and the casing may be too hot to touch. Take care when handling the unit. Be sure to leave adequate space for ventilation.

The following guidelines will help ensure trouble-free signal communication with the NPort.

- Use separate paths to route wiring for power and devices to avoid interference. Do not run signal or communication wiring and power wiring in the same wire conduit. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
- If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.
- Keep input wiring and output wiring separate.
- Label all wiring to each device in the system for easier testing and troubleshooting

Connecting to the Network

Use the supplied Ethernet cable to connect the NPort to your Ethernet network. If the cable is properly connected, the NPort will indicate a valid connection to the Ethernet as follows:

- A green Ethernet LED indicates a valid connection to a 100 Mbps Ethernet network.
- An orange Ethernet LED indicates a valid connection to a 10 Mbps Ethernet network.
- A flashing Ethernet LED indicates that Ethernet packets are being transmitted or received.

Connecting the Power

Connect the VDC power line (12 to 48 V) to the NPort's power jack or terminal block. If power is properly connected, the "Ready" LED will initially glow red. When the system is ready, the "Ready" LED will turn green.

Connecting to a Serial Device

Use a serial cable to connect your serial device to a serial port on the NPort.

Initial IP Configuration

The following topics are covered in this chapter:

- Overview
- Factory Default IP Settings
- Using ARP to Assign an IP Address
- Using the Telnet Console to an Assign IP Address
- Using the Serial Console to an Assign IP Address

Overview

This chapter presents several ways to assign the NPort's IP address for the first time. Please refer to Chapter 2 for instructions on connecting to the network.

The web console is the recommended method for configuring the NPort. Please refer to Chapter 5 and 6 for details on using the web console for configuration.



ATTENTION

The LAN and WLAN interfaces cannot be used at the same time. If the Ethernet link is active, then WLAN connections will be disabled. If the WLAN connection is active, then the Ethernet link will be disabled.



ATTENTION

Make sure that the Ethernet cable is connected before powering up the NPort.

Factory Default IP Settings

Network Interface	IP Configuration	IP Address	Netmask
LAN	Static	192.168.126.254	255.255.255.0
WLAN	Static	192.168.127.254	255.255.255.0

If your NPort is configured to obtain its IP settings from a DHCP or BOOTP server but is unable to get a response, it will use the factory default IP address and netmask.



ATTENTION

If you forget the IP address of your NPort, you can look it up using the Device Search Utility (DSU). After the Device Search Utility (DSU) has found all NPorts on the network, each unit will be listed with its IP address. Please refer to Chapter 11 for additional information on using the Device Search Utility (DSU).

Using ARP to Assign an IP Address

The ARP (Address Resolution Protocol) command can be used to assign an IP address to the NPort. The ARP command tells your computer to associate the NPort's MAC address with the specified IP address. You must then use Telnet to access the NPort, at which point the device server's IP address will be reconfigured. This method only works when the NPort is configured with default IP settings.

- 1. Select a valid IP address for your NPort. Consult with your network administrator if necessary.
- 2. Obtain the NPort's MAC address from the label on its bottom panel.
- 3. From the DOS prompt, execute the **arp** -s command with the desired IP address and the NPort's MAC address, as in the following example:

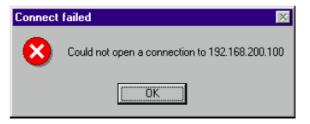
arp -s 192.168.200.100 00-90-E8-xx-xx-xx

In this example, 192.168.200.100 is the new IP address that will be assigned to the NPort, and 00-90-E8-xx-xx is the NPort's MAC address.

 From the DOS prompt, execute a special Telnet command using port 6000, as in the following example: telnet 192.168.200.100 6000

In this example, 192.168.200.100 is the new IP address that will be assigned to the NPort.

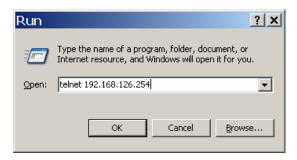
5. You will see a message indicating that the connection failed.



The NPort will automatically reboot with the new IP address. You can verify that the configuration was successful by connecting to the new IP address with Telnet, ping, the web console, or the Device Search Utility (DSU).

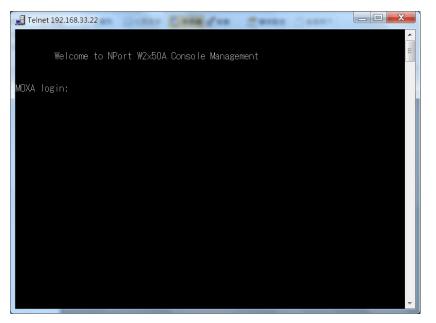
Using the Telnet Console to an Assign IP Address

- 1. Select **Run...** from the Windows Start menu.
- 2. Enter telnet 192.168.126.254 (the NPort's default IP address) and click [OK].



3. Enter your login account and password, then press ENTER.

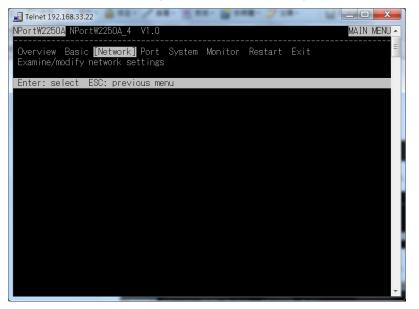
(Default login is **admin** and password is **moxa**.)



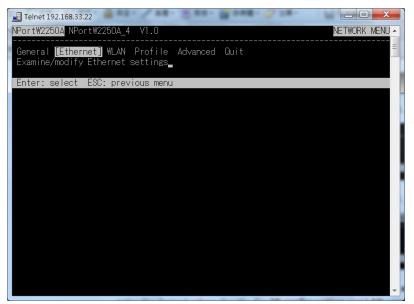
4. You will login to the **Overview** page.

Felnet 192.168.33.22	
NPortW2250A NPortW2250A_4 V1.0	MAIN MENU -
[Overview] Basic Network Port System Monitor Restart Exit Examine server settings	
Enter: select ESC: previous menu	

5. Press **N** or use the cursor keys to select **Network** and press **ENTER**.



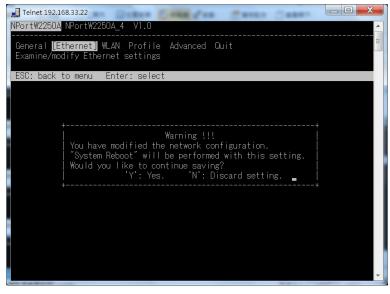
6. Press **E** or use the cursor keys to select **Ethernet** and press **ENTER**.



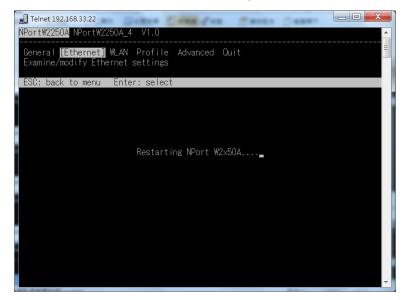
 Use the cursor keys to navigate between the different fields. For IP address, Netmask, and Gateway, enter the desired values directly. For IP configuration and LAN speed, press ENTER to open a submenu and select between the available options.

Telnet 192.168.33.22	**· Sus- Maus- 3 :*-	
NPortW2250A NPortW2250A_4 V1	.0	_
General <mark>[Ethernet]</mark> WLAN Pro Examine/modify Ethernet sett		=
ESC: back to menu Enter: s	elect	
IP configuration IP address Netmask Gateway	[Static] [192.168.126.254] [255.255.255.0] []	
		-

8. Press **ESC** to return to the menu. When prompted, press **Y** to save the configuration changes.



The NPort will reboot with the new IP settings. You can telnet to the new IP to login again.



Using the Serial Console to an Assign IP Address

Before using the NPort's serial console, turn off the power and use a serial cable to connect the NPort console port to your computer's serial port. Port 1 on the NPort serves as the console port. Use Port 1 connecting to the console port with a serial-based terminal or terminal emulator program, such as Windows HyperTerminal. You may also download PComm Lite at <u>www.moxa.com</u>. The terminal type should be set as ANSI or VT100, and the serial communication parameters should be set as 19200, 8, N, 1 (19200 for baud rate, 8 for data bits, None for parity, and 1 for stop bits). As soon as the connection is open, you will be presented with a text menu displaying the NPort W2150A/W2250A Series general settings. Please refer to Chapter 4 for a description of the available settings. The following instructions, we recommend using PComm Terminal Emulator, which can be downloaded free of charge from <u>www.moxa.com</u>, to carry out the configuration procedure.

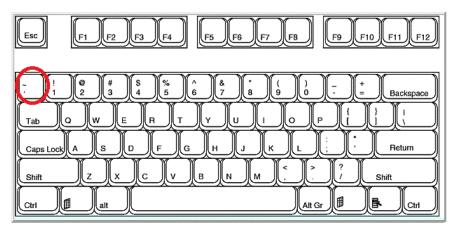
- 1. Connect your PC's serial port to the NPort's console port.
- 2. Open your terminal emulator program, such as Windows HyperTerminal. We recommend using PComm Terminal Emulator, which can be downloaded for free at <u>www.moxa.com</u>.
- In your terminal emulator program, configure the communication parameters for the serial port on the PC. The parameters should be set to **19200** for baud rate, **8** for data bits, **None** for parity, and **1** for stop bits.

Property	×
Communication Paramete	er 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. In your terminal emulator program, set the terminal type to ANSI or VT100. If you select Dumb Terminal as the terminal type, some of the console functions—especially the "Monitor" function—may not work properly.

Property	×
Communication Parameter	Terminal File Transfer Capturing
Terminal Type :	
Dumb Terminal Option : Transmit	
🗖 Local Echo	
Send 'Enter' Key As:	CR-LF
Receive	
CR Translation :	No Changed 💌
LF Translation :	No Changed 💌
	OK Cancel

5. Hold the **grave accent** key (`) down and power up the NPort.



The continuous string of grave accent characters triggers the NPort to switch from data mode to console mode.

6. The serial console will open and will be functionally identical to the Telnet console. Please refer to the Telnet console section for instructions on how to navigate the console and configure the IP settings.

Introduction to Operation Modes

The following topics are covered in this chapter:

- Overview
- Real COM Mode
- RFC2217 Mode
- □ TCP Server Mode
- TCP Client Mode
- UDP Mode
- Pair Connection Modes
- Ethernet Modem Mode

Overview

This chapter introduces the different serial port operation modes that are available on the NPort W2150A/W2250A Series. Each serial port on the NPort is configured independently of the other ports, with its own serial communication parameters and operation mode. The serial port's operation mode determines how it interacts with the network, and different modes are available to encompass a wide variety of applications and devices.

Real COM and **RFC2217** modes allow serial-based software to access the NPort serial port as if it were a local serial port on a PC. These modes are appropriate when your application relies on Windows or Linux software that was originally designed for locally attached COM or TTY devices. With these modes, you can access your devices from the network using your existing COM/TTY-based software, without investing in additional software.

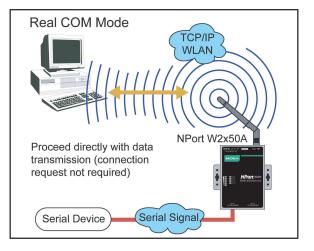
Three different socket modes are available for user-developed socket programs: **TCP Server**, **TCP Client**, and **UDP Server/Client**. For TCP applications, the appropriate mode depends on whether the connection will be hosted or initiated from the NPort serial port or from the network. The main difference 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 multicasting of data to groups of IP addresses and would be suitable for streaming media or noncritical messaging applications such as LED message boards.

Pair Connection Slave and **Master** modes are designed for serial-to-serial communication over Ethernet, in order to overcome traditional limitations with serial transmission distance.

In **Ethernet Modem** mode, the NPort acts as an Ethernet modem, providing a network connection to a host through the serial port.

Real COM Mode

Real COM mode is designed to work with NPort drivers that are installed on a network host. COM drivers are provided for Windows systems, and TTY drivers are provided for Linux and UNIX systems. The driver establishes a transparent connection to the attached serial device by mapping a local serial port to the NPort serial port. Real COM mode supports up to four simultaneous connections, so multiple hosts can collect data from the attached device at the same time.



ATTENTION

Real COM drivers are installed and configured through NPort Windows Driver Manager.

Real COM mode allows you to continue using your serial communications software to access devices that are now attached to your NPort device server. On the host, the NPort Real COM driver automatically intercepts data sent to the COM port, packs it into a TCP/IP packet, and redirects it to the network. At the other end of the connection, the NPort device server accepts the Ethernet frame, unpacks the TCP/IP packet, and sends the serial data to the appropriate device.



ATTENTION

In Real COM mode, several hosts can have simultaneous access control over the NPort serial port. If necessary, you can limit access by using the NPort's Accessible IP settings. Please refer to Chapter 8 for additional information on Accessible IP settings.

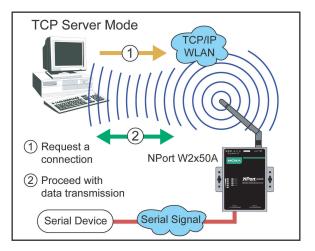
RFC2217 Mode

RFC-2217 mode is similar to Real COM mode, since it relies on a driver to transparently map a virtual COM port on a host computer to a serial port on the NPort. The RFC2217 standard defines general COM port control options based on the Telnet protocol and supports one connection at a time. Third party drivers supporting RFC-2217 are widely available on the Internet and can be used to implement virtual COM mapping.

TCP Server Mode

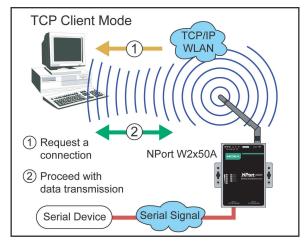
In TCP Server mode, the NPort serial port is assigned an *IP:port* address that is unique on your TCP/IP network. It waits for the host computer to establish a connection to the attached serial device. This operation mode also supports up to eight simultaneous connections, so multiple hosts can collect data from the attached device at the same time.

Data transmission proceeds as follows: A host requests a connection to the NPort serial port. Once the connection is established, data can be transmitted in both directions—from the host to the device, and from the device to the host.



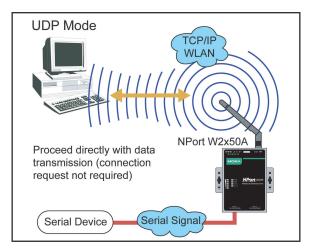
TCP Client Mode

In TCP Client mode, the NPort actively establishes a TCP connection to a specific network host when data is received from the attached serial device. After the data has been transferred, the NPort can automatically disconnect from the host computer through the Inactivity time settings. Please refer to Chapter 7 for details on these parameters. Data transmission proceeds as follows: The NPort requests a connection from the host. The connection is established and data can be transmitted in both directions between the host and device.



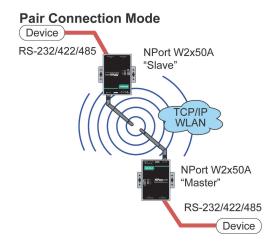
UDP Mode

UDP is similar to TCP but is faster and more efficient. Data can be broadcast to or received from multiple network hosts. However, UDP does not support verification of data and would not be suitable for applications where data integrity is critical. It is ideal for message display applications.



Pair Connection Modes

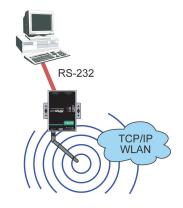
Pair Connection Master and Slave modes connect two NPort device servers over a network for serial-to-serial communication. A device attached to one NPort can then communicate transparently to a device attached to the other NPort, as if the two devices were connected by a serial cable. Both data and modem control signals are exchanged, except for DCD signals. This can be used to overcome traditional limitations with serial communication distance and introduces many new possibilities for serial-based device control.



Ethernet Modem Mode

Ethernet Modem mode is designed for use with legacy operating systems, such as MS-DOS, that do not support TCP/IP Ethernet. By connecting the properly configured NPort serial port to the MS-DOS computer's serial port, it is possible to use legacy software to transmit data over the Ethernet when the software was originally designed to transmit data over a modem.

Ethernet Modem Mode



Web Console: Basic Settings

The following topics are covered in this chapter:

- Overview
- Basic Settings

Overview

This chapter introduces the NPort web console and explains how to configure the basic settings.

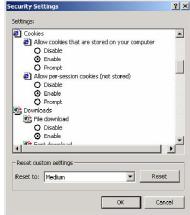
The NPort can be configured from anywhere on the network through its web console. Simply point the browser to the device server's IP address to open the web console. Network settings, operation mode, and other items can all be configured through the browser.

Web Browser Settings

In order to use the web console, you will need to have cookies enabled for your browser. Please note that the web console uses cookies only for password transmission. For Internet Explorer, cookies can be enabled by right-clicking the Internet Explorer icon on your desktop and selecting **Properties** from the context menu.



On the Security tab, click **Custom Level...** and enable these two items: Allow cookies that are stored on your computer Allow per-session cookies (not stored)





ATTENTION

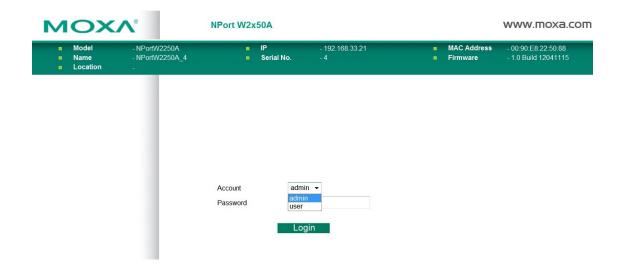
If you are not using Internet Explorer, cookies are usually enabled through a web browser setting such as allow **cookies that are stored on your computer** or **allow per-session cookies**.

Navigating the Web Console

To open the web console, enter your device server's IP address in the website address line. If you are configuring the NPort for the first time over an Ethernet cable, you will use the default IP address, **192.168.126.254**.

There are two account types: **admin** and **user**. If you enter the system with **admin** account, you will have the right to read and write. If you enter the system with **user** account, you will only have the right to read.

If prompted, enter the console password. The default password for both **admin** and **user** accounts is **moxa**. The password will be transmitted with MD5 encryption over the Ethernet.





ATTENTION

If you have forgotten the password, you can use the reset button to load factory defaults, but this will erase all previous configuration information.

The web console will appear as shown below.

ΜΟΧΛ	NPort '	W2x50A				www.moxa.com
■ Model - NPort¥ ■ Name - NPort¥ ■ Location -	V2250A_4	IPSerial No.	- 192.168.126.254 - 4	:	MAC Address Firmware	- 00:90:E8:22:50:88 - 1.0 Build 12041115
	: Welcom	ie to NPOI	rt W2x50A			
Main Menu	Model name	NPor	tW2250A			
Overview Wizard	Serial No.	4				
Basic Settings	Firmware version	I 1.0 B	Juild 12041115			
- Network Settings	Ethernet IP addre	ss 192.	168.126.254			
- Serial Port Settings	Ethernet MAC add	iress 00:90	0:E8:22:50:88			
- System Management	WLAN IP address	N/A				
- System Monitoring	WLAN MAC addre	ess 70:F:	3:95:FF:DC:88			
- Restart	SSID	N/A				
goahead	WLAN network ty	pe N/A				
WEBSERVER Best viewed with IE 5 above at	WLAN security m	ode N/A				
resolution 1024 x 768	WLAN operation	node N/A				
	WLAN country co	de CN				
	WLAN fast roami	ng N/A				
	Active network p	ort Ethe	rnet			
	Up time	0 day	/s 00h:11m:55s			
	Serial port 1	Real	COM, 19200, None, 8, 1, None			
	Serial port 2		COM, 9600, None, 8, 1, None			

Settings are presented on pages that are organized by folder. Select the desired folder in the left navigation panel to open that page. The page will be displayed in the main window on the right. Certain folders can be expanded by clicking the adjacent "–" symbol.

For example, if you click **Basic Settings** in the navigation panel, the main window will show a page of basic settings that you can configure.

After you have made changes on a page, you must click **[Submit]** in the main window before jumping to another page. Your changes will be lost if you do not click **[Submit]**.

Once you click [Submit] button, the device server will reboot and with a beep alarm.

Basic Settings

MOXA	NPort W2x50A	www
 Model Name Location 	- NPortW2250A IP - NPortW2250A_4 Ser -	- 192.168.126.254 MAC Address - 00:90: ial No 4 Firmware - 1.0 Bu
- Main Menu	Basic Setting	gs
Overview	Server Settings	
Wizard	Server name	NPortW2250A_4
Basic Settings - Network Settings	Server location	
- Serial Port Settings	Time Settings	
- System Management	Time zone	(GMT)Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London 🗸
- System Monitoring - Restart	Local time (24-hour)	2012 / 04 / 19 13 : 44 : 34
- Restall	Time server	
goahead WEBSERVER Best viewed with IE 5 above resolution 1024 × 768	=1	Submit

On the **Basic Settings** page, you can configure **Server name**, **Server location**, **Time zone (24-hour**), **Local time**, and **Time server**.

Server Name

Default	NPortW2150A_ <serial no.=""> or NPortW2250A_<serial no.=""></serial></serial>
Options	free text (e.g., "Server 1")
Description	This is an optional free text field to help you differentiate one device server from another. It
	does not affect operation of the NPort device server.

Server Location

Default	
Options	free text (e.g., "Bldg 1, 2nd Floor")
Description	This is an optional free text field to help you differentiate one device server from another. It
	does not affect operation of the NPort device server.

Time Zone

Default	(GMT)Greenwich Mean Time
Options	(GMT)Greenwich Mean Time
	(GMT-01:00)Azores, Cape Verde Is.
	(GMT-02:00)Mid-Atlantic etc.
Description	This field shows the currently selected time zone and allows you to select a different time
	zone.

Local Time

Default				
Options	Date (yy:mm:dd), Time (hh:mm:ss)			
Description	The NPort has a built-in real-time clock that allows you to add time information to functions such as the automatic warning e-mail or SNMP trap. This field shows the current time according to the NPort's built-in real-time clock. This is not a live field, so you will need to refresh the browser to get an updated reading. Change the correct date or time, and click [Submit]. The change will take effect directly, and shows Basic Setting OK!.			
	Model - NPortW2250A IP - 192.168.126.254 Name - NPortW2250A_4 Serial No. - 4 Location - -			
	Basic Settings OK!			
	- Main Menu			
	Overview			
	Wizard Basic Settings			
	- Network Settings			
	- Serial Port Settings			
	- System Management - System Monitoring			
	- Restart			



ATTENTION

There is a risk of an explosion if the real-time clock battery is replaced incorrectly! The real-time clock is powered by a lithium battery. We strongly recommend that you obtain assistance from a Moxa support engineer before replacing the battery. Please contact the Moxa RMA service team if you need to change the battery.

Time Server	
Default	
Options	IP address or domain name (e.g., "192.168.1.1" or "time.nist.gov")
Description	This optional field specifies your time server's IP address or domain name, if a time server is used in your network. The NPort supports SNTP (RFC-1769) for automatic time calibration.
	The device server will request time information from the specified time server every 10 minutes.

Web Console: Network Settings

The following topics are covered in this chapter:

- Overview
- Network Settings
 - General Settings
 - Ethernet/Bridge Settings
 - > WLAN Settings
 - Advanced Settings

Overview

This chapter explains how to configure all settings located under the **Network Settings** folder in the NPort web console.

Network Settings

General Settings

MOX/	NF NF	NPort W2x50A		
 Model Name Location 	- NPortW2250A - NPortW2250A_4 -	IPSerial No.	- 192.168.126.254 - 4	MAC AddressFirmware
	:•Gene	ral Settings		
- Main Menu	General Se	ttinac		
Overview				
Wizard	DNS server	1		
Basic Settings	DNS server 2	2		
- Network Settings				
General Settings			Submit	
Ethernet Settings				
- WLAN Settings				
Advanced Settings				
- Serial Port Settings				
- System Management				
- System Monitoring				
- Restart				

On the General Settings page in the Network Settings folder, you can modify DNS server 1 and 2.

Default	
Options	IP address (e.g., "192.168.1.1")
Description	This field is for the DNS server's IP address, if applicable. With the DNS server configured, the
	NPort device server can use domain names instead of IP addresses to access hosts.
	Domain Name System (DNS) is how Internet domain names are identified and translated into
	IP addresses. A domain name is an alphanumeric name, such as www.moxa.com, that it is
	usually easier to remember than the numeric IP address. A DNS server is a host that
	translates a text-based domain name into an IP address in order to establish a TCP/IP
	connection. When the user wants to visit a particular website, the user's computer sends the
	domain name (e.g., www.moxa.com) to a DNS server to request that website's numeric IP
	address. When the IP address is received from the DNS server, the user's computer uses that
	information to connect to the website's web server.
	The NPort will play the role of a DNS client, actively querying the DNS server for the IP
	address associated with a particular domain name.

DNS Server 1 and 2

Ethernet/Bridge Settings

To enable the Ethernet-to-Wireless function, also called Wireless Client, go to the **Ethernet/Bridge Settings** page and enable **Ethernet Bridge**.

ΜΟΧΛ	Total Solution for Industrial Device Networking			
 Model Name Location 	- NPortW2150A - NPortW2150A_4397 -	= IP = Serial No.	- 192.168.126.254 - 4397	
- Main Menu	Network Setting - Ethernet	etting - Ethernet/B ^{/Bridge}	ridge	
Overview	Ethernet bridge	Enabl	e 🔻	
Wizard	IP configuration	DHCF		
Basic Settings	IP address	192.16	8 126 254	
- Network Settings	Netmask			
General Settings		255.25	5.255.0	
Ethernet/Bridge Settings	Gateway			
- WLAN Settings				
Advanced Settings			Submit	
- Serial Port Settings				
- System Management				
- System Monitoring				
- Restart				



ATTENTION

In dynamic IP environments, the NPort will send three requests every 30 seconds to the DHCP or BOOTP server until the network settings have successfully been assigned. The first request will time out after one second; the second request will time out after three seconds, and the third request will timeout after five second. If the DHCP or BOOTP server is unavailable, the NPort will use the factory default network settings.

Ethernet Bridge

Default	Disabled
Options	Enabled, Disabled
Description	This field specifies whether to enable Ethernet Bridge mode or not. When Ethernet Bridge is enabled, the LAN and WLAN interfaces are bridged together. Data can be seamlessly transferred between serial lines, LAN, and WLAN. The LAN and WLAN will use the LAN IP setting, and WLAN IP setting will be disabled.
	Disabled: When disabled, you can use either the LAN or WLAN.
	Enabled: When enabled, you can use both the LAN and the WLAN.
	Ethernet Serial

IP Configuration

Default	Static	
Options	Static, DHCP, DHCP/BOOTP, BOOTP	
Description	This field determines how the NPort's IP address will be assigned.	
	Static: IP address, netmask, and gateway are user-defined.	
	DHCP: IP address, netmask, gateway, DNS, and time server are assigned by the DHCP server.	
	DHCP/BOOTP: IP address, netmask, gateway, DNS, and time server are assigned by the DHCP server. IP address is assigned by BOOTP server if DHCP server does not respond.	
	BOOTP: IP address is assigned by the BOOTP server.	

IP Address

Default	192.168.126.254	
Options	IP address (e.g., "192.168.1.1")	
Description	This field is for the IP address that will be assigned to your NPort device server. An IP address	
	is a number assigned to a network device (such as a computer) as a permanent address on	
	the network. Computers use the IP address to identify and talk to each other over the	
	network. Choose a proper IP address that is unique and valid in your network environment.	
	If your device server will be assigned a dynamic IP address, set the IP configuration	
	parameter appropriately.	

Netmask

Default	255.255.255.0	
Options	Netmask setting (e.g., "255.255.0.0")	
Description	This field is for the subnet mask. A subnet mask represents all of the network hosts at one	
	geographic location, in one building, or on the same local area network (LAN). When a packet	
	is sent out over the network, the NPort device server 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 device server, a connection is	
	established directly from the device server. Otherwise, the connection is established through	
	the gateway as specified in the Gateway parameter.	

Gateway

Default		
Options	IP address (e.g., "192.168.1.1")	
Description	nis field is for the IP address of the gateway, if applicable. A gateway is a network computer	
	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	
	device server needs to know the IP address of the default gateway computer in order to	
	communicate with the hosts outside the local network environment. Consult your network	
	administrator if you do not know how to set this parameter.	

WLAN Settings

WLAN

ΜΟΧΛ°		NPort W2x50A				
ModelNameLocation		N2250A N2250A_4	IPSerial No.	- 192.168.126.254 - 4	-	MAC Address Firmware
		:•WLA	N Settings			
- Main Menu		WLAN Sett	inde			
Overview						
Wizard		IP configura	tion	Static 🐱		
Basic Settings		IP address		192.168.127.254		
- Network Settings		Netmask		255.255.255.0		
General Settings		Gateway				
Ethernet Settings						
- WLAN Settings				Submit		
WLAN Profile						
Advanced Settings						
- Serial Port Settings						
- System Management						
- System Monitoring						
- Restart						

The WLAN page is located under WLAN Settings in the Network Settings folder. You can modify IP configuration, IP address, Netmask, and Gateway for your WLAN.

The NPort W2150A/W2250A Series supports IEEE 802.11a/b/g/n wireless network interfaces. The supported IP configurations are static and dynamic (BOOTP, DHCP, or BOOTP+DHCP). Users can set up the IP configuration with the serial console, or the Web/Telnet consoles through the NPort's Ethernet interface. For detailed information about configuring **IP configuration**, **IP address**, **Netmask**, and **Gateway**, see the previous section, Ethernet Configuration.

Default	Static	
Options	Static, DHCP, DHCP/BOOTP, BOOTP	
Description	This field determines how the NPort's IP address will be assigned.	
	Static: IP address, netmask, and gateway are user-defined.	
	DHCP: IP address, netmask, gateway, DNS, and time server are assigned by the DHCP	
	server.	
	DHCP/BOOTP: IP address, netmask, gateway, DNS, and time server are assigned by the	
	DHCP server. An IP address is assigned by the BOOTP server if the DHCP server does not	
	respond.	
	BOOTP: An IP address is assigned by the BOOTP server.	

IP Configuration

IP Address

Default	192.168.127.254	
Options	IP address (e.g., "192.168.1.1")	

Description	This field is for the IP address that will be assigned to your NPort device server. An IP address
	is a number assigned to a network device (such as a computer) as a permanent address on
	the network. Computers use the IP address to identify and talk to each other over the
	network. Choose a proper IP address that is unique and valid in your WLAN environment. If
	your device server will be assigned a dynamic IP address, set the IP configuration parameter
	appropriately.

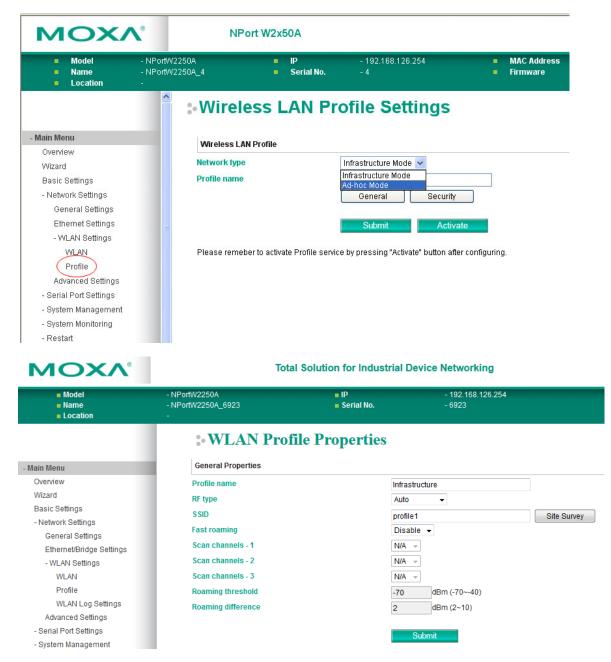
Netmask

Default	255.255.255.0	
Options	Netmask setting (e.g., "255.255.0.0")	
Description	This field is for the subnet mask. A subnet mask represents all of the network hosts at one	
	geographic location, in one building, or on the same LAN. When a packet is sent out over the	
	network, the NPort device server 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 device server, a connection is established directly from the	
	device server. Otherwise, the connection is established through the gateway as specified in	
	the Gateway parameter.	

Gateway

Default		
Options	IP address (e.g., "192.168.1.1")	
Description	his field is for the IP address of the gateway, if applicable. A gateway is a network computer	
	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	
	device server needs to know the IP address of the default gateway computer in order to	
	communicate with the hosts outside the local network environment. Consult your network	
	administrator if you do not know how to set this parameter.	

Profile



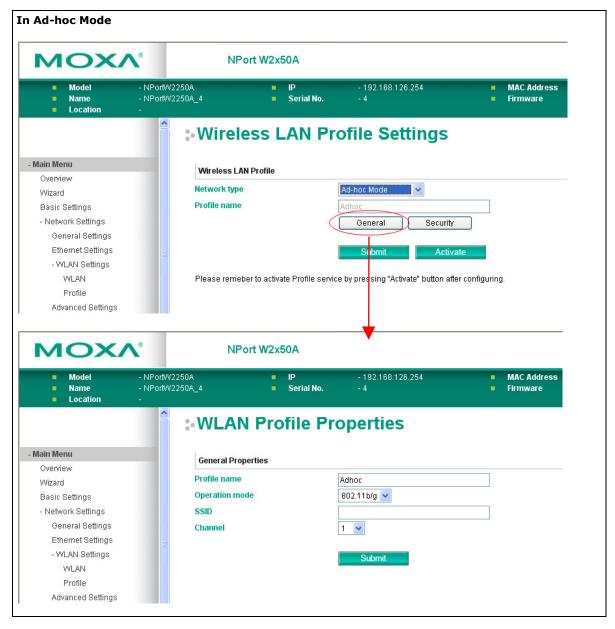
The **Profile** page is located under **WLAN Settings** in the **Network Settings** folder. This is where you configure the NPort for Infrastructure operation. Different settings are available depending on whether you select Ad-hoc Mode or Infrastructure Mode.

Network Type

Default	Infrastructure Mode
Options	Infrastructure Mode, Ad-hoc Mode
Description	This field specifies whether the NPort will operate in Ad-hoc or Infrastructure Mode. For all wireless networking devices, there are two possible modes for communication with another wireless device. Devices that are configured for Ad-hoc Mode automatically detect and communicate directly with each other and do not require a wireless access point (AP) or gateway. Wireless devices that are configured for Infrastructure Mode do not communicate directly with each other, but through a wireless access point (AP).
	Devices must be configured for the same mode in order to communicate with each other. Devices in Ad-Hoc Mode will only recognize other devices in Ad-Hoc Mode, and likewise for devices in Infrastructure Mode.
	Example of Ad-Hoc Mode WLAN HMI RS-232 RS-232 Flow meters Drives
	Example of Infrastructure Mode
	After setting the Network type, you will need to adjust the General and Security settings to
	establish the wireless connection.

General Settings for WLAN Profile

The **General** page is opened through the **Profile** page, under **WLAN Settings** in the **Network Settings** folder. You can type a profile name to help you differentiate one profile from another. It does not affect operation of the NPort. After selecting Ad-hoc or Infrastructure Mode, click **[General]** to open the General page for the selected profile. In Ad-hoc Mode and Infrastructure Mode, only one profile is available.



MOXV	Total Sol	ution for Indu	strial Device Netwo	rking	ww	w.moxa.com
	ortW2150A ortW2150A_8164	IPSerial No.	- 192.168.126.254 - 8164			00:90:E8:2F:92:DC 1.6 Build 13120415
	î ≎Wir	eless L/	AN Profile S	Settings		
1ain Menu	Wireless	s LAN Profile				
Overview	Network	huno	Infrastructure Mode 🔻			
Wizard					-	
Basic Settings	Profile na	me	Infrastructure			
- Network Settings			General	Security		
General Settings						
Ethernet Settings	E		Supmit	Activate		
- WLAN Settings						
WLAN	Please re	meber to activate F	Profile service by pressing "/	Activate" button aft	er configurin	g.
Profile						
		Tota	I Solution for Industr	ial Device Net	working	
0	- NPortW2250A - NPortW2250A_68 -		Il Solution for Industr = IP = Serial No.		2.168.126.25	:4
Model Name	- NPortW2250A_6 -	923	∎ IP	- 19	2.168.126.25	i4
Model Name Location	- NPortW2250A_6 -	923 LAN Prof	≡ IP ∎ Serial No.	- 19	2.168.126.25	:4
Model Name Location	- NPortW2250A_6 -	923 LAN Profi	Serial No.	- 19	2.168.126.25	:4
Model Model Name Location	- NPortW2250A_68	923 LAN Profi	Serial No.	- 19 - 69	2.168.126.25	4
Model Name Location	- NPortW2250A_68	923 LAN Profi	 IP Serial No. The Properties 	- 19 - 69 Infrastructure Auto v	2.168.126.25	
Model Model Mame Location in Menu Vizard lasic Settings Network Settings	- NPortW2250A_68	923 LAN Profi Properties ne	 IP Serial No. The Properties 	- 19 - 69 Infrastructure	2.168.126.25	4 Site Survey
Model Model Name Location in Menu Vizard lasic Settings Network Settings General Settings	- NPortW2250A_68	923 LAN Profi Properties ne	 IP Serial No. The Properties 	- 19 - 69 Infrastructure Auto profile1 Disable	2.168.126.25	
Model Model Mame Location Menu Verview Jizard asic Settings Network Settings General Settings Ethernet/Bridge Settings	- NPortW2250A_63	923 LAN Profi properties ne ing nels - 1	 IP Serial No. The Properties 	- 19 - 69 Infrastructure Auto • profile1 Disable • N/A •	2.168.126.25	
Model Model Name Location in Menu Vizard lasic Settings Network Settings General Settings	- NPortW2250A_64	923 LAN Prof roperties ne ing nels - 1 inels - 2	 IP Serial No. 	- 19 - 69 Infrastructure Auto • profile1 Disable • N/A •	2.168.126.25	
Model Model Name Location Moriew Vizard lasic Settings General Settings Ethernet/Bridge Settings Ethernet/Bridge Settings - WLAN Settings	- NPortW2250A_68	923 LAN Prof roperties ne ing nels - 1 nels - 2 nels - 3	 IP Serial No. 	- 19 - 69 Infrastructure Auto • profile1 Disable • N/A • N/A •	2.168.126.25	
Model Name Location Model Name Location in Menu Dverview Wizard Basic Settings General Settings Ethernet/Bridge Settings - WLAN Settings WLAN	- NPortW2250A_68	923 ICAN Prof roperties ne ing ing inels - 1 inels - 2 inels - 3 hreshold	 IP Serial No. 	- 19 - 69 Infrastructure Auto • profile1 Disable • N/A • N/A • N/A • -70 dBm (-7	2.168.126.25 23 '0~-40)	
And Antiparties and a second s	- NPortW2250A_68	923 ICAN Prof roperties ne ing ing inels - 1 inels - 2 inels - 3 hreshold	 IP Serial No. 	- 19 - 69 Infrastructure Auto • profile1 Disable • N/A • N/A •	2.168.126.25 23 '0~-40)	
And the set of the set	- NPortW2250A_68	923 ICAN Prof roperties ne ing ing inels - 1 inels - 2 inels - 3 hreshold	 IP Serial No. 	- 19 - 69 Infrastructure Auto • profile1 Disable • N/A • N/A • N/A • -70 dBm (-7	2.168.126.25 23 '0~-40)	

On the General page, you can configure **Profile name**, **Operation mode**, and input an **SSID** provided by your Wi-Fi AP. Additional settings are also available depending on whether you select Ad-hoc Mode or Infrastructure Mode.

Profile Name

Default	Ad-hoc (in Ad-hoc Mode)
	Infrastructure (in Infrastructure Mode)
Options	free text (e.g., "Primary Connection")
Description	This is a free text field to help you differentiate one profile from another. It does not affect
	operation of the NPort.

RF Type

Default	802.11b/g for Ad-Hoc Mode.
	Auto for Infrastructure Mode.
Options	Auto, 802.11a, 802.11b/g, 802.11a/n, 802.11b/g/n
Description	This field determines which wireless standard will be used by the selected profile. 802.11a, 802.11b/g, 802.11a/n and 802.11b/g/n are supported.
	Auto: In Ad-hoc Mode, the NPort will scan the 2.4G wireless band and will automatically select the appropriate wireless standard for communication with any other wireless devices that are detected. In Infrastructure Mode, the NPort will automatically select between 802.11a, 802.11b/g, 802.11a/n and 802.11b/g/n according to the settings of the AP.
	802.11a: The Unlicensed National Information Infrastructure (UNII) 5 GHz band is used for communication, which is different from the RF band used by 802.11b and 802.11g. Consequently, 802.11a devices will not be able to communicate with 802.11b or 802.11g devices. (Multi-mode 802.11a/b/g APs or client adapters can be used to resolve this.) Transmission rates up to 54Mbps are supported.
	 802.11b/g: This option means our device will support for 802.11b or 802.11g. 802.11b: This is the well-known "Wi-Fi" standard, also referred to as "802.11 High-Rate (HR)." Wireless communication is in the 2.4 GHz ISM band, using the DSSS spread spectrum transmission scheme. 802.11b supports data rates of 1 Mbps, 2 Mbps, 5.5 Mbps, and 11 Mbps.
	802.11a/n: This option means our device will support up to 150 Mbps bandwidth to communicate with an 802.11a/n AP.
	802.11b/g/n: This option means our device will support up to 72.2 Mbps bandwidth to communicate to a 802.11b/g/n AP.

SSID

Default	profile1
Options	free text (e.g., "Coffeeshop WLAN")
Description	This field specifies the SSID, or name, of the wireless network (SSID) that will be used by the
	NPort. Wireless devices must use the same SSID in order to communicate with each other.

Site Survey (This function is supported by firmware V1.10 or above)

When you click **Site Survey**, the device server will scan for all the APs it can find nearby. It shows all the signal strengths between the device server and the APs. You may check the checkbox and click **OK** to create a profile for the specified AP.

SSID	Security	Signal Strengt
 AREONING 	WPA2-PSK	-86 dBm
O HTC 344D	WPA2-PSK	-81 dBm
0 😃	None	-88 dBm
	None	-90 dBm
O MPG-Meble	WPA2	-71 dBm
	WPA2-PSK	-71 dBm
	WPA2	-88 dBm
O PYQ_1	WPA2-PSK	-74 dBm
Sepido_58270s_d15ds3	WPA	-71 dBm
O UTEHO	WPA2	-74 dBm
O Unitech	WPA2-PSK	-69 dBm
C LITENOSIA	WPA2-PSK	-71 dBm

OK C:	ncel Refresh
-------	--------------

Channel (Ad-hoc mode only)

Default	1
Options	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
Description	This field is for Ad-Hoc Mode only and specifies the radio channel to use for the wireless
	network.

Fast Roaming (Infrastructure mode only)

Default	Disable
Options	Disable, Enable
Description	This field is only available in Infrastructure Mode and is used to specify the W2150A/W2250A roaming behavior. Roaming is the ability to connect to different APs so that wireless communication is not confined to one area or one particular AP. The W2150A/W2250A will only roam between APs, as specified by the SSID.
	Disable: Fast Roaming function will be disabled.
	W2150A/W2250A will scan all available channels and roam between APs as specified by the SSID. It scans the channel when booting up and will associate with the highest signal strength AP. Only when the associated AP is lost, it will re-associate again.
	Enable: Fast Roaming function will be enabled.
	NPort W2150A/W2250A will only scan the pre-defined Scan Channels - 1, Scan Channels - 2 & Scan Channels - 3 and roam between APs as specified by the SSID.
	It scans the channel and will associate with the highest signal strength AP. It also scans the channel regularly and will re-associate with the highest signal strength AP (if there is) automatically.

Scan channels – 1, Scan channels – 2, Scan channels – 3 (Infrastructure mode only)

Default	N/A
Options	1 through 14, 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140,
	149, 153, 157, 161
Description	This field is for fast roaming under Infrastructure Mode and specifies the radio channel to use
	for the wireless network. Choose the channel according to the factory setting of the AP.

Roaming threshold (This function is supported by firmware V1.10 or above)

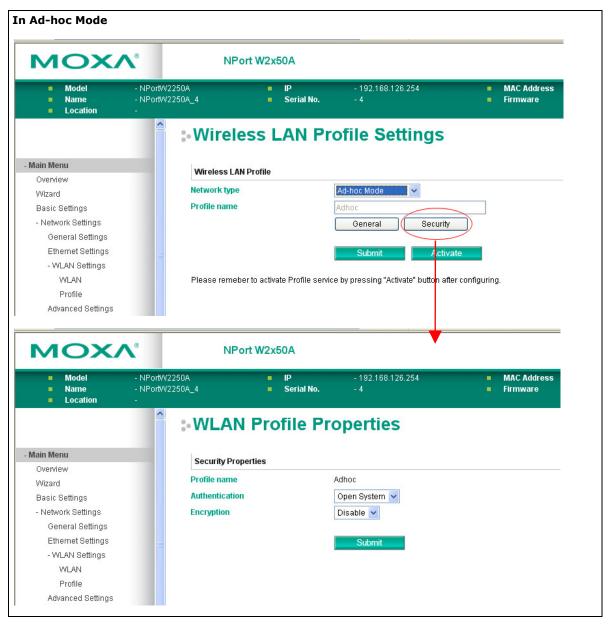
Default	-70 (Disable)
Options	numbers
Description	When the signal strength between the device and the AP is worse than this number, below
	-70 dBm as the default number, the device server will start to scan for a new AP to establish
	the connection.

Roaming difference (This function is supported by firmware V1.10 or above)

Default	2 (Disable)
Options	numbers
Description	When the device server finds a new AP, the signal strength between device server and the
	new AP must above this number compares to the old AP, then the device server will change
	to establish a new connection with the new AP. For example, when the signal strength to the
	old AP is -70 dBm. When the new AP is -69 dBm, the device server will keep the connection
	to the old one. If the new AP is -68 dBm, the device server will switch the connection to the
	new AP.

Security Settings for WLAN Profile

The **Security** page is opened through the **Profile** page, under **WLAN Settings** in the **Network Settings** folder. After selecting Ad-hoc or Infrastructure Mode, click **[Security]** to open the Security page for the selected profile. In Ad-hoc Mode, only one profile is available, whereas three profiles are available in Infrastructure Mode.



ΜΟΧΛ	® N	Port W2x50A		
 Model Name Location 	- NPortW2250A - NPortW2250A_4 -	IPSerial No.	- 192.168.126.254 - 4	MAC AddressFirmware
	â:Wire	less LAN P	rofile Settings	
Main Menu	Wireless	LAN Profile		
Overview				
Wizard	Network ty		Infrastructure Mode ⊻	
Basic Settings	Profile nan	10	Infrastructure	
- Network Settings			General Security	
General Settings				
Ethernet Settings - WLAN Settings			Submit Activ	ate
- WLAN	Please ren	neher to activate Profile ser	vice by pressing "Activate" button aft	er configuring
Profile	The doc ten		nee by pressing Activate Balton an	er conliganing.
Advanced Settings				
мохл		Port W2x50A		
 Model Name Location 	- NPortW2250A - NPortW2250A_4	IPSerial No.	- 192.168.126.254 - 4	 MAC Address Firmware
Main Menu Overview	Security F	N Profile P	roperties	
Wizard	Profile nan	1e	Infrastructure	
	Authentica	tion	Open System 🐱	
Basic Settings			Disable 😽	
Basic Settings - Network Settings	Encryption			
	Encryption			
- Network Settings	Encryption		Submit	
- Network Settings General Settings Ethernet Settings - WLAN Settings	Encryption		Submit	
- Network Settings General Settings Ethernet Settings - WLAN Settings WLAN	Encryption		Submit	
- Network Settings General Settings Ethernet Settings - WLAN Settings	Encryption		Submit	

You will need to configure **Authentication** and **Encryption**. These settings must match the settings on the wireless device at the other end of the connection (such as the AP). Different settings and options are available depending on how **Authentication** and **Encryption** are configured.

Authentication

Default	Open System
Options	Open System, Shared Key, WPA, WPA-PSK, WPA2, WPA2-PSK
Description	This field specifies how wireless devices will be authenticated. Only authenticated devices will be allowed to communicate with the NPort. If a RADIUS server is used, this setting must match the setting on the RADIUS server.
	Open System: The NPort will simply announce a desire to associate with another station or access point. No authentication is required. For Ad-hoc Mode, this is the only option for authentication, since Ad-hoc Mode was designed for open communication.
	Shared Key: This option is only available in Infrastructure Mode. Authentication involves a more rigorous exchange of frames to ensure that the requesting station is authentic. WEP encryption is required.
	WPA: This is a managed authentication option that is only available in Infrastructure Mode. WPA was created by the Wi-Fi Alliance, the industry trade group that owns the Wi-Fi trademark and certifies devices with the Wi-Fi name. It is based on Draft 3 of the IEEE 802.11i standard. Each user uses a unique key for authentication, distributed from an IEEE 802.1X authentication server, also known as a RADIUS server. This option is also referred to as WPA Enterprise Mode, since it is intended to meet rigorous enterprise security requirements. Tunneled authentication is supported, depending on the EAP method selected.
	WPA-PSK: This is an unmanaged authentication option that is only available in Infrastructure Mode. Instead of a unique key for each user, a pre-shared key (PSK) is manually entered on the access point to generate an encryption key that is shared among all users. Consequently, this method does not scale well for enterprise. A PSK that uses a mix of letters, numbers and non-alphanumeric characters is recommended. This option is also referred to as WPA Personal Mode, since it is designed for the needs and capabilities of small home and office WLANs.
	WPA2: This is a managed authentication option that is only available in Infrastructure Mode. WPA2 implements the mandatory elements of 802.11i. Supported encryption algorithms include TKIP, Michael, and AES-based CCMP, which is considered fully secure. Since March 13, 2006, WPA2 has been mandatory for all Wi-Fi-certified devices. This option may also be referred to as WPA Enterprise Mode. Tunneled authentication is supported, depending on the EAP method selected.
	WPA2-PSK: This is an unmanaged authentication option that is only available in Infrastructure Mode. It employs WP2 encryption algorithms but relies on a PSK for authentication. A PSK that uses a mix of letters, numbers and non-alphanumeric characters is recommended. This option can also be referred to as WPA Personal Mode.

Encryption

Disable, WEP, TKIP, AES-CCMP This field specifies the type of encryption to use during wireless communication. Different encryption methods are available depending on the Authentication setting. Also, each
encryption method has its own set of parameters that may also require configuration. Disable: No encryption is applied to the data during wireless communication. This option is only available if Authentication is set to Open System .
WEP: Wired Equivalent Privacy (WEP) is only available for Open System and Shared Key authentication methods. Data is encrypted according to a key. The NPort supports both 64 and 128-bit keys. This method may deter casual snooping but is not considered very secure.
TKIP: Temporal Key Integrity Protocol (TKIP) is only available for WPA, WPA2, WPA-PSK, and WPA2-PSK authentication methods. TKIP is part of a draft standard from the IEEE 802.11i working group and utilizes the RC4 stream cipher with 128-bit keys for encryption and 64-bit keys for authentication. TKIP improves on WEP by adding a per-packet key mixing function to de-correlate the public initialization vectors (IVs) from weak keys.
AES-CCMP: This is a powerful encryption method that is only available for WPA, WPA2, WPA-PSK, and WPA2-PSK authentication methods. Advanced Encryption Standard (AES) is the block cipher system used by the Robust Secure Network (RSN) protocol and is equivalent to the RC4 algorithm used by WPA. CCMP is the security protocol used by AES, equivalent to TKIP for WPA. Data undergoes a Message Integrity Check (MIC) using a well-known and proven technique called Cipher Block Chaining Message Authentication Code (CBC-MAC). The technique ensures that even a one-bit alteration in a message produces a dramatically different result. Master keys are not used directly but are used to derive other keys, each of which expire after a certain amount of time. Messages are encrypted using a secret 128-bit key and a 128-bit block of data. The encryption process is complex, but the administrator does not need to be aware of the intricacies of the computations. The end result is encryption

PSK Passphrase

Default	
Options	free text (e.g., "This is the WLAN passphrase")
Description	This field is only available for WPA-PSK and WPA2-PSK authentication methods. If the NPort's
	passphrase does not match the AP's passphrase, the connection will be denied. A PSK of
	sufficient strength—one that uses a mix of letters, numbers and non-alphanumeric
	characters—is recommended.

Security Settings for WEP Encryption

ModelNameLocation	- NPortW225 - NPortW225 -		-	IP Serial No.	- 192.168.126.254 - 4	 MAC Addres Firmware
		WLAN	Pro	file Pr	operties	
Main Menu		Security Prope	rties			
Overview						
Wizard		Profile name			Adhoc	
Basic Settings		Authentication			Open System 🔽	
- Network Settings		Encryption			WEP 🖌	
General Settings		WEP key length			64-bits 💌	
Ethernet Settings	=	WEP key index			1 🗸	
- WLAN Settings		WEP key sourc	e		Manual O Generate W	EP keys by passphrase
WLAN		WEP key forma				Li nojo oj pacopinaco
Profile		Participation of the second state			Racii	
Advanced Settings		WEP key 1				
- Serial Port Settings		WEP key 2				
- System Management		WEP key 3				
- System Monitoring		WEP key 4				
- Restart						

When Encryption is set to WEP on the **Security** page for the WLAN profile, you will be able to configure **WEP key length**, **WEP key index**, and **WEP key source**. Other settings will be displayed depending on how **WEP key source** is configured.

WEP Key Length

Default	64bits
Options	64bits, 128bits
Description	This field specifies the length of the WEP key. 64bits is the industry standard for WEP, but
	128bits provides better protection.

WEP Key Index

Default	1
Options	1 through 4
Description	This field specifies the primary WEP key to use for the WLAN.

WEP Key Source

Default	Manual
Options	Manual, Generate WEP keys by passphrase
Description	This field specifies whether the WEP key will be generated manually or through a
	user-specified passphrase. A passphrase is equivalent to a free-text password that will be
	used to generate the WEP key. A passphrase is typically easier to remember and enter than
	a long and complicated WEP key.

WEP Passphrase

Default	
Options	free text (e.g., "This is the WEP passphrase")
Description	This field is only available if WEP key source is set to Generate WEP keys by passphrase.
	A standard hexadecimal password will be generated using the supplied passphrase. For
	example, if "404tech" is entered, the WEP key will be "DB971608E942FC39BD89FC4ADB".

WEP Key Format

Default	ASCII
Options	ASCII, HEX
Description	This field is only available if WEP key source is set to Manual. It specifies the format you will
	use to enter the WEP key.

WEP Key 1 Through 4

Default				
Options	free text in ASCII or H	EX		
Description	These fields are only av	vailable if WEP key source	e is set to Manual. Ente	er each WEP key in
	ASCII or HEX as specifie	ed in WEP key format. The	number of characters i	required for each key
	depends on WEP key le	ength and WEP key forma	t.	
	WEP Key Length	WEP Key Format	Key Length	
		•		
	64bits	ASCII	5 characters	
		HEX	10 characters	
	128bits	ASCII	13 characters	
		HEX	26 characters	
	·		•	

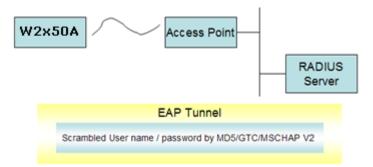
Security Settings for WPA, WPA2

MOX/	N° I	NPort W2x50A		
 Model Name Location 	- NPortW2250A - NPortW2250A_4 -	■ IP ■ Serial No.	- 192.168.126.254 - 4	 MAC Address Firmware
Main Menu Overview Wizard Basic Settings - Network Settings General Settings Ethernet Settings - WLAN Settings WLAN Profile Advanced Settings - Serial Port Settings	Security Profile na Authentic Encryptic EAP mett Usernam Verify se	cation on hod ne rver certificate server certificate tificate	Infrastructure VMPA Open System Shared Key VMPA WPA-PSK WPA2 WPA2-PSK WPA2-PSK Not-installed Not Installed Not Installed Strumit	
- System Monitoring			Su Jin	
MOX/	 NPortW2250A NPortW2250A_4 	NPort W2x50A IP Serial No.	- 192.168.126.254 - 4	 MAC Addres Firmware
MOX/	- NPortW2250A - NPortW2250A_4 -	= IP	- 192.168.126.254 - 4	
MOX/	- NPortW2250A - NPortW2250A_4 -	 IP Serial No. 	- 192.168.126.254 - 4	- 11110 11441 00
Model Name Location	- NPortW2250A - NPortW2250A_4 - - - Securit	 IP Serial No. AN Profile P y Properties	- 192.168.126.254 - 4 Properties	
Model Name Location	- NPortW2250A - NPortW2250A_4 - * • WLL Securit Profile n	 IP Serial No. AN Profile P y Properties name	- 192.168.126.254 - 4 Properties	
Model Name Location Main Menu Overview	- NPortW2250A - NPortW2250A_4 - - - Securit	 IP Serial No. AN Profile P y Properties name	- 192.168.126.254 - 4 Properties	
Model Mame Location Main Menu Overview Wizard Basic Settings - Network Settings	- NPortW2250A - NPortW2250A_4 - Securit Profile n Authenti Encrypti	 IP Serial No. AN Profile P y Properties tame tication on	- 192.168.126.254 - 4 Properties	
Model Mame Location Main Menu Overview Wizard Basic Settings - Network Settings General Settings	- NPortW2250A - NPortW2250A_4 - - Securit Profile n Authenti	 IP Serial No. AN Profile P y Properties tame tication on	- 192.168.126.254 - 4 Properties	
Model Name Location Main Menu Overview Wizard Basic Settings - Network Settings General Settings Ethernet Settings	- NPortW2250A - NPortW2250A_4 - Securit Profile n Authenti Encrypti	P Serial No. AN Profile P by Properties mame ication on	- 192.168.126.254 - 4 Properties	
Model Name Location Main Menu Overview Wizard Basic Settings - Network Settings General Settings Ethernet Settings - WLAN Settings	- NPortW2250A - NPortW2250A_4 - Securit Profile n Authenti EAP met Usernan	P Serial No. AN Profile P by Properties mame ication on	- 192.168.126.254 - 4 Properties	
Model Name Location Main Menu Overview Wizard Basic Settings - Network Settings General Settings Ethernet Settings - WLAN Settings WLAN Settings WLAN	- NPortW2250A - NPortW2250A_4 - Securit Profile n Authenti Encrypti EAP met Usernan Verify se	P Serial No. AN Profile P y Properties name ication on thod ne	- 192.168.126.254 - 4	
Model Mame Location Main Menu Overview Wizard Basic Settings - Network Settings General Settings Ethernet Settings Ceneral Setings Ceneral Settings Ceneral Settings Ceneral Settin	- NPortW2250A - NPortW2250A_4 - Securit Profile n Authenti Encrypti EAP met Usernan Verify se	P Serial No. AN Profile P y Properties ication ication ion thod ne enver certificate server certificate	- 192.168.126.254 - 4 Properties	
Model Name Location Main Menu Overview Wizard Basic Settings - Network Settings Ceneral Settings Ethernet Settings Ethernet Settings WLAN Settings WLAN Settings WLAN Settings WLAN Settings WLAN Settings	- NPortW2250A - NPortW2250A_4 - Securit Profile n Authenti Encrypti EAP met Usernan Verify se Trusted User cer	P Serial No. AN Profile P y Properties name ication on thod ne erver certificate server certificate rtificate	- 192.168.126.254 - 4 Properties Infrastructure WPA TKIP TLS Disable Not Installed Not Installed	
Model Name Determine Coverview Wizard Basic Settings - Network Settings General Settings Ethernet Settings Ethernet Settings WLAN Settings WLAN Settings WLAN Settings WLAN Profile Advanced Settings - Serial Port Settings	- NPortW2250A - NPortW2250A_4 - Securit Profile n Authenti Encrypti EAP met Usernan Verify se Trusted User cer	P Serial No. AN Profile P y Properties tame ication ion thod ne enver certificate server certificate	- 192.168.126.254 - 4 Properties Infrastructure WPA TKIP TLS Disable Not Installed	
Model Name Name Location Main Menu Overview Wizard Basic Settings - Network Settings Ceneral Settings Ethernet Settings Ethernet Settings WLAN Settings WLAN Settings WLAN Settings WLAN Settings WLAN Settings	- NPortW2250A - NPortW2250A_4 - Securit Profile n Authenti Encrypti EAP met Usernan Verify se Trusted User cer	P Serial No. AN Profile P y Properties name ication on thod ne erver certificate server certificate rtificate	- 192.168.126.254 - 4 Properties Infrastructure WPA TKIP TLS Disable Not Installed Not Installed	

When WPA or WPA2 is used for authentication, you will also need to configure **EAP method** in the **Security** settings for the WLAN profile. Other settings will also be displayed depending on how **EAP method** is configured.

There are two parts to WPA and WPA2 security, authentication, and data encryption.

 Authentication occurs before access is granted to a WLAN. Wireless clients such as the NPort W2150A/W2250A Series are first authenticated by the AP according to the authentication protocol used by the RADIUS server. Depending on the WLAN security settings, an EAP tunnel can be used to scramble the username and password that is submitted for authentication purposes.



• Encryption occurs after WLAN access has been granted. For all wireless devices, data is first encrypted before wireless transmission, using mutually agreed-upon encryption protocol.

EAP Method

Default	PEAP					
Options	TLS, PEAP, TTLS, LEAP					
Description	This field specifies the EAP method to use for authentication. Four methods are supp					
	TLS: Transport Layer Security (TLS) was created by Microsoft and accepted by the IETF as RFC 2716: PPP EAP TLS Authentication Protocol. Passwords and tunneled authentication are not used. A user certificate and user private key are used to identify the NPort. The NPort's user certificate and user private key must already be installed on the RADIUS server. PEAP: Protected Extensible Authentication Protocol (PEAP) is a proprietary protocol which was developed by Microsoft, Cisco, and RSA Security.					
	TTLS: Tunneled Transport Layer Security (TTLS) is a proprietary protocol which was developed by Funk Software and Certicom, and is supported by Agere Systems, Proxim, and Avaya. TTLS is being considered by the IETF as a new standard. For more information on TTLS, read the draft RFC EAP Tunneled TLS Authentication Protocol. LEAP: Lightweight Extensible Authentication Protocol (LEAP) is a proprietary protocol which was developed by Cisco. LEAP doesn't check certificate during the authentication process.					

Tunneled Authentication

Default	PAP (when using TTLS)
	GTC (when using PEAP)
Options	GTC, MD5, MSCHAP V2 (when using PEAP)
	PAP, CHAP, MSCHAP, MSCHAP V2, EAP-MSCHAP V2, EAP-GTC,
	EAP-MD5 (when using TTLS)
Description	This field specifies the encryption method to use during the authentication process. Different
	methods are available, depending on the EAP Method setting.

Username

Default	
Options	free text (e.g., "Smith_John")
Description	This field specifies the username that will be used to gain access to the WLAN. The correct
	username and password must be provided for access to be granted.

Password

Default	
Options	free text (e.g., "Password123")
Description	This field specifies the password that will be used to gain access to the WLAN. The correct
	username and password must be provided for access to be granted.

Anonymous Username

Default		
Options	free text (e.g., "Anyuser")	
Description	This field specifies the anonymous username to use when initiating authentication. After th	
	RADIUS Server has been verified by certificate, the true username and password will be used	
	to complete the authentication process.	

Verify Server Certificate

Default	Disable
Options	Disable, Enable
Description	Disable: The certificate from the RADIUS server will be ignored.
	Enable: The certificate from the RADIUS server will be used to authenticate access to the WLAN. The RADIUS server's trusted server certificate must already be installed on the NPort. To install a trusted server certificate, visit the corresponding page in the System Management> Certificate folder.

Trusted Server Certificate

This field is available for PEAP, TLS, and TTLS EAP methods only. It displays information on the trusted server certificate that is installed on the NPort. To install a trusted server certificate, visit the corresponding page in the **System Management > Certificate** folder.

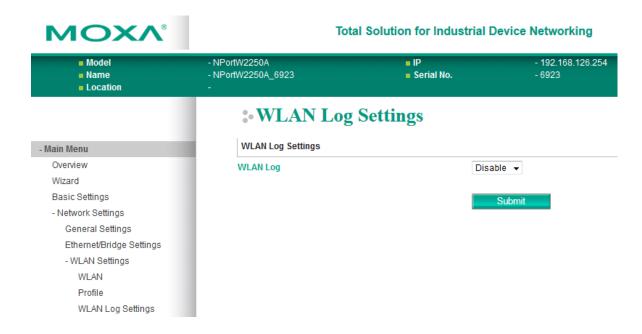
User Certificate

This field is available only when the EAP method has been set to TLS. It displays information on the user certificate that is installed on the NPort. To install a user certificate, visit the corresponding page in the **System Management > Certificate** folder.

User Private Key

This field is available only when EAP method has been set to TLS. It displays information on the user private key on the NPort.

WLAN Log Settings



Default	Disable
Options	Disable, Enable
Description	When the wireless connection between the device server and the AP is not stable, you may
	enable this function to have more information for troubleshooting. You may find System
	Monitoring → System Status → WLAN Log for the detail logs. Before calling for help from
	Moxa, please enable this function to collect some information.

WLAN Log Settings (This function is supported by firmware V1.10 or above)

Advanced Settings

ΜΟΧΛ°	Total Solution for Industrial Device Networking				
= Model = Name = Location	- NPortW2150A - NPortW2150A_4397 -	= IP = Serial No.	- 192.168. - 4397	126.254	
Main Menu	Gratuitous ARP	ttings			
Overview Wizard Basic Settings - Network Settings General Settings Ethernet/Bridge Settings - WLAN Settings - WLAN Settings - Serial Port Settings - System Management - System Management - System Monitoring - Restart	Gratuitous ARP enable Send period (10-1000 sec) IP/MAC addresses 1 IP/MAC addresses 2 IP/MAC addresses 3 IP/MAC addresses 4	[Enable I80 IP 192.168.127.211 IP 192.168.127.222 IP 192.168.127.233 IP 192.168.127.244 Submit	MAC 11:22:33:44:AA:11 MAC 11:22:33:44:BB:22 MAC 11:22:33:44:CC:33 MAC 11:22:33:44:DD:44	

On the Advanced Settings page in the Network Settings folder, you can modify Gratuitous ARP.

Gratuitous ARP

Default	Enabled						
Options	Enable / Disable						
Description	Gratuitous ARP requests provide duplicate IP address detection. The NPort sends broadcas						
	packets to update ARP tables on other devices (e.g., AP, PC) periodically. We can use this						
	function to notify networked devices that the NPort is still alive. Moreover, the NPort can send						
	Gratuitous ARP for legacy devices that do not have this function.						
	If you want the NPort to send Gratuitous ARP for legacy devices, you should enter the legacy						
	devices' IP and Mac addresses in IP/MAC address field.						

Send Period

Default	180 seconds
Options	10-1000 seconds
Description	This field specifies how long the NPort periodically sends Gratuitous ARP.

IP/MAC Addresses

Default	N/A					
Options	IP address and MAC address of the legacy device (e.g., IP: "192.168.1.1", MAC:					
	"11:22:33:44:AA:11"). This function only available when Ethernet Bridge is enabled.					
Description	IP address: legacy device IP address.					
	MAC address: legacy devices MAC address.					

Web Console: Serial Port Settings

The following topics are covered in this chapter:

Overview

- Serial Port Settings
- Communication Parameters
- Data Buffering/Log

Overview

This chapter explains how to configure all settings located under the **Serial Port Settings** folder in the NPort web console.

Serial Port Settings

Operation Modes

Model	- NPortW	22504			IP	- 192.168.126.254		MAC Address	- 00:90:E8:22:50:88
 Noder Name Location 	- NPortW - NPortW			-	Serial No.	- 192.100.120.204 - 4		 Firmware 	- 1.0 Build 12041115
overview Wizard Basic Settings - Network Settings		0 0	Operatio	on	Modes				
General Settings	_	Port	Operating mode		Packing length	Delimiter 1	Delimiter 2	Delimiter process	Force transmit
Ethernet Settings			an manage		0	00 (Disable)	00 (Disable)	Do Nothing	0
- WLAN Settings		1	Real COM		Max connection:	1			
WLAN		1			0	00 (Disable)	00 (Disable)	Do Nothing	0
Profile		2	Real COM		Max connection:	1			
Advanced Settings									
- Serial Port Settings									
Operation Modes									

Each serial port on the NPort is configured through the hyperlink below the column of **Operating mode**.

MOX/	N° (NPort W	2x50A				www.moxa.co
 Model Name Location 	- NPortW2250A - NPortW2250A -		IPSerial No.	- 192.168.126.254 - 4	1	 MAC Address Firmware 	- 00:90:E8:22:50:88 - 1.0 Build 12041115
Wizard Basic Settings	•	Operatio	n Modes				
- Network Settings General Settings	Port	Operating mode	Packing length	Delimiter 1	Delimiter 2	Delimiter process	Force transmit
Ethernet Settings		\frown	0	00 (Disable)	00 (Disable)	Do Nothing	0
- WLAN Settings	1	Real COM	Max connection:	1			
WLAN			0	00 (Disable)	00 (Disable)	Do Nothing	0
Profile	2	Real COM	Max connection:	1			
Advanced Settings							
- Serial Port Settings							
Operation Modes							

Click the link of **Real COM**, it will show the Port settings page. The Operation Modes page for each serial port is where you configure the serial port's operation mode and related settings. For an introduction to the different operation modes, please refer to Chapter 4.

Model - NPortW: Name - NPortW: Location -		-	IP Serial No.	- 192.168.126.254 - 4	 MAC Address Firmware
	:• Oper	ration	Mode	5	
Aain Menu	Port Setti	146			
Overview		iyə			
Wizard	Port			1	
Basic Settings	Operation I	node		Real COM 🛛 🕶	
- Network Settings	TCP alive c	heck time		7 (0 - 99 min)	
General Settings	Max conne	ction		1 🗸	
Ethernet Settings	Ignore jam	ned IP		Disable 🗸	
- WLAN Settings	Allow drive			Disable 🗸	
WLAN	1000				te ba
Profile	Connection	goes down		RTS 🔿 always low 💿 always h	
Advanced Settings				DTR 🔘 always low 💿 always h	high
- Serial Port Settings	Data Pack	ing			
Operation Modes	Packet len	yth		0 (0 - 1024)	
Communication Parameters	Delimiter 1			00 (HEX) Cable	
Data Buffering/Log	Delimiter 2			00 (HEX) C Enable	
- System Management					alandara Destrinationalis of
- System Monitoring	Delimiter p				only when Packing length is 0)
- Restart	Force trans	smit		0 (0 - 65535 ms)	
	📃 Apply th	e above settin	igs to all serial	ports	

Operation Mode

Default	Real COM
Options	Real COM, RFC2217, TCP Server, TCP Client, UDP, Pair_Master, Pair_Slave, EModem
Description	Along with Application, this field specifies the serial port's operation mode, or how it will
	interact with network devices. Depending on how Application is configured, different options
	are available for Mode. Depending on how Mode is configured, additional settings will be
	available for configuration. For an introduction to the different operation modes, please refer
	to Chapter 4. Real COM: This serial port will operate in Real COM mode.
	RFC2217: This serial port will operate in RFC2217 mode.
	TCP Server: This serial port will operate in TCP Server mode.
	TCP Client: This serial port will operate in TCP Client mode.
	UDP: This serial port will operate in UDP mode.
	Pair_Master: This serial port will operate in Pair Connection Master mode.
	Pair_Slave: This serial port will operate in Pair Connection Slave mode.
	EModem: This serial port will operate in Ethernet Modem mode.

Settings for Real COM Mode

ΜΟΧΛ [®]	NPort W2x5	A
	PortW2250A PortW2250A_4 PortW2250A_4	IP - 192.168.126.254 = MAC Address Serial No 4 = Firmware
	: Operation	Modes
Main Menu	Port Settings	
Overview		
Wizard	Port	1
Basic Settings	Operation mode	Real COM 🔽 💙
- Network Settings	TCP alive check time	7 (0 - 99 min)
- Serial Port Settings	Max connection	1 🗸
Operation Modes	Ignore jammed IP	Disable 🗸
Communication Parameter	Allow driver control	Disable 🗸
Data Buffering/Log	Connection goes down	RTS 🔿 always low 💿 always high
- System Management	connection goes down	
- System Monitoring		DTR 🔿 always low 💿 always high
- Restart	Data Packing	
goahead	Packet length	0 (0 - 1024)
WEBSERVER	Delimiter 1	00 (HEX) 🔲 Enable
Best viewed with IE 5 above at resolution 1024 x 768	Delimiter 2	00 (HEX) 🗖 Enable
1250100011 1024 x 700	Delimiter process	Do Nothing V (Processed only when Packing length is 0)
	Force transmit	0 (0 - 65535 ms)
	Apply the above setting	
		Submit

When **Operation Mode** is set to Real COM on a serial port's **Operation Modes** page, you will be able to configure additional settings including **TCP alive check time**, **Max connection**, **Ignore jammed IP**, **Allow driver Control, Connection goes down**, **Packet length**, **Delimiter 1**, **Delimiter 2**, **Delimiter process**, and **Force transmit**.

TCP Alive Check Time

Default	7 min
Options	0 to 99 min
Description	This field specifies how long the NPort will wait for a response to "keep-alive" packets before
	closing the TCP connection. The NPort checks connection status by sending periodic "keep-
	alive" packets.
	0: The TCP connection will remain open even if there is no response to the "keep-alive" packets.
	1 to 99: If the remote host does not respond to the packet within the specified time, the
	NPort will force the existing TCP connection to close.

Max connection

1
1 to 8
This field specifies the maximum number of connections that will be accepted by the serial
port.
1: Only one specific host can access this serial port, and the Real COM driver on that host will
have full control over the port.
2 to 8: This serial port will allow the specified number of connections to be opened
simultaneously. With simultaneous connections, the Real COM driver will only provide a pure
data tunnel with no control ability. The serial communication will be determined by the NPort
rather than by your application program. Application software that is based on the Real COM
driver will receive a driver response of "success" when using any of the Win32 API functions.
The NPort will send data only to the Real COM driver on the host. Data received from hosts
will be sent to the attached serial device on a first-in-first-out basis.



ATTENTION

When Max connection is two or greater, the serial port's communication settings (i.e., baudrate, parity, data bits, etc.) will be determined by the NPort. Any host that opens the COM port connection must use identical serial communication settings.

Ignore jammed IP

Default	Disable
Options	Disable, Enable
Description	This field specifies how an unresponsive IP address is handled when there are simultaneous connections to the serial port. Disable: All transmission will be suspended if one IP address becomes unresponsive. Transmission will only resume when all hosts have responded. Enable: Data transmission to the other hosts will not be suspended if one IP address becomes
	unresponsive.

Allow driver control

Default	Disable
Options	Disable, Enable
Description	This field specifies how the port will proceed if driver control commands are received from multiple hosts that are connected to the port.
	Disable: Driver control commands will be ignored.
	Enable: Control commands will be accepted, with the most recent command received taking precedence.

Connection goes down

Default	always high
Options	always low, always high
Description	This field specifies what happens to the RTS and DTR signals when the Ethernet connection goes down. For some applications, serial devices need to know the Ethernet link status through RTS or DTR signals sent through the serial port. Always low: The selected signal will change to low when the Ethernet connection goes down. Always high The selected signal will remain high when the Ethernet connection goes down.

Packet length

Default	0
Options	0 to 1024
Description	This field specifies the maximum amount of data that is allowed to accumulate in the serial port buffer before sending.
	0: Packet length is disregarded and data in the buffer will be sent as specified by the delimiter settings or when the buffer is full.
	1 to 1024: Data in the buffer will be sent as soon it reaches the specified length.

Delimiter 1 and 2

Default	Disabled
Options	Disabled, Enabled, 00 to FF
Description	These fields are used to define special delimiter character(s) for data packing. Enable Delimiter 1 to control data packing with a single character; enable both Delimiter 1 and 2 to control data packing with two characters received in sequence. When these fields are enabled, serial data will accumulate in the serial port's buffer until the buffer is full or until the specified delimiter character(s) are received. 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 will be packed according to Delimiter process. Delimiters must be incorporated into the data stream at the software or device level.



ATTENTION

When **Delimiter 1** is enabled, **Packet length** must be set to 0.

Delimiter process

Default	Do Nothing
Options	Do Nothing, Delimiter + 1, Delimiter + 2, Strip Delimiter
Description	This field specifies how data is packed when delimiter characters are received. This field has no effect if Delimiter 1 is not enabled.
	Do nothing: Data accumulated in the serial port's buffer will be packed, including delimiters.
	Delimiter + 1: One additional character must be received before the data in the serial port's buffer is packed.
	Delimiter + 2: Two additional characters must be received before the data in the serial port's buffer is packed.
	Strip Delimiter: Data accumulated in the serial port's buffer will be packed, but the delimiter character(s) will be stripped from the data.

Force transmit

Default	0 ms	
Options	0 to 65535	
Description	This field controls data packing by the amount of time that elapses between bits of data.	
	When using this field, make sure that 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.	
	0: If serial data is not received, the NPort will wait indefinitely for additional data.	
	1 to 65535: If serial data is not received for the specified amount of time, the data that is	
	currently in the buffer will be packed for network transmission. The optimal force transmit	
	time depends on 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 8.3 ms, so the force	
	transmit time to be larger than 8.3 ms.	

Settings for RFC2217 Mode

ΜΟΧΛ°	NPort W2x50A		
Model - NPortM Name - NPortM Location -		- 192.168.126.254 MAC Addr rial No 4 Firmware	
	• Operation M	odes	
- Main Menu	Port Settings		
Overview			
Wizard	Port	1	
Basic Settings	Operation mode	(RFC2217 V	
- Network Settings	TCP alive check time	7 (0-99 min)	
- Serial Port Settings	TCP port	4001	
Operation Modes	Data Packing	·	
Communication Parameters Data Buffering/Log	Packet length	0 (0 - 1024)	
- System Management	Delimiter 1	00 (HEX) 🗖 Enable	
- System Monitoring	Delimiter 2	00 (HEX) C Enable	
- Restart	Delimiter process	Do Nothing V(Processed only when Packing length	is 0)
	Force transmit	0 (0 - 65535 ms)	
goahead WEBSERVER	Apply the above settings to		
Best viewed with IE 5 above at			
resolution 1024 × 768		Submit	

When **Operation Mode** is set to **RFC2217** on a serial port's **Operation Modes** page, you will be able to configure additional settings, including **TCP alive check time**, **TCP port**, **Packet length**, **Delimiter 1**, **Delimiter 2**, **Delimiter process**, and **Force transmit**.

Default	7 min
Options	0 to 99 min
Description	 This field specifies how long the NPort will wait for a response to "keep-alive" packets before closing the TCP connection. The NPort checks connection status by sending periodic "keep-alive" packets. 0: The TCP connection will remain open even if there is no response to the "keep-alive" packets. 1 to 99: If the remote host does not respond to the packet within the specified time, the NPort will force the existing TCP connection to close.

TCP alive check time

TCP port

Default	4001
Options	
Description	This field specifies the TCP port number that the serial port will use to listen to connections,
	and that other devices must use to contact the serial port.

Packet length

Default	0
Options	0 to 1024
Description	This field specifies the maximum amount of data that is allowed to accumulate in the serial port buffer before sending.
	 0: Packet length is disregarded and data in the buffer will be sent as specified by the delimiter settings or when the buffer is full. 1 to 1024: Data in the buffer will be sent as soon it reaches the specified length.

Delimiter 1 and 2

Default	Disabled
Options	Disabled, Enabled, 00 to FF
Description	These fields are used to define special delimiter character(s) for data packing. Enable Delimiter 1 to control data packing with a single character; enable both Delimiter 1 and 2 to control data packing with two characters received in sequence. When these fields are enabled, serial data will accumulate in the serial port's buffer until the
	buffer is full or until the specified delimiter character(s) are received. 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 will be packed according to Delimiter process. Delimiters must be incorporated into the data stream at the software or device level.

Delimiter process

Default	Do Nothing	
Options	Do Nothing, Delimiter + 1, Delimiter + 2, Strip Delimiter	
Description	This field specifies how data is packed when delimiter characters are received. This field has no effect if Delimiter 1 is not enabled.	
	Do nothing: Data accumulated in the serial port's buffer will be packed, including delimiters.	
	Delimiter + 1: One additional character must be received before the data in the serial port's buffer is packed.	
	Delimiter + 2: Two additional characters must be received before the data in the serial port's buffer is packed.	
	Strip Delimiter: Data accumulated in the serial port's buffer will be packed, but the delimiter character(s) will be stripped from the data.	

Force transmit

Default	0 ms
Options	0 to 65535
Description	This field controls data packing by the amount of time that elapses between bits of data.
	When using this field, make sure that 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.
	0: If serial data is not received, the NPort will wait indefinitely for additional data.
	1 to 65535: If serial data is not received for the specified amount of time, the data that is
	currently in the buffer will be packed for network transmission. The optimal force transmit
	time depends on 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 8.3 ms, so the force
	transmit time to be larger than 8.3 ms.

Settings for TCP Server Mode

ΜΟΧΛ		
		IP - 192.168.126.254 MAC Address Serial No 4 Firmware
	:• Operation	n Modes
- Main Menu	Port Settings	
Overview		
Wizard	Port	1
Basic Settings	Operation mode	
- Network Settings	TCP alive check time	7 (8 - 99 min)
- Serial Port Settings	Inactivity time	0 (0 - 65535 ms)
Operation Modes	Max connection	1 💌
Communication Paramet	ers Ignore jammed IP	Disable 🛩
Data Buffering/Log	Allow driver control	Disable 🗸
- System Management - System Monitoring	TCP port	4001
- System Monitoring - Restart	Cmd port	966
- Nestan	Connection goes dow	
goahead		DTR () always low () always high
WEBSERVER Best viewed with IE 5 above at resolution 1024 × 768	Data Packing	
	Packet length	0 (0 - 1024)
	Delimiter 1	00 (HEX) 🔲 Enable
	Delimiter 2	00 (HEX) 🗍 Enable
	Delimiter process	Do Nothing V (Processed only when Packing length is 0)
	Force transmit	0 (0 - 65535 ms)
	Apply the above se	ttings to all serial ports
		Submit

When **Operation Mode** is set to **TCP Server** on a serial port's **Operation Modes** page, you will be able to configure additional settings such as **TCP alive check time**, **Inactivity time**, **Max connection**, **Ignore jammed IP**, **Allow driver control**, **TCP port**, **Cmd port**, **Connection goes down**, **Packet length**, **Delimiter 1**, **Delimiter 2**, **Delimiter process**, and **Force transmit**.

TCP alive check time

Default	7 min
Options	0 to 99 min
Description	 This field specifies how long the NPort will wait for a response to "keep-alive" packets before closing the TCP connection. The NPort checks connection status by sending periodic "keep-alive" packets. 0: The TCP connection will remain open even if there is no response to the "keep-alive" packets. 1 to 99: If the remote host does not respond to the packet within the specified time, the NPort will force the existing TCP connection to close.

Inactivity time

Default	0 ms
Options	0 to 65535 ms
Description	This field specifies the time limit for keeping the connection open if no data flows to or from
	the serial device.
	0: 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.
	1 to 65535: If there is no activity for the specified time, the connection will be closed. When
	adjusting this field, 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

Default	1
Options	1 to 8
Description	This field specifies the maximum number of connections that will be accepted by the serial port.
	1: Only one specific host can access this serial port, and the Real COM driver on that host will have full control over the port.
	2 to 8: This serial port will allow the specified number of connections to be opened simultaneously. With simultaneous connections, the Real COM driver will only provide a pure data tunnel with no control ability. The serial communication will be determined by the NPort rather than by your application program. Application software that is based on the Real COM driver will receive a driver response of "success" when using any of the Win32 API functions. The NPort will send data only to the Real COM driver on the host. Data received from hosts will be sent to the attached serial device on a first-in-first-out basis.



ATTENTION

When Max connection is two or greater, the serial port's communication settings (i.e., baudrate, parity, data bits, etc.) will be determined by the NPort. Any host that opens the COM port connection must use identical serial communication settings.

Ignore jammed IP

Default	Disable
Options	Disable, Enable
Description	This field specifies how an unresponsive IP address is handled when there are simultaneous connections to the serial port. Disable: All transmission will be suspended if one IP address becomes unresponsive. Transmission will only resume when all hosts have responded. Enable: Data transmission to the other hosts will not be suspended if one IP address becomes
	unresponsive.

Allow driver control

Default	Disable	
Options	Disable, Enable	
Description	This field specifies how the port will proceed if driver control commands are received from multiple hosts that are connected to the port.	
	Disable: Driver control commands will be ignored.	
	Enable: Control commands will be accepted, with the most recent command received taking precedence.	

TCP port

-		
Default	4001	
Options	0 to 9999	
Description	This field specifies the TCP port number that the serial port will use to listen to connections,	
	and that other devices must use to contact the serial port.	

Cmd port

Default	996
Options	
Description	This field specifies the TCP port number for listening to SSDK commands from the host.

The usage of other functions can be found in the subsection of **Real COM** mode in page 7-4.

Connection goes down

Default	always high	
Options	always low, always high	
Description	is field specifies what happens to the RTS and DTR signals when the Ethernet connection	
	goes down. For some applications, serial devices need to know the Ethernet link status through RTS or DTR signals sent through the serial port.	
	Always low: The selected signal will change to low when the Ethernet connection goes down.	
	Always high The selected signal will remain high when the Ethernet connection goes down.	

Packet length

Default	0
Options	0 to 1024
Description	This field specifies the maximum amount of data that is allowed to accumulate in the serial port buffer before sending.
	0: Packet length is disregarded and data in the buffer will be sent as specified by the delimiter settings or when the buffer is full.
	1 to 1024: Data in the buffer will be sent as soon it reaches the specified length.

Delimiter 1 and 2

Default	Disabled
Options	Disabled, Enabled, 00 to FF
Description	These fields are used to define special delimiter character(s) for data packing. Enable Delimiter 1 to control data packing with a single character; enable both Delimiter 1 and 2 to control data packing with two characters received in sequence.
	When these fields are enabled, serial data will accumulate in the serial port's buffer until the buffer is full or until the specified delimiter character(s) are received. 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 will be packed according to Delimiter process.
	Delimiters must be incorporated into the data stream at the software or device level.



ATTENTION

When **Delimiter 1** is enabled, **Packet length** must be set to 0.

Delimiter process

Default	Do Nothing
Options	Do Nothing, Delimiter + 1, Delimiter + 2, Strip Delimiter
Description	This field specifies how data is packed when delimiter characters are received. This field has no effect if Delimiter 1 is not enabled.
	Do nothing: Data accumulated in the serial port's buffer will be packed, including delimiters.
	Delimiter + 1: One additional character must be received before the data in the serial port's buffer is packed.
	Delimiter + 2: Two additional characters must be received before the data in the serial port's buffer is packed.
	Strip Delimiter: Data accumulated in the serial port's buffer will be packed, but the delimiter character(s) will be stripped from the data.

Force transmit

Default	0 ms	
Options	0 to 65535	
Description	This field controls data packing by the amount of time that elapses between bits of data.	
	When using this field, make sure that 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.	
	0: If serial data is not received, the NPort will wait indefinitely for additional data.	
	1 to 65535: If serial data is not received for the specified amount of time, the data that is	
	currently in the buffer will be packed for network transmission. The optimal force transmit	
	time depends on 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 8.3 ms, so the force	
	transmit time to be larger than 8.3 ms.	

Settings for TCP Client Mode

ΜΟΧΛ°	NPort W2x50A		www.mo
Model - NPortW Name - NPortW Location -		- 192.168.126.254 MAC Address No 4 Firmware	- 00:90:E8:22:6 - 1.0 Build 120
_	Port Settings		
	Port	1	
Main Menu	Operation mode	TCP Client	
Overview Wizard	TCP alive check time	7 (0 - 99 min)	
Basic Settings	Inactivity time	0 (0 - 65535 ms)	
- Network Settings	Ignore jammed IP	Disable 🗸	
- Serial Port Settings	Destination address 1		Port 4001
Operation Modes	Destination address 2		Port 4001
Communication Parameters	Destination address 3		Port 4001
Data Buffering/Log	Destination address 4		Port 4001
- System Management	Designated local port 1	5010	
- System Monitoring	Designated local port 2	5011	
- Restart	Designated local port 3	5012	
goahead	Designated local port 4	5013	
WEBSERVER	Connection control	Startup/None	
Best viewed with IE 5 above at resolution 1024 × 768	Data Packing		
_	Packet length	0 (0 - 1024)	
	Delimiter 1		
	Delimiter 2		
	Delimiter process	Do Nothing (Processed only when Packing length is 0)	
_	Force transmit	0 (0 - 65535 ms)	
_	Apply the above settings to all		
		per court - Successione	
		Submit	

When **Operation Mode** is set to **TCP Client** on a serial port's **Operation Modes** page, you will be able to configure additional settings such as **TCP alive check time**, **Inactivity time**, **Ignore jammed IP**, **Destination address 1-4**, **Designated local port 1-4**, **Connection control**, **and Packet length**, **Delimiter 1**, **Delimiter 2**, **Delimiter process**, and **Force transmit**.

TCP Alive Check Time

Default	7 min
Options	0 to 99 min
Description	This field specifies how long the NPort will wait for a response to "keep-alive" packets before
	closing the TCP connection. The NPort checks connection status by sending periodic
	"keep-alive" packets.
	0: The TCP connection will remain open even if there is no response to the "keep-alive" packets.
	1 to 99: If the remote host does not respond to the packet within the specified time, the
	NPort will force the existing TCP connection to close.

Inactivity time

Default	0 ms
Options	0 to 65535 ms
Description	This field specifies the time limit for keeping the connection open if no data flows to or from the serial device.
	0: 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.
	1 to 65535: If there is no activity for the specified time, the connection will be closed. When adjusting this field, 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.

Ignore jammed IP

Default	Disable
Options	Disable, Enable
Description	This field specifies how an unresponsive IP address is handled when there are simultaneous connections to the serial port.
	Disable: All transmission will be suspended if one IP address becomes unresponsive. Transmission will only resume when all hosts have responded.
	Enable: Data transmission to the other hosts will not be suspended if one IP address becomes unresponsive.

Destination address 1 to 4

Default	
Options	IP address and port (e.g., "192.168.1.1" and "4001")
Description	This field specifies the remote host(s) that will access the attached device. At least one
	destination must be provided. This field supports the use of domain names and names
	defined in the host table.



ATTENTION

In TCP Client mode, up to four connections can be established between the serial port and TCP hosts. The connection speed or throughput may be low if any one of the four connections is slow, since the one slow connection will slow down the other three connections.

Designated local port 1 to 4

Default	
Options	1 to 65535
Description	This field specifies the TCP port number that will be used for data transmission with the serial
	port.

Connection control

Default	Startup/None
Options	Startup/None, Any Character/None, Any Character/Inactivity Time, DSR On/DSR Off, DSR On/None, DCD On/DCD Off, DCD On/None
Description	This field specifies how connections to the device are established and closed.
	Startup/None: The connection will be opened as the NPort starts up. The connection will only be closed manually.
	Any Character/None: The connection will be opened as soon as a character is received from the attached device. The connection will only be closed manually.
	Any Character/Inactivity Time: The connection will be opened as soon as a character is received from the attached device. The connection will be closed if no data is received for the time specified in Inactivity time.
	DSR On/DSR Off: The TCP connection is opened when the DSR signal is on, and closed when the DSR signal is off.
	DSR On/None: The TCP connection is opened when the DSR signal is on. The connection will only be closed manually.
	DCD On/DCD Off: The TCP connection is opened when the DCD signal is on, and closed when the DCD signal is off.
	DCD On/None: The TCP connection is opened when the DCD signal is on. The connection will only be closed manually.

Packet length

Default	0
Options	0 to 1024
Description	This field specifies the maximum amount of data that is allowed to accumulate in the serial port buffer before sending.
	0: Packet length is disregarded and data in the buffer will be sent as specified by the delimiter settings or when the buffer is full.
	1 to 1024: Data in the buffer will be sent as soon it reaches the specified length.

Delimiter 1 and 2

Default	Disabled
Options	Disabled, Enabled, 00 to FF
Description	These fields are used to define special delimiter character(s) for data packing. Enable Delimiter 1 to control data packing with a single character; enable both Delimiter 1 and 2 to control data packing with two characters received in sequence.
	When these fields are enabled, serial data will accumulate in the serial port's buffer until the buffer is full or until the specified delimiter character(s) are received. 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 will be packed according to Delimiter process.
	Delimiters must be incorporated into the data stream at the software or device level.



ATTENTION

When **Delimiter 1** is enabled, **Packet length** must be set to 0.

Delimiter process

Default	Do Nothing
Options	Do Nothing, Delimiter + 1, Delimiter + 2, Strip Delimiter
Description	This field specifies how data is packed when delimiter characters are received. This field has no effect if Delimiter 1 is not enabled.
	Do nothing: Data accumulated in the serial port's buffer will be packed, including delimiters.
	Delimiter + 1: One additional character must be received before the data in the serial port's buffer is packed.
	Delimiter + 2: Two additional characters must be received before the data in the serial port's buffer is packed.
	Strip Delimiter: Data accumulated in the serial port's buffer will be packed, but the delimiter character(s) will be stripped from the data.

Force transmit

Default	0 ms	
Options	0 to 65535	
Description	This field controls data packing by the amount of time that elapses between bits of data.	
	When using this field, make sure that 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.	
	0: If serial data is not received, the NPort will wait indefinitely for additional data.	
	1 to 65535: If serial data is not received for the specified amount of time, the data that is	
	currently in the buffer will be packed for network transmission. The optimal force transmit	
	time depends on 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 8.3 ms, so the force	
	transmit time to be larger than 8.3 ms.	

Settings for UDP Mode

ΜΟΧΛ	NPort W2x50A			WWW.IT
Model - NPort Name - NPort Location -		- 192.168.126.25 al No 4	i4 -	MAC Address - 00:90:E8: Firmware - 1.0 Build 1
	:•Operation M	odes		
- Main Menu	Port Settings			
Overview				
Wizard	Port			
Basic Settings	Operation mode	UDP 💙		
- Network Settings	Destination address 1	Begin	End	Port 4001
- Serial Port Settings	Destination address 2	Begin	End	Port 4001
- System Management	Destination address 3	Begin	End	Port 4001
- System Monitoring	Destination address 4	Begin	End	Port 4001
- Restart	Local listen port	4001		
goahead WEBSERVER	Data Packing			
Best viewed with IE 5 above at	Packet length	0 (0 - 1024)		
resolution 1024 × 768	Delimiter 1	00 (HEX) 🗌 Ena	ble	
	Delimiter 2	00 (HEX) 🗌 Ena		
	Delimiter process		ocessed only when Pack	ing longth is 0)
	Force transmit		· · · · · · · · · · · · · · · · · · ·	ang lengti i s uj
		0 (0 - 65535	ms)	
	Apply the above settings to	all serial ports		

When **Operation Mode** is set to **UDP** on a serial port's **Operation Modes** page, you will be able to configure additional settings such as **Destination address 1** through **4**, **Local listen port**, **Packet length**, **Delimiter 1**, **Delimiter 2**, **Delimiter process**, and **Force transmit**.

Destination	address	1	to	4
-------------	---------	---	----	---

Default	
Options	IP address range and port (e.g., "192.168.1.1" to "192.168.1.64" and "4001")
Description	In UDP mode, you may specify up to four ranges of IP addresses for the serial port to connect to. At least one destination range must be provided.
	The maximum selectable IP address range is 64 addresses. However, you can enter multicast addresses in the Begin field, in the form xxx.xxx.255. For example, enter "192.127.168.255" to allow the NPort to broadcast UDP packets to all hosts with IP addresses between 192.127.168.1 and 192.127.168.254.

Local listen port

Default	4001
Options	
Description	This field specifies the UDP port that the NPort listens to and that other devices must use to
	contact the attached serial device.

Packet length

Default	0
Options	0 to 1024
Description	This field specifies the maximum amount of data that is allowed to accumulate in the serial port buffer before sending.
	0: Packet length is disregarded and data in the buffer will be sent as specified by the delimiter settings or when the buffer is full.
	1 to 1024: Data in the buffer will be sent as soon it reaches the specified length.

Delimiter 1 and 2

Default	Disabled
Options	Disabled, Enabled, 00 to FF
Description	These fields are used to define special delimiter character(s) for data packing. Enable Delimiter 1 to control data packing with a single character; enable both Delimiter 1 and 2 to control data packing with two characters received in sequence. When these fields are enabled, serial data will accumulate in the serial port's buffer until the buffer is full or until the specified delimiter character(s) are received. 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 will be packed according to Delimiter process. Delimiters must be incorporated into the data stream at the software or device level.



ATTENTION

When **Delimiter 1** is enabled, **Packet length** must be set to 0.

Delimiter process

Default	Do Nothing
Options	Do Nothing, Delimiter + 1, Delimiter + 2, Strip Delimiter
Description	This field specifies how data is packed when delimiter characters are received. This field has no effect if Delimiter 1 is not enabled.
	Do nothing: Data accumulated in the serial port's buffer will be packed, including delimiters.
	Delimiter + 1: One additional character must be received before the data in the serial port's buffer is packed.
	Delimiter + 2: Two additional characters must be received before the data in the serial port's buffer is packed.
	Strip Delimiter: Data accumulated in the serial port's buffer will be packed, but the delimiter character(s) will be stripped from the data.

Force transmit

Default	0 ms
Options	0 to 65535
Description	This field controls data packing by the amount of time that elapses between bits of data.
	When using this field, make sure that 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.
	0: If serial data is not received, the NPort will wait indefinitely for additional data.
	1 to 65535: If serial data is not received for the specified amount of time, the data that is
	currently in the buffer will be packed for network transmission. The optimal force transmit
	time depends on 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 8.3 ms, so the force
	transmit time to be larger than 8.3 ms.

Settings for Pair Connection Master Mode and Pair Connection Slave

Mode

ΜΟΧΛ	⁸ N	Port W2x50A			WWW.MO
	- NPortW2250A - NPortW2250A_4 -	IPSerial No.	- 192.168.126.254 - 4	 MAC Address Firmware 	- 00:90:E8:22:5 - 1.0 Build 1204
	:•Oper	ration Mode	s		
- Main Menu	Port Settin	ngs			
Overview Wizard	Port		1		
Basic Settings	Operation r	node	Pair_Master 🗸		
- Network Settings	TCP alive cl	heck time	7 (0 - 99 min)		
- Serial Port Settings	Destination	address			Port 4001
- System Management	Apply the	e above settings to all seria	l ports		
- System Monitoring		-	-0-		
- Restart			Submit		
goahead	s				

ΜΟΧΛ°	NP	ort W2x50A			WWW.MC
	PortW2250A PortW2250A_4	IPSerial N	- 192.168.126.254 o. - 4	 MAC Ad Firmwar 	1000 B 200 B 20
	:•Opera	ation Mod	les		
- Main Menu	Port Setting	s			
Overview	Port		1		
Wizard			1		
Basic Settings	Operation m	ode	Pair_Slave 🔽		
- Network Settings	TCP alive che	eck time	7 (0 - 99 min)		
- Serial Port Settings	TCP port		4001		
- System Management	C Anniv the	above settings to all s	serial norts		
- System Monitoring		above settings to an e			
- Restart			Submit		

When **Operation Mode** is set to **Pair Connection Master** or **Pair Connection Slave** on a serial port's **Operation Modes** page, you will be able to configure additional settings such as **TCP alive check time**, **Destination address** and **TCP port.** A Pair Connection application involves one serial port communicating over an IP network to another serial port as if the two serial ports were connected by a serial cable. Pair Connection modes can be used to extend RS-232 transmission to unlimited distances.

An NPort device server is needed at both ends of the connection. The serial port at one end must be set to Pair Connection Master mode, and the serial port at the other end must be set to Pair Connection Slave mode. It does not matter which serial port is master and which serial port is slave.

Default	7 min
Options	0 to 99 min
Description	This field specifies how long the NPort will wait for a response to "keep-alive" packets before closing the TCP connection. The NPort checks connection status by sending periodic "keep-alive" packets.
	0: The TCP connection will remain open even if there is no response to the "keep-alive" packets.
	1 to 99: If the remote host does not respond to the packet within the specified time, the NPort will force the existing TCP connection to close.

TCP alive check time

Destination address

Default				
Options	P address and port (e.g., "192.168.1.1" and "4001")			
Description	his field specifies the IP address for the NPort at the opposite end of the Pair Connection,			
	and the TCP port number for communication with the serial port. The port number must			
	match with that serial port's TCP port setting.			

TCP port

Default	4001				
Options					
Description	his field specifies the TCP port to use for communication with the attached serial device. The				
	serial port at the opposite end of the Pair Connection must use this port number to establish				
	the connection.				

Settings for Ethernet Modem Mode

MOX/	N°	I	VPort W2x	50A			
 Model Name Location 	- NPortV - NPortV -	/2250A /2250A_4		IP Serial No.	- 192.168.126.254 - 4	-	MAC Address Firmware
		:•Ope	ration	Mode	S		
- Main Menu		Port Set	tinge				
Overview			unga				
Wizard		Port			1		
Basic Settings		Operation	mode		EModem 🖌		
- Network Settings		TCP alive	check time		7 (0 - 99 min)		
- Serial Port Settings		TCP port			4001		
- System Management		Apply1	tha ahova catti	ngs to all serial			
- System Monitoring			ine above seiii	ligs to all serial	porta		
- Restart					Submit		

When **Application** is set to **Ethernet Modem Mode**, the NPort will accept AT commands such as "ATD 192.127.168.1:4001" from the serial port. A TCP connection will then be requested from the specified remote Ethernet Modem or PC. When the remote unit accepts this TCP connection, the NPort will return the "**CONNECT** {*baudrate*}" signal to the serial port and will then enter data mode. Please refer to Appendix C for details on Ethernet modem commands.

TCP alive check time

Default	7 min
Options	0 to 99 min
Description	 This field specifies how long the NPort will wait for a response to "keep-alive" packets before closing the TCP connection. The NPort checks connection status by sending periodic "keep-alive" packets. 0: The TCP connection will remain open even if there is no response to the "keep-alive" packets. 1 to 99: If the remote host does not respond to the packet within the specified time, the NPort will force the existing TCP connection to close.

TCP port

Default	4001
Options	
Description	This field specifies the TCP port to use for communication with the attached serial device.

Communication Parameters

MOX/	∧ °	NPort W	2x50A					ww	w.moxa	а.соп
 Model Name Location 	- NPortW2250A - NPortW2250A -	_4	IPSerial No.	- 192.168.126.2 - 4	254		 MAC Addre Firmware 		10:E8:22:50:8 Build 120411	
		Serial Pa	arameter							
- Main Menu	* Modify	/ing "Serial Paramete	er" settings will caus	e serial port restartin	g connecti	ons.				
Overview				· · · · · · · · · · · · · · · · · · ·	-					
Wizard	Port	Alias	Bard rate	Parity	Data bit	Stop bit	Flow control	FIFO	Interface	
Basic Settings	1		115200 🗸	None 🔽	8 🗸	1 🗸	RTS/CTS 🔽	Enable 🔽	RS-232	*
- Network Settings	2		115200 🗸	None 🗸	8 🗸	1 🗸	RTS/CTS 🗸	Enable 🗸	RS-232	~
- Serial Port Settings										
Operation Modes			1	Submit						
Communication Para	ameters									
Data Buffering/Log										

The **Communication Parameters** page for each serial port is where serial communication settings are specified, such as **Baud rate**, **Data bits**, and **Stop bits**.

Alias

Default	
Options	free text (e.g., "Secondary console connection")
Description	This is an optional free text field to help you differentiate one serial port from another. It does
	not affect operation of the NPort device server.



ATTENTION

Serial communication settings should match the attached serial device. Check the communication settings in the user's manual for your serial device.

Baud rate

Default	115200			
Options	50, 75, 110, 134, 150, 300, 600, 1200, 1800, 2400, 4800, 9600, 19200, 38400, 57600,			
	115200, 230400, 460800, 921600, Other			
Description	This field specifies the baudrate for the serial port. Nonstandard baudrates are supported			
	through the Other setting. When set to Other , you may manually enter a baudrate of your			
	choice, up to 921600.			
	50 to 921600: The serial port will operate at the specified baudrate			
	Other: The serial port will operate at a baudrate that is manually entered by the user.			

Parity

Default	None
Options	None, Odd, Even, Space, Mark
Description	This field specifies the type of parity bit used for each character frame.

Data bit

Default	8
Options	5, 6, 7, 8
Description	This field specifies the number of data bits used to encode each character of data.

Stop bit

Default	1
Options	1, 1.5, 2
Description	This field specifies the number of stop bits used for each character frame.

Flow control

Default	RTS/CTS
Options	None, RTS/CTS, XON/XOFF, DTR/DSR
Description	This field specifies the type of flow control used by the serial port.

FIFO

Default	Enable
Options	Enable, Disable
Description	This field specifies whether the serial port will use the built-in FIFO. A 128-byte FIFO is
	provided to each serial port for both Tx and Rx directions. To prevent data loss during serial
	communication, this should be set to Disabled if the attached serial device does not have a
	FIFO.

Interface

Default	RS-232
Options	RS-232, RS-422, RS-485 2-wire, RS-485 4-wire
Description	This field specifies the type of interface the serial port will use.

Data Buffering/Log

ΜΟΧΛ	NPort	W2x50A		www.mc
	tW2250A tW2250A_4	IPSerial No.	- 192.168.126.254 - 4	AC Address - 00:90:E8:22 mware - 1.0 Build 12
	: Data B	uffering/L	og	
- Main Menu	Port		Port buffering (10M)	Corial data logging (CAV)
Overview				Serial data logging (64K)
Wizard	Port 1		Disable 🛩	Disable 💙
Basic Settings	Port 2		Disable 🛩	Disable 🔽
- Network Settings	All Ports		Disable 🗸	Disable 🗸
- Serial Port Settings				
Operation Modes			Submit	
Communication Parameters				
Data Buffering/Log				
- System Management				

On the serial port's **Data Buffering/Log** page, you can enable or disable **Port buffering** and **Serial data logging**.

Port buffering

Default	Disable		
Options	Enable, Disable		
Description	This field specifies whether the serial port will use port buffering when the network		
	connection (Ethernet or WLAN) is down. Port buffering can be used in Real COM mode, TCP		
	Server mode, TCP Client mode, and Pair Connection mode. For other modes, the port		
	buffering settings will have no effect.		

Serial data logging(64K)

Default	Disable			
Options	Enable, Disable			
Description	This field specifies whether data logs for the serial port will be stored on system RAM. Each			
	serial port is allotted 64 KB for data logging. The data log is not saved when the NPort is			
	powered off.			

Web Console: System Management

The following topics are covered in this chapter:

- Overview
- **G** System Management
 - Misc. Network Settings
 - > Auto Warning Settings
 - > Maintenance
 - > Certificate

Overview

This chapter explains how to configure all settings located under the **System Management** folder in the NPort web console.

System Management

Misc. Network Settings

Accessible IP List

ΜΟΧΛ	Total Solution for Industrial Device Networking					
 Model Name Location 		rtW2250A rtW2250A_69	923	■ IP ■ Serial No.	- 192.168.126.254 - 6923	
		•Ac	cessible	IP List		
- Main Menu	En:	able the acce	ssible IP list ("D	isable" will allow all IP's connection	request.)	
Overview	No.	Active	IP			Netmask
Wizard	1					
Basic Settings		_				
- Network Settings	2					
- Serial Port Settings	3					
- System Management	4					
- Misc. Network Settings						
SNMP Agent	5					
User Table	6					
Authentication Server	7					
System Log Settings	'					
- Auto Warning Settings	8					
- Maintenance	9					
- Certificate	40					
Quatam Manitaring	10					

The **Accessible IP List** page is located under **Misc. Network Settings** in the **System Management** folder. This page is used to restrict access to the NPort by IP address. Only IP addresses on the list will be allowed access to the NPort. You may add a specific address or range of addresses by using a combination of IP address and netmask, as follows:

To allow access to a specific IP address

Enter the IP address in the corresponding field; enter 255.255.255.255 for the netmask.

To allow access to hosts on a specific subnet

For both the IP address and netmask, use 0 for the last digit (e.g., "192.168.1.0" and "255.255.255.0").

To allow access to all IP addresses

Make sure that **Enable the accessible IP list** is not checked.

Refer to the following table for more configuration examples.

Desired IP Range	IP Address Field	Netmask Field
Any host	Disable	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

SNMP Agent Settings

Model - NPort	V2250A IP V2250A 4 Serial No	- 192.168.126.254 4	 MAC Address Firmware
Location - Main Menu Overview		ettings	
Wizard Basic Settings	SNMP Contact name	Enable 💌	
 Network Settings Serial Port Settings System Management Misc. Network Settings Accessible IP List SMP Agent System Log Settings Auto Warning Settings Maintenance Certificate System Monitoring Restart 	Location Read community string Write community string SNMP agent version Read only user name Read only authentication mode Read only password Read only privacy mode Read only privacy Read/write user name Read/write authentication mode	public private V1, V2c, V3 V rouser Disable V Invuser Disable V	
goahead WEBSERVER Best viewed with IE 5 above at resolution 1024 × 768	Read/write password Read/write privacy mode Read/write privacy	Disable 💌	

The **SNMP Agent** page is located under **Misc. Network Settings** in the **System Management** folder. This page is used to configure the SNMP Agent on the NPort.

SNMP

Default	Enable
Options	Enable, Disable
Description	This field enables or disables the SNMP Agent. If enabled, you will need to configure other
	SNMP Agent settings. You will need to enter a community name under Read community
	string.

Contact Name

Default	
Options	free text (e.g., "J Smith")
Description	This is an optional free text field that can be used to specify the SNMP emergency contact
	name, telephone, or pager number.

Location

Default	
Options	free text (e.g., "Building XYZ")
Description	This is an optional free text field that can be used to specify the location for SNMP agents such
	as the NPort.

Read Community String

Default	public
Options	free text (e.g., "public community")
Description	This field specifies the read community string used for the SNMP Agent. This is a text password mechanism that is used to weakly authenticate queries to agents of managed network devices.

Write Community String

Default	private
Options	free text (e.g., "private community")
Description	This field specifies the write community string used for the SNMP Agent. This is a text password mechanism that is used to weakly authenticate changes to agents of managed network devices.

SNMP Agent Version

Default	V1, V2c, V3
Options	V1, V2c, V3 / V1, V2c / V3 only
Description	This field specifies which version(s) of SNMP to support.

Read Only User Name

Default	rouser
Options	free text (e.g., "guest")
Description	This field specifies a username to use for read-only access.

Read Only Authentication Mode

Default	Disable
Options	Disable, MD5, SHA
Description	This field specifies the type of authentication to use for read-only access.

Read Only Password

Default	
Options	free text (e.g., "password123")
Description	This field specifies the password that users must enter for read-only access, if read-only
	authentication is enabled.

Read Only Privacy mode

Default	Disable
Options	Disable, DES_CBC
Description	This field specifies whether DES_CBC data encryption will be used during read-only access.

Read Only Privacy

Default	
Options	free text (e.g., "read only key")
Description	This field specifies the encryption key for read-only access, if read-only privacy is enabled.

Read/Write User Name

Default	rwuser
Options	free text (e.g., "admin")
Description	This field specifies a username to use for read/write access.

Read/Write Authentication Mode

Default	Disable
Options	Disable, MD5, SHA
Description	This field specifies the type of authentication to use for read/write access.

Read/Write Password

Default				
Options	free text (e.g., "password123")			
Description	This field specifies the password that users must enter for read/write access, if read-only			
	authentication is enabled.			

Read/Write Privacy mode

Default	Disable
Options	Disable, DES_CBC
Description	This field specifies whether DES_CBC data encryption will be used during read/write access.

Read/Write Privacy

	•
Default	
Options	free text (e.g., "read write key")
Description	This field specifies the encryption key for read/write access, if read-/write privacy is enabled.

User Table

ModelNameLocation		- NPortW2150A - NPortW2150A_8 -	223	IPSerial No.	- 192.168.35.185 - 8223		 MAC Address Firmware
	Î	Us	er Table				
- Main Menu		No	User Name			Password	
Overview		1					
Wizard							
Basic Settings		2					
- Network Settings		3					
- Serial Port Settings		4					
- System Management		+					
- Misc. Network Settings		5					
Accessible IP List	Ξ	6		1			
SNMP Agent							
User Table		7					
Authentication Server		8					
System Log Settings				1			
- Auto Warning Settings		9					
- Maintenance		10					

The NPort User Table can be used to authenticate users for reverse terminal access and is useful if you do not have an external RADIUS server for authentication. The NPort User Table stores up to 64 entries, with fields for User Name and Password.

Authentication Server

 Model Name Location 	- NPortW2150A - NPortW2150A_2722 -	IPSerial No.	- 192.168.35.185 - 8164	 MAC Address Firmware
- Main Menu Overview Wizard Basic Settings - Network Settings - Serial Port Settings - System Management - Misc. Network Settings Accessible IP List SNMP Agent	*• Authentical RADIUS RADIUS server RADIUS key UDP port RADIUS accounting	1645 Disa	5 v ble v Submit	
User Table Authentication Server System Log Settings				

RADIUS server: If you are using a RADIUS server for user authentication, enter its IP address here.
RADIUS key: If you are using a RADIUS server for user authentication, enter its password here.
UDP port (default=1645): If you are using a RADIUS server, enter its UDP port assignment here.
RADIUS accounting: Use this field to enable or disable RADIUS accounting.

System Log Settings

ΜΟΧΛ°		NPort W2x50A				www.moxa.com	
ModelNameLocation	- NPortW2250A - NPortW2250A_4 -		IPSerial No.	- 192.168.126.254 - 4	-	MAC Address Firmware	- 00:90:E8:22:50:88 - 1.0 Build 12041115
	â Sy:	stem	Log Setti	ngs			
Main Menu	Event Course	Bernard	C				
Overview	Event Group	Local Log	Summary				
Wizard	System		System Cold Start, S	ystem Warm Start			
Basic Settings	Network		DHCP/BOOTP Get IP/Renew, Mail Fail, NTP Connect Fail, IP Conflict, Network Link Down				
- Network Settings			Login Foil JB Chong	ed, Password Changed, Firmw	voro Lingrodo		anort Config Import Config
- Serial Port Settings	Config			tificate Import, Serial Data Log		, ood Certificate III	iport, coning import, coning
- System Management	OpMode		Connect, Disconnec	t Restart			
- Misc. Network Settings							
Accessible IP List				Submit			
SNMP Agent				Oddrift			
System Log Settings							
- Auto Warning Settings							

The **System Log** page is located under **Misc. Network Settings** in the **System Management** folder. This is where you select the type of events that will be logged by the NPort.

Group	Event
System	System Cold Start, System Warm Start
Network	DHCP/BOOTP, Get IP/Renew, Mail Fail, NTP Connect Fail, IP Conflict, Network Link Down
Config	Login Fail, IP Changed, Password Changed, Firmware Upgrade, SSL Certificate Import,
	Config Import, Config Export, Wireless Certificate Import, Serial Data Log Export
Op Mode	Connect, Disconnect, Restart

Auto Warning Settings

Event Settings

ΜΟΧΛ	NPort W2x50A
	rtW2250A IP - 192.168.126.254 MAC Address rtW2250A_4 Serial No 4 Firmware
- Main Menu	System Event Settings
Overview Wizard Basic Settings - Network Settings	Cold start Mail Trap Warm start Mail Trap Config Event Karn start Karn start
- Serial Port Settings - System Management - Misc. Network Settings Accessible IP List SNMP Agent	Console(web/text) login auth fail Mail Trap IP changed Mail Password changed Mail Submit
System Log Settings - Auto Warning Settings Event Settings Betial Form Settings	

The **Event Settings** page is located under **Auto Warning Settings** in the **System Management** folder. This is where you specify how the NPort will notify you of system and configuration events. Depending on the event, different options for notification are available, as shown above. **Mail** refers to sending an e-mail to a specified address. **Trap** refers to sending an SNMP trap.

Event	Description
Cold start	The NPort was powered on, or was restarted after a firmware upgrade.
Warm start	The NPort restarted without powering off.
Console login auth fail An attempt has been made to open the web, Telnet, or serial console	
	password was incorrect.
IP changed	The IP address has been changed.
Password changed	The password to the console has been changed.

Serial Event Settings

MOXA	° N	Port W2x50A				WWW.MOX
 Model Name Location 	- NPortW2250A - NPortW2250A_4 -	IPSerial No.	- 192.168.126.254 - 4			- 00:90:E8:22:50: - 1.0 Build 12041
	â :• Seria	al Event Set	tings			
- Main Menu	Serial Port Event		DCD changed		DSR change	ur l
Overview	Port 1					
Wizard			Mail 📃	Trap 📃	Mail 📃	Trap 🗖
Basic Settings	Port 2		Mail 📃	Trap 📃	Mail 📃	Trap 🗖
- Network Settings	All Ports		Mail 📃	Trap 📃	Mail 📃	Trap 📃
- Serial Port Settings						
- System Management			Submit			
- Misc. Network Setting:	s					
Accessible IP List						
SNMP Agent						
System Log Setting	s					
- Auto Warning Settings	3					
Event Settings						
Serial Event Setting						

The **Serial Event Settings** page is located under **Auto Warning Settings** in the **System Management** folder. This is where you specify how the NPort will notify you of DCD and DSR events for each serial port. **Mail** refers to sending an e-mail to a specified address. **Trap** refers to sending an SNMP trap.

A change in the DCD (Data Carrier Detect) signal indicates that the modem connection status has changed. If the DCD signal changes to low, it indicates that the connection line is down. A change in the DSR (Data Set Ready) signal indicates that the data communication equipment is powered off. If the DSR signal changes to low, it indicates that the data communication equipment is powered down.



ATTENTION

SNMP indicates a change in DCD or DSR signals but does not differentiate between the two. A change in either signal from "-" to "+" is indicated by "link up" and a change in either signal from "+" to "-" is indicated by "link down."

E-mail Alert

MOXV	NPort W2x50A	WV
	NPortW2250A IP - 192.168.126.254 MAC Addres NPortW2250A_4 Serial No 4 Firmware .	s - 00 - 1.0
Main Menu		
Overview Wizard Basic Settings	Mail server (SMTP)	
- Network Settings - Serial Port Settings	User name Password	
- System Management - Misc. Network Settings Accessible IP List	From e-mail address To e-mail address 1	
SNMP Agent System Log Settings	To e-mail address 2 To e-mail address 3 To e-mail address 4	
- Auto Warning Settings Event Settings Ser <u>ial Ev</u> ent Settings	To e-mail address 4	
E-mail Alert		

The **E-mail Alert** page is located under **Auto Warning Settings** in the **System Management** folder. This is where you specify how and where e-mail is sent when e-mail is used for automatic notification of system and serial port events.



ATTENTION

Consult your network administrator or ISP for the mail server settings to use for your network. If these settings are not configured correctly, e-mail notification may not work properly.

Mail Server (SMTP)						
Default						
Options	free text (e.g., "192.168.3.3")					
Description	This field specifies the IP address of the mail server that will be used when sending automatic					
	warning e-mails. If the mail server requires authentication, select My server requires					
	authentication and enter the username and password.					

From e-mail address

Default	
Options	free text (e.g., "jsmith@xyz.com")
Description	This field specifies the e-mail address that will be listed in the e-mail's From field.

To e-mail address 1 to 4

Default	
Options	free text (e.g., "admin@abc.com")
Description	These fields specify the destination e-mail address(es) for the automatic e-mail warnings.

SNMP Trap

ΜΟΧΛ	NPort W2x50A	4					
	- NPortW2250A IP - NPortW2250A_4 Se -	- 192.168.33.21 erial No 4	 MAC Address Firmware 	- 00:90:E8:22:50:88 - 1.0 Build 12041115			
- Main Menu							
Overview Wizard Basic Settings - Network Settings	SNMP trap server IP or dom Trap version Trap community	oain name ○ v2c ⊙ v1					
- Serial Port Settings - System Management - Misc. Network Settings Accessible IP List		Submit					
SNMP Agent System Log Settings - Auto Warning Settings Event Settings							
Serial Event Settings E-mail Alert SNMP Trap							

The **SNMP Trap** page is located under **Auto Warning Settings** in the **System Management** folder. This is where you specify the SNMP trap settings to use for automatic notification of system and serial port events.

SNMP Trap Server IP

Default	
Options	IP address (e.g., "192.168.5.5")
Description	This field specifies the IP address of the SNMP trap server that will receive SNMP traps.

Trap Version

Default	v1
Options	v1, v2c
Description	This field specifies the SNMP trap version to use.

Trap Community

Default	
Options	free text (e.g., "public access")
Description	This field specifies the SNMP trap community.

Maintenance

Console Settings

ModelNameLocation		- NPortW2150A - NPortW2150A_8223 -	i	IP Serial No.		- 192.168.35.185 - 8223		MAC Address Firmware
	Â	: Console Settings						
- Main Menu		Configurations						
Overview		_						
Wizard		HTTP console		Enable	•			
Basic Settings		HTTPS console		Enable	•			
- Network Settings		Telnet console		Enable	•			
- Serial Port Settings	=	SSH console		Enable	•			
- System Management	-	Serial console		Enable	•			
- Misc. Network Settings		Reset button						
- Auto Warning Settings		Reserbution		Always er	nable	•		
- Maintenance Console Settings Ping				Sub	omit			

The **Console Settings** page is located under **Maintenance** in the **System Management** folder. This is where you enable or disable access to the various NPort configuration consoles, as well as the behavior of the reset button. You may modify **HTTP console**, **HTTPS console**, **Telnet console**, **SSH console**, **Serial Console**, and **Reset button**.

HTTP Console

Default	Enable
Options	Enable, Disable
Description	This field enables or disables access to the HTTP (web) console.

HTTPS Console

Default	Enable
Options	Enable, Disable
Description	This field enables or disables access to the HTTPS (web) console.

Telnet Console

Default	Enable
Options	Enable, Disable
Description	This field enables or disables access to the Telnet console.

SSH Console

Default	Enable
Options	Enable, Disable
Description	This field enables or disables access to the SSH console.

Serial Console

Default	Enable
Options	Enable, Disable
Description	This field enables or disables access to the serial console.

Reset Button

Default	Always Enable					
Options	Always Enable, Disable after 60 sec					
Description	This field specifies the behavior of the hardware reset button.					
	Always Enable: The reset button will be operate as usual.					
	Disable after 60 sec: The reset button will only be effective for the first 60 seconds that the					
	NPort is powered on.					

Ping

ΜΟΧΛ		NPo	rt W2x	50A		
	- NPortW2250 - NPortW2250 -			IP Serial No.	- 192.168.126.254 - 4	MAC Address Firmware
- Misc. Network Settings Accessible IP List SNMP Agent		Ping T	est			
System Log Settings - Auto Warning Settings		Ping Destination	on			
Event Settings		Destination				
Serial Event Settings E-mail Alert					Activate	
SNMP Trap - Maintenance						
Console Settings						
Ping						
Firmware Upgrade						

The **Ping** page is located under **Maintenance** in the **System Management** folder. It provides a convenient way to test an Ethernet connection or verify an IP address. Enter the IP address or domain name in the Destination field and click **[Activate].** The results will be displayed immediately.

Firmware Upgrade

MOXA		NPort W2x50A			www.moxa.com
 Model Name Location 	- NPortW2250A - NPortW2250A_4 -	IPSerial No.	- 192.168.33.21 - 4	 MAC Address Firmware 	- 00:90:E8:22:50:88 - 1.0 Build 12041115
	Firm	nware Upgra	ade		
- Main Menu	!!! Warnir	na !!!			
Overview			a Damada Grannara will dia are	denomination of a sufficient stick of	hanges and restart the system!
Wizard			e: Opgrade firmware will discar	-	
Basic Settings	Select firm	nware file		Browse	
- Network Settings					
- Serial Port Settings			Submit		
- System Management					
- Misc. Network Settings	6				
Accessible IP List					
SNMP Agent					
System Log Settings	3 =				
- Auto Warning Settings					
- Maintenance					
Console Settings					
Ping					
Firmware Upgrade					

The **Firmware Upgrade** page is located under **Maintenance** in the **System Management** folder. This is where you can update the NPort firmware. After obtaining the latest firmware from www.moxa.com, select or browse for the firmware file in the **Select firmware file** field. Before clicking **[Submit]**, it is a good idea to save the NPort configuration using the **Configuration Export** page, since the firmware upgrade process may cause all settings to revert to factory defaults.

Configuration Import

MOXA	NF	Port W2x50A			www.moxa.com
 Model Name Location 	- NPortW2250A - NPortW2250A_4 -	IPSerial No.	- 192.168.33.21 - 4	 MAC Address Firmware 	- 00:90:E8:22:50:88 - 1.0 Build 12041115
	Confi	iguration Ir	nport		
- Main Menu	Configuratio	on Import			
Overview		-	-		
Wizard	Select config			Browse	
Basic Settings	IP configurat	ion	Import all configurations inc	cluding IP configurations.	
- Network Settings					
- Serial Port Settings			Submit		
- System Management					
 Misc. Network Settings 	3				
Accessible IP List					
SNMP Agent					
System Log Settings	3) 📋				
- Auto Warning Settings					
- Maintenance					
Console Settings					
Ping					
Firmware Upgrade					
Configuration Impor	t i i i i i i i i i i i i i i i i i i i				
Configuration Export					

The **Configuration Import** page is located under **Maintenance** in the **System Management** folder. This is where you can load a previously saved or exported configuration. Select or browse for the configuration file in the **Select configuration file** field. If you also wish to import the IP configuration (i.e., IP address, netmask, and gateway), make sure that **Import all configurations including IP configurations** is checked.

ΜΟΧΛ	⁸ NF	Port W2x50A		
	- NPortW2250A - NPortW2250A_4 -	■ IP ■ Serial No.	- 192.168.126.254 - 4	MAC AddressFirmware
- Misc. Network Settings Accessible IP List SNMP Agent	[≜] :∙Conf	iguration Ex	port	
System Log Settings - Auto Warning Settings	Configurati	ion Export		
Event Settings Serial Event Settings		1	Export	
E-mail Alert SNMP Trap				
- Maintenance Console Settings				
Ping Firmware Upgrade				
Configuration Import Configuration Export				

Configuration Export

The **Configuration Export** page is located under **Maintenance** in the **System Management** folder. This is where you can save the NPort's current configuration to a file on the local host. Click **[Download]** to begin the process. A window should appear asking you to open or save the configuration text file.

Load Factory Default

ΜΟΧΛ	NPo	rt W2x50A			www.moxa.com
	- NPortW2250A - NPortW2250A_4 -	IPSerial No.	- 192.168.33.21 - 4	 MAC Addres Firmware 	s - 00:90:E8:22:50:88 - 1.0 Build 12041115
- System Management - Misc. Network Settings Accessible IP List SNMP Agent System Log Settings - Auto Warning Settings Event Settings Serial Event Settings E-mail Alert SNMP Trap - Maintenance Console Settings Ping Firmware Upgrade Configuration Import Load Factory Default	Click on Submi netmask, gatev Reset to Facto Keep IP set	way and WLAN profile sett	uding the console password, t	to the factory default values. To hat Keep IP Settings is enabled	

The Load Factory Default page is located under Maintenance in the System Management folder. Click [Submit] to reset all settings to the factory defaults. You can preserve the NPort's existing IP settings (i.e., IP address, netmask, gateway, WLAN profile, and all certificates) by making sure Keep IP settings is checked before clicking [Submit].

Change Password

MOXA	°	NPort \	W2x50A		
ModelNameLocation	- NPortW22 - NPortW22 -		■ IP ■ Serial N	- 192.168.126.254 o. - 4	 MAC Address Firmware
 Misc. Network Setting Accessible IP List SNMP Agent System Log Setting Auto Warning Settings Event Settings Serial Event Setting E-mail Alert SNMP Trap Maintenance Console Settings Ping Firmware Upgrade Configuration Impor Load Factory Defau Change Password Certificate 	s s s	Password Account name Old password New password Confirm password		/ord	

The **Change Password** page is located under **Maintenance** in the **System Management** folder. To change the password, choose the account name first, and then enter the old password in the **Old password** field. Enter the new password twice, once in the **New password** field and once in the **Confirm password**. Leave these fields blank to remove password protection.



ATTENTION

If you forget the password, the ONLY way to configure the NPort is by loading the factory defaults with the reset button. All settings will be lost.

Before setting the password, you may want to first export the configuration to a file. Your configuration can then be easily imported back into the NPort if necessary.

Certificate

Ethernet SSL Certificate Import

ΜΟΧΛ	• NF	ort W2x50A		
 Model Name Location 	- NPortW2250A - NPortW2250A_4 -	■ IP ■ Serial No.	- 192.168.126.254 - 4	MAC AddressFirmware
SNMP Trap - Maintenance Console Settings Ping	• Ether		ertificate Impor	t
Firmware Upgrade Configuration Import Configuration Export Load Factory Default Change Password	Issued by Valid	ertificate/key file	192.168.126.254 192.168.126.254 from 2012/4/19 to 2072/4/4	Browse
- Certificate Ethernet SSL Certifica WLAN SSL Certificat			Submit	

The **Ethernet SSL Certificate Import** page is located under **Certificate** in the **System Management** folder. This is where you can load the Ethernet SSL certificate. Select or browse for the certificate file in the **Select SSL certificate/key file** field.

WLAN SSL Certificate Import

ΜΟΧΛ	°, NP	ort W2x50A			
	- NPortW2250A - NPortW2250A_4 -	IPSerial No.	- 192,168,126,254 - 4	-	MAC Address Firmware
SNMP Agent System Log Settings - Auto Warning Settings Event Settings	So WLAN		ficate Import		
Serial Event Settings E-mail Alert SNMP Trap	Issued to Issued by		Not installed Not installed		
- Maintenance Console Settings	Valid Select SSL co	ertificate/key file	from Not installed to Not installed		Browse
Ping Firmware Upgrade Configuration Import			Submit		
Configuration Export Load Factory Default Change Password					
- Certificate Ethernet SSL Certificat WLAN SSL Certificate					

The **WLAN SSL Certificate Import** page is located under **Certificate** in the **System Management** folder. By default, the WLAN SSL certificate is automatically generated by the NPort based on the IP address of the wireless interface. You can also import a certificate. Select or browse for the certificate file in the **Select SSL certificate/key file** field.

WPA Server Certificate Import

ΜΟΧΛ	NP	ort W2x50A		
Model Name Location Accessible in List	- NPortW2250A - NPortW2250A_4 -	IPSerial No.	- 192.168.126.254 - 4	 MAC Address Firmware
SNMP Agent System Log Settings - Auto Warning Settings Event Settings			ificate Import	
Serial Event Settings	Issued to	1	Not installed	
E-mail Alert	Issued by	1	Not installed	
SNMP Trap	Valid	ſ	rom Not installed to Not installed	
- Maintenance	Select WDA s	erver certificate file		Browse
Console Settings	Street in A c			Diowse
Ping			Submit	
Firmware Upgrade			Submit	
Configuration Import				
Configuration Export				
Load Factory Default				
Change Password				
- Certificate				
Ethernet SSL Certifica	ate Imp			
WLAN SSL Certificat	e Impc			
WPA Server Certifica	te Imp			

The **WPA Server Certificate Import** page is located under **Certificate** in the **System Management** folder. This is where you can load the WPA server certificate. Select or browse for the certificate file in the **Select WPA server certificate file** field.

You must install the trusted server certificate from the RADIUS server in order to enable **Verify server certificate** in the WLAN **Security** settings. This certificate will then be used by the NPort to authenticate the RADIUS server.

WPA User Certificate Import

ΜΟΧΛ	NPort W2x50A	
NameLocation	- NPortW2250A IP - 192,168.126.254 - NPortW2250A_4 Serial No 4 -	 MAC Address Firmware
SNMP Agent System Log Settings - Auto Warning Settings		
Event Settings Serial Event Settings E-mail Alert		
SNMP Trap - Maintenance	Issued by Not installed Valid from Not installed to Not ins Select WPA user certificate file	
Console Settings Ping	Select we a user certificate life	Browse
Firmware Upgrade Configuration Import Configuration Export		
Load Factory Default Change Password		
- Certificate Ethernet SSL Certificat	te Im;	
WLAN SSL Certificate WPA Server Certificat WPA User Certificate	te Imp	

The **WPA User Certificate Import** page is located under **Certificate** in the **System Management** folder. This is where you can load the WPA user certificate. Select or browse for the certificate file in the **Select WPA user certificate file** field.

The user certificate of the NPort must be installed in the RADIUS server when the NPort uses WPA (WPA2)/TLS. The trusted server certificate of the RADIUS server must also be installed in the NPort.

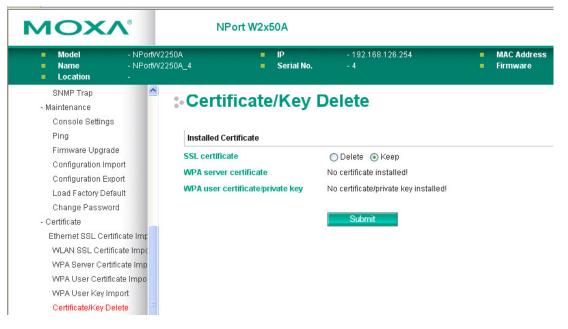
WPA User Key Import

ΜΟΧΛ°	NPort W2x50A		
Model - NPortM Name - NPortM Location -	V2250A IP V2250A_4 Serial N	- 192.168.126.254 o. - 4	MAC AddressFirmware
SNMP Trap - Maintenance Console Settings Ping	WPA User Key Installed Certificate	Import	
Firmware Upgrade Configuration Import Configuration Export Load Factory Default Change Password - Certificate Ethernet SSL Certificate Imp WLAN SSL Certificate Impo WPA Server Certificate Impo WPA User Certificate Impo WPA User Key Import	Key length Select SSL certificate/key file Password for private key	Not install!! Submit	Browse

The **WPA User Key Import** page is located under **Certificate** in the **System Management** folder. This is where you can load the WPA user certificate. Select or browse for the user private key file in the **Select WPA user privacy key file** field and enter the **Password for the private key**.

The user private key of the NPort must be installed in the RADIUS server when the NPort uses WPA(WPA2)//TLS. The trusted server certificate of RADIUS server must also be installed on the NPort.

Certificate/Key Delete



The **Certificate/Key Delete** page is located under **Certificate** in the **System Management** folder. This page is where you can delete certificates or WPA keys that have been installed on the model. When you click **[Submit]**, any certificate or key that has been set to **Delete** will be deleted from the NPort.

Web Console: System Monitoring

The following topics are covered in this chapter:

- Overview
- System Monitoring
 - > Serial Status
 - > System Status

Overview

This chapter explains how to use the **System Monitoring** functions on the NPort web console. These functions allow you to monitor many different aspects of operation.

System Monitoring

Serial Status

Serial to Network Connections

	N	Port W2x50A							WWW.M	oxa.
Model - NPortW2 Name - NPortW2 Location -		IPSerial No.	-	192.168.126 4	.254				- 00:90:E8:2) - 1.0 Build 12	
Console Settings 🔄 Ping Firmware Upgrade	:•Seria	al to Networ	k C	onne	ctions	5				
Configuration Import	🔽 Auto rei	resh								
Configuration Export	Port OP	Mode				Conr	ections			
Load Factory Default			[1	[1	[1	[1
Change Password	1	Real COM	i	i	ĩ	1	i	i	i	i
- Certificate	2	Real COM	1	1	[1	1]]	1
Ethernet SSL Certificate Imp	2	Real COM	[1	[1]	1	[1
WLAN SSL Certificate Impo										
WPA Server Certificate Imp										
WPA User Certificate Impo										
WPA User Key Import										
Certificate/Key Delete										
- System Monitoring										
- Serial Status										
Serial to Network Connectic										
Serial Port Status										

The **Serial to Network Connections** page is located under **Serial Status** in the **System Monitoring** folder. On this page, you can monitor the current operation mode and host connection status for each serial port.

Serial Port Status

νοχν			ort W2x50A								v.mox	
	- NPortW2250A - NPortW2250A -		■ IP ■ Seri		- 192.16 - 4	3.126.254	-		Address vare		:E8:22:50 Jild 12041	
Console Settings Ping Firmware Upgrade	•	Serial	Port S	tatus								
Configuration Import Configuration Export		Auto refree	sh TxCnt	RxCnt	ъ	TotalCnt	RxTotalCnt	DSR	DTR	RTS	CTS	DCD
Load Factory Default Change Password		1	0		0	0	(-	0	•		0
- Certificate Ethernet SSL Certificat WLAN SSL Certificat WPA Server Certificat WPA User Certificate WPA User Key Impor Certificate/Key Delete System Monitoring - Serial Status Serial to Network Con Serial Port Status Serial Port Status	e Impo Impo t e nectic											

The **Serial Port Status** page is located under **Serial Status** in the **System Monitoring** folder. On this page, you can monitor the signal and data transmission status for each serial port.

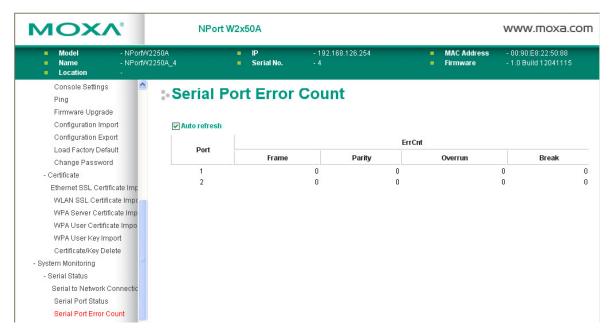
TxCnt: number of Tx packets (to device) for the current connection

RxCnt: number of Rx packets (from device) for the current connection

TxTotalCnt: number of Tx packets since the NPort was powered on

RxTotalCnt: number of Rx packets since the NPort was powered on

Serial Port Error Count



The **Serial Port Error Count** page is located under **Serial Status** in the **System Monitoring** folder. On this page, you can view the current number of frame, parity, overrun, and break errors for each serial port.

Serial Port Settings

ΜΟΧΛ		NPort W2	X50A						www.moxa.co		
Model - NPortW22 Name - NPortW22 Location -				- 192.16 - 4	8.126.254			AC Address rmware	- 00:90:E8:22:50:88 - 1.0 Build 12041115		
Console Settings 🔷 Ping Firmware Upgrade	: Se	rial Po	rt Setti	ngs							
Configuration Import	Aut	o refresh									
Configuration Export					1	Flow Control		1			
Load Factory Default	Port	Baud Rate	Data Bits	Stop Bits	Parity	RTS/CTS	XON/XOF	FIFO	Interface		
Change Password	1	19200	8	1	None	OFF	OFF	Enable	RS-232		
- Certificate Ethernet SSL Certificate Imr	2	9600	8	1	None	OFF	OFF	Enable	RS-232		
WLAN SSL Certificate Impo WPA Server Certificate Imp											
WPA User Certificate Imp											
WPA User Certificate Impo											
Certificate/Key Delete											
- System Monitoring											
- Serial Status											
Serial to Network Connectic											
Serial Port Status											
Serial Port Error Count											
Serial Port Settings											

The **Serial Port Settings** page is located under **Serial Status** in the **System Monitoring** folder. On this page, you can view the current communication settings for each serial port.

System Status

ΜΟΧΛ		NPort W	2x50A			www.moxa.
Name - NP(Location -	ortW2250A ortW2250A_4		IPSerial No.	- 192.168.126.254 - 4	 MAC Address Firmware 	- 00:90:E8:22:50:88 - 1.0 Build 12041115
Configuration Import Configuration Export Configuration Export Load Factory Default Change Password	Auto refre		Conne	ctions		
- Certificate	Protocol	Recv-Q	Send-Q	Local Address	Foreign Address	State
Ethernet SSL Certificate Im	TCP	0	0	*:4900	*:0	LISTEN
WLAN SSL Certificate Imp		0	0	*:966	*:0	LISTEN
WPA Server Certificate Imp	TCP	0	0	*:967	*:0	LISTEN
WPA User Certificate Impo	TCP	0	0	*:80	*:0	LISTEN
WPA User Key Import	TCP	0	0	*:950	*:0	LISTEN
Certificate/Key Delete	TCP	0	0	*:22	*:0	LISTEN
- System Monitoring	TCP	0	0	*:951	*:0	LISTEN
- Serial Status	TCP	0	0	*:23	*:0	LISTEN
Serial to Network Connection Serial Port Status	TCP	0	0	* 443	*•0	LISTEN
Serial Port Status	TCP	0	0	192.168.126.254:80	.0	TIME WAIT
Serial Port Settings	TCP	ů.	0	192.168.126.254:80	192.168.126.11:3892	TIME WAIT
- System Status	TCP	0	0	192.168.126.254:80	192.168.126.11:3898	TIME_VVAIT
Network Connections	тср	0	0	192.168.126.254:80	192.168.126.11:3868	TIME_WAIT
Serial Data Log	TCP	0	0	192.168.126.254:80	192.168.126.11:3878	TIME_VVAIT
System Log	тср	0	0	192.168.126.254.80	192.168.126.11:3878	TIME_WAIT
WLAN Status						and the second second second
WLAN Site Survey	TCP	0	0	192.168.126.254:80	192.168.126.11:3863	TIME_WAIT
- Restart	TCP	0	1275	192.168.126.254:80	192.168.126.11:3908	ESTABLISHED
goahead	TCP	0	0	192.168.126.254:80	192.168.126.11:3873	TIME_WAIT
WEBSERVER	TCP	0	0	192.168.126.254:80	192.168.126.11:3883	TIME_WAIT
est viewed with IE 5 above at resolution 1024 × 768	🗸 ТСР	0	0	192.168.126.254:80	192.168.126.11:3897	TIME_WAIT

Network Connections

The **Network Connections** page is located under **System Status** in the **System Monitoring** folder. On this page, you can view the current status of any network connection to the NPort.

Serial Data Log

Data logs for each serial port can be viewed in ASCII or HEX format. After selecting the serial port and format, you may click **Select** all to select the entire log if you wish to copy and paste the contents into a text file. The **Clear log** and **Refresh** buttons allow you to clear or refresh the log contents.

ΜΟΧΛ	NPort W2x50A				
	tW2250A tW2250A_4	IPSerial No.	- 192.168.126.254 - 4	-	MAC Address Firmware
Configuration Import Configuration Export Load Factory Default Change Password	Download Ser	Data Log			
Certificate Ethernet SSL Certificate Imp WLAN SSL Certificate Imp WPA Server Certificate Imp WPA User Certificate Impo WPA User Key Import Certificate/Key Delete System Monitoring Serial Status Serial Status Serial Port Status Serial Port Status Serial Port Status Serial Port Status Serial Port Settings System Status Network Connections	Serial port Download form	iat	Port1 ♥		

The **Serial Data Log** page is located under **System Status** in the **System Monitoring** folder. This is where you can download the current data log for a serial port. Select the desired serial port in the **Select port** field. Select the desired data format in the **Download format** field. Click **[Clear log]** to clear the log contents.

The data log includes all data sent or received by the specified serial port since the NPort was powered on. The maximum size of the log is 64 KB.

System Log

ΜΟΧΛ	NF	ort W2x	50A			
Model - NPortW Name - NPortW Location -		-	IP Serial No.	- 192.168.126.254 - 4		MAC Address Firmware
Configuration Import	: Syste	em Lo	og			
Load Factory Default Change Password	System Log	ľ				
- Certificate						~
Ethernet SSL Certificate Imp						
WLAN SSL Certificate Impo						
WPA Server Certificate Imp						
WPA User Certificate Impo						
WPA User Key Import						
Certificate/Key Delete						
- System Monitoring						
- Serial Status						
Serial to Network Connectic						
Serial Port Status						
Serial Port Error Count						
Serial Port Settings						
- System Status						~
Network Connections						
Serial Data Log 📃						
System Log				Clear log Refres	h	

The **System Log** page is located under **System Status** in the **System Monitoring** folder. This is where you can view the log of NPort system events. Click **[Clear log]** to clear the log contents. Click **[Refresh]** to refresh the log contents.

WLAN Log (This function is supported by firmware V1.10 or above)

ΜΟΧΛ	То	tal Solution for Industrial [Device Networking	
 Model Name Location 	- NPortW2250A - NPortW2250A_6923 -	■ IP ■ Serial No.	- 192.168.126.254 - 6923	
	:• WLAN Log	Ş		
Main Menu	WLAN Log			
Overview	2015/08/28 15:41:10 Disco	nnect from 06:90:e8:41:a9:e9, reasor	n=2 status=3	*
Wizard	2015/08/28 15:41:11 Scan		1-2, 510103-5	
Basic Settings	2015/08/28 15:41:11 Try to 1			=
- Network Settings	2015/08/28 15:41:11 Try to 1 2015/08/28 15:41:11 Scan			
- Serial Port Settings	2015/08/28 15:41:11 Try to			
-	2015/08/28 15:41:11 Try to 1			
- System Management	2015/08/28 15:41:11 No su 2015/08/28 15:41:11 wpa s			
- System Monitoring	2015/08/28 15:41:16 Scan			
- Serial Status		:90:e8:41:a9:e9 ssid='profile1'		
- System Status		=2437 level=167 qual=6 strength=36	%	
Network Connections	2015/08/28 15:41:16 Try to 2015/08/28 15:41:16 06:90			
Serial Data Log	2015/08/28 15:41:16 skip -			
System Log	2015/08/28 15:41:16 Try to			
	2015/08/28 15:41:16 wpa_s 2015/08/28 15:41:16 Conn	supplicant_need_to_roam ect to 06:90:e8:41:a9:e9 on freg 2437		
WLAN Log	2015/08/28 15:42:23 Low s			
WLAN Status	2015/08/28 15:42:23 Scan			*
- Restart	2015/08/28 15:42:23 01.06	:90:e8:41:a9:e9 ssid='profile1'		

The **WLAN Log** page is located under **System Status** in the **System Monitoring** folder. This is where you can view the log between the device server and the access points. It's a good tool for an engineer to troubleshoot if there is any issue with the wireless connection. Click **[Clear log]** to clear the log contents. Click **[Download]** to save the log to a txt file for an engineer to troubleshoot, e.g., Moxa's Technical Support Team. Click **[Refresh]** to refresh the log contents.

WLAN Status

vrtw2250A vrtw2250A_4 So WLAI Information Active profile IP configurat		- 192.168.126.254 o 4 N/A	:	MAC Address Firmware
Information Active profile		N/A		
Henre prome	e name	N/A		
IP address Netmask Gateway Network type		static N/A N/A N/A N/A		
SSID Channel Authentication Encryption Region Signal streng	on	N/A N/A N/A N/A CN N/A N/A		
	Network typ Operation m SSID Channel Authenticati Encryption Region Signal stren	Network type Operation mode SSID Channel Authentication Encryption	Network type N/A Operation mode N/A SSID N/A Channel N/A Authentication N/A Encryption N/A Region CN Signal strength N/A	Network type N/A Operation mode N/A SSID N/A Channel N/A Authentication N/A Encryption N/A Region CN Signal strength N/A

The **WLAN Status** page is located under **System Status** in the **System Monitoring** folder. This is where you can view the current WLAN settings and status.

10

Web Console: Restart

The following topics are covered in this chapter:

- Overview
- Restart
 - > Restart System
 - > Restart Ports

Overview

This chapter explains how to use save your configuration changes and restart the NPort using the NPort web console. Configuration changes will not be effective until they are saved and the NPort is rebooted.

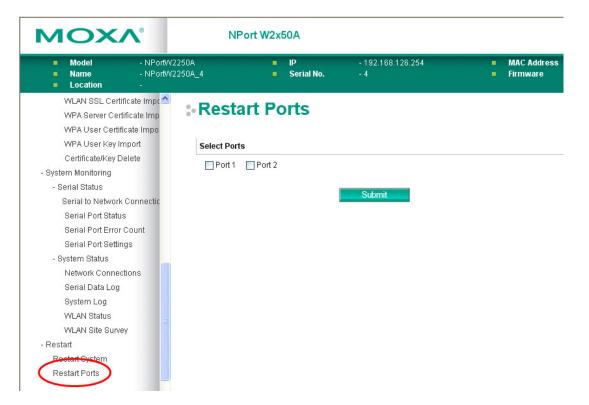
Restart

Restart System

ΜΟΧΛ°	NPort W2x50A			www.moxa.com
Model - NPortW2 Name - NPortW2 Location -		- 192.168.126.254 - 4	 MAC Address Firmware 	- 00:90:E8:22:50:88 - 1.0 Build 12041115
WLAN SSL Certificate Impc 🗙 WPA Server Certificate Imp WPA User Certificate Impo WPA User Key Import	System restart			
Certificater/Key Delete - System Monitoring - Serial Status Serial I to Network Connectic Serial Port Status Serial Port Status Serial Port Settings - System Status Network Connections Serial Data Log System Log WLAN Status WLAN Status MLAN Status MLA	_	disconnect all serial and Etherr nges will be discarded, and data Submit		

The **Restart System** page is located in the **Restart** folder. Click **[Restart]** to restart the NPort, and the new settings will take effect upon restart.

Restart Ports



The **Restart Ports** page is located in the **Restart** folder. Select the desired serial and click **[Select All]** to select all serial ports. Click **[Submit]** to restart the selected serial ports.

11

Installing and Configuring the Software

The following topics are covered in this chapter:

Overview

Device Search Utility (DSU)

- Installing the DSU
- > Finding NPort Device Servers on a Network
- Modifying NPort IP Addresses
- > Upgrading NPort Firmware

D NPort Windows Driver Manager

- > Installing NPort Windows Driver Manager
- Adding Mapped Serial Ports
- > Configuring Mapped Serial Ports
- > Command-Line Installation/Removal

Linux Real TTY Drivers

- > Basic Steps
- > Installing Linux Real TTY Driver Files
- > Mapping TTY Ports
- Removing Mapped TTY Ports
- Removing Linux Driver Files

UNIX Fixed TTY Drivers

- Installing the UNIX Driver
- > Configuring the UNIX Driver

Overview

This chapter describes how to install and use the NPort Windows Driver Manager, the Device Search Utility (DSU), and NPort Linux and UNIX drivers. These items are located on the Document & Software CD that is provided with the NPort W2150A/W2250A Series.

NPort Windows Driver Manager is a utility that installs and manages NPort COM drivers for COM mapping. The **Device Search Utility (DSU)** is a utility for the management of NPort device servers over the network. You may also use the Device Search Utility (DSU) to upgrade the firmware.

Device Search Utility (DSU)

Installing the DSU

1. The main installation window will open when you insert the Document & software CD. Click **INSTALL UTILITY** to proceed. Once the program starts running, click **Yes** to proceed.

2. The installation wizard will open. Click **Next** to proceed.

🔂 Setup - DSU				
	Welcome to the DSU Setup Wizard			
	This will install DSU Ver2.0 on your computer.			
	It is recommended that you close all other applications before continuing.			
	Click Next to continue, or Cancel to exit Setup.			
	Next > Cancel			

3. Select a destination location and click **Next** to proceed.

광 Setup - DSU	- • •
Select Destination Location Where should DSU be installed?	
Setup will install DSU into the following folder.	
To continue, click Next. If you would like to select a different folder, click	Browse.
C: Program Files (x86) Moxa DSU	Browse
At least 2.2 MB of free disk space is required.	
< <u>B</u> ack Next >	Cancel

4. Indicate if you wish to create a desktop icon and click **Next** to proceed.

😼 Setup - DSU	- • ×
Select Additional Tasks Which additional tasks should be performed?	
Select the additional tasks you would like Setup to perform while installing dick Next.	g DSU, then
Additional icons:	
Create a desktop icon	
< <u>Back</u> Next >	Cancel

5. Verify the installation parameters and click **Install** to proceed.

🔂 Setup - DSU	- • •
Ready to Install Setup is now ready to begin installing DSU on your computer.	
Click Install to continue with the installation, or click Back if you want change any settings.	to review or
Destination location: C:\Program Files (x86)\Moxa\DSU	*
4	
< <u>B</u> ack	all Cancel

6. The wizard will begin installing the files. After the files have been installed, click **Finish** to complete the installation.

🕞 Setup - DSU	
	Completing the DSU Setup Wizard Setup has finished installing DSU on your computer. The application may be launched by selecting the installed icons. Click Finish to exit Setup.
	Einish

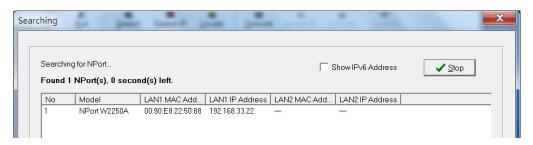
Finding NPort Device Servers on a Network

You can use the Device Search Utility (DSU) to look up or change the IP address of any NPort device server on the network. Since the utility searches for devices based on their MAC address rather than IP address, all NPort units that are connect to the LAN will be located, regardless of whether or not they are part of the same subnet as the host.

1. In the Device Search Utility (DSU), click **Search** on the main toolbar.

D NPort Search U	Jtility							X
	ew <u>H</u> elp							_
	arch) 🚨	' <u>≭</u> Locate	<u> </u>	₽ }ssign IP	U n-Lock	2 Upgrade		
No 🛆 Model	LAN1 M	IAC Addr	AN1 IP Address	LAN2 N	1AC Addr	LAN2 IP Address	Status	

2. The utility will being searching for NPort device servers.



3. When the search is complete, the NPort units that were found will be listed in the main window.

D NPor	t Search Utility	10.00	2.84	a 🤋				
<u> </u>	unction ⊻iew <u>H</u> e	elp						
<u> </u>		🧟 Search IP I	≝ _ocate	 _Console	Lessign IP	Un-Lock	£ U <u>p</u> grade	
No 🛆	Model	LAN1 MAC A	Addr LA	N1 IP Address	LAN2 M	AC Addr	LAN2 IP Address	Status
1	NPort W2250A	00:90:E8:22:	50:88 19	2.168.33.22	1		19 7 92	

Modifying NPort IP Addresses

1. Once the Device Search Utility (DSU) has found NPort device servers on the LAN, you can modify any unit's IP address. Select the desired NPort in the main window and click **Assign IP** on the main toolbar. This will modify the IP address for the active network connection (LAN or WLAN).

P] N	Por	t Sear	rch Utility								x
<u> </u>	Eile	e F <u>u</u>	Inction	⊻iew <u>H</u> e	elp			\frown				
		<u>I</u> Exit		<u> </u>	🙎 Search IP	' <u>≭</u> Locate	<u>C</u> onsole	Assign IP	Jn-Lock	⊈ U <u>p</u> grade		
N	ο	Δ.	Mode	əl	LAN1 MA	C Addr	LAN1 IP Addre	ess LANEN	AC Addr	LAN2 IP Address	Status	
	1		NPor	t W2250A	00:90:E8:2	2:50:88	192.168.33.22			=		

2. Enter the new IP address and netmask. If multiple units were selected, you may assign addresses sequentially by clicking **Assign IP Sequentially**. Click **OK** to proceed.

No	MAC Address	IP Address	Netmask	Gateway	
1	00:90:E8:22:50:8	192.168.33.22	255.255.255.0		
		Ad	ssign IP Sequer	tially	

3. The selected NPort will be restarted by the Device Search Utility (DSU) with the new IP address.



Upgrading NPort Firmware

1. Once the Device Search Utility (DSU) has found NPort device servers on the LAN, you can upgrade any unit's firmware. Right-click the desired NPort in the main window and select **Upgrade**.

<u>I</u> Exi			₽ rch <u>I</u> P	 Locate	<u>C</u> onsol	e <u>A</u> s	sign IP	u n-Lock	🛃 Upgrade		
lo Z	Model NPort W2250A	100	.00.00.00		LAN1 IP Ad		LAN2	MAC Addr	LAN2 IP Addr	ess Stat	us
		2 S ≝ L	earch Eearch I Locate (I Locate (I	Pv4)	Ctrl+B Ctrl+S Ctrl+L						
				(IPv4) (IPv4) (IPv6)							
		10 L	Assign I Jn-Lock Jpgrade Accessib	e	Ctrl+I						

2. Select the new firmware file and click **OK** to proceed. To obtain the latest firmware for the NPort W2150A/W2250A, visit www.moxa.com.

Dpgrade file		
Select Firmware File		
File path:		
	Brows	ie .
	🖉 ОК 🛛 🗶 Сал	ncel

3. The utility will begin upgrading the firmware for the selected unit. Do not disconnect or power off the unit while the firmware is being upgraded.

Upgra	ade Process				<u>_ ×</u>
P	rocessing., please w	/ait	🗙 Cancel		
No	Model	MACAddress	IP Address	Status	
1	NPort W2250A	00:90:E8:22:50:88	192.168.33.22	Write Flash - 20%	
1					

4. When the displayed status is OK, click **Close** to complete the process.

Upgra	ade Process				<u> </u>
P	rocessing., please w	rait		👖 <u>C</u> lose	
No	Model	MAC Address	IP Address	Status	
1	NPort W2250A	00:90:E8:22:50:88	192.168.33.22	ОК	



ATTENTION

The Device Search Utility (DSU) supports upgrading the firmware of multiple units simultaneously if each unit is the same model. Hold down the CTRL key to add additional units to your selection; hold down the SHIFT key to select a block of units.

NPort Windows Driver Manager

NPort Windows Driver Manager installs remote NPort serial ports as new COM ports on your Windows PC. When the drivers are installed and configured, devices that are attached to serial ports on the NPort will be treated as if they were attached to your PC's own COM ports. The NPort serial port must be configured for Real COM mode when being mapped to a COM port.

Installing NPort Windows Driver Manager

- The main installation window will open when you insert the Document & software CD. Click [INSTALL COM Driver] to proceed. Once the installation program starts running, click [Yes] to proceed.
- 2. The installation wizard will open. Click **Next** to proceed.

🜈 Setup - NPort Win	dows Driver Manager
	Welcome to the NPort Windows Driver Manager Setup Wizard This will install NPort Windows Driver Manager Ver1.4 on your computer. It is recommended that you close all other applications before continuing. Click Next to continue, or Cancel to exit Setup.
	[<u>N</u> ext >]] Cancel

3. Select a destination location and click **Next** to proceed.

🐻 Setup - NPort Windows Drive	er Manag	er	_ 🗆 🗙
Select Destination Location Where should NPort Windows Driver Manage	er be installed?		
Setup will install NPort Windows Dri	ver Manager inti	o the following fo	older.
To continue, click Next. If you would like to s	elect a different	folder, click Bro	wse.
C:\Program Files\NPortDrvManager		В	Iowse
At least 1.4 MB of free disk space is required.			
	< <u>B</u> ack	<u>N</u> ext>	Cancel

4. Select a folder for the program shortcuts and click **Next** to proceed.

🕆 Setup - NPort Windows Driver Manager
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 Windows Driver Manager Browse
< <u>B</u> ack <u>N</u> ext > Cancel

5. Verify the installation parameters and click **Install** to proceed.

🕼 Setup - NPort Windows Driver Manager	_ 🗆 🗙
Ready to Install Setup is now ready to begin installing NPort Windows Driver Manager on your computer.	
Click Install to continue with the installation, or click Back if you want to review o change any settings.	ır
Destination location: C:\Program Files\NPortDrvManager	<u> </u>
Start Menu folder: NPort Windows Driver Manager	
	T
<u> ۲</u>	
< <u>B</u> ack	Cancel

6. If you see a warning that the software has not passed Windows Logo testing, click **Continue Anyway** to proceed.

Softwa	are Installation
1	The software you are installing has not passed Windows Logo testing to verify its compatibility with Windows XP. (<u>Tell me why</u> <u>this testing is important.</u>) Continuing your installation of this software may impair or destabilize the correct operation of your system
	either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the software vendor for software that has passed Windows Logo testing.
	<u>Continue Anyway</u> <u>STOP Installation</u>

7. The wizard will begin installing the files. When the files have been installed, click **Finish** to complete the installation.



Adding Mapped Serial Ports

NPort Windows Driver Manager adds a COM port to your PC that is mapped to an NPort serial port. The destination NPort serial port must be set to Real COM mode.

1. In NPort Windows Driver Manager, click Add on the main toolbar.

😵 NPort Windows	Driver Manager	
Eile <u>C</u> OM Mapping	C <u>o</u> nfiguration ⊻iew <u>H</u> elp G № № № Remove Apply Undo Setting	-
No COM	Address 1	Address 2

2. Click **Search** to search the network for NPort device servers. In the list of NPort device servers that were found, select the unit(s) that you will use for COM mapping and click **OK**.

No				Search	Select All	Clear All
INU	Model	MAC1	Address 1	MAC 2	Address 2	
1	NPort W2250A	00:90:E8:22:50:	192.168.33.22		-	
nput	Manually					
		1	n. Jooul			
Real	COM Redunda	nt COM Reverse				
Real	COM Redunda	nt COM Reverse	RealCOM			
		nt COM Reverse	RealCOM		First Mapping Port	
	COM Redunda	nt COM Reverse	RealCOM		Data Port 950	
		nt COM Reverse	RealCOM	[

Alternatively, you can select **Input Manually** and manually enter the **NPort IP Address**, **1st Data Port**, **1st Command Port**, and **Total Ports** for the desired NPort unit. Click **OK** to proceed.

	Mapping IPv6	COM Port		Sear	ch Sele	ct All	Clear All
No	Model	MAC1	Address 1	MAC 2	Address	2	
nout	Manually						
		dant COM Reve	erse RealCOM				
					First Mapping F	Port	
٢	Port IP Addres	s 192.168.168.25	4		Data Porl	950	
					Command Por	966	
					Total Ports	1	

3. NPort Windows Driver Manager will list each available serial port and will automatically assign a new COM port to each one. The new COM port will not be accessible by the host system until it has been activated in NPort Windows Driver Manager. Activating a mapped COM port saves the information in the host system registry and makes the COM port available for use. Click **Yes** to activate the COM port(s) at this time; click **No** to activate the COM port(s) later.

Information
Do you want to activate the COM Port now?
<u>Y</u> es <u>N</u> o
Processing
Please wait
processing 85%
Cancel
Information
COM Port Configuration is applied successfully. Remember to change NPort operation mode to Driver/Real COM Mode.
ОК

4. Activated COM ports will be listed in black; COM ports that have not been activated will be listed in blue. Once a COM port has been activated, the host computer will be able to communicate with the new COM port as if it were physically attached. Since the COM mappings are stored in the host system registry, they will still be in effect if the PC is restarted or if Windows Driver Manager is closed.

Eile Ei Ei	i. 💰	Configuration ⊻iew Help Configuration ↓ Configuration ↓ Confi	
No	COM 🛆	1	Address 2
2	COM31 + COM32 +	192.168.33.21 950:966 (Port)) 192.168.33.21 951:967 (Port2)	

Configuring Mapped Serial Ports

1. To modify the settings of a mapped serial port, select the desired port(s) and click **Setting** on the main toolbar.

😵 NP	ort Windows	Driver Manager	
_ <u>F</u> ile	di.	Configuration View Help	
No	COM 🛆	Address 1	Address 2
1	COM31	192.168.33.21 950:966 (Port1)	
2	COM32	192.168.33.21 951:967 (Port2)	
-			
Total C	OM Port - 2		1.

 On the Basic Setting tab, select the COM Number that will be assigned to the serial port. If you have selected multiple ports, you can assign COM numbers automatically in sequential order by selecting the Auto Enumerating COM Number for Selected Ports function.

COM Port Setting
Port Number: 1 Port(s) are Selected.
Basic Settings Advanced Settings Serial Parameters Security IPv6 Settings
Auto Enumerating COM Number for Selected Ports.
COM Number COM31 (current) (in use)

3. On the Advanced Setting tab, configure Tx Mode, FIFO, and Fast Flush.

COM Port Setting			
Port Number: 1 Port(s) are Selected.			
Basic Settings Advanced Settings Serial Parameters Security IPv6 Settings			
C Apple All Calended Parts			
Apply All Selected Ports			
The FIFO settings will overwrite the firmware setting.			
Tx Mode Hi-Performance			
FIFO Enable 💌			
Network Timeout 5000 ms (500 - 20000)			
Fast Flush (Flush Local Buffer Only)			
Auto Network Re-Connection			
Always Accept Open Requests			
Drop Writing Data If Network Connection Lost			
🗖 Return Error If Network Is Unavailable			
II Ignore TX Purge			
? Help ✓ OK X Cancel			

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.

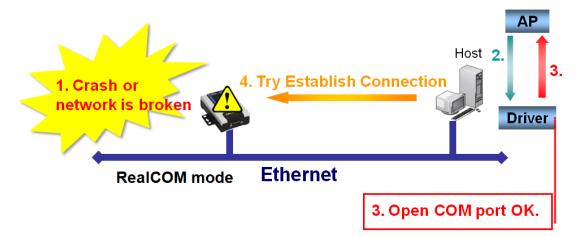
FIFO: This tells the driver whether or not to use the FIFO.

Network Timeout: You can use this option to prevent blocking if the target NPort is unavailable.

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 performance seems sluggish, try enabling Fast Flush.

Auto Network Re-Connection: With this option enabled, the driver will repeatedly attempt to re-establish the TCP connection if the NPort does not respond to background "check-alive" packets

Always Accept Open Requests: When enabled, the NPort driver will always accept requests to open a virtual COM port, even if communications with the device can not be established. With this option, the NPort driver will agree to open a virtual COM port on the system even if the port is blocked or the Ethernet connection is disabled. If this is the case, the connected device will not receive and transmit data even though the system has opened a virtual COM port.



Drop Writing Data if Network Connection is Lost: This function will assure the data to be kept in the buffer or dropped when network connection is lost. The buffer size is 4 KBytes.

Return error if network is unavailable: If this option is disabled, the driver will not return any error even when a connection cannot be established to the NPort. With this option enabled, calling the Win32 Comm function will result in the error return code "STATUS_NETWORK_UNREACHABLE" when a connection cannot be established to the NPort. This usually means that your host's network connection is down, perhaps due to a cable being disconnected. However, if you can reach other network devices, it may be that the NPort is not powered on or is disconnected. Not that **Auto Network Re-Connection** must be enabled in order to use this function.

Ignore TX Purge

Applications can use the Win32 API PurgeComm to clear the output buffer. Outstanding overlapping write operations will be terminated. Select the **Ignore TX Purge** checkbox to ignore the effect on output data.

4. On the **Serial Parameters** tab, specify the communication settings that the host will use when opening the COM port.

COM Port Setting	unit.			X
Port Number: 1	Port(s) are Se	elected.		
Basic Settings Adva	nced Settings	Serial Parameters	Security IPv6 S	ettings
Apply All Select	ed Ports			
		n registry and used o general cases you o		s
Parity	None			
Data Bits	8	•		
Stop Bits	1	•		
Flow Control	None	•		
? Help		● Ok	Ca 🗶 Ca	ncel

5. On the Security tab, select the Enable Data Encryption option to enable data to be encrypted when transmitted over the COM ports. After selecting the encryption option, select the Keep connection option to start encrypting COM port communications immediately without restarting the COM ports. This may speed up opening and closing of the COM port for your host, but it also causes your host to tie up the NPort serial port so other hosts cannot use it.

COM Port Setting
Port Number: 1 Port(s) are Selected.
Basic Settings Advanced Settings Serial Parameters Security IPv6 Settings
Apply All Selected Ports
Enable Data Encryption
🗖 Keep Connection
In Redundant COM mode, the security function is not supported.
In Reverse RealCOM mode, "Keep Connection" is not supported.
? <u>H</u> elp X Cancel

6. On the IPv6 Setting tab, interface 1 and 2 are able to change.

OM Port Setti	19
Port Number:	1 Port(s) are Selected.
Basic Settings	Advanced Settings Serial Parameters Security IPv6 Settings
🔲 Apply All	Selected Ports
correct inte	ce Index is for Link-Local address mapping only. Assign rface for your COM Port to be opened successfully. Ignore the e mapping address is NOT a link-local one. (e.g. :###)
Interface Inde	ex for Address 1:
Interface Inde	ex for Address 2:
	•
? <u>H</u> elp	✓ OK X Cancel

7. Click ${\bf OK}$ when you have finished configuring the COM port

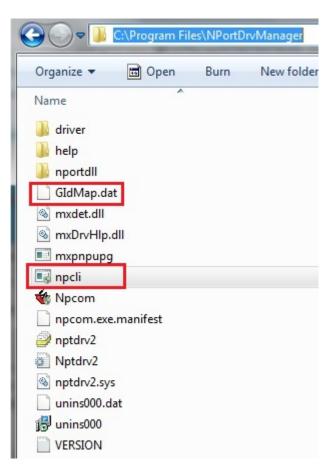
8. To save all COM mapping settings to a text file, right-click a COM port and select **Export** in the context menu. After the settings have been exported to a file, they can be imported on another host.

<u> </u>	COM Mapping	C <u>o</u> nfigura Ctrl+N	tion ⊻i	ew <u>H</u> elp	e e e e e e e e e e e e e e e e e e e	est file, s	X
J Ex	Remove	Ctrl+D	Apply	Undo	Setting	<u> </u>	
No	Setting	Ctrl+C	.22	950:966	(Port1)	Address 2	
2	图 Apply 回 Undo	Ctrl+S Ctrl+Z	.22	951:967			
	Export Import	6					
Total (COM Port - 2	_	_			_	//

Command-Line Installation/Removal

For NPort Windows Driver Manager v1.19 and above, it comes with command line script tool – npcli.exe for installation, removal of the driver and capability of configuring NPort driver functions.

After successfully installing NPort Windows Driver Manager v1.19 (or above), the default file path is C:\Program Files\NPortDrvManager as shown below. The main files that support the NPort command line tool are npcli.exe and GIdMap.dat. You may move these two files to your preferred location.



Once NPort Windows Driver Manager v1.19 (or above) is installed, call up the cmd screen on your computer. Change the directory to the drive where you placed the above two files.

	Statement of the second second	
Copyright (c) 2009 Microsoft Corporation.	All rights reserved.	Î
C:\Users\ts>cd C:\Program Files\NPortDrvMa	nager	

Type npcli /? to get detail information of what command lines are supported and the function descriptions.

```
C:\Windows\system32\cmd.exe

Microsoft Windows [Version 6.1.7601]

Copyright (c> 2009 Microsoft Corporation. All rights reserved.

C:\Users\ts>cd C:\Program Files\NPortDrvManager

C:\Program Files\NPortDrvManager?npcli /?
```

The usage instructions will show up for a user's reference.

```
NPort Command Line Interface Ver2.0 Build 16052400
Usage:
 1. NPort Driver operation:
  npcli /driver [/install | /uninstall | /upgrade] [PATH NAME]
 /install
              Install specified driver to host.
 /uninstall Uninstall current installed driver from host.
              Upgrade specified driver without modifying the mapped ports.
 /upgrade
              Specify the installer file of the NPort Driver Manager to install
 PATH NAME
             or upgrade.
 2. RealCOM port operation:
   npcli /driver /add IP ADDR /port PORT NO /com COM NO [/txmode [hiperf |
        classical]] [/fifo [enable | disable]] [/flush [fast | normal]]
   npcli /driver /remove /com [COM NO | all]
 /add
             Add a RealCOM with a valid IP address (IP ADDR).
 /port
             Specify the NPort port number (PORT NO) to add.
             Specify the COM number to add or remove (COM NO).
 /com
 /txmode
              Set the TX mode as hi-performance (hiperf) or classical. The
             default is hiperf.
 /fifo
             Set the FIFO as enable or disable. The default is enable.
 /flush
              Set to enable fast flush(fast) or disable fast flush(normal).
             The default is fast.
              Remove specified COM number (COM NO) or all RealCOM ports.
 /remove
 3. NPort devices operation:
   npcli /devicd /search
   npcli /device /set ID /network [/ip IP_ADDR] [/mask SUBNET]
        [/gateway IP ADDR] [/password CIPHER]
   npcli /device /apply ID [/password CIPHER]
```

```
Search the NPort and store the list to the memory.
 /search
             Specify the ID to set. Users must specify one of the searched
 /set
             NPorts for further operations. The default is 1.
 /port
             Specify the NPort port number (PORT NO) to set.
 /password Specify the password (CIPHER) if the NPort has one.
 /network
             Set to change the network settings.
 /ip
             Change the IP address (IP ADDR) of NPort.
 /mask
            Change the subnet mask (SUBNET) of NPort.
 /gateway
             Change the IP address (IP_ADDR) of gateway.
             Specify the ID to save changes and restart the NPort.
 /apply
 4. Examples
   npcli /driver /install D:\Users\drvmgr_setup_Ver1.19.0_Build_15122492
   npcli /driver /uninstall
   npcli /driver /add 192.168.127.254 /port 1 /com 3
   npcli /driver /add 192.168.127.254 /port 2 /com 4 /flush normal
   npcli /device /search
   npcli /device /set 1 /network /ip 192.168.10.7 /mask 255.255.255.0
        /password moxa
   npcli /device /apply 1
Note:
 Npcli.exe requires an administrator privilege to change device settings.
 It support only IPv4 and it must be run under Windows XP and later versions.
```

Linux Real TTY Drivers

Real TTY driver are provided that will map Linux host TTY ports to NPort serial ports. Once the mapping has been set up, Linux users and applications can connect to a serial port as if it were a local TTY port. These drivers have been designed and tested for the majority of Linux distributions, including Linux kernel version 2.4.x, 2.6.x, and 3.x, 4.x. Please check <u>http://www.moxa.com</u> for the latest Linux kernel supported.

Basic Steps

Follow these instructions to map a TTY port to an NPort serial port:

- 1. Install the NPort device server and set the target device port to Real COM mode.
- 2. Install the Real TTY driver files on the Linux host.
- 3. Map the host's TTY port to the target device port on the NPort.

Installing Linux Real TTY Driver Files

Before proceeding with the software installation, make sure you have completed the NPort device server has been installed and configured correctly. Note that the default LAN IP address for the NPort is **192.168.126.254**, whereas the default WLAN IP address is **192.168.127.254**.



ATTENTION

The target serial port must be operating in Real COM mode in order to map TTY ports.

- 1. Obtain the driver file from the Document and software CD, or from http://www.moxa.com.
- 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.
- Execute /tmp/moxa/mxinst. (For Red Hat AS/ES/WS and Fedora Core1, execute "# /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, map TTY port)
 mxdelsvr (delete server, undo TTY port mapping)
 mxloadsvr (reload server)
 mxmknod (create device node/TTY port)
 mxrmnod (remove device node/TTY port)
 mxuninst (remove TTYport and driver files)

At this point, you may map the TTY port to the NPort serial port.

Mapping TTY Ports

Make sure that you set the operation mode of the desired NPort 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. Modify npreal2d.cf.
- 2. Create TTY ports in directory /dev with major and minor number configured in npreal2d.cf.
- 3. Restart the driver.

Mapping TTY ports automatically

To map TTY ports automatically, you may execute **mxaddsvr** with just the IP address and 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. Enter the directory **/usr/lib/npreal2/driver** and 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.

UNIX Fixed TTY Drivers

A fixed TTY driver is provided that will map UNIX host TTY ports to NPort serial ports. Once the mapping has been set up, UNIX users and applications can connect to an NPort serial port as if it were a local TTY port. This driver has been designed and tested for the majority of UNIX systems. Please check <u>http://www.moxa.com</u> for the latest UNIX systems support.

Installing the UNIX Driver

1. Log in to UNIX and create a directory for the MOXA TTY. To create a directory named **/usr/etc**, execute the command:

mkdir -p /usr/etc

 Copy moxattyd.tar to the directory you created. For the /usr/etc directory, you would execute the following commands:

```
# cp moxattyd.tar /usr/etc
# cd /usr/etc
```

- 3. Extract the source files from the tar file by executing the command:
 - # tar xvf moxattyd.tar

The following files will be extracted: **README.TXT moxattyd.c** --- source code **moxattyd.cf** --- an empty configuration file **Makefile** --- makefile **VERSION.TXT** --- fixed TTY driver version **FAQ.TXT**

4. Compile and link.

For SCO UNIX:

make sco

For UnixWare 7: # make svr5 For UnixWare 2.1.x, SVR4.2: # make svr42

Configuring the UNIX Driver

Modify the configuration:

The configuration used by **moxattyd** is defined in the text file **moxattyd.cf**, which is in the same directory. You may use vi or any text editor to modify the file, as follows:

ttyp1 192.168.1.1 950

You can refer to **moxattyd.cf** for detailed descriptions of the various configuration parameters. Please note that **Device Name** depends on the OS. See the Device Naming Rule section in README.TXT for more information.

To start the moxattyd daemon after system bootup, add an entry into **/etc/inittab** using the TTY name you defined in **moxattyd.cf**, as in the following example:

ts:2:respawn:/usr/etc/moxattyd/moxattyd -t 1

Device naming rule

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

For all other UNIX operating systems, use:

ttyp[n]

The value of [n] should be equal or larger than 11 in order to prevent conflicts with the device names of functional keys in some UNIX systems.

Starting moxattyd

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

Adding an additional server

Modify the text file **moxattyd.cf** to add an additional server. Users may use vi or any text editor to modify the file. For more configuration information, refer to **moxattyd.cf**, which contains detailed descriptions of the various configuration parameters.

Find the process ID (PID) of the **moxattyd**. **# ps -ef | grep moxattyd**

Update the configuration of **moxattyd**. **# kill -USR1** [*PID*] (e.g., if moxattyd PID = 404, kill -USR1 404)

This completes the process of adding an additional server.

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 similar to MOXA Driver Manager. For more details about the provided functions, please refer to the "MxNPortAPI Function Groups" section.

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



How to Start MxNPortAPI

You can download the MxNPortAPI from Moxa's website at <u>http://www.moxa.com</u>, and develop the application program in popular OSs, such as Windows, Linux, or Mac.

(You 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).

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

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

All Classes	pavascript is disabled on your browser.
MxException MxException.ErrorCode	OVERVEN PACKAGE CLASS TREE NDEX HELP
MxNPort .	PREV NEXT FRAMES NO FRAMES ALL CLASSES
MxNPort.FlowCtrl MxNPort.loctIMode	This document is the programming guide for the MxNPortAPI.
MxNPort.LineError MxNPort.ModemStatus	See: Description
MxNPortService Version	
	Packages
	Package Description
	com.moxa.mxnportapi
	This document is the programming guide for the MxNPortAPI. You can get information about how to code with the MxNPortAPI quickly and how to link the MxNPortAPI Library into your program.
	1. Introduction to the NPort Android API
	Android Platform
	Application
	(Phone, Contacts, Camera)
	Java API MxNPortAPI
	Frameworks
	(USB, Package, Location)
	Libraries Dalvik
	Runtime
	Linux Kernel
	Linux Kerner

MxNPortAPI Function Groups

The supported functions in this API are listed below:

Port Control	Input/Output	Port Status Inquiry	Miscellaneous
open	read	getBaud	setBreak
close	write	getFlowCtrl	
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.loctlMode mode = new MxNPort.loctlMode();
        mode.baudRate = 38400;
        mode.dataBits = MxNPort.DATA_BITS_8;
        mode.dataBits = MxNPort.PARITY_NONE;
        mode.stopBits = MxNPort.STOP_BITS_1;
        MxNPort mxNPort = NPortList.get(0); /* Get first NPort device */
        try {
```

```
byte[] buf = {'H','e','I','I','o','r','I','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();
```

A

SNMP Agents with MIB II & RS-232-Like Groups

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

RFC1213 MIB-II Supported SNMP Variables

System MIB

SysDescr SysObjectID SysUpTime SysContact SysName SysLocation SysServices

Interfaces MIB

- itNumber ifOperStatus ifIndex ifLastChange ifDescr ifInOctets ifType ifInUcastPkts ifMtu ifInNUcastPkts ifSpeed ifInDiscards ifPhysAddress ifInErrors ifAdminStatus ifInUnknownProtos
- ifOutOctets ifOutUcastPkts ifOutNUcastPkts ifOutDiscards ifOutErrors ifOutQLen ifSpecific

IP MIB

ipForwarding ipDefaultTTL ipInreceives ipInHdrErrors ipInAddrErrors ipForwDatagrams ipInUnknownProtos ipInDiscards ipInDelivers ipOutRequests ipOutDiscards ipOutNoRoutes ipReasmTimeout ipReasmReqds ipReasmFails ipFragOKs ipFragFails ipFragCreates ipAdEntAddr ipAdEntIfIndex ipAdEntNetMask ipAdEntBcastAddr ipAdEntReasmMaxSize IpNetToMediaIfIndex IpNetToMediaPhysAddress IpNetToMediaNetAddress IpNetToMediaType IpRoutingDiscards

ICMP MIB

- IcmpInMsgs IcmpInErrors IcmpInDestUnreachs IcmpInTimeExcds IcmpInParmProbs IcmpInSrcQuenchs IcmpInRedirects IcmpInEchos IcmpInEchoReps
- IcmpInTimestamps IcmpTimest ampReps IcmpInAddrMasks IcmpOutMsgs IcmpOutErrors IcmpOutDestUnreachs IcmpOutDestUnreachs IcmpOutTimeExcds IcmpOutParmProbs IcmpOutSrcQuenchs
- IcmpOutRedirects IcmpOutEchos IcmpOutEchoReps IcmpOutTimestampReps IcmpOutAddrMasks IcmpOutAddrMaskReps

UDP MIB

UdpInDatagrams	UdpOutDatagrams
UdpNoPorts	UdpLocalAddress
UdpInErrors	UdpLocalPort

Address Translation

AtIfIndex	
AtPhysAddress	

AtNetAddress

TCP MIB

tcpRtoAlgorithm	tcpEstabResets
tcpRtoMin	tcpCurrEstab
tcpRtoMax	tcpInSegs
tcpMaxConn	tcpOutSegs
tcpActiveOpens	tcpRetransSegs
tcpPassiveOpens	tcpConnState
tcpAttempFails	tcpConnLocalAddress

tcpConnRemAddress tcpConnRemPort tcpInErrs tcpOutRsts

tcpConnLocalPort

SNMP MIB

snmpInPkts snmpOutPkts snmpInBadVersions snmpInBadCommunityNames snmpInASNParseErrs snmpInTooBigs snmpInNoSuchNames snmpInBadValues snmpInReadOnlys snmpInGenErrs snmpInTotalReqVars snmpInTotalSetVars snmpInGetRequests snmpInGetNexts snmpInSetRequests snmpInGetResponses snmpInTraps snmpOutTooBigs snmpOutTooBigs snmpOutBadValues snmpOutGenErrs snmpOutGetRequests snmpOutGetNexts snmpOutSetRequests snmpOutGetResponses snmpOutTraps snmpEnableAuthenTraps

RFC1317: RS-232 MIB Objects

Generic RS-232-like Group

rs232Number

RS-232-like General Port Table

rs232PortTable rs232PortEntry rs232PortIndex rs232PortType rs232PortInSigNumber rs232PortOutSigNumber rs232PortInSpeed rs232PortOutSpeed

RS-232-like Asynchronous Port Group

rs232AsyncPortTable rs232AsyncPortEntry	rs232AsyncPortIndex rs232AsyncPortBits	rs232AsyncPortStopBits rs232AsyncPortParity
The Input Signal Table		
rc222InCigTable	rc222InSigDortIndov	rc222InSigState

rs232InSigTable	rs232InSigPortIndex	rs232InSigState
rs232InSigEntry	rs232InSigName	

The Output Signal Table

rs232OutSigTable	rs232OutSigPortIndex	rs232OutSigState
rs232OutSigEntry	rs232OutSigName	

Well-Known Port Numbers

Listed below are Well-Known Port Numbers that may cause network problems if they are assigned to an NPort serial port. Refer to RFC 1700 for Well-Known Port Numbers or refer to the following introduction from IANA.

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

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

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

TCP Socket	Application Service
0	reserved
1	TCP Port Service Multiplexor
2	Management Utility
7	Echo
9	Discard
11	Active Users (systat)
13	Daytime
15	Netstat
20	FTP data port
21	FTP CONTROL port
23	Telnet
25	Simple Mail Transfer Protocol (SMTP)
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 to 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	Gopher 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 (NTP)	
161	(Simple Network Mail Protocol (SNMP)	
162	SNMP Traps	
213	IPX (Used for IP Tunneling)	

Ethernet Modem Commands

A serial port on the NPort can be set to Ethernet Modem mode, allowing a PC or device to connect to the NPort as if it was an Ethernet modem. This section provides additional detail about how the NPort operates in Ethernet Modem mode.

Dial-in Operation

The NPort can listen for a TCP/IP connection request from a remote Ethernet modem or host. The NPort's response depends on the ATS0 value, as follows.

ATS0=0: 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≥1: The NPort will accept the TCP connection immediately. It will send the "**CONNECT** {*baudrate*}" command to the serial port and will immediately enter data mode.

Dial-out

The NPort accepts ATD commands such as "**ATD 192.168.1.1:4001**" from the serial port. It will then request a TCP connection from the specified remote Ethernet modem or PC. Once the remote unit accepts this TCP connection, the NPort will send the "**CONNECT** {*baudrate*}" command to the serial port and will immediately enter data mode.

Disconnection Request from Local Site

When the NPort is in data mode, you can initiate disconnection by sending "+++". Some applications allow you to directly set the DTR signal to off, which will also initiate disconnection. The NPort will enter command mode, and you can then enter "**ATH**" to close the TCP connection "**NO CARRIER**" will be returned to the serial port.



ATTENTION

When entering "+++" to disconnect, the three "+" characters must be sent in quick succession, and the sequence must be prefaced and followed by a guard time to protect the raw data. You can change the disconnect character using register S2. You can set the guard time using register S12.

Disconnection Request from Remote Site

After the TCP connection has been closed by the remote Ethernet modem or PC, the NPort will send "**NO CARRIER**" to the serial port and will return to command mode.

AT Commands

Ethernet Modem mode supports the following common AT commands, as used with a typical modem:

No.	Command	Description	Remarks
1	ATA	Answer manually	
2	ATD	Dial up specified IP address and port number	
		ATD 192.168.1.1:950 (example)	
3	ATE	ATE0=Echo OFF	
		ATE1=Echo ON (default)	
4	ATH	ATH0=On-hook (default)	
		ATH1=Off-hook	
5	ATI, ATIO,	Modem version	reply "OK" only
	ATI1, ATI2		
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 (default)	
		0=OK	
		1=connect	
		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&F	Restore manufacturer's settings	
17	AT&G	Select guard time	reply "OK" only
18	AT&R	Serial port RTS option command	reply "OK" only
19	AT&S	Serial port DSR control	reply "OK" only
20	AT&V	View settings	
21	AT&W	Write current settings to flash for next boot up	

S Registers

No.	Register	Description	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)	
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	no action applied
		(always=6, unit 1/10 sec)	
11	S10	Delay for hang up after carrier	no action applied
		(always=14, unit 1/10 sec)	
12	S11	DTMF duration and spacing	no action applied
		(always=100 ms)	
13	S12	Escape code guard time	
		(default=50, unit 1/50 sec)	
		to control the idle time for "+++"	

D

Federal Communication Commission Interference Statement

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

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

CAUTION:

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

FCC RF Radiation Exposure Statement

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

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

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

Labeling requirements

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.

RF exposure warning

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

End Product Labeling

This transmitter module is authorized only for use in a device where the antenna may be installed such that 20cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: SLE-W2X50A "

Information for the OEMs and Integrators

The following statement must be included with all versions of this document supplied to an

OEM or integrator, but should not be distributed to the end user.

- 1. This device is intended for OEM integrators only.
- 2. Please see the full Grant of Equipment document for other restrictions.

This radio transmitter FCCID: SLE-W2X50A has been approved by FCC to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Antenna List

No.	Manufacturer	Model No.	Antenna Type	Peak Gain
1	KINSUN	ANT-WDB-ARM-02	Dipole Antenna	1.21 dBi for 2.4 GHz
				1.73 dBi for 5 GHz

Note: The antenna connector is Reverse SMA type.

FCC Warning 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.

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

CAUTION:

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. The operation frequency of the device is in the 5150-5250 MHz band and is for indoor use only.

Prohibition of Co-location

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

Safety Information

To maintain compliance with FCC's RF exposure guidelines, when installing and/or operating this equipment, you should maintain a minimum distance of 20 cm between the transmitter and your body. Use only the supplied antenna. Unauthorized antennae, modifications, or attachments could damage the transmitter and may violate FCC regulations.