

NPort IA5000A-I/O Series NPort IAW5000A-I/O Series Quick Installation Guide

Version 2.1, January 2021

Technical Support Contact Information
www.moxa.com/support

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Overview

The NPort IA5000A-I/O and IAW5000A-I/O Series consist of serial device servers with Digital Input/Output (DIO), providing maximum flexibility to integrate serial equipment in the field into Ethernet networks for a variety of industrial data acquisition applications. The DIO on a device can be controlled over TCP/IP, using the Modbus TCP protocol, and it can be configured and secured from a web browser.

Package Checklist

Before installing the NPort IA5000A-I/O or NPort IAW5000A-I/O Series device server, verify that the package contains the following items:

- NPort IA5000A-I/O or NPort IAW5000A-I/O device server with digital I/O
- Antenna (for the NPort IAW5000A-I/O Series)
- Quick installation guide (printed)
- Warranty card

Optional Accessories

- **Mini DB9F-to-TB Adapter:** DB9-female-to-terminal-block adapter for RS-422/485 applications
- **WK-51-01:** Wall-mounting kit
- **DR-4524:** 45W/2A DIN-rail 24 VDC power supply with universal 85 to 264 VAC input
- **DR-75-24:** 75W/3.2A DIN-rail 24 VDC power supply with universal 85 to 264 VAC input
- **DR-120-24:** 120W/5A DIN-rail 24 VDC power supply with 88 to 132 VAC or 176 to 264 VAC input, selected by a DIP switch

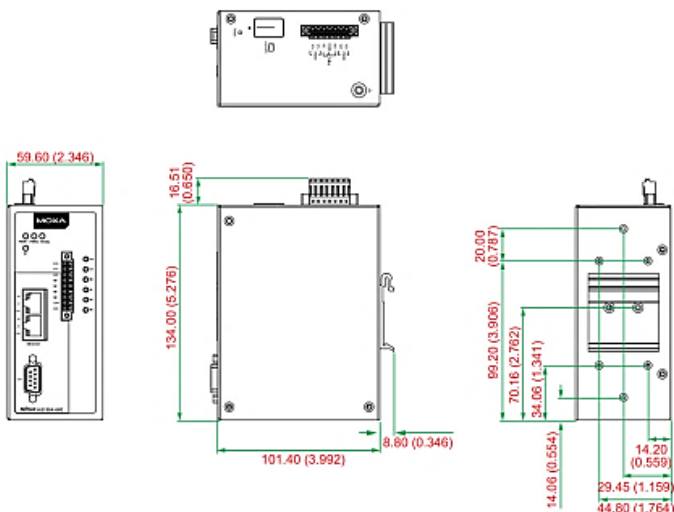
Notify your sales representative if any of the above items are missing or damaged.

Hardware Introduction

As shown in the following figures, the NPort IA5000A-I/O Series has two Ethernet RJ45 LAN ports, and the NPort IAW5000A-I/O Series has one Ethernet RJ45 LAN port and one antenna for WiFi (IEEE 802.11 standards) signal communication, supporting 2.4GHz and 5 GHz frequencies. Both series are equipped with four DIs and two DOs for data acquisition applications. The NPort IA5000A-I/O and IAW5000A-I/O device server series come with built-in 4 kV serial port surge protection.

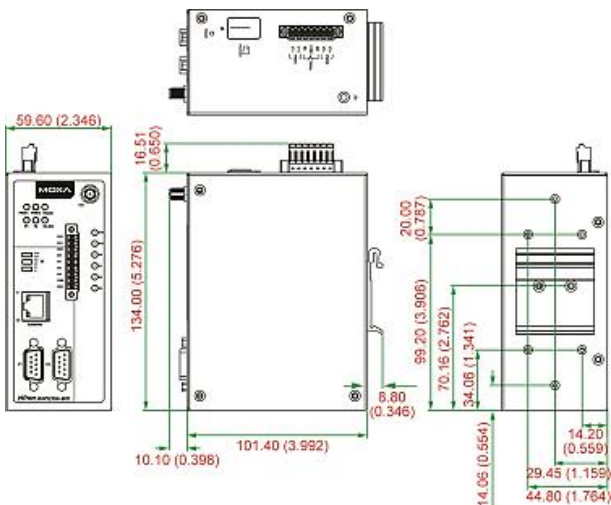
NPort IA5000A-I/O Series

The mechanical design of the NPort IA5000A-I/O Series is mostly identical; only the number of serial ports and number of DI/DO channels differ.



NPort IAW5000A-I/O Series

The mechanical design of the NPort IAW5150A and the NPort IAW5250A is mostly identical; only the number of serial ports and number of DI/DO channels differ.



LED Indicators

Name	Color	Function	
PWR 1, PWR 2	Green	Power is being supplied to power input PWR1, PWR2.	
Ready	Red	Steady on	Power is on, and the NPort is booting up.
		Blinking	Indicates an IP conflict, or the DHCP or BOOTP server did not respond properly, or a relay output occurred. When the above two conditions occur at the same time. Check the relay output first. If the Ready LED is still blinking after resolving the relay output, then there is an IP conflict, or the DHCP or BOOTP server did not respond properly.
		Flashing quickly	microSD card failed
	Green	Steady on	Power is on, and the NPort is functioning normally.
		Blinking	The device server has been located by Administrator's Location function
	Off	Power is off, or a power error condition exists.	
WLAN (Only for the NPort IAW5000A-I/O)	Green	Steady on	Wireless is enabled
		Blinking	NPort can't establish WLAN connection with AP (Infrastructure) or station (Ad-Hoc)
	Off	Wireless is not enabled.	
Signal Strength (3 LEDs only for the NPort IAW5000A-I/O)	Green	1 Bottom	The signal strength (RSSI) is less than -74 dBm
		2 Middle	The signal strength (RSSI) is between -65 to -74 dBm
		3 Top	The signal strength (RSSI) is greater than -65 dBm
Ethernet	Amber	10 Mbps Ethernet connection	
	Green	100 Mbps Ethernet connection	
	Off	The Ethernet cable is disconnected or has a short.	
P1, P2 (Serial)	Amber	Serial port is receiving data.	
	Green	Serial port is transmitting data	
	Off	No data is being transmitted or received through the serial port.	
DI	Green	DI status on	
	Off	DI status off	
DO	Green	DO status on	
	Off	DO status off	

Hardware Installation Procedure

STEP 1: After unpacking the unit, connect the power supply to the unit.

STEP 2: Use an Ethernet cable to connect the unit to the network.

STEP 3: Connect your device to the desired port on the unit.

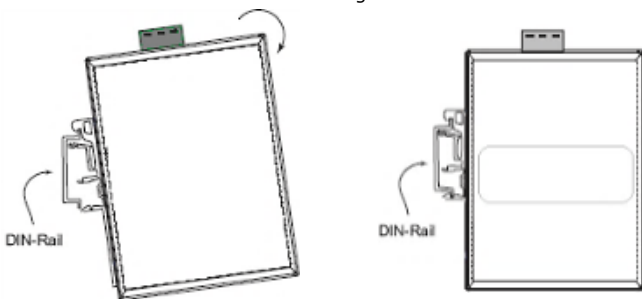
STEP 4: Place or mount the unit. The unit may be placed on a horizontal surface such as a desktop, or mounted on the wall.

Mounting Options

The NPort IA5000A-I/O and IAW5000A-I/O are designed to be attached to a DIN rail or mounted on a wall.

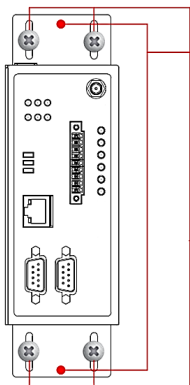
STEP 1: Insert the top of the DIN rail into the slot.

STEP 2: The DIN rail attachment unit will snap into place as shown at right.



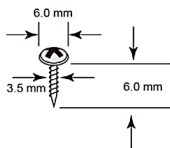
Wall Mounting (optional)

For some applications, it may be more convenient to mount the NPort IA5000A-I/O or IAW5000A-I/O to a wall, as illustrated below.



Step 1: Remove the aluminum DIN-rail attachment plate from the NPort, and then attach the wall-mounting plates with M3 screws.

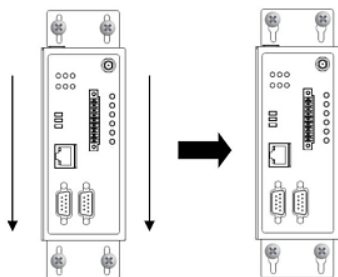
Step 2: Mounting the NPort to a wall with wall-mounting plates attached in Step 1. The heads of the screws should be less than 6.0 mm in diameter, and the shafts should be less than 3.5 mm in diameter, as shown in the figure on the right.



Do not drive the screws in all the way—leave a space of about 2 mm to allow room for sliding the wall-mounting panel between the wall and the screws.

NOTE Test the screw head and shank size by inserting the screws into one of the keyhole-shaped apertures of the wall-mounting plates before they are fixed to the wall.

STEP 3: Once the screws are fixed into the wall, insert the four screw heads through the large opening of the keyhole-shaped apertures, and then slide the NPort downwards, as indicated to the right. Tighten the screws for added stability.



Termination Resistor and Adjustable Pull-Up/Down Resistors

In some critical environments, you may need to add termination resistors to prevent the reflection of serial signals. When using termination resistors, it is important to set the pull-up/down resistors correctly so that the electrical signal is not corrupted. The NPort IA5000A-I/O and IAW5000A-I/O Series use DIP switches to set the pull-up/down resistor values for each serial port. The DIP switches are located at the side of wireless device server for easy setting.

To add a 120 Ω termination resistor, set switch 3 on the port’s assigned DIP switch to ON; set switch 3 to OFF (the default setting) to disable the termination resistor.

To set the pull-up/down resistors to 150 KΩ, set switches 1 and 2 on the port’s assigned DIP switch to OFF. This is the default setting.

To set the pull-up/down resistors to 1 KΩ, set switches 1 and 2 on the port’s assigned DIP switch to ON.

Pull-Up/Down Resistors for the RS-485 Port

SW1 (Serial 1) SW2 (Serial 2)	DIP 1	DIP 2	DIP 3
	Pull-up resistor	Pull-down resistor	Terminal resistor
ON	1 KΩ	1 KΩ	120 Ω
OFF (Default)	150 KΩ	150 KΩ	N/A

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

Software Installation Information

For software installation, download the relative utilities from Moxa's website:

https://www.moxa.com/support/support_home.aspx?isSearchShow=1

- Download the NPort Windows Driver Manager and install it as the driver to run with Real COM mode of the NPort Series.
- Execute NPort Windows Driver Manager; then map the virtual COM ports on your Windows platform.
- You may refer to the DB9 Male pin assignment section to loop back pin 2 and pin 3 for the RS-232 interface to carry out a self-test on the device.
- Use HyperTerminal or a similar program (you may download Moxa's program, called PComm Lite) to test whether the device is good or not.

Setting the IP Address

The factory default IP settings are assigned as follows:

NPort IA5000A-I/O Series

LAN	IP	Netmask
Static	192.168.127.254	255.255.255.0

NPort IAW5000A-I/O Series

LAN	IP	Netmask
Static	192.168.126.254	255.255.255.0

WLAN	IP	Netmask
Static	192.168.127.254	255.255.255.0

If the NPort is configured for DHCP but the DHCP server cannot be found, the NPort will use factory default IP settings.

NOTE If you have forgotten the NPort's IP address, use the Device Search Utility from your PC to locate the NPort. After searching the LAN for NPort units, the Device Search Utility will display the IP address of each unit.

NOTE (For the NPort IAW5000A-I/O Series)

Ethernet Bridge Disabled (default): Only one network interface can be active at a time. If the Ethernet link is active, the WLAN will be inactive. If the WLAN is active, the Ethernet link will be inactive.

Ethernet Bridge Enabled: The LAN and WAN will both be active. Go to the web console, find the network settings page, and set **Ethernet Bridge** to **Enabled**.

Open the web console to make the configuration changes as follows:

STEP 1: Open your web browser.

STEP 2: In the address bar, enter the default IP address (for the NPort IA5000A-I/O Series, it is 192.168.127.254; for the NPort IAW5000A-I/O Series, it is 192.168.126.254)

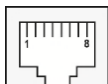
STEP 3: The web server will ask for the username and password before you log in. To configure the device server, you may use the default user/default password **admin/moxa** to log in the web console.

STEP 4: For first-time use, click the Wizard in the left navigation panel. The wizard will prompt you to configure the IP address and basic settings. For other settings, use the factory defaults or modify the settings for your application.

Pin Assignments

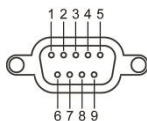
RJ45 (LAN)

Pin	LAN
1	Tx+
2	Tx-
3	Rx+
4	-
5	-
6	Rx-
7	-
8	-

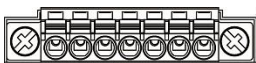


DB9 Male (RS-232/422/485)

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	-	-	-

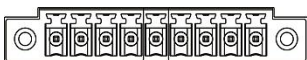


Power Input and Relay Output Pinouts



V2+	V2-				V1+	V1-
DC Power Input 2	DC Power Input 2	N.O.	Common	N.C.	DC Power Input 1	DC Power Input 1

DI/DO Pinouts



D00	D01	GND	DI0	DI1	DI2	DI3	COM	GND
Digital Output 0	Digital Output 1	Ground	Digital Input 0	Digital Input 1	Digital Input 2	Digital Input 3	Common	Ground

Specifications

Power Input	12 to 48 VDC
Power Consumption	NPort IA5000A-I/O: 300 mA @ 12 V NPort IAW5000A-I/O: 300 mA @ 12 V
Operating Temperature	Standard models: 0 to 60°C (32 to 140°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Humidity	5 to 95% RH
Dimensions (W x D x H)	NPort IA5000A-I/O: 59.6 x 101.4 x 134 mm (2.35 x 4.0 x 5.28 in) IAW5000A-I/O: 59.6 x 101.4 x 134 mm (2.35 x 4.0 x 5.28 in)
Magnetic Isolation	1.5 kV for Ethernet
Regulatory Approvals	EMC CE: EN 61000-6-2/6-4 FCC: FCC Part 17 Subpart B, Class A FCC Part 15 Subpart B, Class A Safety UL: UL 60950-1 LVD: EN 60950-1 DSPR: ARIB-STD 33, ARIB-STD 66
Fault Relay Circuit	3-pin circuit with current-carrying capacity of 2 A @ 30 VDC



ATTENTION

This product is intended to be supplied by an UL listed DC source suitable for use at TMA of 60 degree C, which output meets SELV circuit and LPS, which is separated from the primary circuit by double insulation or reinforced insulation, and is rated 12-48Vdc, 0.38-0.1A or min. 0.38A; or 24Vdc, min. 0.17A.



ATTENTION

The risk of an explosion is very high if the battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.



ATTENTION

This equipment is intended to be used in Restricted Access Location.

WARNING:

HOT SURFACE. DO NOT TOUCH! Before touching the surface, pay special attention and take the necessary protection measures.