NPort S9000 Series
Quick Installation Guide

Version 3.1, January 2021

Technical Support Contact Information
www.moxa.com/support

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Overview

The NPort S9000 Series combines a substation-grade 4/8/16-port RS-232/422/485 serial ports device server with a full-function managed Ethernet switch by integrating a combination of fiber and copper Ethernet ports, allowing you to easily install, manage, and maintain the products and serial devices.

Package Checklist

Before installing the NPort S9000, verify that the package contains the following items:

- NPort S9000 combo switch/serial device server
- CN20070 connection CBL: RJ45/10P/F9, 150 cm
- DIN-Rail kit for NPort S9450I/rackmount kit for NPort S9650I
- Quick installation guide
- Warranty card

Optional Accessories (must be ordered separately)

- Wall-mount kit WK-51-01

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

Hardware Introduction

The NPort S9450I integrates five Ethernet ports with 5 RJ-45 ports or two fiber ports plus three RJ-45 ports and four male DB9 ports for the RS-232/422/485 serial port.

The NPort S9650I integrates two Ethernet ports (with expansion module for two extra RJ-45/fiber ports or one IRIG-B port) and 8/16 DB9 male/female or multimode ST ports for the RS-232/422/485 serial port.

Reset Button—Hold the Reset button for five seconds to load the factory default settings: Use a pointed object, such as a straightened paper clip or toothpick, to press the reset button. This will cause the Ready LED to blink on and off. The factory defaults will be loaded once the Ready LED stops blinking (after about five seconds). At this point, you should release the reset button.

LED Indicators—The NPort S9000's front panel contains some LED indicators as described in the following table.

Type	Color	Meaning
PW 1	Green	Power 1 input
PW 2	Green	Power 2 input
Ready	Red	Steady On: Power is on, and the NPort is booting up. Blinking: Indicates a LAN-IP conflict, or the DHCP or BOOTP server did not respond properly.
	Green	Steady On: Power is on, and the NPort is functioning normally. Blinking: The device server has been located by the DSU's (Device Search Utility) location function.
	Off	Power is off, or a power error condition exists.
Master	Green	Steady On: When the NPort is the Master of this Turbo Ring. Blinking: When the NPort is the Ring Master of this Turbo Ring and the Turbo Ring is disconnected.
Coupler	Green	When the NPort enables the coupling function to form a backup path
NPort S9450I Series		
E1-E5		
Link	Green	Steady On: The Ethernet port is active. Blinking: When the Ethernet port is transmitting/receiving data.
Speed	Green	Steady On: 100 Mbps Ethernet connection.
	Yellow	Steady On: 10 Mbp Ethernet connection.
TX1-TX4	Green	The serial port is transmitting data.
RX1-RX4	Amber	The serial port is receiving data.
NPort S9650I Series		
E1-E4	Green	Steady On: When the Ethernet port is transmitting/receiving data
S1-S16	Green	Steady On: When the serial port is transmitting/receiving data

Hardware Installation Procedure

STEP 1: After removing the NPort S9000 from the box, attach the power adapter.

STEP 2: Connect the NPort S9000 to a network. Use a standard straight-through Ethernet cable to connect to a hub or switch. When setting up or testing the NPort S9000, you might find it convenient to connect it directly to your computer's Ethernet port. In this case, use a crossover Ethernet cable.

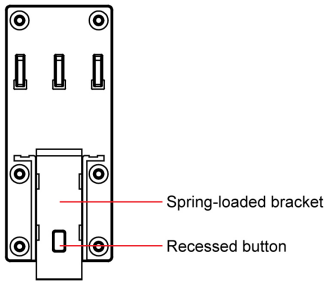
STEP 3: Connect the NPort S9000's serial port to a serial device.

STEP 4: Mount the NPort S9000 to either a wall or DIN-rail or rack, as described below.

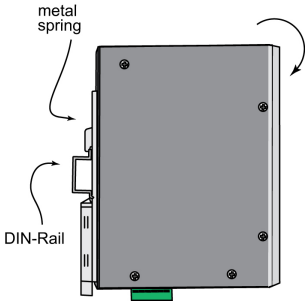
DIN-Rail Mounting

The aluminum DIN-rail attachment plate should already be fixed to the back panel of the NPort S9450I when you take it out of the box. If you need to reattach the DIN-rail attachment plate to the NPort S9450I, make sure the stiff metal spring is situated towards the top as shown in the figures below.

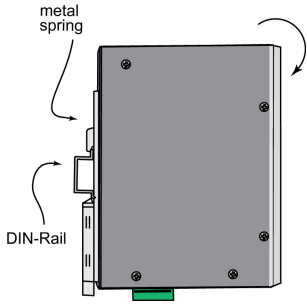
STEP 1: If the spring-loaded bracket is locked in place, push the recessed button to release it. Once released, you should feel some resistance from the spring as you slide the bracket up and down a few millimeters in each direction.



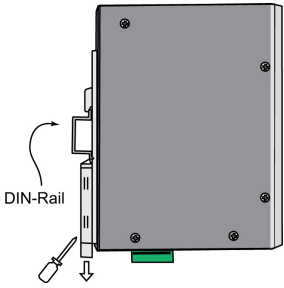
STEP 2:
Insert the top of the DIN rail into the top slots on the DIN-rail attachment plate.



STEP 3:
The DIN-rail attachment unit will snap into place as shown in the following illustration.



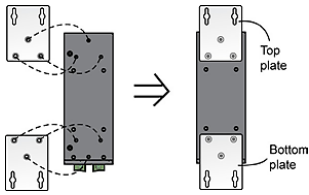
To remove the Moxa NPort S9450I switch from the DIN rail, use a screwdriver to push down the spring-loaded bracket until it locks in place, as shown in the following diagram. Next, rotate the bottom of the switch upwards and then remove the switch from the DIN rail.



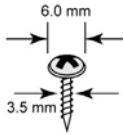
Wall-Mounting (optional)

For added convenience, the NPort S9450I can be wall-mounted as illustrated below.

STEP 1: Remove the aluminum DIN-rail attachment plate from the NPort S9450I's rear panel, and then attach the wall-mount plates with six M3 screws, as shown on the right.



STEP 2: Mounting the NPort S9450I to a wall requires four screws. Use the NPort S9450I with the wall-mount plates attached as a guide to mark the correct locations for the four screws. 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 on the right.



NOTE Test the screw's head and shank size by inserting the screw into one of the keyhole-shaped apertures of the wall-mounting plates before you put the screws into the wall

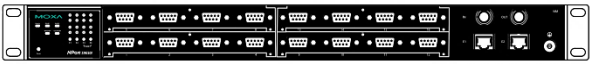
DO NOT screw the screws all the way in—leave a space of about 2 mm to allow room for sliding the wall-mount panel between the wall and the screws.

STEP 3: After 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 S9450I downwards. Tighten the four screws for added stability.

NOTE Installed to the wall of an appropriate enclosure or industrial machinery.

Rack-Mounting

Use four screws to attach the NPort S9650I Series to a standard rack.



Software Installation Information

For the NPort's configuration, the default IP address of the NPort is **192.168.127.254**. You may log in with the account name **admin** and password **moxa** to change any settings to meet your network topology (e.g., IP address) or serial device (e.g., serial parameters).

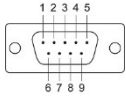
For software installation, download the relative utilities from Moxa's website:

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.

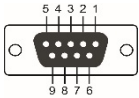
Pin Assignments and Cable Wiring

DB9 Male RS-232/422/485 Port Pinouts



Pin	RS-232	RS-422/485-4w	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	–	–	–

DB9 Female RS-232/422/485 Port Pinouts

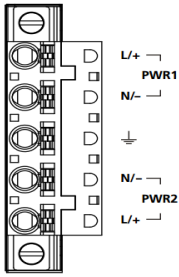


Pin	RS-232	RS-422/485-4w	RS-485-2w
1	DCD	TxD-	–
2	TxD	RxD+	Data+
3	RxD	TxD+	–
4	DSR/+IRIG-B	DSR/+IRIG-B	DSR/+IRIG-B
5	GND	GND	GND
6	DTR	–	–
7	CTS	RxD-	DATA-
8	RTS	–	–
9	–	–	–

Wiring the Redundant Power Inputs for the NPort S9450I Series

The NPort S9450I unit has two sets of power inputs: power input 1 and power input 2.

Take the following steps to wire the redundant power inputs:

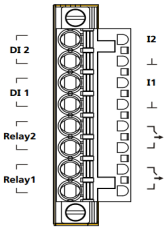


1. Insert the negative/positive DC wires into the N- and L+ terminals.
2. To keep the DC wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.
3. Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on the NPort S9450I's top panel.

Wiring the Relay Contact for the NPort S9450I Series

The NPort S9450I has two sets of relay outputs: relay 1 and relay 2. Each relay contact consists of two contacts of the terminal block on the NPort S9450I's top panel. Refer to the next section for detailed instructions on how to connect the wires to the terminal block connector and how to attach the terminal block connector to the terminal block receptor.

The two contacts used to connect the relay contacts work as follows (see illustration below):



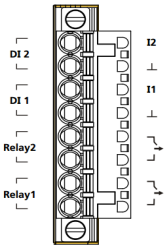
The fault circuit will open if

1. A relay warning event is triggered, or
2. The NPort S9450I is the Master of this Turbo Ring, and the Turbo Ring is disconnected, or
3. Start-up fails.

If none of these three conditions are met, the fault circuit will remain closed.

Wiring the Digital Inputs for the NPort S9450I Series

The NPort S9450I unit has two sets of digital inputs: DI 1 and DI 2. Each DI consists of two contacts of the 8-pin terminal block connector on the NPort S9450I's top panel.



Take the following steps to wire the digital inputs:

1. Insert the negative (ground) or positive DI wires into the terminals.
2. To keep the DI wires from getting loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.
3. Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on the NPort S9450I's top panel.

ATTENTION

When wiring the relay contact (R), digital input (DI) and power inputs (P1/P2), we suggest using the cable type - AWG (American Wire Gauge) 18-24(1.31-0.205 mm²) and the corresponding pin type cable terminals. The rated temperature of wiring should be at least 105°C.
We suggest using a torque value of 1.7lb-in; do not use excessive force.

ATTENTION

Please use a power defined by SELV or one complying with double insulation under the UL 60950, UL 61010-1, and UL 61010-2-201 standard, or from the circuit, which is isolated between the mains by reinforced or double insulation.

Symbol:

1. Nature and ratings of mains supply (dc) 

2. Nature and ratings of mains supply 

3. Nature and ratings of mains supply (ac/dc) 

4. Functional earth terminal 
5. Protective conductor terminal 
6. Field wiring box cable temperature 
7. Easily heated surfaces 
8. Reference to the Manual, Caution Symbol 

Wiring Information:

The cable type—copper only. AWG (American Wire Gauge) 18- 12 Sol; 14-12 Str and the corresponding pin type cable terminals. The rated temperature of wiring should be at least 105°C. Torque of value 12 lb-in; do not use excessive force.

ATTENTION

Veuillez utiliser une puissance définie par SELV ou une autre conforme à la double isolation selon la norme UL 60950, UL 61010-1 ou UL 61010-2-201, ou à partir du circuit qui est isolé entre Mains by Reinforce ou Double isolation.

Symbole:
1. Terre de protection
2. Attention

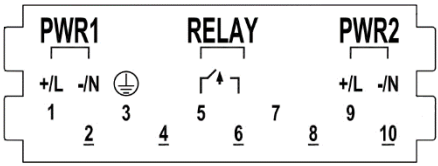
Informations de câblage:
Le type de câble - Cuivre seulement, AWG (American Wire Gauge) 18-12 Sol; 14-12 Str et les cosses de câble correspondantes. La température nominale du câblage doit être d'au moins 105 ° C.Couple de valeur 12 lb-in; N'utilisez pas de force excessive.

WARNING

LED or LASER components in compliance with IEC 60825-1:
CLASS 1 LASER PRODUCT
CLASS 1 LED PRODUCT

Connecting the Power for the NPort S9650I Series

The NPort S9650I Series has two sets of power inputs: power input 1 and power input 2.



STEP 1: Insert the dual set positive/negative DC wires into PWR1 and PWR2 terminals (+ → pins 1, 9; - → pins 2, 10). Or insert the L/N AC wires into PWR1 and PWR2 terminals (L → pin 1, 9; N → pin 2, 10)

STEP 2: To keep the DC or AC wires from pulling loose, use a screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.

Wiring the Relay Contact for the NPort S9650I Series

The NPort S9650I Series has one relay output. The relay contact of the 10-pin terminal block connector is used to detect user-configured events. The two wires attached to the RELAY contacts form an open circuit when a user-configured event is triggered. If a user-configured event does not occur, the RELAY circuit will be closed.

WV Model

Power	NPort S9450I Series: 24-48VDC, 0.6A max. NPort S9650I Series: 24-48VDC, 1.68A max.
Overload Current Protection	Present
Reverse Polarity Protection	Present
Fault Relay Circuit	2-pin circuit with current-carrying capacity of 2 A @ 30 VDC

Environmental Limits

Altitude	up to 2,000 m
Operating Temperature	-40 to 85°C
Ambient Relative Humidity	5 to 95% (non-condensing)
IEC/UL 61010	Indoor use and Pollution degree 2 (The equipment must be dried with a dry cloth.)
Overvoltage	NPort S9450I Series: Category 2 NPort S9650I Series: Not connected to mains directly
Hazardous Location	NPort S9450I Series: Temperature code (T-Code)—T4 UL/cUL Class I, Division 2, Groups A, B, C and D

HV Model

Power	NPort S9450I Series: 100-220VAC, 50-60Hz, 0.2A; 100-220VDC, 0.2A max. NPort S9650I Series: 100-240VAC, 50-60Hz, 0.65A; 100-250VDC, 0.47A max.
Voltage Fluctuations	Up to ±10 %
Fault Relay Circuit	2-pin circuit with current-carrying capacity of 2 A @ 30 VDC

Environmental Limits

Altitude	Up to 2,000 m
Operating Temperature	-40 to 85°C
Ambient Relative Humidity	5 to 95% (non-condensing)
IEC/UL 61010	Indoor use and Pollution degree 2 (The equipment must be dried with a dry cloth.)
Overvoltage	Category 2
Hazardous Location	NPort S9450I Series: Temperature code (T-Code)—T4 UL/cUL Class I, Division 2, Groups A, B, C and D

ATTENTION

This equipment is intended to be used in a Restricted Access Location. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

The product ambient temperature should not exceed 85°C.

Cet équipement est destiné à être utilisé dans un lieu d'accès restreint. Si l'équipement est utilisé d'une manière non spécifiée par le fabricant, la protection fournie par l'équipement peut être compromise.

La température ambiante du produit ne doit pas dépasser 85 ° C.

ATTENTION

For NPort S9450I Series:
These devices are open-type devices that are to be installed in an enclosure that is suitable for the environment and where the internal compartment is only accessible by the use of a tool.

SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C AND D HAZARDOUS LOCATIONS, OR NONHAZARDOUS LOCATIONS ONLY.

WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT INPUT TERMINAL BLOCK WHILE THE CIRCUIT IS LIVE OR UNLESS THE AREA IS KNOWN TO BE FREE OF IGNITABLE CONCENTRATIONS.