

# NPort® S8455/S8458 Series

## Combo switch / serial device servers



- > 4-port RS-232/422/485 serial device server
  - Serial QoS for configuring serial data transmission priority
  - 2 KV (DC) isolation protection for each serial port (S8455 only)
  - Adjustable pull high/low resistor for RS-485 ports (S8455 only)
- > Built-in managed Ethernet switch
  - S8455: Two fiber Ethernet ports and three Ethernet ports
  - S8458: Four fiber Ethernet ports and four Ethernet ports
- > Ethernet redundancy with Turbo Ring and Turbo Chain (recovery time < 20 ms) or RSTP/STP (IEEE 802.1w/D) supported
- > QoS, IGMP-snooping/GMRP, VLAN, LACP, SNMPv1/v2c/v3, RMON supported
- > Surge protection for serial, power, and Ethernet



### : Overview

The NPort S8455/S8458 series combines an industrial device server with a full-function managed Ethernet switch by integrating a combination of fiber and Ethernet ports with 4 RS-232/422/485 serial ports, allowing you to easily install, manage, and maintain the product.

Combining a device server and switch in one product allows you to save space in your cabinet, reduce overall power consumption, and reduce costs, since you will not need to purchase a switch and serial device server separately.

### : Supports the Full Range of NPort 5000 Series Device Server Functions

The NPort S8455/S8458 series supports the complete array of NPort 5000 series device server functions. You can network your existing serial devices by connecting up to 4 serial devices through Ethernet

ports, with only basic configuration required. In addition, data transmission between the serial and Ethernet interfaces is bi-directional.

### : Full-function Managed Ethernet Switch

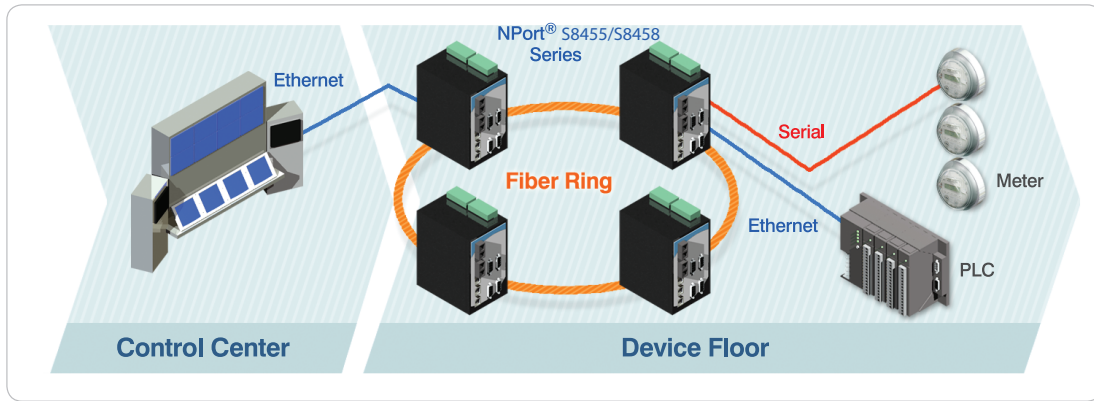
The NPort S8455/S8458 series has a built-in full-function managed Ethernet switch that supports QoS, IGMP-snooping/GMRP, VLAN, Port Trunking, SNMPv1/v2c/v3, and IEEE 802.1X, allowing you to handle virtually any kind of application. Ethernet redundancy, which

is used to increase the reliability and availability of your industrial Ethernet network, is provided by Moxa's Turbo Ring and Turbo Chain technology (recovery time < 20 ms) or RSTP/STP (IEEE 802.1w/D).

### : Ring Redundancy at the Device Level

Device level communication networks for industrial automation are very critical since they are used to control and monitor device processes. The reliability of these communications depends on ring redundancy at the device level, which is designed to provide fast network fault detection and reconfiguration in order to support the most demanding control applications. The NPort S8455/S8458 series integrates a full function NPort device server with an industrial switch

to carry serial and Ethernet devices at the same time. In addition, the NPort S8455/S8458 can also achieve ring redundancy with standard STP/RSTP and Moxa's proprietary Turbo Ring or Turbo Chain 2 redundancy protocols. This all-in-one design can be used to optimize and simplify your device network, and enhance reliability.



## Rugged Design with Complete Protection



### UL508 Safety

The NPort S8455 series complies with the UL 508 standard, which covers safety requirements for industrial control equipment.



### Level 4 ESD

The NPort S8455 series supports high level, 8/15 KV, ESD protection to prevent damage from static electricity.



### Full Surge Protection

The NPort S8455 series is equipped with surge protection for power, Ethernet interface, and serial interface to protect against voltage spikes.



### 2 KV Serial Isolation (NPort S8455 only)

Each serial port is protected by 2 KV of isolation protection to guard against harmful currents.

## Appearance



## General Specifications

### Port Summary

**Serial Ports:** 4 RS-232/422/485 ports

**Ethernet Switch Ports:**

NPort S8455: 3 RJ45 copper ports and 2 multi-mode fiber ports

NPort S8458: 4 RJ45 copper ports and 4 multi-mode fiber ports

**Console Ports:** 1 (8-pin RJ45 connector)

### Physical Characteristics

**Housing:** Metal

**Weight:**

NPort S8455: 578 g

NPort S8458: 1105 g

**Dimensions:**

NPort S8455: 73.1 x 134 x 125 mm (2.88 x 5.27 x 4.92 in)

NPort S8458: 93 x 144 x 125 mm (3.66 x 5.64 x 4.92 in)

### Environmental Limits

**Operating Temperature:**

Standard Models: 0 to 60°C (32 to 140°F)

Wide Temp. Models:

NPort S8455-T: -40 to 75°C (-40 to 167°F)

NPort S8458-T: -40 to 85°C (-40 to 185°F)

**Storage Temperature:** -40 to 85°C (-40 to 185°F)

**Ambient Relative Humidity:** 5 to 95% (non-condensing)

**Altitude:** Up to 2000 m

*Note: Please contact Moxa if you require products guaranteed to function properly at higher altitudes.*

### Power Requirements

**Input Voltage:** 12 to 48 VDC

**Power Consumption:**

NPort S8455: 935 mA @ 12 V, 470 mA @ 24 V

NPort S8458: 940 mA @ 12 V, 470 mA @ 24 V

### Standards and Certifications

**Safety:** UL 508, UL 60950-1, EN 60950-1

**EMC:** CE, FCC

**EMI:** EN 55022 Class A, FCC Part 15 Subpart B Class A

**EMS:**

EN 55024,

IEC 61000-4-2 (ESD) Level 4,

IEC 61000-4-4 (EFT) Level 4,

IEC 61000-4-5 (Surge)

- Level 1 for serial ports,

- Level 2 for LAN ports,

- Level 3 for power lines

### Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

## Device Server Specifications

### Serial Interface

**Number of Ports:** 4

**Serial Standards:** RS-232/422/485

**Connector:** DB9 male

**Serial Line Protection:**

- 15 KV ESD protection for all signals
- 2 KV isolation protection (NPort S8455 only)

**RS-485 Data Direction Control:** ADDC® (automatic data direction control)

**Pull High/Low Resistor for RS-485:** 1 K $\Omega$ , 150 K $\Omega$

**Terminator for RS-485:** 55  $\Omega$ , 120  $\Omega$

**Console Port:** Dedicated RS-232 console port (8-pin RJ45)

### Serial Communication Parameters

**Data Bits:** 5, 6, 7, 8

**Stop Bits:** 1, 1.5, 2

**Parity:** None, Even, Odd, Space, Mark

**Flow Control:** RTS/CTS and XON/XOFF

**Baudrate:** 50 bps to 921.6 Kbps

### Serial Signals

**RS-232:** TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND

**RS-422:** Tx+, Tx-, Rx+, Rx-, GND

**RS-485-4w:** Tx+, Tx-, Rx+, Rx-, GND

**RS-485-2w:** Data+, Data-, GND

### Software

**Configuration Options:** Web Console, Telnet Console, Serial Console, Windows Search Utility

**Windows Real COM Drivers:** Windows 95/98/ME/NT/2000, Windows XP/2003/Vista/2008/7/8 x86/x64, 2012 x64, Embedded CE 5.0/6.0, XP Embedded

**Fixed TTY Drivers:** SCO Unix, SCO OpenServer, UnixWare 7, UnixWare 2.1, SVR 4.2, QNX 4.25, QNX 6, Solaris 10, FreeBSD, AIX 5.x

**Linux Real TTY Drivers:** Linux kernel 2.4.x, 2.6.x, 3.x

**Operation Modes:** Real COM, TCP Server, TCP Client, UDP, RFC2217

**Management:** SNMP MIB-II

### Reliability

**Alert Tools:** Built-in buzzer and RTC (real-time clock)

**Automatic Reboot Trigger:** Built-in WDT (watchdog timer)

**MTBF (mean time between failures):**

NPort S8455: 200,951 hrs

NPort S8458: 163,624 hrs

## Ethernet Switch Specifications

### Ethernet Interface

**Standards:**

IEEE 802.3 for 10BaseT

IEEE 802.3u for 100BaseT(X) and 100Base FX

IEEE 802.3x for Flow Control

IEEE 802.1D for Spanning Tree Protocol

IEEE 802.1w for Rapid STP

IEEE 802.1Q for VLAN Tagging

IEEE 802.1p for Class of Service

IEEE 802.1x for Authentication

IEEE 802.3ad for Port Trunk with LACP

**Network Protocols:** ICMP, IP, TCP, UDP, ARP, Telnet, DNS, HTTP, SMTP, SNMP, IGMPv1/v2 device, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, DHCP Option 82, BootP, TFTP, SNMP, SMTP, RARP, GMRP, LACP, RMON

**MIB:** MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9

**Flow Control:** IEEE 802.3x flow control, back pressure flow control interface

### Switch Properties

**Priority Queues:** 4

**Max. Number of Available VLANs:** 64

**VLAN ID Range:** VID 1 to 4094

**IGMP Groups:** 256

### Optical Fiber Interface

	100BaseFX	
	Multi-mode	Single-mode
Wavelength	1300 nm	1310 nm
Max. TX	-14 dBm	0 dBm
Min. TX	-20 dBm	-5 dBm
RX Sensitivity	-32 dBm	-34 dBm
Link Budget	12 dB	29 dB
Typical Distance	5 km <sup>a</sup> 4 km <sup>b</sup>	40 km <sup>c</sup>
Saturation	-6 dBm	-3 dBm

a. 50/125  $\mu$ m, 800 MHz\*km fiber optic cable

b. 62.5/125  $\mu$ m, 500 MHz\*km fiber optic cable

c. 9/125  $\mu$ m, 3.5 PS/(nm\*km) fiber optic cable

### Switch Interface

**RJ45 Ports:** 10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection

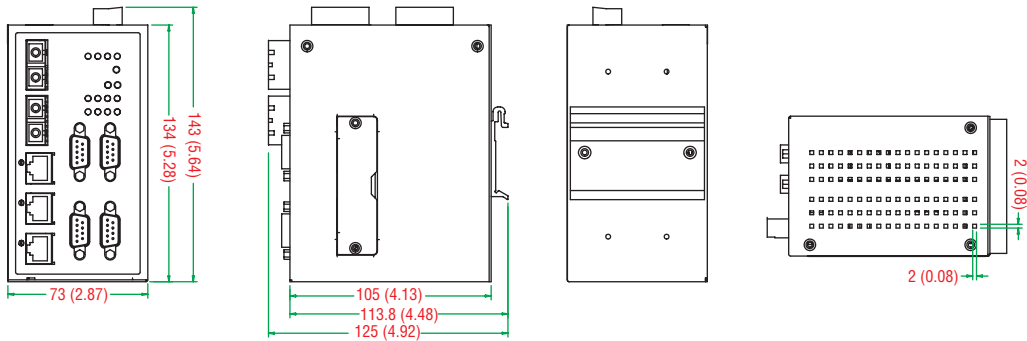
**DIP Switches:** Turbo Ring, Master, Coupler, Reserve

**Alarm Contact:** 2 relay outputs with current carrying capacity of 1A @ 24 VDC

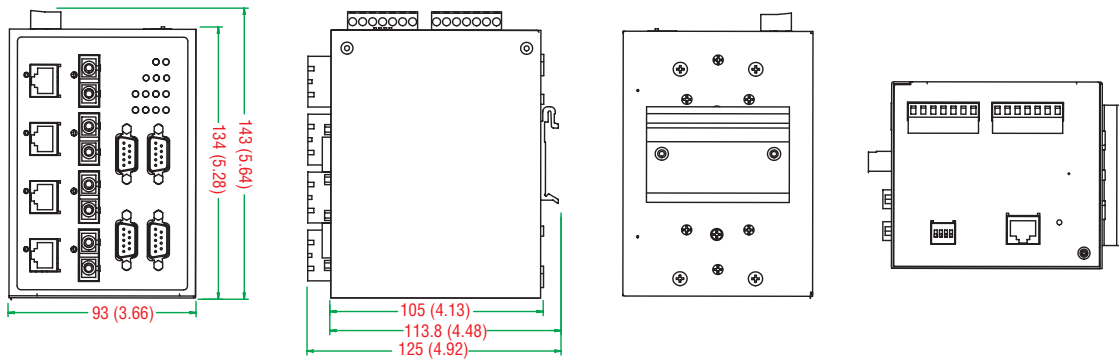
Dimensions

Unit: mm (inch)

**NPort S8455**

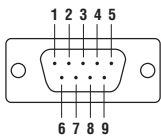


**NPort S8458**



Pin Assignment

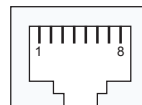
DB9 male connector



Serial Port (DB9 male connector)

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	-	-

8-pin RJ45 connector



Console Port (RJ45)

PIN	RS-232
1	DSR
2	RTS
3	GND
4	TxD
5	RxD
6	DCD
7	CTS
8	RTS

Ethernet Port (RJ45)

PIN	Signal
1	RXD+
2	RXD-
3	TXD+
4	-
5	-
6	TXD-
7	-
8	-

Ordering Information

Available Models

**NPort S8455I-MM-SC:** 4 RS-232/422/485 ports, 3 10/100M Ethernet ports, 2 100M multi-mode fiber ports with SC connector, 15 KV ESD, 12-48 VDC, 2 KV isolation protection, 0 to 60°C operating temperature

**NPort S8455I-SS-SC:** 4 RS-232/422/485 ports, 3 10/100M Ethernet ports, 2 100M single-mode fiber ports with SC connector, 15 KV ESD, 12-48 VDC, 2 KV isolation protection, 0 to 60°C operating temperature

**NPort S8455I-MM-SC-T:** 4 RS-232/422/485 ports, 3 10/100M Ethernet ports, 2 100M multi-mode fiber ports with SC connector, 15 KV ESD, 12-48 VDC, 2 KV isolation protection, -40 to 75°C operating temperature

**NPort S8455I-SS-SC-T:** 4 RS-232/422/485 ports, 3 10/100M Ethernet ports, 2 100M single-mode fiber ports with SC connector, 15 KV ESD, 12-48 VDC, 2 KV isolation protection, -40 to 75°C operating temperature

**NPort S8458-4S-SC-T:** 4 RS-232/422/485 ports, 4 10/100M Ethernet ports, 4 100M single-mode fiber ports with SC connector, 12-48 VDC, -40 to 85°C operating temperature

Optional Accessories (can be purchased separately)

**MXview:** Moxa industrial network management software

Package Checklist

- NPort S8455/S8458 device server
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card