

NPort® S8000 Series

Combo switch / serial device server



- > **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
 - Adjustable pull high/low resistor for RS-485 ports
- > **5-port managed Ethernet switch built in**
 - Two fiber Ethernet ports and three Ethernet ports
 - Ethernet redundancy with Turbo Ring® (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® S8000 series combines an industrial device server with a full-function managed Ethernet switch by integrating 2 fiber ports, 3 Ethernet ports, and 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 all NPort® 5000 Series Device Server Functions

The NPort® S8000 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 each of the

5 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® S8000 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

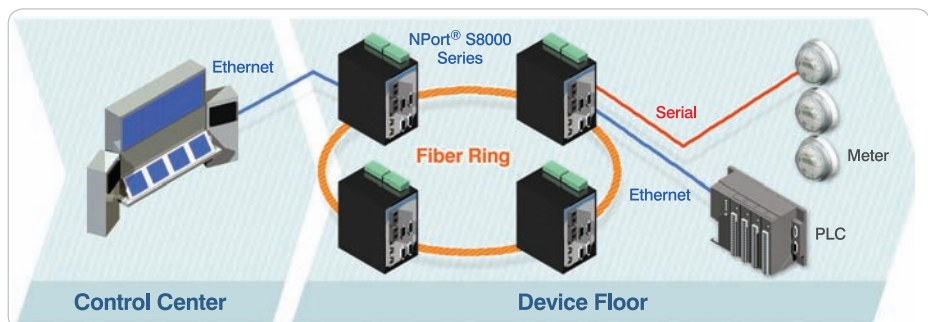
is used to increase the reliability and availability of your industrial Ethernet network, is provided by Moxa's own Turbo Ring® technology (recovery time < 20 ms) or RSTP/STP (IEEE 802.1w/D).

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. A significant part of this type of communication 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 S8000 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 S8000 can also achieve ring redundancy with standard STP/RSTP and Moxa's proprietary Turbo

Ring or Turbo Ring 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® S8000 series complies with the UL 508 standard, which covers safety requirements for industrial control equipment.



Level 4 ESD

The NPort® S8000 series supports high level, 8/15 KV, ESD protection to prevent damage from static electricity.



3-way Surge Protection

The NPort® S8000 series is equipped with surge protection for power, Ethernet interface, and serial interface to protect against voltage spikes.



2 KV Serial Isolation

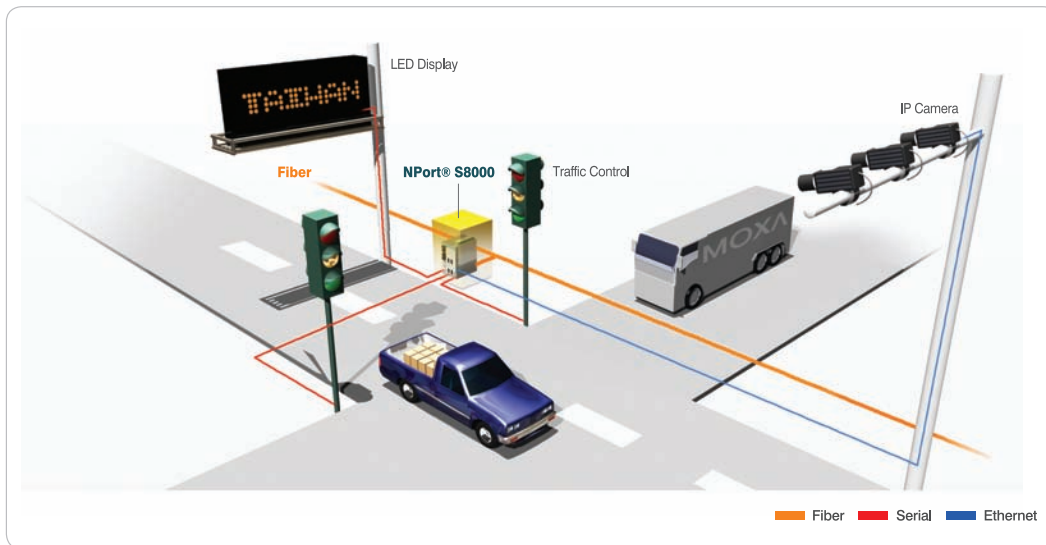
Each serial port is protected by 2 KV of isolation protection to guard against harmful currents.

Typical Applications

Roadway Traffic Monitoring and Control

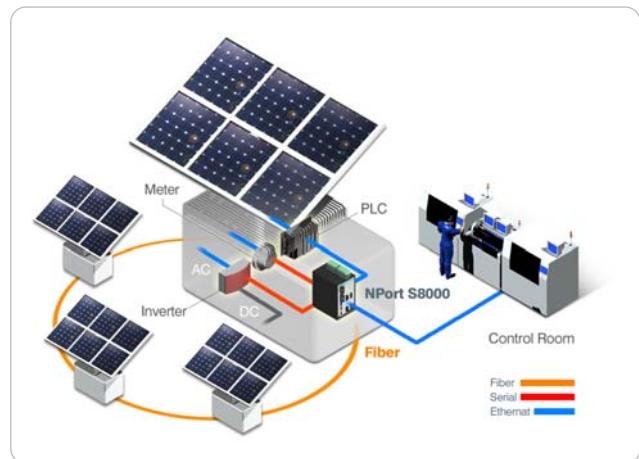
Intelligent transportation systems (ITS) are playing a major role in modern transportation construction, with ITS technology applied to roadway traffic control systems. In general, ITS involves integrating communication, control, and electronics technologies, and is used to monitor and manage traffic flow, reduce congestion, provide alternative routes to travelers, and enhance productivity to save lives, time, and money. Traffic monitoring and control systems are usually

housed in a small cabinet located by the roadside or at an intersection. Such systems usually include a camera for monitoring traffic, a traffic light control system, as well as other devices. The NPort S8000 is the best choice for traffic monitoring and control applications, since the compact size and all-in-one switch/device-server design saves a significant amount of space in a small cabinet.

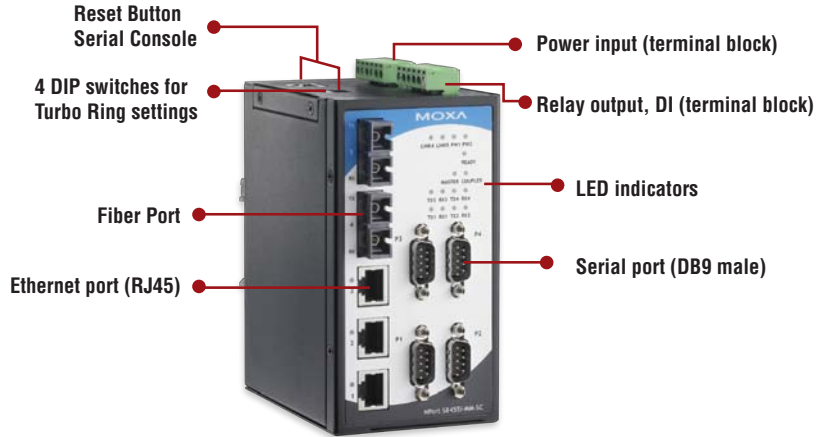


Solar Power Station

All solar power stations include three major devices—a power inverter, a PLC, and meters. The power inverter converts the energy generated by the plant into the power that is transmitted to end-users. The PLC controls the sun tracking system of the base. These devices are often serial devices, although some may be Ethernet-ready. Now you can connect all of these Ethernet and serial devices to the control center easily and economically with one NPort® S8000. The Ethernet redundancy function and ring structure increase the reliability and availability of the system.



Appearance



General Specifications

Port Summary

Serial Ports: 4 RS-232/422/485 ports
Ethernet Switch Ports: 3 RJ45 copper ports, 2 fiber ports
Console Ports: 1 (8-pin RJ45 connector)
LED Indicators: PWR1, PWR2, READY, MASTER, COUPLER, LINK4, LINK5

Physical Characteristics

Housing: Metal
Weight: 995 g
Dimensions: 73.1 x 134 x 105 mm (2.88 x 5.27 x 4.13 in)

Environmental Limits

Operating Temperature:
 Standard Models: 0 to 60°C (32 to 140°F)
 Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Operating Humidity: 5 to 95% RH
Storage Temperature: -40 to 85°C (-40 to 185°F)

Power Requirements

Input Voltage: 12 to 48 VDC
Power Consumption: 935 mA @ 12 V, 470 mA @ 24 V

Regulatory Approvals

EMC: FCC Class A, CE Class A
Safety: UL-508

EMS:

IEC 61000-4-2, Level 4 (ESD)
 IEC 61000-4-4, Level 4 (EFT)
 IEC 61000-4-5 for serial port, Level 1 (Surge)
 IEC 61000-4-5 for LAN port, Level 2 (Surge)
 IEC 61000-4-5 for Power Line, Level 3 (Surge)

Warranty

Warranty Period: 5 years
Details: See www.moxa.com/warranty

Device Server Specifications

Serial Interface

Number of Ports: 4
Serial Standards: RS-232/422/485
Connectors: DB9 male
Serial Line Protection:
 15 KV ESD protection for all signals
 2 KV isolation protection
RS-485 Data Direction Control: ADDC® (automatic data direction control)
Pull High/Low Resistor for RS-485: 1 KΩ, 150 KΩ
Terminator for RS-485: 55 Ω, 120 Ω
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, XP x86/x64, 2003 x86/x64, Vista x86/x64, 2008 x86/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, HP-UX 11i
Linux Real TTY Drivers: Linux kernel 2.4.x, 2.6.x
Operation Modes: Real COM, TCP Server, TCP Client, UDP, RFC2217
Management: SNMP MIB-II
IP Routing: Static, RIP-I, RIP-II
Reliability
Alert Tools: Built-in buzzer and RTC (real-time clock)
Automatic Reboot Trigger: Built-in WDT (watchdog timer)

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

Optical Fiber Interface

Distance:

- Multi-mode: 0 to 2 km, 1310 nm (62.5/125 μm, 500 MHz*km)
- Single-mode: 0 to 40 km, 1310 nm (9/125 μm, 3.5 PS/(nm*km))

Min. TX Output:

- Multi-mode: -20 dBm
- Single-mode: -5 dBm

Max. TX Output:

- Multi-mode: -14 dBm
- Single-mode: 0 dBm

Sensitivity:

- Multi-mode: -34 to -30 dBm
- Single-mode: -36 to -32 dBm

Switch Properties

Priority Queues: 4

Max. Number of Available VLANs: 64

VLAN ID Range: VID 1 to 4094

IGMP Groups: 256

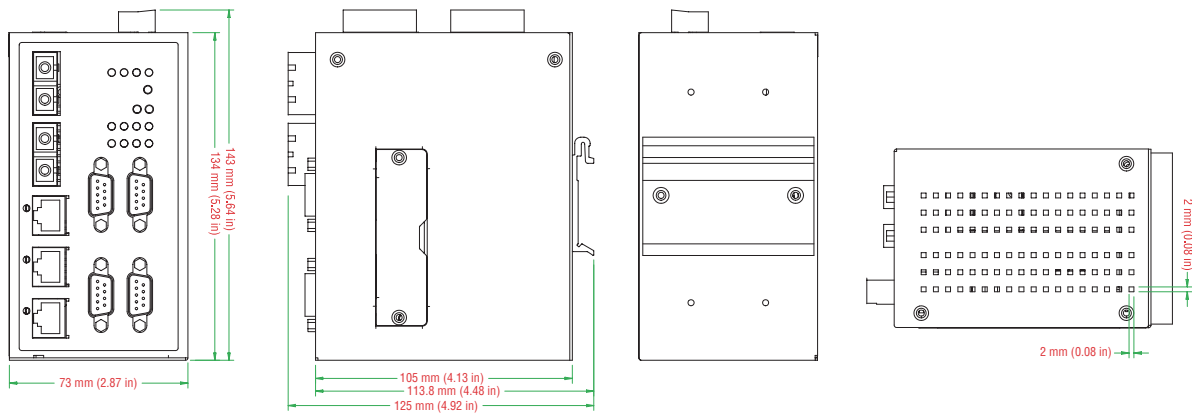
Switch Interface

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

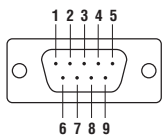
Alarm Contact: 2 relay outputs with current carrying capacity of 1A @ 24 VDC

Dimensions



Pin Assignment

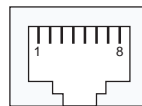
DB9 male connector



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, 0 to 60°C

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, 0 to 60°C

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, -40 to 75°C

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, -40 to 75°C

Package Checklist

- 1 NPort S8000
- Two power jack to TB power cables
- Document and Software CD
- Quick Installation Guide (printed)
- Warranty Card