NPort® S8000 Series

Combo switch / serial device server

NPort S8455I-MM-SC

> **4-port RS-232/422/RS-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

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

Overview

The first model available from the NPort® S8000 series is the NPort® S8455I-MM-SC, which combines an industrial device server with a full-function managed Ethernet switch. The NPort® S8455I-MM-SC integrates 2 fiber ports, 3 Ethernet ports, and 4 RS-232/422/485 serial ports, allowing you to save space in your cabinet, reduce your overall power consumption, and reduce your costs since you will not need to purchase separate switch and serial device server products.

Supports all NPort® 5000 Series Device Server Functions

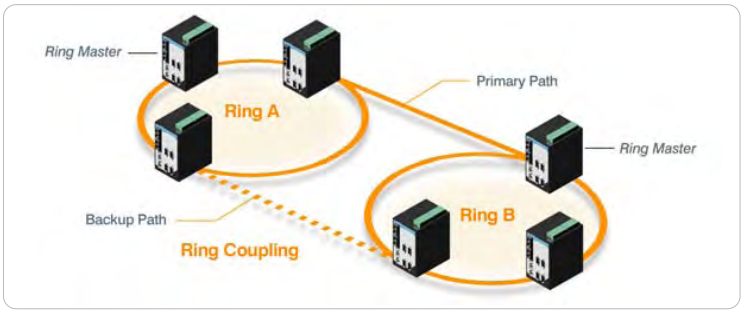
The NPort® S8455I-MM-SC supports the complete array of NPort® 5000 series device server functions. Network your existing serial devices by connecting up to 4 serial devices through each of the 5 Ethernet ports, with only basic configuration required. Data transmission between the serial and Ethernet interfaces is bi-directional.

Full-function Managed Ethernet Switch

The NPort® S8455I-MM-SC 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).

Couple Several Turbo Rings for Distributed Applications

For some systems, it may not be convenient to connect all devices in the system to create one BIG redundant ring, since some devices could be located at a remote site. The NPort® S8455I-MM-SC supports Turbo Ring's "Ring Coupling" function, which allows you to separate distributed devices into different smaller redundant rings, without a control line, and in such a way that the smaller rings will still be able to communicate with each other.



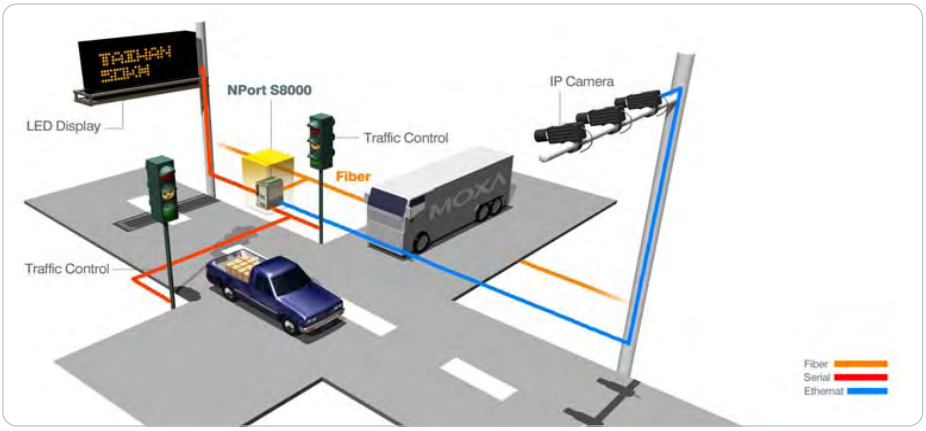
Rugged Design with Complete Protection

- **UL508 safety**
  To meet customers' critical application requirements, the NPort® S8455I-MM-SC has been certified to meet the UL 508 national and international standard. The UL 508 standard covers the safety requirements for industrial control equipment.
- **3-way surge protection**
  The NPort® S8455I-MM-SC is equipped with a surge protector for power, Ethernet interface, and serial interface for protection against voltage spikes.
- **Level 4 ESD**
  The NPort® S8455I-MM-SC supports high level, 8/15 KV, ESD protection to avoid damage from static electricity.
- **2 KV Serial Isolation**
  Each serial port is protected by 2 KV of isolation against harmful currents from high voltages caused by a difference in ground potential between points in a communications system.

Typical Applications

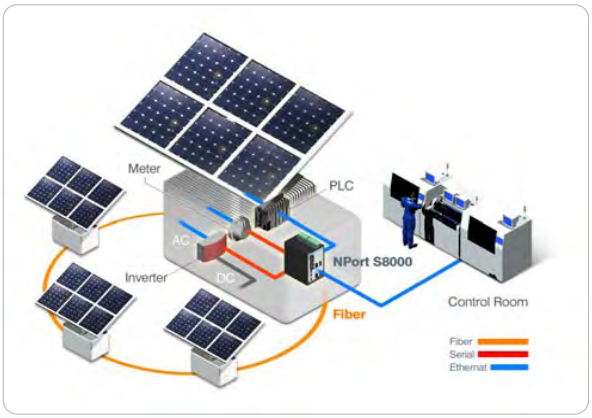
Roadway Traffic Monitoring and Control

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 S8455I-MM-SC 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.

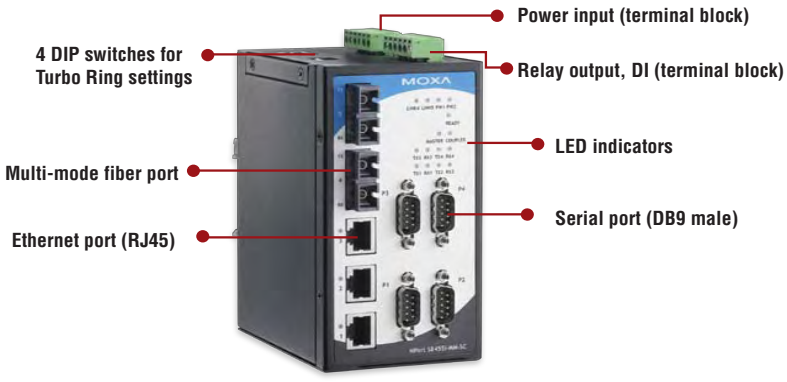


Solar Power Station

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 With the NPort® S8455I-MM-SC. The Ethernet redundancy function and ring structure increase the reliability and availability of the system. The NPort® S8000 series is definitely the best solution for this type of solar power system.



Appearance



General Specifications

Port Summary

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

Ethernet Switch Ports: 3 RJ45 copper ports, 2 multi-mode 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: 0 to 60°C (32 to 140°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: 935mA @ 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)

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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, SNTP, IGMPv1/v2 device, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, DHCP Option 82, BootP, TFTP, SNTP, 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

Type: Multi-mode

Distance: 0 to 2 km, 1310 nm (62.5/125 µm, 500 MHz*km)

Min. TX Output: -20 dBm

Max. TX Output: -14 dBm

Sensitivity: -34 to -30 dBm

Switch Properties

Priority Queues: 4

Max. Number of Available VLANs: 64

VLAN ID Range: VID 1 to 4094

IGMP Groups: 256

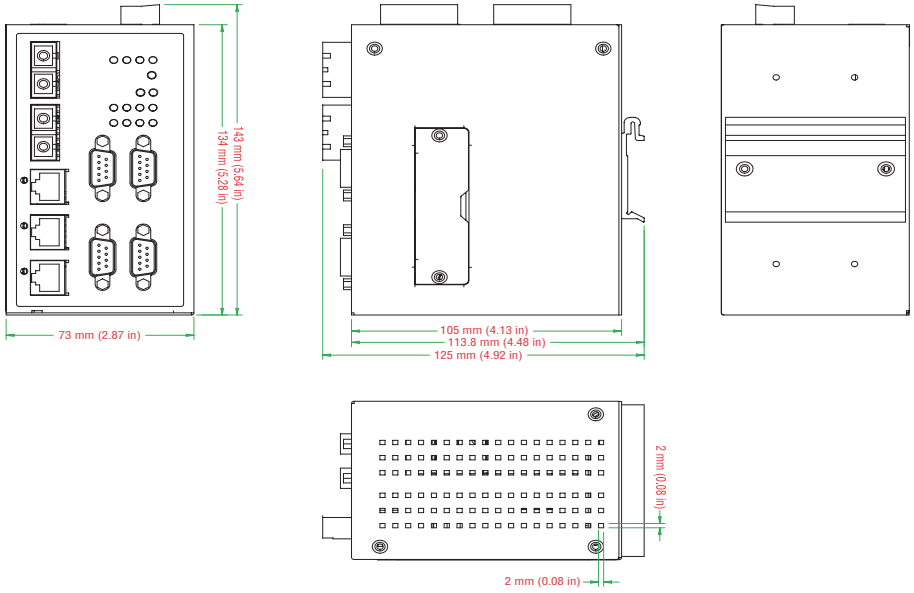
Switch Interface

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

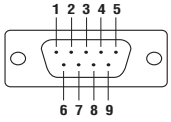
Alarm Contact: 2 relay outputs with current carrying capacity of 1A @ 24 VDC

Dimensions



Pin Assignment

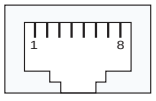
DB9 male connector



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: 5-port Ethernet switch and 4-port serial device server combo

Package Checklist

- NPort S8455I-MM-SC
- Two power jack to TB power cables
- Document and Software CD
- Quick Installation Guide (printed)
- Warranty Card