

# NPort® S8000 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 (S8455I only)
  - Adjustable pull high/low resistor for RS-485 ports (S8455I only)
- > Built-in managed Ethernet switch
  - S8455I Fiber: Two fiber Ethernet ports and three Ethernet ports
  - S8455I All Copper: Five 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 S8000 series combines an industrial device server with a full-function managed Ethernet switch 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 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 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

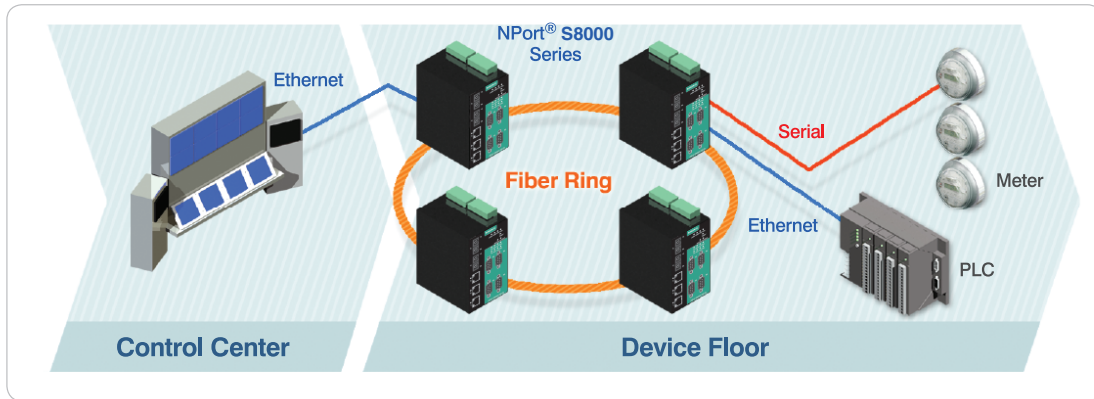
The NPort S8000 series has a built-in full-function managed Ethernet switch that supports QoS, IGMP-snooping/GMRP, VLAN, Port Trunking, SNMPv1/v2c/v3, and IEEE 802.1X, allowing you to handle virtually any kind of application. Ethernet redundancy, which

is used to increase the reliability and availability of your industrial Ethernet network, is provided by Moxa's 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 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 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



### UL 508 Safety

The NPort S8000 series complies with the UL 508 standard, which covers safety requirements for industrial control equipment.



### Level 4 ESD (NPort S8458 only)

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



### Full Surge Protection (NPort S8458 only)

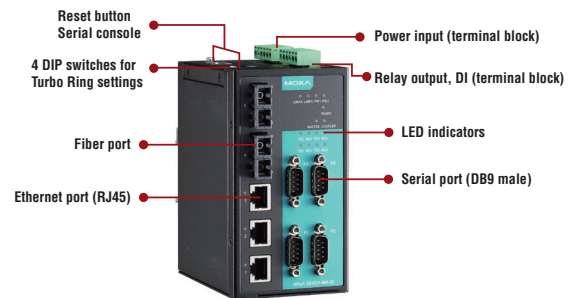
The NPort S8000 series is equipped with surge protection for power, Ethernet interface, and serial interface to protect against voltage spikes.



### 2 kV Serial Isolation (NPort S8455I 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 S8455I all copper: 5 RJ45 copper ports

NPort S8455I fiber: 3 RJ45 copper ports and 2 fiber ports

NPort S8458: 4 RJ45 copper ports and 4 fiber ports

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

### Physical Characteristics

**Housing:** Metal

**Weight:**

NPort S8455I: 578 g (1.27 lb)

NPort S8458: 1,105 g (2.44 lb)

**Dimensions:**

NPort S8455I: 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 S8455I-T: -40 to 75°C (-40 to 167°F)

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

**Storage Temperature:** -40 to 75°C (-40 to 167°F)

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

### Power Requirements

**Input Voltage:** 12 to 48 VDC

**Input Current:**

NPort S8455I: 935 mA @ 12 VDC

NPort S8458: 940 mA @ 12 VDC

## Standards and Certifications

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

**EMC:** EN 55022/24

**EMI:** CISPR 22, FCC Part 15B Class A

**EMS:**

NPort S8455I:

IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV

IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m

IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV

IEC 61000-4-5 Surge: Power 1 kV (4 kV for all copper models); Signal: 0.25 kV

IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m

IEC 61000-4-8 PFMF

NPort S8458 series:

IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV

IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m

IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV

IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV

IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m

IEC 61000-4-8 PFMF

**Hazardous Location:** UL/cUL Class I Division 2 Groups A/B/C/D (S8455I all copper model only)

### 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:**  
 2 kV isolation protection (NPort S8455I only)  
**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:** 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 Utility  
**Windows Real COM Drivers:** Windows 95/98/ME/NT/2000, Windows XP/2003/Vista/2008/7/8/8.1/10 (x86/x64), Windows 2008 R2/2012/2012 R2 (x64), Windows Embedded CE 5.0/6.0, Windows XP Embedded  
**Fixed TTY Drivers:** SCO Unix, SCO OpenServer, UnixWare 7, QNX 4.25, QNX 6, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X  
**Linux Real TTY Drivers:** Linux 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)  
**Time:**  
 NPort S8455I Single-mode: 286,993 hrs  
 NPort S8455I Multi-mode: 200, 951 hrs  
 NPort S8455I All copper: 287,354 hrs  
 NPort S8458: 163,624 hrs  
**Standard:** Telcordia (Bellcore) Standard TR/SR

## Ethernet Switch Specifications

### Ethernet Interface

**Standards:**  
 IEEE 802.3 for 10BaseT  
 IEEE 802.3u for 100BaseT(X) and 100BaseFX  
 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, IPv4, TCP, UDP, ARP, Telnet, DNS, HTTP, SMTP, SNMP, IGMPv1/v2, 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  
**Switch Properties**  
**Priority Queues:** 4  
**Max. Number of Available VLANs:** 64  
**VLAN ID Range:** VID 1 to 4094  
**IGMP Groups:** 256

### Optical Fiber Interface

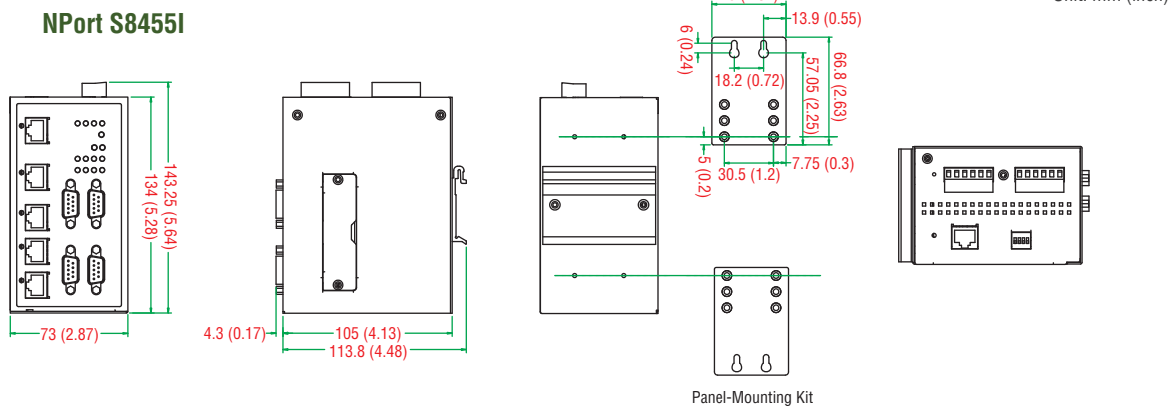
		100BaseFX		
		Multi-Mode		Single-Mode
Fiber Cable Type		OM1	50/125 μm 800 MHz*km	G.652
Typical Distance		4 km	5 km	40 km
Wave-length	Typical (nm)	1300		
	TX Range (nm)	1260 to 1360	1280 to 1340	
	RX Range (nm)	1100 to 1600	1100 to 1600	
Optical Power	TX Range (dBm)	-10 to -20	0 to -5	
	RX Range (dBm)	-3 to -32	-3 to -34	
	Link Budget (dB)	12	29	
	Dispersion Penalty (dB)	3	1	

**Note:** When connecting a single-mode fiber transceiver, we recommend using an attenuator to prevent damage caused by excessive optical power.  
**Note:** Compute the "typical distance" of a specific fiber transceiver as follows: Link budget (dB) > dispersion penalty (dB) + total link loss (dB).

### 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

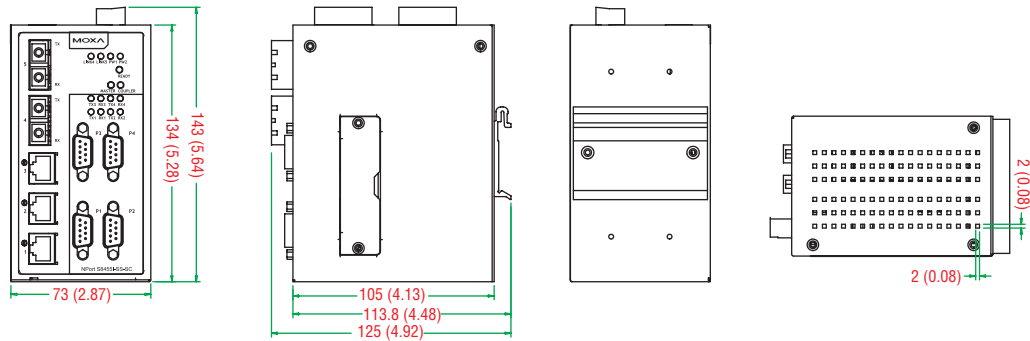
## Dimensions



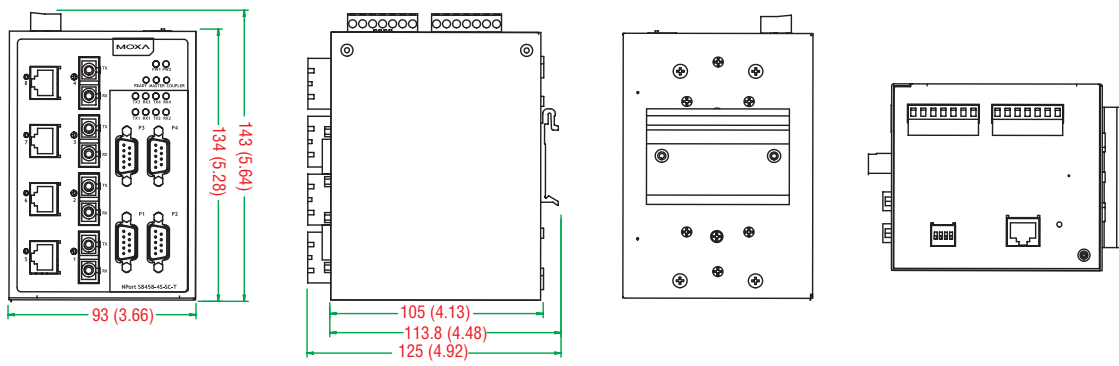
Dimensions

Unit: mm (inch)

**NPort S8455I Fiber**

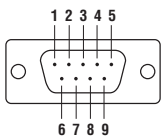


**NPort S8458**



Pin Assignment

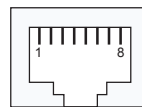
DB9 male connector



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:** 4 RS-232/422/485 ports, 5 10/100M Ethernet ports, 12 to 48 VDC, 2 kV isolation protection, 0 to 60°C operating temperature

**NPort S8455I-T:** 4 RS-232/422/485 ports, 5 10/100M Ethernet ports, 12 to 48 VDC, 2 kV isolation protection, -40 to 75°C operating temperature

**NPort S8455I-MM-SC:** 4 RS-232/422/485 ports, 3 10/100M Ethernet ports, 2 100M multi-mode fiber ports with SC connector, 12 to 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, 12 to 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, 12 to 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 multi-mode fiber ports with SC connector, 12 to 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 to 48 VDC, -40 to 85°C operating temperature

Optional Accessories (can be purchased separately)

**CBL-PJTB-10:** Non-locking barrel plug to bare-wires cable






**Mini DB9F-to-TB:** DB9 female to terminal block adapter for RS-422/485 applications

**MXview:** Moxa industrial network management software

Package Checklist

- 1 NPort S8000 device server
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

# Power Accessory Selection Guide

Barrel Plug Type		Locking Barrel Plug				
O/P		12 VDC 0.5 A, 100 to 240 VAC (Switch-Mode)				
Plug Type		US/JP	EU	AU	UK	CN
Appearance						
Model Name		PWR-12050-WPUSJP-S1	PWR-12050-WPEU-S1	PWR-12050-WPAU-S1	PWR-12050-WPUK-S1	PWR-12050-WPCN-S1
1 Port	NPort 5110	-	-	-	-	-
	NPort 5130	-	-	-	-	-
	NPort 5150	-	-	-	-	-
	NPort 5110A	✓	✓	✓	✓	✓
	NPort 5130A	✓	✓	✓	✓	✓
	NPort 5150A	✓	✓	✓	✓	✓
	DE-211	-	-	-	-	-
	DE-311	-	-	-	-	-
	NPort P5150A	✓	✓	✓	✓	✓
	NPort W2150A	✓	✓	✓	✓	✓
NPort Z2150/Z3150	✓	✓	✓	✓	✓	
2 Ports	NPort 5210	-	-	-	-	-
	NPort 5230	-	-	-	-	-
	NPort 5232	-	-	-	-	-
	NPort 5232I	-	-	-	-	-
	NPort 5210A	✓	✓	✓	✓	✓
	NPort 5230A	✓	✓	✓	✓	✓
	NPort 5250A	✓	✓	✓	✓	✓
	NPort W2250A	✓	✓	✓	✓	✓

Barrel Plug Type		Non-Locking Barrel Plug				
O/P		12 VDC 0.5 A, 100 to 240 VAC (Switch-Mode)				
Plug Type		US/JP	EU	AU	UK	CN
Appearance						
Model Name		PWR-12050-WPUSJP-S2	PWR-12050-WPEU-S2	PWR-12050-WPAU-S2	PWR-12050-WPUK-S2	PWR-12050-WPCN-S2
1 Port	NPort 5110	✓	✓	✓	✓	✓
	NPort 5130	✓	✓	✓	✓	✓
	NPort 5150	✓	✓	✓	✓	✓
	NPort 5110A	-	-	-	-	-
	NPort 5130A	-	-	-	-	-
	NPort 5150A	-	-	-	-	-
	DE-211	✓	✓	✓	✓	✓
	DE-311	✓	✓	✓	✓	✓
	NPort P5150A	-	-	-	-	-
	NPort W2150A	-	-	-	-	-
NPort Z2150/Z3150	-	-	-	-	-	
2 Ports	NPort 5210	✓	✓	✓	✓	✓
	NPort 5230	✓	✓	✓	✓	✓
	NPort 5232	✓	✓	✓	✓	✓
	NPort 5232I	✓	✓	✓	✓	✓
	NPort 5210A	-	-	-	-	-
	NPort 5230A	-	-	-	-	-
	NPort 5250A	-	-	-	-	-
	NPort W2250A	-	-	-	-	-

# Power Accessory Selection Guide

Barrel Plug Type		Non-Locking Barrel Plug				
O/P		12 VDC 1.25/1.5 A, 100 to 240 VAC				
Plug Type		US/JP	EU	AU	UK	CN
Appearance						
Model Name		PWR-12125-USJP-S1	PWR-12150-EU-S2	PWR-12150-AU-S2	PWR-12150-UK-S2	PWR-12125-CN-S1
4 Ports	NPort 5410	✓	✓	✓	✓	✓
	NPort 5430	✓	✓	✓	✓	✓
	NPort 5430I	✓	✓	✓	✓	✓
	NPort 5450	✓	✓	✓	✓	✓
	NPort 5450I	✓	✓	✓	✓	✓
8 Ports	NPort 5610-8	-	-	-	-	-
	NPort 5630-8	-	-	-	-	-
	NPort 5650-8	-	-	-	-	-
	NPort 5650-8-M-SC	-	-	-	-	-
	NPort 5650-8-S-SC	-	-	-	-	-
	NPort 5610-8-DT	-	-	-	-	-
	NPort 5610-8-DT-J	-	-	-	-	-
	NPort 5650-8-DT	-	-	-	-	-
	NPort 5650-8-DT-J	-	-	-	-	-
	NPort 5650I-8-DT	-	-	-	-	-
	NPort 5610-8-DTL	-	-	-	-	-
NPort 5650-8-DTL	-	-	-	-	-	
16 Ports	NPort 5610-16	-	-	-	-	-
	NPort 5630-16	-	-	-	-	-
	NPort 5650-16	-	-	-	-	-

Barrel Plug Type		Locking Barrel Plug						
O/P		12 VDC 2 A, 100 to 240 VAC (desktop type)	10A/250V Power Cord, 183 cm					
Plug Type		Must accompany with one power cord	US	JP	EU	AU	UK	CN
Appearance								
Model Name		PWR-12200-DT-S1	PWC-C13US-3B-183	PWC-C13JP-3B-183	PWC-C13EU-3B-183	PWC-C13AU-3B-183	PWC-C13UK-3B-183	PWC-C13CN-3B-183
4 Ports	NPort 5410	-	-	-	-	-	-	-
	NPort 5430	-	-	-	-	-	-	-
	NPort 5430I	-	-	-	-	-	-	-
	NPort 5450	-	-	-	-	-	-	-
	NPort 5450I	-	-	-	-	-	-	-
8 Ports	NPort 5610-8	-	✓	✓	✓	✓	✓	✓
	NPort 5630-8	-	✓	✓	✓	✓	✓	✓
	NPort 5650-8	-	✓	✓	✓	✓	✓	✓
	NPort 5650-8-M-SC	-	✓	✓	✓	✓	✓	✓
	NPort 5650-8-S-SC	-	✓	✓	✓	✓	✓	✓
	NPort 5610-8-DT	✓	✓	✓	✓	✓	✓	✓
	NPort 5610-8-DT-J	✓	✓	✓	✓	✓	✓	✓
	NPort 5650-8-DT	✓	✓	✓	✓	✓	✓	✓
	NPort 5650-8-DT-J	✓	✓	✓	✓	✓	✓	✓
	NPort 5650I-8-DT	✓	✓	✓	✓	✓	✓	✓
	NPort 5610-8-DTL	✓	✓	✓	✓	✓	✓	✓
NPort 5650-8-DTL	✓	✓	✓	✓	✓	✓	✓	
16 Ports	NPort 5610-16	-	✓	✓	✓	✓	✓	✓
	NPort 5630-16	-	✓	✓	✓	✓	✓	✓
	NPort 5650-16	-	✓	✓	✓	✓	✓	✓