

# NPort S9650I 系列

配備網管型乙太網路交換器的 8/16 埠強固裝置伺服器



## 特色與優點

- 支援多達 4 個網管型乙太網路交換器埠 ( 部份選配網路模組適用光纖 )
- 8/16 埠 RS-232/422/485 串列介面
- 支援 DNP3 和 Modbus 通訊協定
- 支援 Turbo Ring/Chain 和 RSTP/STP 的乙太網路備援
- 用於 Windows 和 Linux 的 Real COM/TTY 驅動程式
- 符合 IEC 61850-3、IEEE 1613 ( 變電站 )
- IEEE 1588v2 和 IRIG-B 時間同步功能
- 支援 IEC 61850 MMS 通訊協定
- 基於 IEC 62443/NERC CIP 的安全功能
- -40°C 至 85°C 寬範圍操作溫度

## 認證



## 簡介

NPort S9650I 系列 8/16 埠 RS-232/422/485 裝置伺服器內建全功能網管型乙太網路交換器，專為變電站的嚴苛環境條件所設計。裝置伺服器和乙太網路交換器的組合同時支援光纖和線路乙太網路連接埠，使用者很容易就能安裝、管理和維護 NPort S9650I 本身以及連接的串列裝置。

### 嚴苛變電站環境的電磁相容性

NPort S9650I 系列支援大量突波保護，防止變電站和工業自動化應用中出現電源突波和 EMI 等類型的損壞。結合 -40°C 至 85°C 的操作溫度範圍和鍍鋅鋼外殼，NPort S9650I 適用於多種工業環境。

此外，NPort S9650I 的雙電源既提供備援，也提供多樣化的電壓輸入。WV 型號接受 24/48 VDC 電源輸入 ( 範圍從 18 到 72 VDC )，HV 型號接受 88 到 300 VDC 和 85 到 264 VAC 的電源輸入。

### 支援 IEC 61850 MMS 的 Power SCADA，便於維護

SCADA 應用目前的趨勢是使用 MMS 通訊協定控制和監控 IT 裝置 ( 交換器、路由器等 ) 和 IED ( 感測器、傳動器等 )。然而，傳統的管理方法是對於 IT 裝置使用 SNMP，而對於 IED 使用 MMS。實際上，SI 甚至可能需要管理使用私有通訊協定的各種傳統裝置。

NPort S9650I 裝置伺服器是全球首款將 MMS 整合到專為電源 SCADA 應用而設計的 IT 型裝置。NPort S9650I 甚至支援使用 MMS 監控 S9650I 與傳統裝置之間的串列通訊。

### 支援 Modbus/DNP3 通訊協定閘道

NPort S9650I 系列為整合各種類型和規模的工業 Modbus/DNP3 網路提供最大的彈性。NPort S9650I 的設計可將 Modbus TCP、ASCII 和 RTU 裝置整合到幾乎任何主從式組合中，包括同步串列和乙太網路主控裝置。

NPort S9650I 裝置伺服器也支援 DNP3 串列和 DNP3 IP 之間的通訊協定轉換，而且所有型號都相當堅固耐用，能夠確保正常運作。

### 基於 IEC 62443/NERC CIP 的網路安全功能

NPort S9650I 系列具有基於 IEC 62443/NERC CIP 的安全功能，提供絕佳的網路安全性。保護任務關鍵型網路免於遭受網路攻擊是工業自動化應用的首要任務，網路停機時間延長可能造成巨大損失。

### 支援 IEEE 1588v2 和 IRIG-B 時間同步功能

NPort S9650I 系列採用模組化設計，支援 IEEE 1588v2 和 IRIG-B 時間同步，能夠互連和同步使用不同通訊通訊協定的多種智慧電子裝置 (IED)。時間來源透過 IEEE 1588v2 提供並轉換為 IRIG-B，以便透過串列埠或專用 IRIG-B BNC 連接器分配給 IED。

## 設備層級的環網備援

工業自動化的裝置層級通訊網路非常重要，這些網路的作用是控制和監控裝置程序。這些通訊的可靠性取決於裝置層級環網備援。這種備援可進行快速的網路失效偵測和重新配置，支援最嚴苛的控制應用。NPort S9650I 系列將全功能 NPort 裝置伺服器與工業交換器相互整合，同時承載串列和乙太網路裝置。此外，NPort S9650I 系列可透過標準 STP/RSTP 和 Moxa 的私有 Turbo Ring 或 Turbo Chain 2 備援通訊協定進行環網備援。這種一體式設計可優化和簡化裝置網路並提高可靠性。

## 規格

### Input/Output Interface

Alarm Contact Channels	Resistive load: 1 A @ 24 VDC
------------------------	------------------------------

### Ethernet Interface

10/100BaseT(X) Ports (RJ45 connector)	NPort S9650I-E Series: 4 RJ45 ports NPort S9650I-MSC Series: 2 RJ45 ports NPort S9650I-SSC Series: 2 RJ45 ports NPort S9650I-IRIG Series: 2 RJ45 ports
100BaseFX Ports (multi-mode SC connector)	NPort S9650I-MSC Series: 2 multi-mode SC ports
100BaseFX Ports (single-mode SC connector)	NPort S9650I-SSC Series: 2 single-mode SC ports
Magnetic Isolation Protection	1.5 kV (built-in)

### Optical Fiber

		100BaseFX		
		Multi-Mode		Single-Mode
Fiber Cable Type		OM1	50/125 $\mu$ m	G.652
			800 MHz x km	
Typical Distance		4 km	5 km	40 km
Wavelength	Typical (nm)	1300		1310
	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).

### Standards

IEEE 802.1D-2004 for Spanning Tree Protocol  
IEEE 802.1p for Class of Service  
IEEE 802.1Q for VLAN Tagging  
IEEE 802.1w for Rapid Spanning Tree Protocol  
IEEE 802.1X for authentication  
IEEE 802.3 for 10BaseT  
IEEE 802.3ad for Port Trunk with LACP  
IEEE 802.3u for 100BaseT(X) and 100BaseFX

### Switch Properties

IGMP Groups	256
Max. No. of VLANs	64
Priority Queues	4
VLAN ID Range	VID 1 to 4094

## Ethernet Software Features

Configuration Options	Command Line Interface (CLI) through Serial/Telnet/SSH, Web Console (HTTP/HTTPS), Windows Utility
Management	DHCP Client, DHCP Option 82, HTTP, IEC 61850 MMS, IPv4, LLDP, Port Mirror, RARP, RMON, SMTP, SNMPv1/v2c/v3, Syslog, Telnet, TFTP, Web Console
Filter	GMRP, GVRP, IGMP v1/v2
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
Linux Real TTY Drivers	Kernel versions: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x
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
Android API	Android 3.1.x and later
Industrial Protocols	Modbus TCP Server (Slave), DNP3 TCP Outstation
Time Management	NTP Server/Client, SNTP, IEEE 1588v2 PTP (hardware-based), IRIG-B
MIB	Bridge MIB, Device Settings MIB, Ethernet-like MIB, MIB-II, P-BRIDGE MIB, Q-BRIDGE MIB, RFC1213, RFC1317, RMON MIB Groups 1, 2, 3, 9, RSTP MIB
Redundancy Protocols	RSTP, Turbo Chain, Turbo Ring v1, Turbo Ring v2
Security	HTTPS/SSL, Local Account Accessibility, TACACS+, RADIUS, SSH

## IRIG-B Interface

PWM/PPS Output, BNC Connector	NPort S9650I-IRIG Series: 1
PWM/PPS Output, DB9 Female	NPort S9650I-8B-2HV-IRIG-T: 8 NPort S9650I-16B-2HV-IRIG-T: 16
PWM Input, BNC Connector	NPort S9650I-IRIG Series: 1

## Serial Interface

Connector	NPort S9650I-8/-16 Series: DB9 male NPort S9650I-8B/-16B Series: DB9 female NPort S9650I-8F/-16F Series: Multi-mode fiber ST connector
No. of Ports	8 or 16
Serial Standards	RS-232, RS-422, RS-485
Operation Modes	Real COM mode, RFC2217 mode, TCP Client mode, TCP Server mode, UDP mode, Modbus mode, DNP3 mode, DNP3 Raw Socket mode, Disabled
Baudrate	50 bps to 921.6 kbps (supports non-standard baudrates)
Data Bits	5, 6, 7, 8
Stop Bits	1, 1.5, 2
Parity	None, Even, Odd, Space, Mark
Flow Control	None, RTS/CTS, XON/XOFF
Isolation	2 kV
Surge	4 kV
RS-485 Data Direction Control	ADDC® (automatic data direction control)

Pull High/Low Resistor for RS-485	1 kilo-ohm, 150 kilo-ohms
Terminator for RS-485	120 ohms
Console Port	RS-232 (TxD, RxD, GND), 10-pin RJ45 (19200, n, 8, 1)

### Serial Signals

RS-232	NPort S9650I-IRIG Series: TxD, RxD, RTS, CTS, DTR/+IRIG-B, DSR, DCD, GND NPort S9650I Series: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422	NPort S9650I-IRIG Series: TxD+, TxD-, RxD+, RxD-, GND, +IRIG-B NPort S9650I Series: Tx+, Tx-, Rx+, Rx-
RS-485-4w	Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w	NPort S9650I-IRIG Series: Data+, Data-, GND, +IRIG-B NPort S9650I Series: Data+, Data-, GND

### DIP Switch Configuration

Ethernet Interface	Turbo Ring, Master, Coupler, Reserved
--------------------	---------------------------------------

### Modbus TCP

Max. No. of Client Connections	32
Max. No. of Server Connections	16

### DNP3 (Transparent)

Max. No. of Master Connections	16
Max. No. of Outstation Connections	32

### Reliability

Automatic Reboot Trigger	Built-in WDT
Alert Tools	Built-in buzzer and RTC (real-time clock)

### Power Parameters

No. of Power Inputs	2
Reverse Polarity Protection	Supported
Input Current	0.65 A @ 100 VAC, 0.47A @ 100 VDC
Input Voltage	110/220 VAC/VDC (100 to 240 VAC, 100 to 250 VDC)

### Physical Characteristics

Housing	Metal
Installation	19-inch rack mounting
Dimensions	457 x 32 x 330 mm (18 x 1.25 x 12.99 in)
Weight	Product only: 5.15 kg (11.35 lb)

### Environmental Limits

Operating Temperature	-40 to 85°C (-40 to 185°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

## Standards and Certifications

EMC	EN 61000-6-2/-6-4
EMI	CISPR 32, FCC Part 15B Class A
EMS	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: 4 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 IEC 61000-4-11 DIPs
Environmental Testing	IEC 60068-2-2 IEC 60068-2-14
Power Substation	IEC 61850-3, IEEE 1613
Safety	EN 61010-2-201, UL 61010-2-201
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6, IEC 60068-2-64

## Declaration

Green Product	RoHS, CRoHS, WEEE
---------------	-------------------

## MTBF

Time	NPort S9650I-8-2HV-E-T: 224,670 hrs NPort S9650I-8-2HV-MS-C-T: 220,944 hrs NPort S9650I-8-2HV-SS-C-T: 220,944 hrs NPort S9650I-8B-2HV-IRIG-T: 213,025 hrs NPort S9650I-8F-2HV-E-T: 311,734 hrs NPort S9650I-8F-2HV-MS-C-T: 304,587 hrs NPort S9650I-8F-2HV-SS-C-T: 304,587 hrs NPort S9650I-16-2HV-E-T: 158,816 hrs NPort S9650I-16-2HV-MS-C-T: 156,949 hrs NPort S9650I-16-2HV-SS-C-T: 156,949 hrs NPort S9650I-16B-2HV-IRIG-T: 157,770 hrs NPort S9650I-16F-2HV-E-T: 261,817 hrs NPort S9650I-16F-2HV-MS-C-T: 256,761 hrs NPort S9650I-16F-2HV-SS-C-T: 256,761 hrs
Standards	Telcordia SR332

## Warranty

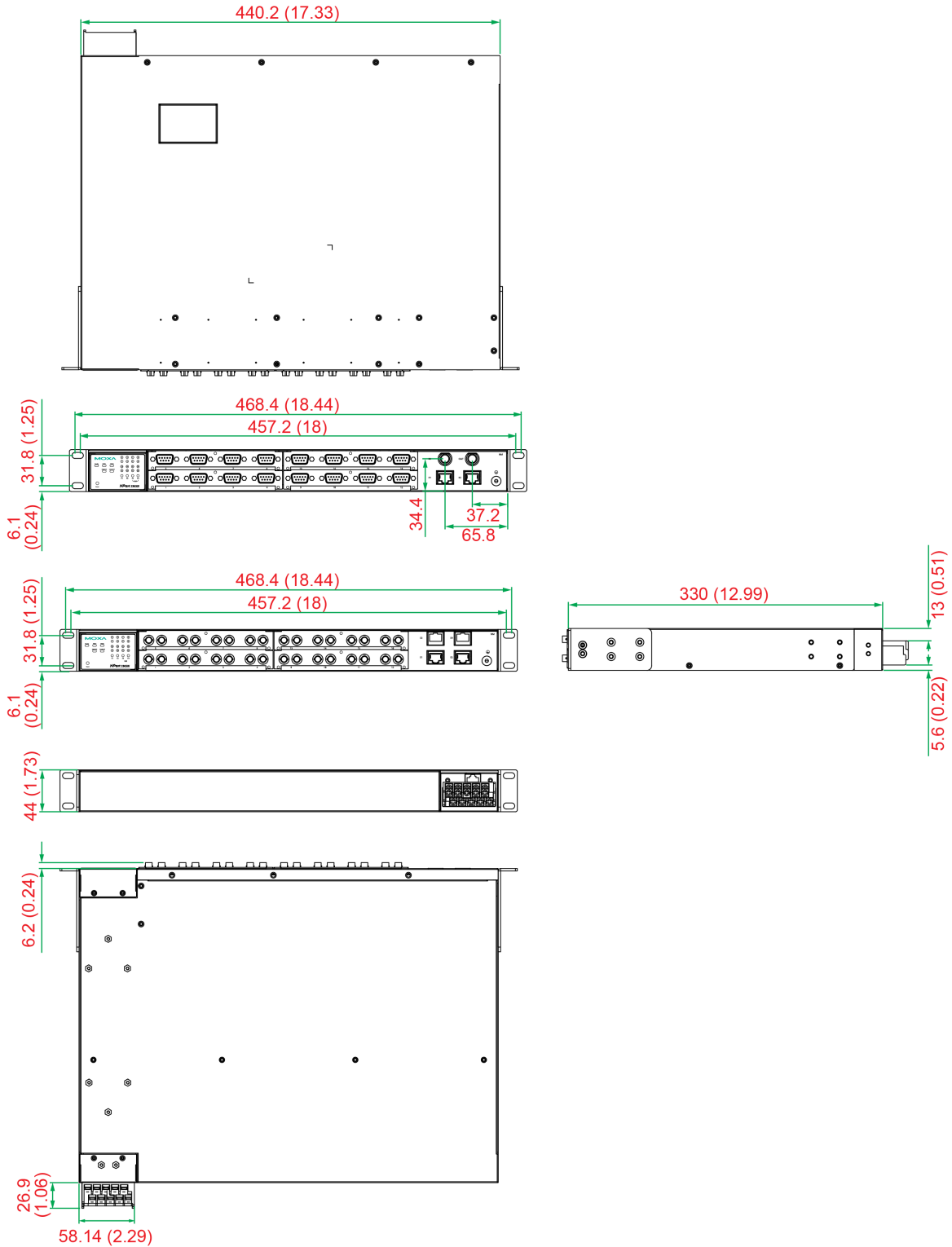
Warranty Period	5 years
Details	See <a href="http://www.moxa.com/tw/warranty">www.moxa.com/tw/warranty</a>

## Package Contents

Device	1 x NPort S9650I Series device server
Documentation	1 x quick installation guide 1 x warranty card

# 尺寸

單位：公釐 (英寸)



## 訂購資訊

Model Name	No. of Serial Ports	Serial Port Connector	IRIG-B Time Sync	No. of Ethernet Ports	Ethernet Port Connector
NPort S9650I-8-2HV-E-T	8	DB9 male	-	4	4 x RJ45
NPort S9650I-8-2HV-MS-C-T	8	DB9 male	-	4	2 x RJ45, 2 x multi-mode SC fiber

Model Name	No. of Serial Ports	Serial Port Connector	IRIG-B Time Sync	No. of Ethernet Ports	Ethernet Port Connector
NPort S9650I-8-2HV-SSC-T	8	DB9 male	-	4	2 x RJ45, 2 x single-mode SC fiber
NPort S9650I-8B-2HV-IRIG-T	8	DB9 female	P	2	2 x RJ45
NPort S9650I-8F-2HV-E-T	8	Multi-mode ST fiber	-	4	4 x RJ45
NPort S9650I-8F-2HV-MS-C-T	8	Multi-mode ST fiber	-	4	2 x RJ45, 2 x multi-mode SC fiber
NPort S9650I-8F-2HV-SSC-T	8	Multi-mode ST fiber	-	4	2 x RJ45, 2 x single-mode SC fiber
NPort S9650I-16-2HV-E-T	16	DB9 male	-	4	4 x RJ45
NPort S9650I-16-2HV-MS-C-T	16	DB9 male	-	4	2 x RJ45, 2 x multi-mode SC fiber
NPort S9650I-16-2HV-SSC-T	16	DB9 male	-	4	2 x RJ45, 2 x single-mode SC fiber
NPort S9650I-16B-2HV-IRIG-T	16	DB9 female	P	2	2 x RJ45
NPort S9650I-16F-2HV-E-T	16	Multi-mode ST fiber	-	4	4 x RJ45
NPort S9650I-16F-2HV-MS-C-T	16	Multi-mode ST fiber	-	4	2 x RJ45, 2 x multi-mode SC fiber
NPort S9650I-16F-2HV-SSC-T	16	Multi-mode ST fiber	-	4	2 x RJ45, 2 x single-mode SC fiber

## 配件 (選購)

### Cables

CBL-F9M9-150	DB9 female to DB9 male serial cable, 1.5 m
CBL-F9M9-20	DB9 female to DB9 male serial cable, 20 cm
CBL-RJ458P-100	8-pin RJ45 CAT5 Ethernet cable, 1 m
CN20070	10-pin RJ45 to DB9 female serial cable

### Connectors

ADP-RJ458P-DB9F	DB9 female to RJ45 connector
Mini DB9F-to-TB	DB9 female to terminal block connector

© Moxa Inc. 版權所有.2019 年 12 月 15 日更新。

未經 Moxa Inc. 明確書面許可，不得以任何方式複製或使用本文件及其任何部分。產品規格如有變更，恕不另行通知。請至本公司官網了解最新的產品資訊。