

NPort® 5000AI-M12 Series



Railway 1, 2, and 4-port RS-232/422/485 serial device servers



- > Speedy 3-step web-based configuration
- > COM port grouping and UDP multicast applications
- > Real COM/TTY drivers for Windows and Linux
- > Standard TCP/IP interface and versatile TCP and UDP operation modes
- > Compliant with EN 50121-4 and essential sections of EN 50155
- > M12 connector and IP40 metal housing
- > 2 kV isolation for serial signals



Overview

The NPort 5000AI-M12 serial device servers are designed to make serial devices network-ready in an instant, and provides direct access to serial devices from anywhere on the network. Moreover, the NPort 5000AI-M12 is compliant with EN 50121-4 and essential sections

of EN 50155, covering operating temperature, power input voltage, surge, ESD, and vibration, making them suitable for rolling stock and wayside applications where high levels of vibration exist in the operating environment.

3-step Web-Based Configuration

The NPort 5000AI-M12's 3-step web-based configuration tool is straightforward and user-friendly. The NPort 5000AI-M12's web console guides users through 3 simple configuration steps that are necessary to activate the serial-to-Ethernet application. With this

speedy 3-step web-based configuration, a user only needs to spend an average of 30 seconds to complete the NPort settings and enable the application, saving a great amount of time and effort.



Easy to Troubleshoot

NPort 5000AI-M12 device servers support SNMP, which can be used to monitor all units over Ethernet. Each unit can be configured to send trap messages automatically to the SNMP manager when user-defined errors are encountered. For users who do not use SNMP manager, an

e-mail alert can be sent instead. Users can define the trigger for the alerts using Moxa's Windows utility, or the web console. For example, alerts can be triggered by a warm start, a cold start, or a password change.

Specifications

Ethernet Interface

Number of Ports: 1
Speed: 10/100 Mbps, auto MDI/MDIX
Connector: M12 D-coded 4-pin female connector

Serial Interface

Number of Ports: 1, 2, 4
Serial Standards: RS-232/422/485
Connector: DB9 male
RS-485 Data Direction Control: ADDC® (Automatic Data Direction Control)

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 DTR/DSR (RS-232 only), 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

Network Protocols: ICMP, IPv4, TCP, UDP, DHCP, BOOTP, Telnet, DNS, SNMP V1, HTTP, SMTP, IGMP V1/2, ARP, LLDP
Configuration Options: Web Console (with new Quick Setup), Telnet 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

Physical Characteristics

Housing: Metal, IP40 protection
Weight: 686 g (1.51 lb)
Dimensions: 80 x 216.6 x 52.9 mm (3.15 x 8.53 x 2.08 in)

Environmental Limits

Operating Temperature:
 Standard Models: -25 to 55°C (-13 to 131°F)
 Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Power Requirements

Input Voltage: 12 to 48 VDC
 Note: Compliant with EN 50155 on 24/48 VDC

Input Current:
 NPort 5150AI-M12: 310 mA @ 12 VDC
 NPort 5250AI-M12: 360 mA @ 12 VDC
 NPort 5450AI-M12: 440 mA @ 12 VDC
Connector: M12 5-pin male connector

Standards and Certifications

Safety: UL 60950-1
EMC: EN 55022/24
EMI: CISPR 22, FCC Part 15B Class A

EMS:

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: 2 kV
 IEC 61000-4-5 Surge: Power: 0.5 kV; Signal: 2 kV
 IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m
 IEC 61000-4-8 PFMF

Rail Traffic: EN 50155 (essential compliance*), EN 50121-4
 *Moxa defines "essential compliance" to include those EN 50155 requirements that make products more suitable for rolling stock railway applications.

Vibration: IEC 60068-2-6

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 5150AI-M12: 789,341 hrs
 NPort 5250AI-M12: 639,622 hrs
 NPort 5450AI-M12: 467,777 hrs
Standard: Telcordia (Bellcore) Standard TR/SR

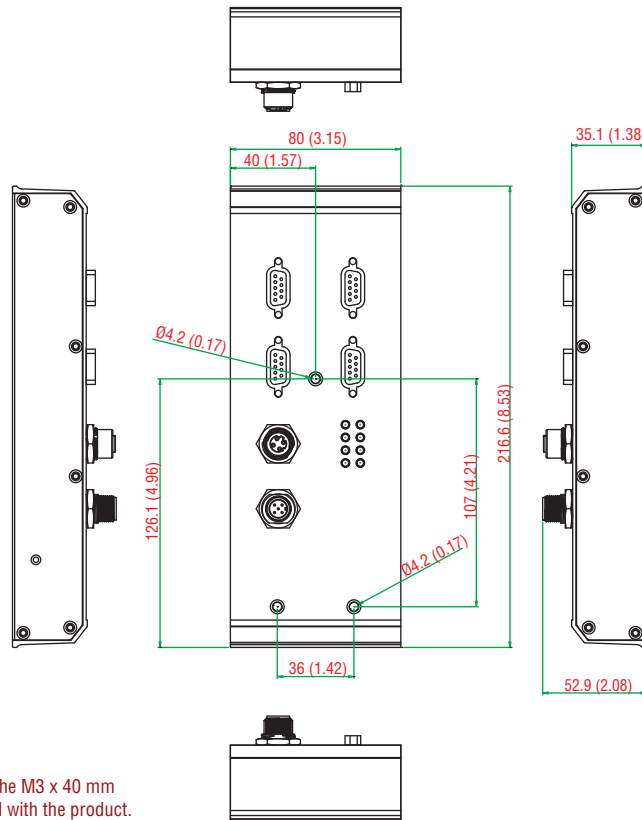
Warranty

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

Dimensions

All models of the NPort 5000AI-M12 series (NPort 5150AI-M12, NPort 5250AI-M12, and NPort 5450AI-M12) have the same dimensions.

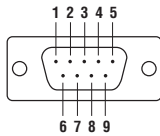
Unit: mm (inch)



Be sure to use the M3 x 40 mm screws included with the product.

Pin Assignment

DB9 male connector



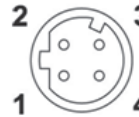
PIN	RS-232	RS-422/485-4w	RS-485-2w
1	DCD	TxD-(A)	-
2	RxD	TxD+(B)	-
3	TxD	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	Data-(A)
5	GND	GND	GND
6	DSR	-	-
7	RTS	-	-
8	CTS	-	-

Power input



PIN	Description
1	Input V+
2	Not assigned
3	Input V-
4	Not assigned
5	Function ground

Ethernet port



PIN	Description
1	TD+
2	RD+
3	TD-
4	RD-

Ordering Information

Available Models

NPort 5150AI-M12: 1-port RS-232/422/485 device server with M12 connector, M12 power input, -25 to 55°C operating temperature

NPort 5150AI-M12-CT: 1-port RS-232/422/485 device server with M12 connector, M12 power input, -25 to 55°C operating temperature, conformal coating

NPort 5150AI-M12-T: 1-port RS-232/422/485 device server, 1 10/100BaseT(X)port with M12 connector, M12 power input, -40 to 75°C operating temperature

NPort 5150AI-M12-CT-T: 1-port RS-232/422/485 device server with M12 connector, M12 power input, conformal coating, -40 to 75°C operating temperature

NPort 5250AI-M12: 2-port RS-232/422/485 device server, 1 10/100BaseT(X)port with M12 connector, M12 power input, -25 to 55°C operating temperature

NPort 5250AI-M12-CT: 2-port RS-232/422/485 device server, 1 10/100BaseT(X)port with M12 connector, M12 power input, -25 to 55°C operating temperature, conformal coating

NPort 5250AI-M12-T: 2-port RS-232/422/485 device server, 1 10/100BaseT(X)port with M12 connector, M12 power input, -40 to 75°C operating temperature

NPort 5250AI-M12-CT-T: 2-port RS-232/422/485 device server with M12 connector, M12 power input, conformal coating, -40 to 75°C operating temperature

NPort 5450AI-M12: 4-port RS-232/422/485 device server, 1 10/100BaseT(X)port with M12 connector, M12 power input, -25 to 55°C operating temperature

NPort 5450AI-M12-CT: 4-port RS-232/422/485 device server, 1 10/100BaseT(X)port with M12 connector, M12 power input, -25 to 55°C operating temperature, conformal coating

NPort 5450AI-M12-T: 4-port RS-232/422/485 device server, 1 10/100BaseT(X)port with M12 connector, M12 power input, -40 to 75°C operating temperature

NPort 5450AI-M12-CT-T: 4-port RS-232/422/485 device server with M12 connector, M12 power input, conformal coating, -40 to 75°C operating temperature

Optional Accessories (can be purchased separately)

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






MXview: Moxa industrial network management software with 50, 100, 250, 500, 1000, or 2000 nodes

DR-75-48/DR-120-48: 75/120 W DIN-rail 48 VDC power supplies

Package Checklist






- 1 NPort 5000AI-M12 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	-	-	-	-	-	
NPort 5650I-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	✓	✓	✓	✓	✓	✓	✓	
NPort 5650I-8-DTL	✓	✓	✓	✓	✓	✓	✓	
16 Ports	NPort 5610-16	-	✓	✓	✓	✓	✓	✓
	NPort 5630-16	-	✓	✓	✓	✓	✓	✓
	NPort 5650-16	-	✓	✓	✓	✓	✓	✓