

# NPort 5000AI-M12 Series

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



## Features and Benefits

- Speedy 3-step web-based configuration
- COM port grouping and UDP multicast applications
- Real COM and TTY drivers for Windows, Linux, and macOS
- Standard TCP/IP interface and versatile TCP and UDP operation modes
- Complies with EN 50121-4
- Complies with all EN 50155 mandatory test items<sup>1</sup>
- M12 connector and IP40 metal housing
- 2 kV isolation for serial signals

## Certifications



## Introduction

The NPort® 5000AI-M12 serial device servers are designed to make serial devices network-ready in an instant, and provide direct access to serial devices from anywhere on the network. Moreover, the NPort 5000AI-M12 is compliant with EN 50121-4 and all mandatory 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 three 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 email 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

10/100BaseT(X) Ports (M12 D-coded 4-pin female connector)	1
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### Ethernet Software Features

Configuration Options	Web Console (HTTP/HTTPS), Windows Utility, Device Search Utility (DSU), MCC Tool, Telnet Console
Management	ARP, BOOTP, DHCP Client, DNS, HTTP, HTTPS, ICMP, IPv4, LLDP, SMTP, SNMPv1/v2c, TCP/IP, Telnet, UDP
Filter	IGMP v1/v2

1. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed statement, click here: [www.moxa.com/doc/specs/EN\\_50155\\_Compliance.pdf](http://www.moxa.com/doc/specs/EN_50155_Compliance.pdf)

Windows Real COM Drivers	Windows 95/98/ME/NT/2000, Windows XP/2003/Vista/2008/7/8/8.1/10/11 (x86/x64), Windows 2008 R2/2012/2012 R2/2016/2019 (x64), Windows Server 2022, 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, macOS 10.12, macOS 10.13, macOS 10.14, macOS 10.15
Android API	Android 3.1.x and later

### Security Functions

Authentication	Local database
Encryption	HTTPS, AES-128, RSA-1024, SHA-1, SHA-256
Security Protocols	SNMPv3 HTTPS (TLS 1.2)

### Serial Interface

Connector	DB9 male
No. of Ports	NPort 5150AI-M12 Models: 1 NPort 5250AI-M12 Models: 2 NPort 5450AI-M12 Models: 4
Serial Standards	RS-232, RS-422, RS-485
Baudrate	Supports standard baudrates (unit=bps): 50, 75, 110, 134, 150, 300, 600, 1200, 1800, 2400, 4800, 7200, 9600, 19200, 38400, 57600, 115200, 230.4k, 460.8k, 921.6k
Data Bits	5, 6, 7, 8
Stop Bits	1, 1.5, 2
Parity	None, Even, Odd, Space, Mark
Flow Control	RTS/CTS (RS-232 only), DTR/DSR (RS-232 only), XON/XOFF
RS-485 Data Direction Control	ADDC (automatic data direction control)
Isolation	2 kV

### 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

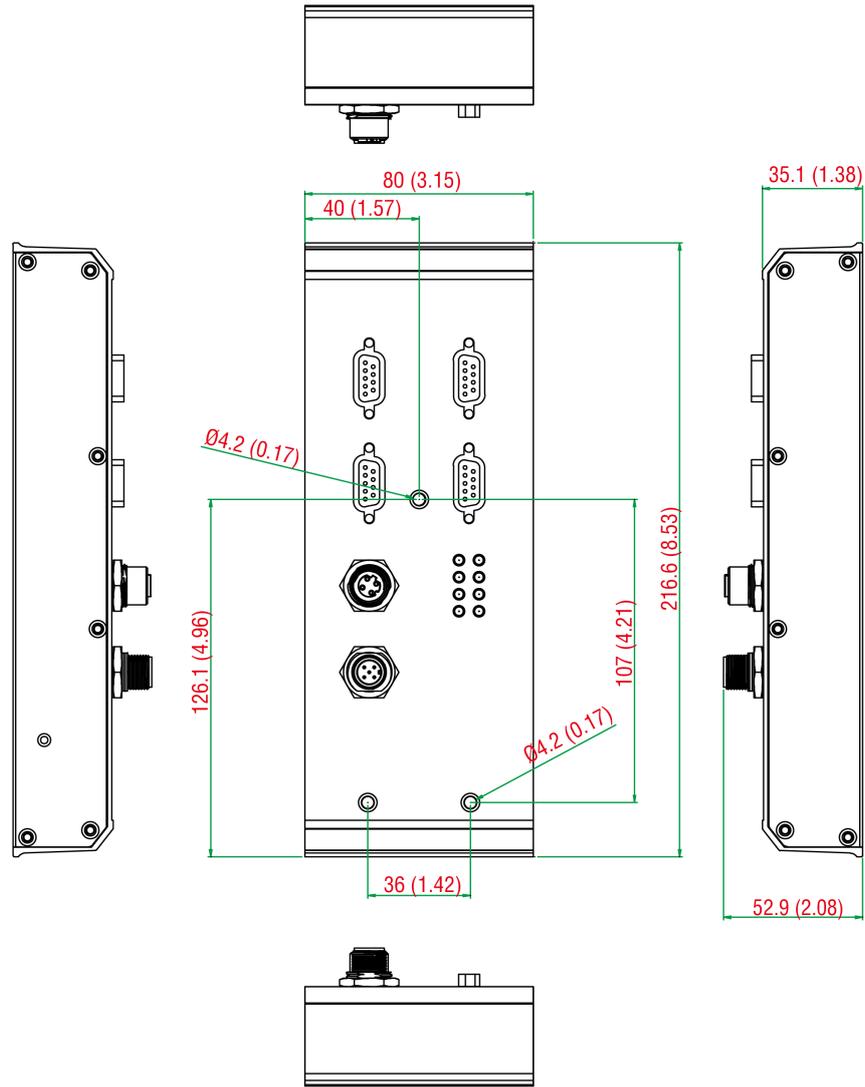
### Power Parameters

Input Current	NPort 5150AI-M12 Models: 310 mA @ 12 VDC NPort 5250AI-M12 Models: 360 mA @ 12 VDC NPort 5450AI-M12 Models: 440 mA @ 12 VDC
Input Voltage	12 to 48 VDC
Note	Compliant with EN 50155 on 24/48 VDC
Power Connector	M12 A-coded 5-pin male connector

<b>Reliability</b>	
Automatic Reboot Trigger	Built-in WDT
Alert Tools	Built-in buzzer and RTC (real-time clock)
<b>Physical Characteristics</b>	
Dimensions	80 x 216.6 x 52.9 mm (3.15 x 8.53 x 2.08 in)
Weight	686 g (1.51 lb)
Protection	NPort 5000AI-M12-CT Models: PCB Conformal Coating
<b>Environmental Limits</b>	
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 (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
<b>Standards and Certifications</b>	
EMC	EN 55032/35
EMI	CISPR 32, 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
Railway	EN 50121-4
Safety	UL 60950-1
Vibration	IEC 60068-2-6
<b>Declaration</b>	
Green Product	RoHS, CRoHS, WEEE
<b>MTBF</b>	
Time	NPort 5150AI-M12 Models: 789,341 hrs NPort 5250AI-M12 Models: 639,622 hrs NPort 5450AI-M12 Models: 467,777 hrs
Standards	Telcordia (Bellcore) Standard TR/SR
<b>Warranty</b>	
Warranty Period	5 years
Details	See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a>
<b>Package Contents</b>	
Device	1 x NPort 5000AI-M12 Series device server
Documentation	1 x quick installation guide 1 x warranty card

## Dimensions

Unit: mm (inch)



## Ordering Information

Model Name	No. of Serial Ports	Power Input Voltage	Operating Temp.	PCB Conformal Coating
NPort 5150AI-M12	1	12-48 VDC	-25 to 55°C	-
NPort 5150AI-M12-CT	1	12-48 VDC	-25 to 55°C	✓
NPort 5150AI-M12-T	1	12-48 VDC	-40 to 75°C	-
NPort 5150AI-M12-CT-T	1	12-48 VDC	-40 to 75°C	✓
NPort 5250AI-M12	2	12-48 VDC	-25 to 55°C	-
NPort 5250AI-M12-CT	2	12-48 VDC	-25 to 55°C	✓
NPort 5250AI-M12-T	2	12-48 VDC	-40 to 75°C	-
NPort 5250AI-M12-CT-T	2	12-48 VDC	-40 to 75°C	✓
NPort 5450AI-M12	4	12-48 VDC	-25 to 55°C	-
NPort 5450AI-M12-CT	4	12-48 VDC	-25 to 55°C	✓
NPort 5450AI-M12-T	4	12-48 VDC	-40 to 75°C	-
NPort 5450AI-M12-CT-T	4	12-48 VDC	-40 to 75°C	✓

## Accessories (sold separately)

### 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-RJ45SF9-150	8-pin RJ45 to DB9 female serial cable with shielding, 1.5m
CBL-RJ458P-100	8-pin RJ45 CAT5 Ethernet cable, 1 m
CBL-M12(FF5P)/OPEN-100 IP67	A-coded M12-to-5-pin power cable, IP67-rated 5-pin female M12 connector, 1 m

### Connectors

Mini DB9F-to-TB	DB9 female to terminal block connector
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