

# NPort® 5000AI-M12 Series

Award-winning Product



## 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

#### Serial Interface

**Number of Ports:** 1, 2, 4

**Serial Standards:** RS-232/422/485

**Connector:** DB9 male

**Serial Line Protection:** 15 kV ESD protection for all signals

**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:** Tx+, Rx+, 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, 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 (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

**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)

**Altitude:** Up to 2000 m

**Note:** Please contact Moxa if you require products guaranteed to function properly at higher altitudes.

## Power Requirements

**Input Voltage:** 12 to 48 VDC

**Note:** Compliant with EN 50155 on 24/48 VDC

### Power Consumption:

NPort 5150AI-M12: 310mA @12V

NPort 5150AI-M12-CT: 310mA @12V

NPort 5150AI-M12-T: 310mA @12V

NPort 5250AI-M12: 360mA @12V

NPort 5250AI-M12-CT: 360mA @12V

NPort 5250AI-M12-T: 360mA @12V

NPort 5450AI-M12: 440mA @12V

NPort 5450AI-M12-CT: 440mA @12V

NPort 5450AI-M12-T: 440mA @12V

**Connector:** M12

## Standards and Certifications

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

**EMC:** CE, FCC

**EMI:** EN 55022 Class A, FCC Part 15 Subpart B Class A

**EMS:** EN 55024

**Rail Traffic:** EN 50155, EN 50121-4

**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):**

NPort 5150AI-M12: 789,341 hrs

NPort 5250AI-M12: 639,622 hrs

NPort 5450AI-M12: 467,777 hrs

## Warranty

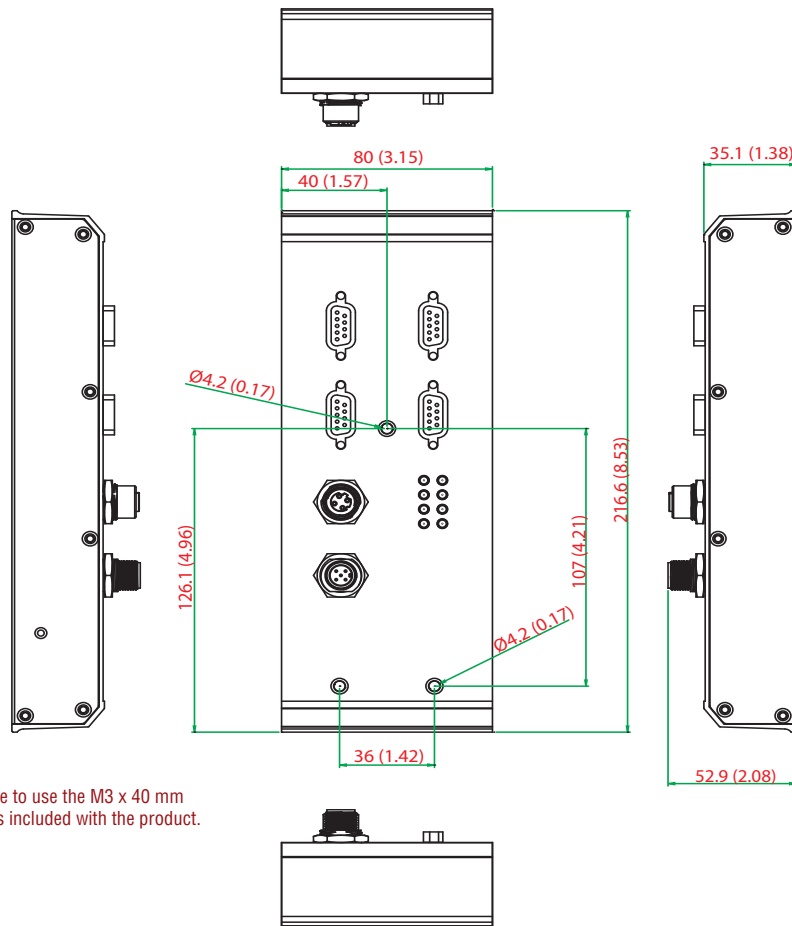
**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://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.

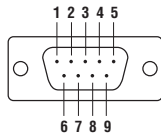
Unit: mm (inch)



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

## Pin Assignment

### DB9 male connector



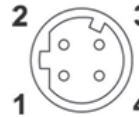
| PIN | RS-232 | RS-422/485-4w | RS-485-2w |
|-----|--------|---------------|-----------|
| 1   | DCD    | TxD-(A)       | —         |
| 2   | RxD    | TxD+(B)       | —         |
| 3   | TxD    | RxD+(B)       | Data+(B)  |
| 4   | DTR    | RxD-(A)       | Data-(A)  |
| 5   | GND    | GND           | 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)

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

**DR-75-48/DR-120-48:** 75/120W Din-Rail 48 VDC power supplies

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

### Package Checklist

- NPort 5000AI-M12 device server
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card