NPort® IA5000 Series

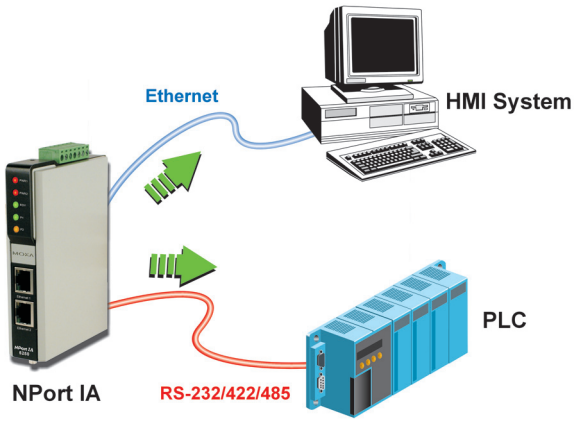
1 and 2-port serial device servers for industrial automation

- Versatile socket operation modes, including TCP Server, TCP Client, UDP
- Patented ADDC® (automatic data direction control) for 2-wire and 4-wire RS-485
- Cascading Ethernet ports for easy wiring (applies only to RJ45 connectors)
- Redundant DC power inputs
- Warning by relay output and e-mail
- 10/100BaseTX (RJ45) or 100BaseFX (single mode or multi-mode with SC connector)
- IP30-rated housing

See also NPort IA5000A, p. 8-45

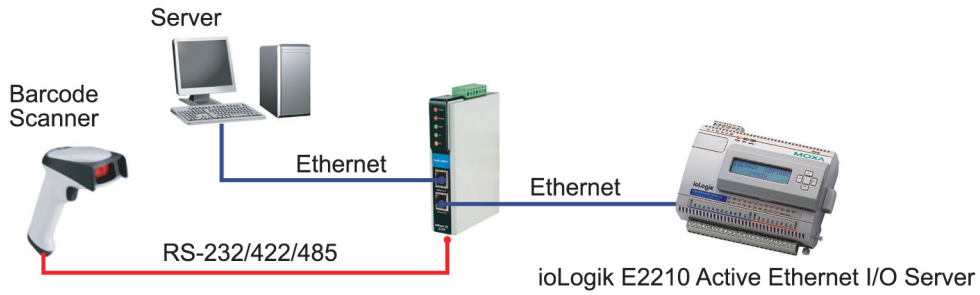
Overview

NPort® IA device servers provide easy and reliable serial-to-Ethernet connectivity for industrial automation applications. The device servers can connect any serial device to an Ethernet network, and to ensure compatibility with network software, they support a variety of port operation modes, including TCP Server, TCP Client, and UDP. The rock-solid reliability of the NPort® IA device servers makes them an ideal choice for establishing network access to RS-232/422/485 serial devices such as PLCs, sensors, meters, motors, drives, barcode readers, and operator displays. All models are housed in a compact, rugged housing that is DIN-rail mountable.



Cascading Ethernet Ports Make Wiring Easy (10/100BaseTX models only)

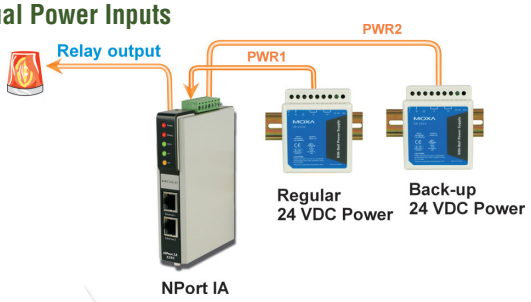
The NPort® IA5150 and IA5250 device servers each have two Ethernet ports that can be used as Ethernet switch ports. One port connects directly to the network or server, and the other port can be connected to another NPort® IA device server or another Ethernet device. The dual Ethernet ports help reduce wiring costs by eliminating the need to connect each device to a separate Ethernet switch.



Redundant Power Inputs

The NPort® IA5000 device servers have two power inputs that can be connected simultaneously to live DC power sources. If one power source fails, the other source takes over automatically. Redundant power inputs help assure that your device server will operate non-stop.

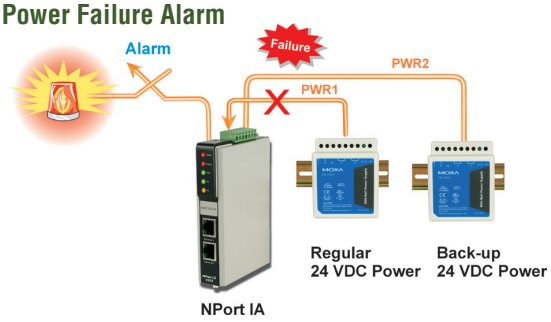
Dual Power Inputs



Relay Output Warning and E-mail Alerts

The built-in relay output can be used to alert administrators of problems with the Ethernet links or power inputs, or when there is a change in the DCD or DSR serial signals. The web console indicates which Ethernet link or power input has failed, or which serial signal has changed. An e-mail warning can also be issued when an exception is detected. These functions are valuable tools that enable maintenance engineers to react promptly to emergency situations.

Power Failure Alarm



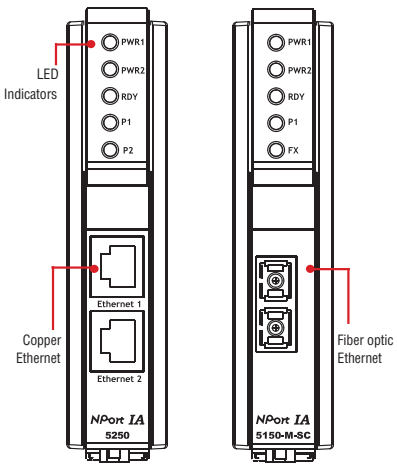
Optical Fiber for Ethernet Communication

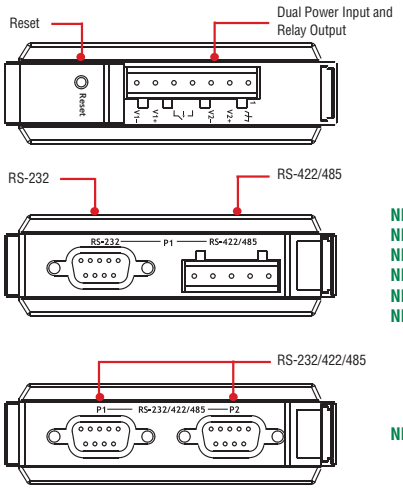
The NPort® IA5000 series includes 100BaseFX fiber models that support transmission distances up to 2 km for multi-mode models, and up to 40 km for single-mode models. Optical fiber is well-suited for industrial applications because it is immune to electromagnetic noise and interference. For environments that experience high ground loop voltages, fiber provides the best isolation protection, and because there is no danger of sparking, optical fiber is safer than copper wire to use in hazardous environments.

Industrial-grade Certification

To ensure safe and reliable operation in industrial environments, the NPort® IA5000 device servers have obtained various industrial certifications, including an IP30 rating for mechanical protection, UL508 safety certification for industrial control equipment, and explosion-safe certifications for hazardous locations. Certifications include UL/cUL Class 1 Division 2 Groups A, B, C, D, and ATEX Class 1 Zone 2.

Appearance





NPort IA5150
NPort IA5150I
NPort IA5150-S-SC
NPort IA5150-M-SC
NPort IA5150I-S-SC
NPort IA5150I-M-SC

NPort IA5250

Specifications

Ethernet Interface (NPort IA5150/5150I/5250)

Number of Ports: 2
Speed: 10/100 Mbps, auto MDI/MDIX
Connector: 8-pin RJ45
Magnetic Isolation Protection: 1.5 KV built-in

Optical Fiber Interface (-M-SC and -S-SC models)

	100BaseFX	
	Multi-mode	Single-mode
Wavelength	1300 nm	1310 nm
Max. TX	-14 dBm	0 dBm
Min. TX	-20 dBm	-5 dBm
RX Sensitivity	-32 dBm	-34 dBm
Link Budget	12 dB	29 dB
Typical Distance	5 km [a] 4 km [b]	40 km [c]
Saturation	-6 dBm	-3 dBm

a. 50/125 µm, 800 MHz*km fiber optic cable
b. 62.5/125 µm, 500 MHz*km fiber optic cable
c. 9/125 µm, 3.5 PS/(nm*km) fiber optic cable

Serial Interface

Number of Ports:
NPort IA5150: 1
NPort IA5250: 2
Serial Standards: RS-232/422/485
Connector:
NPort IA5150: DB9 male for RS-232, terminal block for RS-422/485
NPort IA5250: DB9 male for RS-232/422/485
Serial Line Protection:
15 KV ESD protection for all signals
2 KV isolation protection (NPort IA5150I, NPort 5150I-M-SC, NPort 5150I-S-SC)
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: 110 bps to 230.4 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, IP, TCP, UDP, DHCP, BOOTP, Telnet, Rtelnet, DNS, SNMP V1, HTTP, SMTP, SNTP
Configuration Options: Web Console, Serial Console, Telnet Console, Windows Utility
Windows Real COM Drivers: Windows 95/98/ME/NT/2000, Windows XP/2003/Vista/2008/7 x86/x64, Embedded CE 5.0/6.0, XP Embedded
Fixed TTY Drivers: SCO Unix, SCO OpenServer, UnixWare 7, UnixWare 2.1, SVR 4.2, QNX 4.25, QNX 6, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i
Linux Real TTY Drivers: Linux kernel 2.4.x, 2.6.x

Physical Characteristics

Housing: Plastic, IP30 protection
Weight:
NPort IA5150: 360 g
NPort IA5250: 380 g
Dimensions: 29 x 89.2 x 118.5 mm (0.82 x 3.51 x 4.57 in)

Environmental Limits

Operating Temperature:
Standard Models: 0 to 55°C (32 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
Power Consumption:
NPort IA5150: 360 mA @ 12 V, 195 mA @ 24 V
NPort IA5150I: 420 mA @ 12 V, 215 mA @ 24 V
NPort IA5250: 440 mA @ 12 V, 200 mA @ 24 V
NPort IA5150-S-SC: 470 mA @ 12 V, 210 mA @ 24 V
NPort IA5150I-S-SC: 490 mA @ 12 V, 250 mA @ 24 V
NPort IA5150-M-SC: 500 mA @ 12 V, 250 mA @ 24 V
NPort IA5150I-M-SC: 510 mA @ 12 V, 260 mA @ 24 V

Standards and Certifications

Safety: UL 508, UL 60950-1, EN 60950-1
Hazardous Location: UL/cUL Class I Division 2 Groups A/B/C/D, ATEX Zone 2
EMC: CE, FCC
EMI: EN 55022 Class A, FCC Part 15 Subpart B Class A
EMS:
EN 55024,
EN 61000-4-2 (ESD) Level 3,
EN 61000-4-3 (RS) Level 3,
EN 61000-4-4 (EFT) Level 4,
EN 61000-4-5 (Surge) Level 3,
EN 61000-4-6 (CS) Level 3,
EN 61000-4-8,
EN 61000-4-11
Marine: DNV
Shock: IEC 60068-2-27
Freefall: IEC 60068-2-32
Vibration: IEC 60068-2-6

Reliability

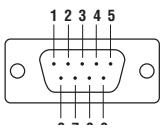
Water and Dust Proof: IP30
Alert Tools: Built-in buzzer and RTC (real-time clock)
Automatic Reboot Trigger: Built-in WDT (watchdog timer)
MTBF (mean time between failures):
NPort IA5150 Series: 183,747 hrs
NPort IA5150I Series: 195,614 hrs
NPort IA5250 Series: 194,765 hrs

Warranty

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

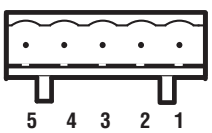
Pin Assignment

RS-232/422/485 DB9 male port



PIN	RS-232	RS-422/RS-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	–	–

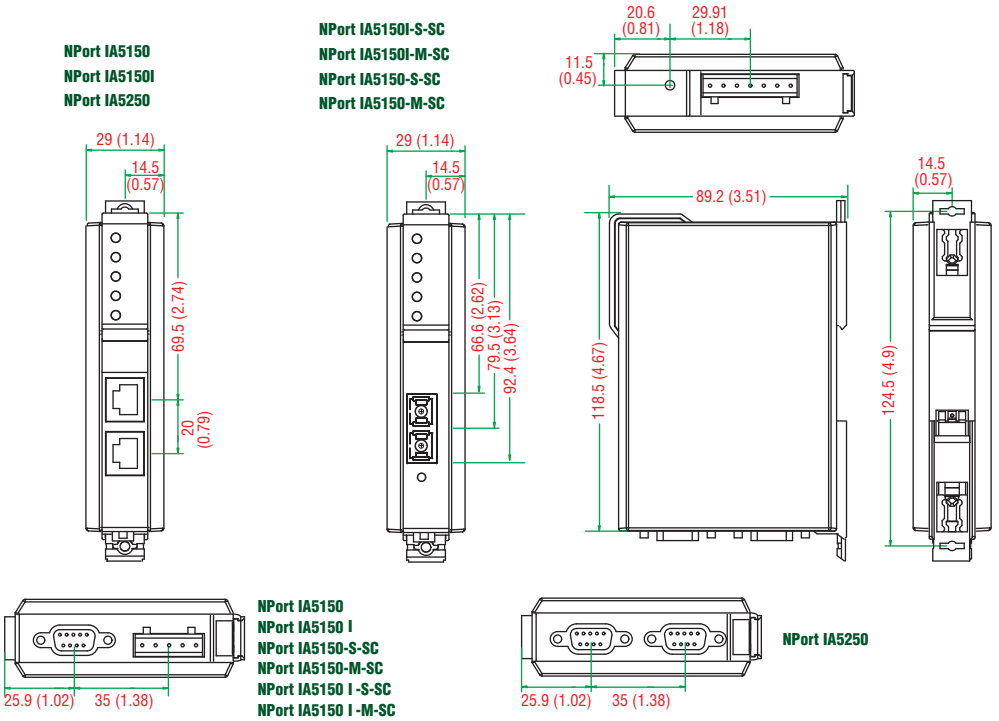
RS-422/485 Terminal Block Wiring



PIN	RS-422/RS-485-4w	RS-485-2w
1	TxD+(B)	–
2	TxD-(A)	–
3	RxD+(B)	Data+(B)
4	RxD-(A)	Data-(A)
5	GND	GND

Dimensions

Unit: mm (inch)



Ordering Information

Available Models

NPort IA5150: 1-port RS-232/422/485 device server with 2 10/100BaseT(X) ports (RJ45 connectors, single IP), 0 to 55°C operating temperature
NPort IA5150I: 1-port RS-232/422/485 device server with 2 10/100BaseT(X) ports (RJ45 connectors, single IP) and 2 KV optical isolation, 0 to 55°C operating temperature
NPort IA5150-M-SC: 1-port RS-232/422/485 device server with 1 100BaseF(X) multi-mode fiber port (SC connectors), 0 to 55°C operating temperature
NPort IA5150I-M-SC: 1-port RS-232/422/485 device server with 1 100BaseF(X) multi-mode fiber port (SC connectors) and 2 KV optical isolation, 0 to 55°C operating temperature
NPort IA5150-S-SC: 1-port RS-232/422/485 device server with 1 100BaseF(X) single-mode fiber port (SC connectors), 0 to 55°C operating temperature
NPort IA5150I-S-SC: 1-port RS-232/422/485 device server with 1 100BaseF(X) single-mode fiber port (SC connectors) and 2 KV optical isolation, 0 to 55°C operating temperature
NPort IA5250: 2-port RS-232/422/485 device server with 2 10/100BaseT(X) ports (RJ45 connectors, single IP), 0 to 55°C operating temperature
NPort IA5150-T: 1-port RS-232/422/485 device server with 2 10/100BaseT(X) ports (RJ45 connectors, single IP), -40 to 75°C operating temperature
NPort IA5150I-T: 1-port RS-232/422/485 device server with 2 10/100BaseT(X) ports (RJ45 connectors, single IP) and 2 KV optical isolation, -40 to 75°C operating temperature
NPort IA5150-M-SC-T: 1-port RS-232/422/485 device server with 1 100BaseF(X) multi-mode fiber port (SC connectors), -40 to 75°C operating temperature
NPort IA5150I-M-SC-T: 1-port RS-232/422/485 device server with 1 100BaseF(X) multi-mode fiber port (SC connectors) and 2 KV optical isolation, -40 to 75°C operating temperature
NPort IA5150-S-SC-T: 1-port RS-232/422/485 device server with 1 100BaseF(X) single-mode fiber port (SC connectors), -40 to 75°C operating temperature
NPort IA5150I-S-SC-T: 1-port RS-232/422/485 device server with 1 100BaseF(X) single-mode fiber port (SC connectors) and 2 KV optical isolation, -40 to 75°C operating temperature
NPort IA5250-T: 2-port RS-232/422/485 device server with 2 10/100BaseT(X) ports (RJ45 connectors, single IP), -40 to 75°C operating temperature

Optional Accessories (can be purchased separately)

Din-Rail Power Supply: See page A-8
SC male to ST female duplex adaptors: See page A-11

Package Checklist

- NPort IA5000 series device server
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card