NPort IA5000-G2 Series

1, 2 and 4-port DIN-rail serial device servers for industrial automation

Features and Benefits

- 30 seconds to complete classic Real COM mode settings with DSU-G2
- 2 Ethernet ports with the same IP or dual IP addresses for network redundancy
- Cascading Ethernet ports for easy wiring
- Supports nonstandard baudrates with high precision
- Data encryption with secure operation modes for Real COM, TCP Server, TCP Client, Pair Connection, Terminal, and Reverse Terminal
- One-click diagnostics for easy troubleshooting
- Embedded traffic monitoring for advanced data analysis
- 10/100BaseTX (RJ45) or 100BaseFX (single mode or multi-mode with SC/ST connector), and 100Base SFP
- DNV, CID2, ATEX Zone 2, and IECEx compliance[1]

Certifications

Introduction

The NPort® IA5000-G2 device servers are designed for connecting industrial automation serial devices, such as PLCs, sensors, meters, motors, drives, barcode readers, and operator displays. The device servers are solidly built, come in a metal housing and with screw connectors, and provide full surge protection. The NPort® IA5000-G2 device servers are extremely user-friendly, making simple and reliable serial-to-Ethernet solutions possible.

Cascading Ethernet Ports Make Wiring Easy

The NPort® IA5000-G2 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 either 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.

Optical Fiber for Ethernet Communication

The NPort® IA5000-G2 Series includes 100BaseFX fiber models that support transmission distances up to 4 km for multi-mode models, and up to 40 km for single-mode models. The models also come with a built-in 100BaseTX copper port that makes configuration easier than ever. One of the models in the series supports SFP modules for additional flexibility with Ethernet port options.

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 in hazardous environments.

Easy Troubleshooting With One-click Log Collection

At the maintenance stage, system errors may require you to call for help. Device vendors might take a long time to troubleshoot issues because they need to collect information and then hold discussions with the technical support team. The NPort® IA5000-G2 comes with a one-click log collection function to enable logging of data, which can provide all the data that a technical support team needs to quickly troubleshoot system issues.

1. Approval pending. Please check Moxa's website for the most up-to-date certification status.

Relay Output Warning and Email Alerts

The built-in relay output can be used to alert administrators when the network is down, when power failure occurs, or when there is a change in the DCD or DSR serial signals. An email warning can also be issued when an abnormality is detected. These functions are valuable tools that enable maintenance engineers to react promptly to emergency situations.

Surge Protection for Serial, Ethernet, and Power

Moxa's leading-edge surge immunity solution, which is applied to the NPort® IA5000-G2's serial, power, and Ethernet lines, is tested and proven compliant with IEC 61000-4-5. This advanced surge protection provides a robust serial-to-Ethernet solution that can protect electrical devices from voltage spikes and resist electrical interference, such as in oil, gas, and power automation applications.

Industrial-grade Certifications

To ensure safe and reliable operation in industrial environments, the NPort® IA5000-G2 device servers have obtained various industrial certifications, including an IP30 rating for mechanical protection and UL 62368-1 safety certification for industrial control equipment. In addition, approvals are pending for ATEX, Class I Division 2, and IECEx compliance for use in hazardous locations.

Specifications

Ethernet Interface

10/100BaseT(X) Ports (RJ45 connector)	NPort IA5150-S-SC-G2/M-SC-G2/M-ST-G2 models: 1 NPort IA5000-G2 models: 2 Auto MDI/MDI-X connection
Magnetic Isolation Protection	1.5 kV (built-in)

Optical Fiber

		100BaseFX		
		Multi-Mode		Single-Mode
Fiber Cable Type		OM1	50/125 µm 800 MHz x km	G.652
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).

Ethernet Software Features

Configuration Options	Web Console (HTTP/HTTPS) Device Search Utility (DSU) MCC Tool Serial Console
Management	ARP, DHCP Client, DNS, HTTPS, ICMP, IPv4, MDNS, LLDP, SMTP, SMTPS, SNMPv1/v2c/v3, TCP/IP, UDP, SNTP, WINS
Windows Real COM Drivers	Windows 11, 10, 8.1, 8, 7, Vista, XP, ME, 98, and 95 Windows Server 2022, 2019, 2016, 2012 R2, 2012, 2008 R2, 2008, 2003, 2000, and NT
Linux Real TTY Drivers	Kernel versions: 6.x, 5.x, and 4.x
Fixed TTY Drivers	macOS versions: 14, 13, 12, and 11
Arm®-based Platform Support	Windows 11 Linux kernels 6.x, 5.x, and 4.x macOS 14, 13, 12, and 11
Virtual Machine	VMWare ESXi (Windows 11/10/8.1/8/7 & Linux 6.x, 5.x, and 4.x) VMware Fusion (Windows on macOS 14, 13, 12, and 11) Parallels Desktop (Windows on macOS 14, 13, 12, and 11)
Android API	Android 3.1.x and later
Time Management	SNTP Client
Filter	IGMP v1/v2
MIB	RFC1213, RFC1317 Private MIB

Security Functions

Root of Trust	Secure Boot True Random Number Generator (TRNG)
Authentication	Local database
Encryption	HTTPS: ECC-256, ECC-384, ECC-521, RSA-1024, RSA-2048, RSA-3072, RSA-4096, AES-128, AES-256, SHA-256, SHA-384, HMAC SSH: ECC-256, ECC-384, ECC-521, RSA-2048, AES-128, AES-256, SHA-256, SHA-384, HMAC SNMPv3: AES-128, SHA-256, SHA-384 Secure OP mode: HTTPS: ECC-256, ECC-384, ECC-521, RSA-1024, RSA-2048, RSA-3072, RSA-4096, AES-128, AES-256, SHA-256, SHA-384, HMAC Config file import/export: AES-256, SHA-256, HMAC
Security Protocols	HTTPS (TLS 1.2) SNMPv3 SSHv2

Serial Interface

No. of Ports	NPort IA5150-G2 models: 1 NPort IA5250-G2 models: 2 NPort IA5450-G2 models: 4
Connector	NPort IA5150-G2 models: 1 x DB9 male NPort IA5250-G2 models: 2 x DB9 male NPort IA5250-TB-G2 models: 2 x 5-pin terminal block NPort IA5450-G2 models: 4 x DB9 male NPort IA5450-TB-G2 models: 4 x 5-pin terminal block
Serial Standards	RS-232/422/485 (software-selectable)
Standard Operation Modes	Real COM, TCP Server, TCP Client, UDP, Reverse Terminal, RFC2217, Pair Connection, Disabled

Secure Operation Modes	Secure Real COM, Secure TCP Server, Secure TCP Client, Reverse SSH, Secure Pair Connection
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, DTR/DSR, RTS Toggle, XON/XOFF
RS-485 Data Direction Control	ADDC (automatic data direction control)
Pull High/Low Resistor for RS-485	1 kilo-ohm, 150 kilo-ohms (software–configurable)
Terminator for RS-485	120 ohms (software–configurable)
Isolation	I models: 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 Voltage	12 to 48 VDC
Input Current	NPort IA5150-G2/IA5250-G2 models: 270 mA (max.) NPort IA5250I-G2 models: 330 mA (max.) NPort IA5450-G2/IA5150-SFP-G2/IA5150I-SFP-G2 models: 377 mA (max.)
Power Connector	8-pin terminal block (V1+, V1-, NO, NC, GND, V2+, V2-, SG)

Relays

Contact Current Rating	Resistive load: 1 A @ 30 VAC

Physical Characteristics

Housing	Metal
IP Rating	IP30
Dimensions	NPort IA5150-G2/IA5250-G2 models: 25 x 89 x 129 mm (0.98 x 3.5 x 5.07 in) NPort IA5450-G2 models: 42 x 89 x 129 mm (1.65 x 3.5 x 5.07 in)
Weight	NPort IA5150-G2 models: 384 g (0.85 lb) NPort IA5250-G2 models: 394 g (0.87 lb) NPort IA5450-G2 models: 512 g (1.13 lb)

Environmental Limits

Operating Temperature	Standard models: -10 to 60°C (14 to 140°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)

Standards and Certifications

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 2 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV IEC 61000-4-5 Surge: Power: 2 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
Hazardous Locations	ATEX*, Class I Division 2*, IECEx* *Approval pending
Maritime	DNV* *Approval pending
Safety	IEC 62368-1 UL 62368-1 EN 62368-1
Vibration	IEC 60068-2-6 IEC 60068-2-64
Freefall	IEC 60068-2-6 IEC 60068-2-32 IEC 60068-2-34

Declaration

Green Product	RoHS, CRoHS, WEEE

MTBF

Time	NPort IA5150-G2(-T): 3,238,923 hrs NPort IA5150I-G2(-T): 3,156,944 hrs NPort IA5150-SFP-G2(-T): 3,109,327 hrs NPort IA5250-TB-G2(-T): 2,943,248 hrs NPort IA5250-G2(-T): 2,931,934 hrs NPort IA5150-S/M-SC-G2(-T): 2,889,487 hrs NPort IA5250I-TB-G2(-T): 2,809,979 hrs NPort IA5250I-G2(-T): 2,799,662 hrs NPort IA5450-TB-G2(-T): 2,377,791 hrs NPort IA5450-G2(-T): 2,363,042 hrs NPort IA5450I-TB-G2(-T): 2,208,607 hrs NPort IA5450I-G2(-T): 2,195,874 hrs
Standards	Telcordia Standard SR-332

Warranty

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

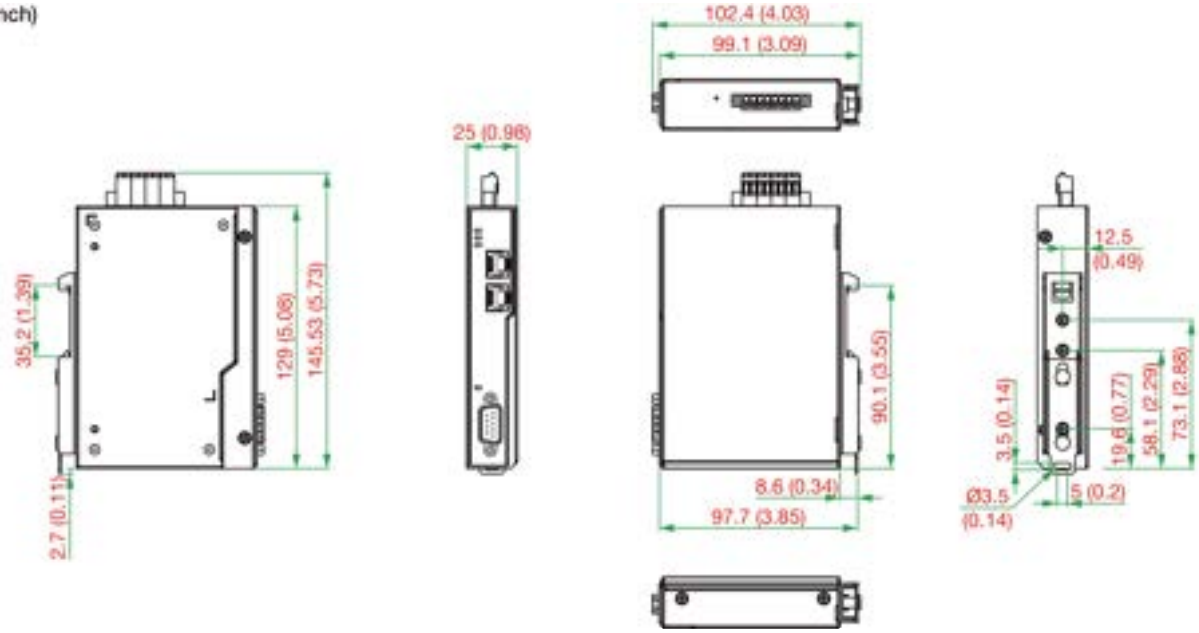
Package Contents

Device	1 x NPort IA5000-G2 Series device server
Documentation	1 x quick installation guide

Dimensions

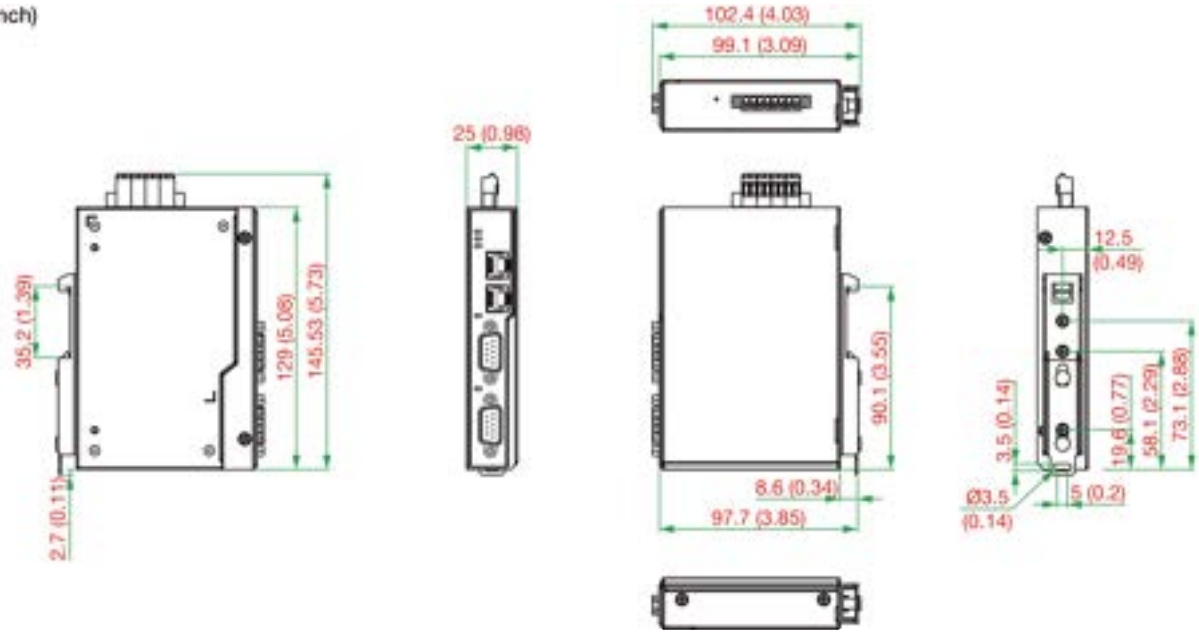
NPort IA5150-G2 Models

Unit: mm (inch)



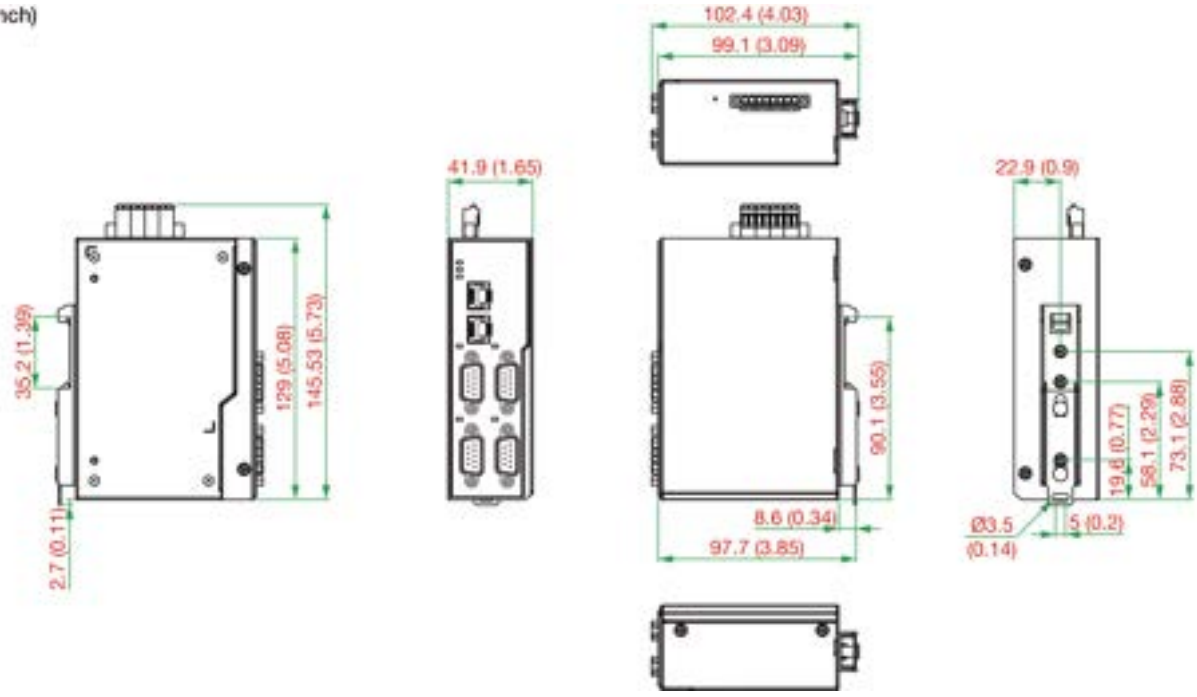
NPort IA5250-G2 Models

Unit: mm (inch)



NPort IA5450-G2 Models

Unit: mm (inch)



Ordering Information

Model Name	Ethernet Interface	No. of Serial Ports	Serial Standards	Serial Isolation	Operating Temperature
NPort IA5150-G2	2 x RJ45	1	RS-232/422/485	–	-10 to 60°C
NPort IA5150-G2-T	2 x RJ45	1	RS-232/422/485	–	-40 to 75°C
NPort IA5150I-G2	2 x RJ45	1	RS-232/422/485	2 kV	-10 to 60°C
NPort IA5150I-G2-T	2 x RJ45	1	RS-232/422/485	2 kV	-40 to 75°C
NPort IA5150-M-SC-G2	1 x Multi-SC, 1 x RJ45	1	RS-232/422/485	–	-10 to 60°C
NPort IA5150-M-SC-G2-T	1 x Multi-SC, 1 x RJ45	1	RS-232/422/485	–	-40 to 75°C
NPort IA5150-S-SC-G2	1 x Single-SC, 1 x RJ45	1	RS-232/422/485	–	-10 to 60°C
NPort IA5150-S-SC-G2-T	1 x Single-SC, 1 x RJ45	1	RS-232/422/485	–	-40 to 75°C
NPort IA5150-SFP-G2	1 x SFP, 1 x RJ45	1	RS-232/422/485	–	-10 to 60°C
NPort IA5150-SFP-G2-T	1 x SFP, 1 x RJ45	1	RS-232/422/485	–	-40 to 75°C
NPort IA5250-G2	2 x RJ45	2	RS-232/422/485	–	-10 to 60°C
NPort IA5250-G2-T	2 x RJ45	2	RS-232/422/485	–	-40 to 75°C
NPort IA5250I-G2	2 x RJ45	2	RS-232/422/485	2 kV	-10 to 60°C
NPort IA5250I-G2-T	2 x RJ45	2	RS-232/422/485	2 kV	-40 to 75°C
NPort IA5250-TB-G2	2 x RJ45	2 x 5-pin TB	RS-232/422/485	–	-10 to 60°C
NPort IA5250-TB-G2-T	2 x RJ45	2 x 5-pin TB	RS-232/422/485	–	-40 to 75°C
NPort IA5250I-TB-G2	2 x RJ45	2 x 5-pin TB	RS-232/422/485	2 kV	-10 to 60°C
NPort IA5250I-TB-G2-T	2 x RJ45	2 x 5-pin TB	RS-232/422/485	2 kV	-40 to 75°C
NPort IA5450-G2	2 x RJ45	4	RS-232/422/485	–	-10 to 60°C
NPort IA5450-G2-T	2 x RJ45	4	RS-232/422/485	–	-40 to 75°C
NPort IA5450I-G2	2 x RJ45	4	RS-232/422/485	2 kV	-10 to 60°C

Model Name	Ethernet Interface	No. of Serial Ports	Serial Standards	Serial Isolation	Operating Temperature
NPort IA5450I-G2-T	2 x RJ45	4	RS-232/422/485	2 kV	-40 to 75°C
NPort IA5450-TB-G2	2 x RJ45	4 x 5-pin TB	RS-232/422/485	–	-10 to 60°C
NPort IA5450-TB-G2-T	2 x RJ45	4 x 5-pin TB	RS-232/422/485	–	-40 to 75°C
NPort IA5450I-TB-G2	2 x RJ45	4 x 5-pin TB	RS-232/422/485	2 kV	-10 to 60°C
NPort IA5450I-TB-G2-T	2 x RJ45	4 x 5-pin TB	RS-232/422/485	2 kV	-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

Connectors

ADP-RJ458P-DB9F	DB9 female to RJ45 connector
Mini DB9F-to-TB	DB9 female to terminal block connector
LB-DB9F-G-01	Serial loopback DB9 adaptor

Power Cords

CBL-PJTB-10	Non-locking barrel plug to bare-wire cable

DIN-Rail Mounting Kits

DK-89-01	DIN-rail mounting kit with 1 plate (89 x 19 x 9 mm), 3 M3 x 5 mm screws

Wall-Mounting Kits

WK-178-01	Wall-mounting kit with 1 plate (178 x 25 x 1.5 mm), 3 M3 x 5 mm screws

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