

# NPort IAW5000A-I/O Series

1/2-port RS-232/422/485 IEEE 802.11 a/b/g/n wireless device servers with 6 or 12 digital IOs



## Features and Benefits

- Serial device server with 6 or 12 digital IOs
- Links serial and Ethernet devices to an IEEE 802.11 a/b/g/n network
- Connects serial/I/O data to the cloud through generic MQTT
- Supports MQTT connection with built-in device SDKs to Azure/Alibaba Cloud
- Supports MQTT connection with TLS and certificate in JSON and Raw data format
- microSD card for configuration backup/duplication and event logs, and data buffering when cloud connection is lost
- Supports repackaging the serial data size (up to 4K) to save the packet numbers that need to be sent to the cloud platform
- Supports redundant dual DC power inputs and 1 relay output
- Secure data access with WEP, WPA, WPA2
- Wireless Client function for flexible integration
- 4 kV serial surge protection

## Certifications



## Introduction

The NPort IA5000A-I/O serial device servers, which have built-in digital I/Os, provide maximum flexibility when you need to integrate serial equipment in the field with an Ethernet network or cloud platform. The cloud-ready device server can communicate with IIoT applications, using generic MQTT or third-party cloud services, such as Azure and Alibaba Cloud. The combination of digital I/Os makes the device servers well-suited for a variety of industrial data acquisition applications. The DI/Os on the device can be controlled over TCP/IP using the Modbus TCP protocol and can be configured and secured from a web browser. The device can also be installed as a COM Port on a Windows/Linux PC to make it compatible with legacy applications.

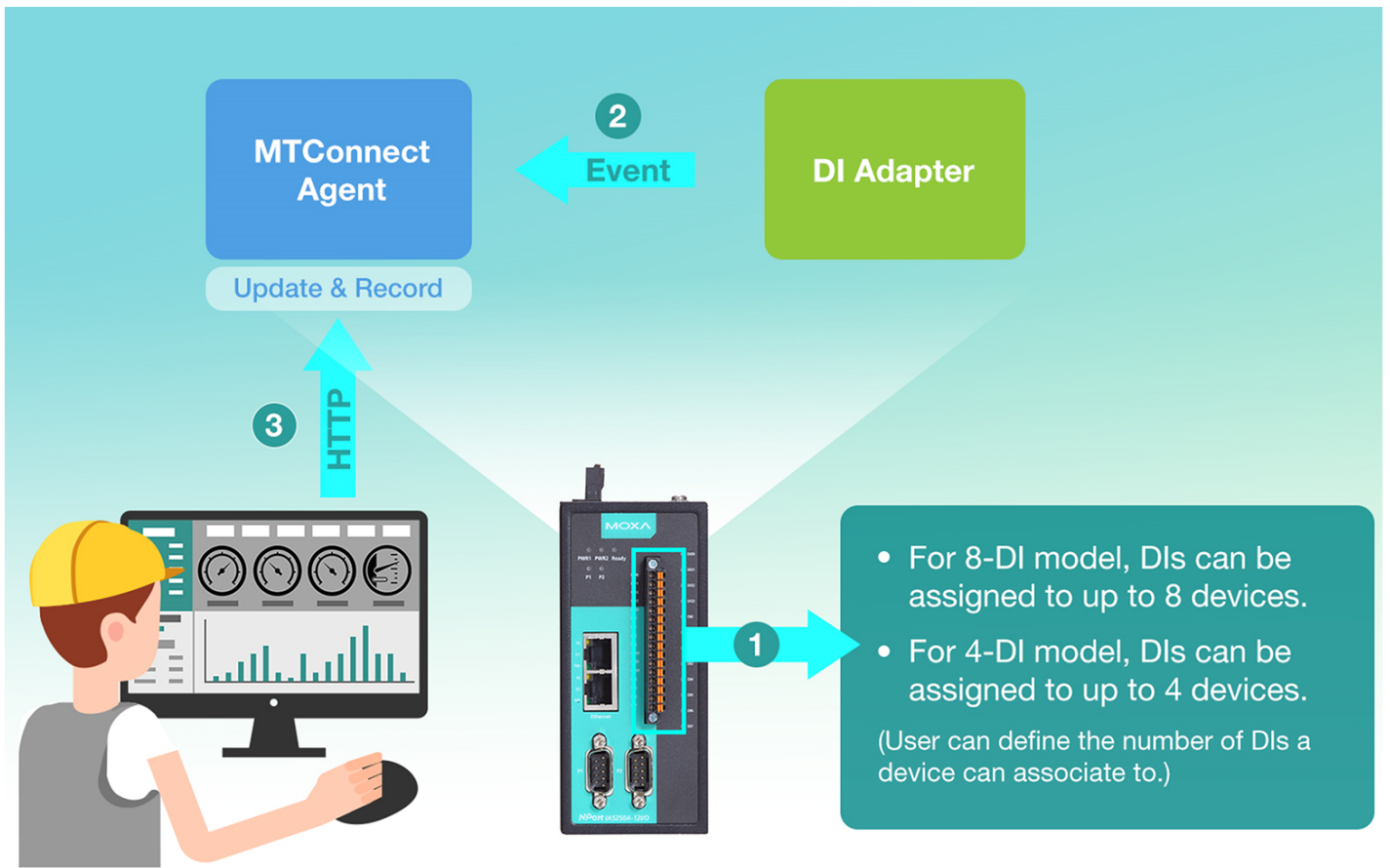
All models are ruggedly constructed, DIN-rail mountable, and designed with redundant power inputs to ensure uninterrupted operation for industrial applications.

### Wireless Client

The device servers are equipped with one Ethernet port that allows data to be transferred seamlessly between the serial line, LAN, and WAN, allowing the LAN and WLAN interfaces to be bridged together using a single IP address.

### Supports MTConnect Protocol for Monitoring Digital Inputs

MTConnect is designed specifically for shop-floor applications that aim to convert shop-floor data into a standard format that can be understood by any MTConnect-compliant software applications. Once the data has been defined by an MTConnect-compliant interface (name, type, description, etc.), it eliminates the need to redefine the data within each application. For those legacy machine tools that do not support MTConnect, the common practice is to get machine-related data through sensor connections and I/Os. Moxa NPort IAW5000A-I/O supports MTConnect-enabled capability for all digital inputs on the device and provides a configurable interface for users to define what data and appropriate MTConnect tags need to be tied to the digital inputs.



## Secure Remote Management and Configuration with SSH/HTTPS

Unauthorized access is one of the biggest headaches for system managers. In addition to IP filtering and password protection, the NPort IAW5000A-I/O Series also supports SSH and HTTPS to provide protection from hackers. To transmit control messages securely, open the web console using a web browser that supports HTTPS (Internet Explorer, for example). You may also open the serial or Telnet console, such as PuTTY, using a terminal emulator that supports SSH.

## Select Any Baudrate Between 50 bps and 921.6 kbps

Most device servers only support a fixed number of serial baudrates. However, some applications require special baudrates, such as 250 kbps or 500 kbps. With the NPort IAW5000A-I/O Series, you can use any baudrate between 50 and 921.6 kbps. If your device's baudrate is not a standard baudrate, select "other" from the drop-down list and then enter the baudrate.

## Specifications

### Input/Output Interface

Digital Input Channels	6I/O Models: 4 12I/O Models: 8
Digital Output Channels	6I/O Models: 2 12I/O Models: 4
Isolation	3k VDC or 2k Vrms
Alarm Contact Channels	Relay output with current carrying capacity of 2 A @ 30 VDC

### Digital Inputs

Sensor Type	Dry contact Wet contact (NPN or PNP)
Dry Contact	On: short to GND Off: open
Wet Contact (DI to COM)	On: 10 to 30 VDC Off: 0 to 3 VDC
I/O Mode	DI or event counter

Counter Frequency	20 Hz
Digital Filtering Time Interval	Software configurable
<b>Digital Outputs</b>	
I/O Mode	DO or pulse output
I/O Type	Sink
Over-Current Protection	2.6 A per channel @ 25°C
Over-Temperature Shutdown	175°C (typical), 150°C (min.)
Over-Voltage Protection	45 VDC
<b>Ethernet Interface</b>	
10/100BaseT(X) Ports (RJ45 connector)	1 Auto MDI/MDI-X connection
Magnetic Isolation Protection	1.5 kV (built-in)
<b>Ethernet Software Features</b>	
Industrial Protocols	MQTT, MTCConnect
Configuration Options	Web Console (HTTP/HTTPS), Windows Utility, Telnet Console, Serial Console
Management	DHCP Client, DNS, HTTP, IPv4, SMTP, SNMPv1/v2c/v3, TCP/IP, Telnet, UDP, ICMP
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
Android API	Android 3.1.x and later
MIB	MIB-II
<b>MQTT</b>	
Mode	Alibaba IoT Platform Device, Azure IoT Hub Device, Publisher/Subscriber of MQTT
Version Supported	v3.1.1
QoS Level	QoS 0-2
Secure Transmission	TLS (1.0, 1.1, 1.2) encryption with user's root CA, Client certificate, Private key
MQTT General Features	Clean Session, Keep Alive, Last Will Message, Retain Message
<b>Security Functions</b>	
Authentication	Local database RADIUS
Encryption	HTTPS, AES-128, AES-256, HMAC, RSA-1024, SHA-1, SHA-256, SHA-384
Security Protocols	SNMPv3 SSHv2 HTTPS (TLS 1.2)

## Serial Interface

Connector	DB9 male
No. of Ports	NPort IAW5150A models: 1 NPort IAW5250A models: 2
Serial Standards	RS-232, RS-422, RS-485
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, XON/XOFF
Pull High/Low Resistor for RS-485	1 kilo-ohm, 150 kilo-ohms
Terminator for RS-485	120 ohms
Surge	4 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

## WLAN Interface

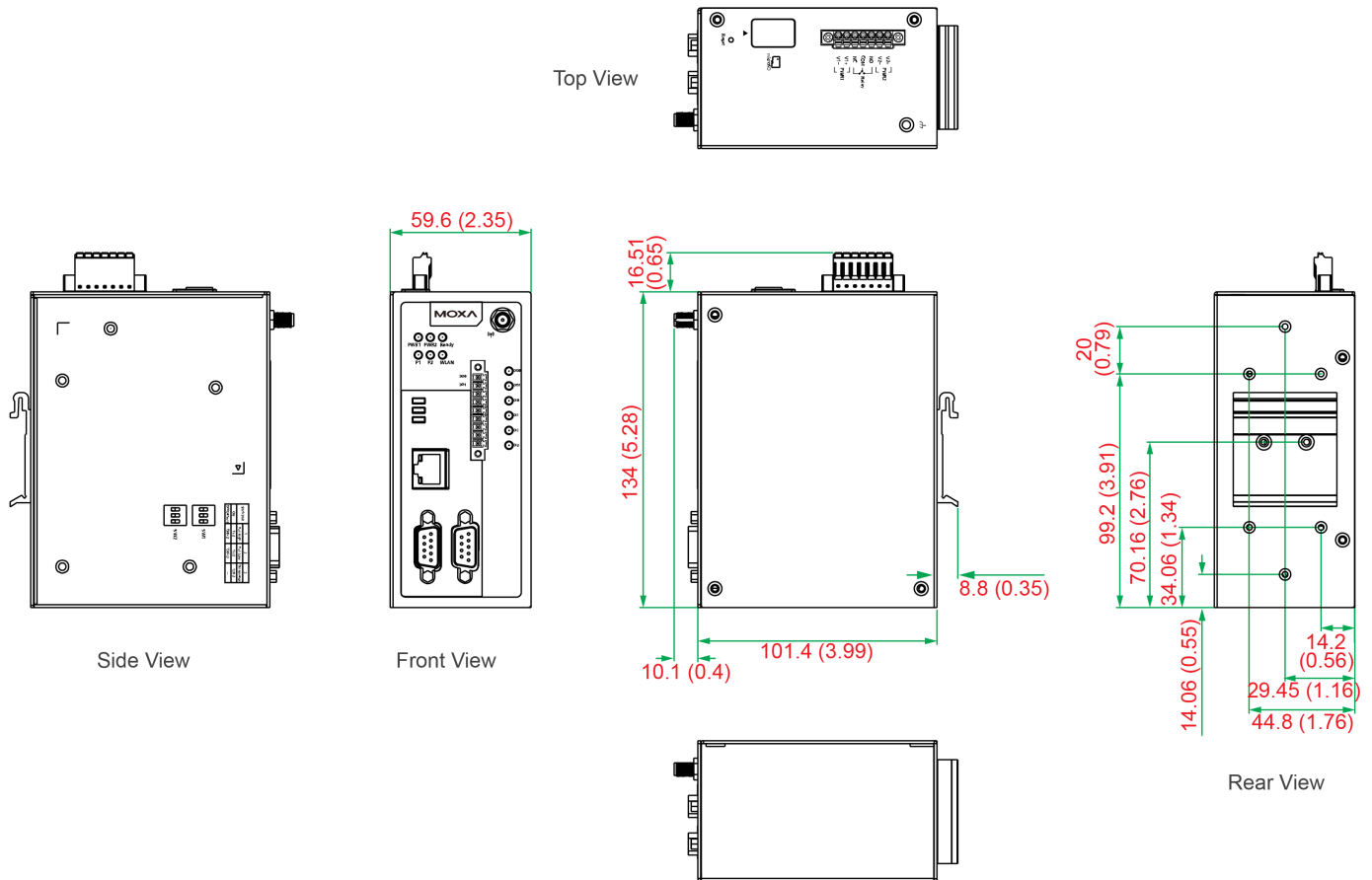
WLAN Standards	802.11a/b/g/n
Receiver Sensitivity for 802.11a (measured at 5.680 GHz)	Typ. -91 @ 6 Mbps Typ. -74 @ 54 Mbps
Receiver Sensitivity for 802.11b (measured at 2.437 GHz)	Typ. -92 dBm @ 1 Mbps Typ. -84 dBm @ 11 Mbps
Receiver Sensitivity for 802.11g (measured at 2.437 GHz)	Typ. -91 dBm @ 6 Mbps Typ. -73 dBm @ 54 Mbps
Receiver Sensitivity for 802.11n (2.4 GHz; measured at 2.437 GHz)	Typ. -89 dBm @ 6.5 Mbps (20 MHz) Typ. -71 dBm @ 72.2 Mbps (20 MHz)
Receiver Sensitivity for 802.11n (5 GHz; measured at 5.680 GHz)	Typ. -89 dBm @ 6.5 Mbps (20 MHz) Typ. -71 dBm @ 72.2 Mbps (20 MHz) Typ. -85 dBm @ 13.5 Mbps (40 MHz) Typ. -67 dBm @ 150 Mbps (40 MHz)
Spread Spectrum	DSSS, OFDM
Transmission Distance	Up to 100 meters (in open areas)
Transmission Rate	802.11a/g: 54 Mbps 802.11b: 11 Mbps 802.11n: 6.5 to 150 Mbps
Transmitter Power for 802.11b	16±1.5 dBm @ 1 Mbps 16±1.5 dBm @ 11 Mbps
Transmitter Power for 802.11g	16±1.5 dBm @ 6 Mbps 14±1.5 dBm @ 54 Mbps

Transmitter Power for 802.11a	15±1.5 dBm @ 6 Mbps 14±1.5 dBm @ 54 Mbps
Transmitter Power for 802.11n (2.4 GHz)	16 dBm @ 1.5 Mbps (6.5 MHz) 12 dBm @ 1.5 Mbps (72.2 MHz)
Transmitter Power for 802.11n (5 GHz)	15 dBm @ 1.5 Mbps (6.5 MHz) 12 dBm @ 1.5 Mbps (150 MHz)
Wireless Security	WEP encryption (64-bit and 128-bit) WPA/WPA2-Enterprise (IEEE 802.1X/RADIUS, TKIP, AES) WPA/WPA2-Personal
WLAN Modes	Ad-hoc Mode, Infrastructure mode
<b>Antenna Characteristics</b>	
Connector	RP-SMA (male)
Antenna Type	Omni-directional
<b>Memory</b>	
microSD Slot	Up to 32 GB (SD 2.0 compatible)
<b>Power Parameters</b>	
Connection	Removable terminal block
Input Voltage	12 to 48 VDC
Input Current	300 mA @ 12 VDC
<b>Reliability</b>	
Automatic Reboot Trigger	Built-in WDT
Alert Tools	Built-in buzzer and RTC (real-time clock)
<b>Physical Characteristics</b>	
Housing	Metal
Dimensions	59.6 x 101.7 x 134 mm (2.35 x 4 x 5.28 in)
Weight	NPort IAW5150A-6I/O Models: 740 g (1.63 lb) NPort IAW5250A-6I/O Models: 760 g (1.68 lb) NPort IAW5150A-12I/O Models: 760 g (1.68 lb) NPort IAW5250A-12I/O Models: 780 g (1.72 lb)
Installation	Wall mounting (with optional kit), DIN-rail mounting
<b>Environmental Limits</b>	
Operating Temperature	0 to 55°C (32 to 131°F)
Storage Temperature (package included)	-40 to 75°C (-40 to 167°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
<b>Standards and Certifications</b>	
EMC	EN 61000-6-2/-6-4
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 4 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: 1 kV IEC 61000-4-5 Surge: Power: 1 kV; Signal: Ethernet: 2 kV, Serial: 4 kV

	IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Radio Frequency	EN 300 328, EN 301 893
Safety	EN 60950-1, UL 60950-1
<b>Declaration</b>	
Green Product	RoHS, CRoHS, WEEE
<b>MTBF</b>	
Time	NPort IAW5150A-6I/O Models: 282,087 hours NPort IAW5150A-12I/O Models: 277,975 hours NPort IAW5250A-6I/O Models: 237,037 hours NPort IAW5250A-12I/O Models: 234,130 hours
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 IAW5000A-I/O Series device server
Antenna	1 x 2.4/5 GHz antenna
Documentation	1 x quick installation guide 1 x warranty card

## Dimensions

Unit: mm (inch)



## Ordering Information

Model Name	No. of Serial Ports	No. of DIs	No. of Dos	Wi-Fi Standards	WLAN Channels
NPort IAW5150A-6I/O-CN	1	4	2	802.11a/b/g/n	CN
NPort IAW5150A-6I/O-EU	1	4	2	802.11a/b/g/n	EU
NPort IAW5150A-6I/O-JP	1	4	2	802.11a/b/g/n	JP
NPort IAW5150A-6I/O-US	1	4	2	802.11a/b/g/n	US
NPort IAW5150A-12I/O-CN	1	8	4	802.11a/b/g/n	CN
NPort IAW5150A-12I/O-EU	1	8	4	802.11a/b/g/n	EU
NPort IAW5150A-12I/O-JP	1	8	4	802.11a/b/g/n	JP
NPort IAW5150A-12I/O-US	1	8	4	802.11a/b/g/n	US
NPort IAW5250A-6I/O-CN	2	4	2	802.11a/b/g/n	CN
NPort IAW5250A-6I/O-EU	2	4	2	802.11a/b/g/n	EU
NPort IAW5250A-6I/O-JP	2	4	2	802.11a/b/g/n	JP
NPort IAW5250A-6I/O-US	2	4	2	802.11a/b/g/n	US
NPort IAW5250A-12I/O-CN	2	8	4	802.11a/b/g/n	CN
NPort IAW5250A-12I/O-EU	2	8	4	802.11a/b/g/n	EU
NPort IAW5250A-12I/O-JP	2	8	4	802.11a/b/g/n	JP
NPort IAW5250A-12I/O-US	2	8	4	802.11a/b/g/n	US

## Accessories (sold separately)

### Antennas

ANT-WDB-ARM-02	2.4/5 GHz, omni-directional rubber duck antenna, 2 dBi, RP-SMA (male)
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### 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

Mini DB9F-to-TB	DB9 female to terminal block connector
ADP-RJ458P-DB9F	DB9 female to RJ45 connector

### Power Supplies

DR-120-24	120W/2.5A DIN-rail 24 VDC power supply with universal 88 to 132 VAC or 176 to 264 VAC input by switch, or 248 to 370 VDC input, -10 to 60°C operating temperature
DR-4524	45W/2A DIN-rail 24 VDC power supply with universal 85 to 264 VAC or 120 to 370 VDC input, -10 to 50°C operating temperature
DR-75-24	75W/3.2A DIN-rail 24 VDC power supply with universal 85 to 264 VAC or 120 to 370 VDC input, -10 to 60°C operating temperature

### Wall-Mounting Kits

WK-51-01	Wall mounting kit with 2 plates (51.6 x 67 x 2 mm) and 6 screws
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