

# ioPAC 6500 Series (65M) CPU Modules

*CPU modules for modular programmable IIN controllers*



## Features and Benefits

- Supports multiple IT/OT protocols for seamless communication between SCADA, Plant Information System, and cloud applications
- Tool-free hardware installation and hot-swap design for maximizing operation efficiency
- Fully modular design for maximum deployment flexibility
- IINxpress IDE utility combines IEC 61131-3 programming, configuration, and protocol services to streamline workflow and reduce programming efforts
- Enhanced security with built-in functions including Secure Boot, password-cracking defense, intrusion detection, and DoS defense

## Certifications



## Introduction

The ioPAC 6500 Series (also referred to as Intelligent Integrated Node or IIN) is an advanced Linux-based RTU featuring a built-in Layer-2 managed switch. Equipped with an Arm Cortex-A53 quad-core CPU, the ioPAC 6500 Series delivers robust performance.

## 6C Competencies

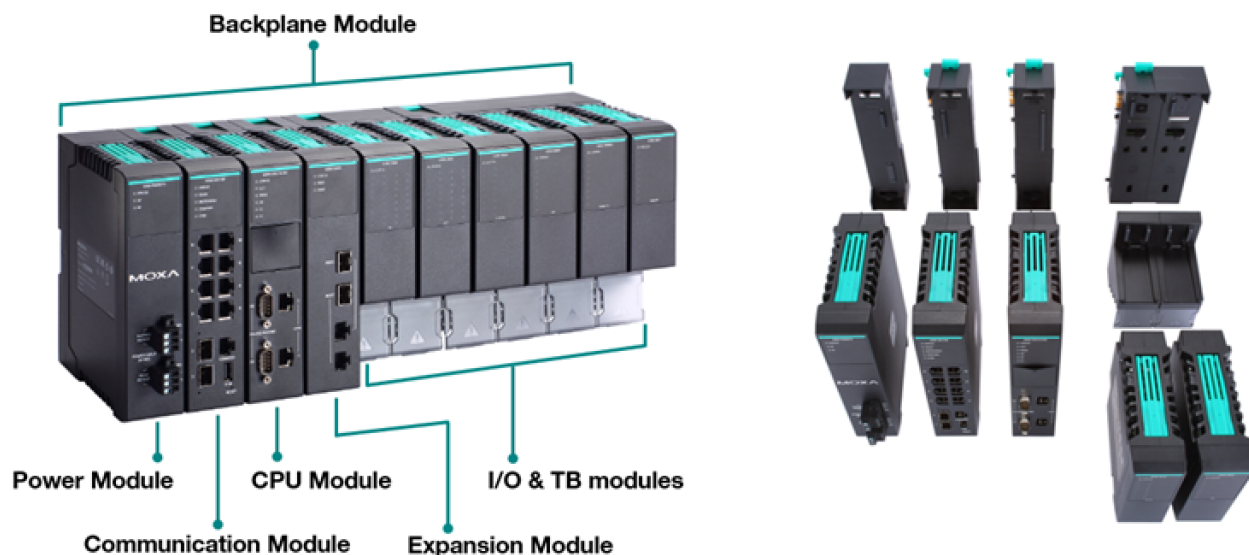
The ioPAC 6500 Series delivers the following competencies to your projects:

- Control: Precision control of your equipment
- Communication: Protocol support to connect to other devices and systems
- Computing: Applications for computing and data processing
- Connectivity: Versatile set of media interfaces
- Cloud: Cloud connectivity and cloud edge computing
- Cybersecurity: Security features to protect the devices and data



## Fully Modular Design

The ioPAC 6500 Series features a unique Lego-like mechanical design that allows for flexible deployment while minimizing installation efforts. The series can be divided into the components: Backplane modules, power modules, communication modules, expansion modules, CPU modules, I/O modules, and terminal-block modules.



## IEC 61131-3 Automation Programming

The ioPAC 6500 Series features IEC 61131-3 automation programming for flexibility in automation design and consistency in syntax and semantics, promoting interoperability between systems, thereby reducing development complexity in automation projects. Five languages are available: LD, FBD, SFC, IL, and ST, allowing automation professionals to choose the programming language that best suits their needs.

## Specifications

### Controller

|                      |                                                                                                                |
|----------------------|----------------------------------------------------------------------------------------------------------------|
| CPU                  | Arm Cortex-A53 quad-core 1.6 GHz                                                                               |
| OS                   | Moxa Industrial Linux 3 (Debian 11, kernel 5.10)<br>See <a href="http://www.moxa.com/MIL">www.moxa.com/MIL</a> |
| SDRAM                | 4 GB DDR4                                                                                                      |
| MRAM                 | 512 KB<br>(for logger)                                                                                         |
| Storage Preinstalled | 8 GB eMMC<br>(4 GB reserved for users)                                                                         |
| Buttons              | Reset                                                                                                          |

### Control Logic

|          |                                   |
|----------|-----------------------------------|
| Language | IEC 61131-3 programming languages |
|----------|-----------------------------------|

### Ethernet Interface

|                                            |                   |
|--------------------------------------------|-------------------|
| 10/100/1000BaseT(X) Ports (RJ45 connector) | 2 MACs (IPs)      |
| Magnetic Isolation Protection              | 1.5 kV (built-in) |

### Serial Interface

|                  |                                                                           |
|------------------|---------------------------------------------------------------------------|
| No. of Ports     | 2                                                                         |
| Connector        | DB9 male                                                                  |
| Serial Standards | RS-232/422/485                                                            |
| Baudrate         | 300, 1200, 1800, 2400, 4800, 9600, 19200, 28800, 38400, 57600, 115200 bps |
| Parity           | None, Even, Odd                                                           |
| Data Bits        | 7,8                                                                       |

|                                        |                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Stop Bits                              | 1, 2                                                                                                                                                                                                                                                                                                                   |
| Flow Control                           | RTS/CTS, XON/XOFF                                                                                                                                                                                                                                                                                                      |
| <b>Serial Signals</b>                  |                                                                                                                                                                                                                                                                                                                        |
| RS-232                                 | TxD, RxD, RTS, CTS, GND                                                                                                                                                                                                                                                                                                |
| RS-422                                 | Tx+, Tx-, Rx+, Rx-, GND                                                                                                                                                                                                                                                                                                |
| RS-485-2w                              | Data+, Data-, GND                                                                                                                                                                                                                                                                                                      |
| <b>System Power Parameters</b>         |                                                                                                                                                                                                                                                                                                                        |
| Input Current                          | 0.8 A @ 12 VDC                                                                                                                                                                                                                                                                                                         |
| <b>Physical Characteristics</b>        |                                                                                                                                                                                                                                                                                                                        |
| Housing                                | Plastic                                                                                                                                                                                                                                                                                                                |
| Dimensions                             | 42 x 177 x 134.8 mm (1.65 x 6.97 x 5.31 in)                                                                                                                                                                                                                                                                            |
| Weight                                 | 625 g (1.38 lb)                                                                                                                                                                                                                                                                                                        |
| Installation                           | DIN-rail mounting<br>Rack mounting (with optional kit)                                                                                                                                                                                                                                                                 |
| <b>Environmental Limits</b>            |                                                                                                                                                                                                                                                                                                                        |
| Operating Temperature                  | -40 to 75°C (-40 to 167°F)<br>Note: Proper airflow is required in an environment with temperature > 65°C                                                                                                                                                                                                               |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                                                                                             |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)                                                                                                                                                                                                                                                                                              |
| Altitude                               | 2000 m                                                                                                                                                                                                                                                                                                                 |
| <b>Standards and Certifications</b>    |                                                                                                                                                                                                                                                                                                                        |
| EMC                                    | EN 55032/35<br>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<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: (DC) 1 kV; Signal: 1 kV<br>IEC 61000-4-5 Surge: Power: (DC) 0.5 kV L-N, 1 kV L/N-PE; Signal: 1 kV; IO: 0.5 kV<br>IEC 61000-4-6 CS: Power: 10 Vrms; Signal: 10 Vrms<br>IEC 61000-4-8 PFMF: 30 A/m |
| Safety                                 | UL 61010-1<br>UL 61010-2-201                                                                                                                                                                                                                                                                                           |
| Shock                                  | IEC 60068-2-27<br>Half sine wave; acceleration: 15 g; time: 11 ms                                                                                                                                                                                                                                                      |
| Vibration                              | IEC 60068-2-6<br>DIN-rail mounted:<br>7 mm peak-peak (p-p) (2 to 8.42 Hz), 1 g (8.42 to 150 Hz)<br>Rack mounted (with optional kit):<br>7 mm peak-peak (p-p) (2 to 8.42 Hz), 0.5 g (8.42 to 150 Hz)                                                                                                                    |
| Package Vibration Test                 | ISTA 1A                                                                                                                                                                                                                                                                                                                |
| Package Drop Test                      | ISTA 1A                                                                                                                                                                                                                                                                                                                |

## MTBF

|           |                           |
|-----------|---------------------------|
| Time      | 1,830,589 hrs             |
| Standards | Telcordia Standard SR-332 |

## Warranty

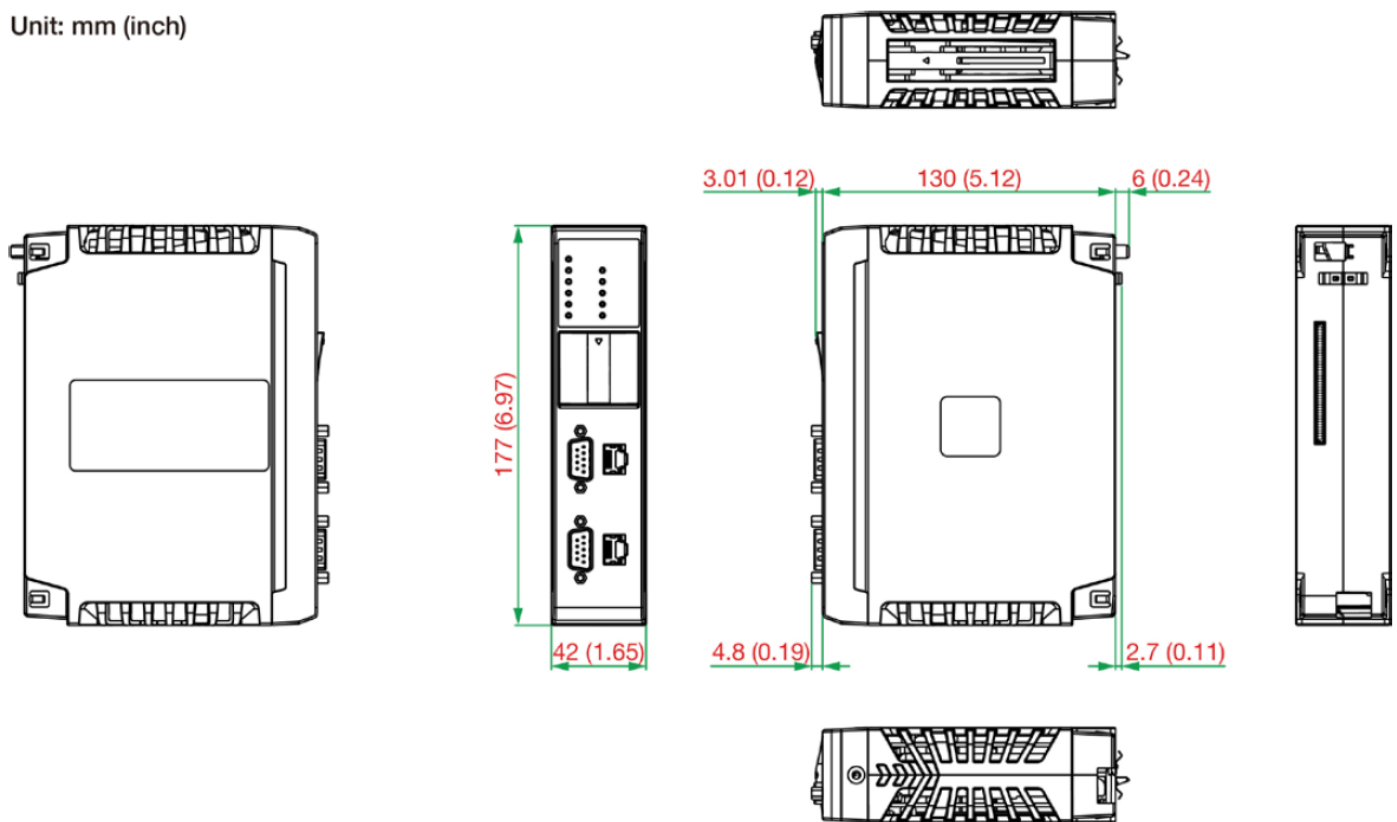
|                 |                                                                      |
|-----------------|----------------------------------------------------------------------|
| Warranty Period | 5 years                                                              |
| Details         | See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a> |

## Package Contents

|               |                                                   |
|---------------|---------------------------------------------------|
| Device        | 1 x ioPAC 6500 Series (65M) CPU module            |
| Documentation | 1 x warranty card<br>1 x quick installation guide |

## Dimensions

Unit: mm (inch)



## Ordering Information

| Model Name         | Programming Support               | Ethernet Ports | Serial Ports       | Conformal Coating | Operating Temperature |
|--------------------|-----------------------------------|----------------|--------------------|-------------------|-----------------------|
| 65M-CPU14-IEC-CT-T | IEC 61131-3 programming languages | 2 (RJ45)       | 2 (RS-232/422/485) | Yes               | -40 to 75°C           |

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