# 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

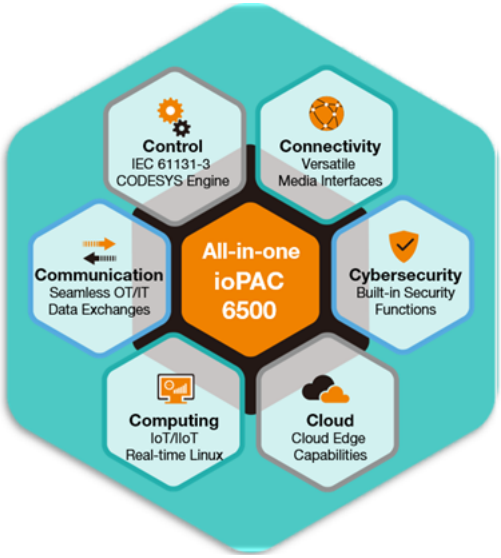
## Introduction

The brain of the system, the CPU module processes data collected from all field devices and triggers appropriate actions. The CPU module is powered by a CODESYS runtime engine, while the IINxpress integrated development environment (IDE) is used to configure device and write IEC 61131-3 compliant code using programming languages such as ladder diagram (LD), function block diagram (FBD), structured text (ST).

### 6C Competencies

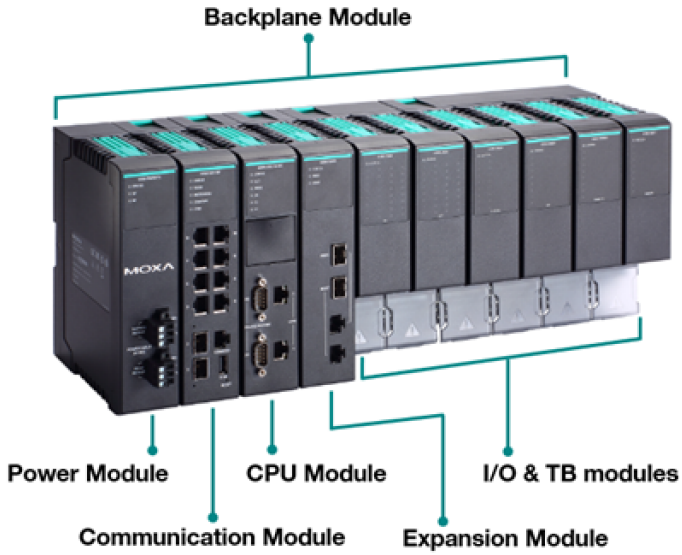
The ioPAC 6500 Series delivers the following competencies to your projects:

- 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 design that is mistake-proof and supports tool-free assembly 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 www.moxa.com/MIL |
| 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 Software Features

| | |
|---|---|
| Configuration Options | Web Console (HTTPS)<br>IINxpress Utility |
| Industrial Protocols | Modbus TCP Server<br>Modbus TCP Client<br>Modbus RTU Client<br>OPC UA Server<br>DNP3 TCP Outstation<br>SNMPv1/v2c/v3 |
| Security | Secure Boot<br>RADIUS<br>TACACS+<br>LDAP<br>RBAC<br>Login and Password Policy<br>SSH<br>Allowlist<br>DOS Defense<br>OpenVPN<br>SNMPv3<br>DNP3 SAv5 |

## 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 |
| Bitrate | 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 |

## Serial Signals

| | |
|---|---|
| RS-232 | TxD, RxD, RTS, CTS, GND |
| RS-422 | Tx+, Tx-, Rx+, Rx-, GND |
| RS-485-2w | Data+, Data-, GND |

## System Power Parameters

| | |
|---|---|
| Input Current | 0.8 A @ 12 VDC |

## Physical Characteristics

| | |
|---|---|
| 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) |

## Environmental Limits

| | |
|---|---|
| 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 |

## Standards and Certifications

| | |
|---|---|
| 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 V; Signal: 10 Vrms<br>IEC 61000-4-8 PFMF: 30 A/m |
| Hazardous Locations | ATEX Zone 2<br>Class I Division 2<br>IECEx |
| 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

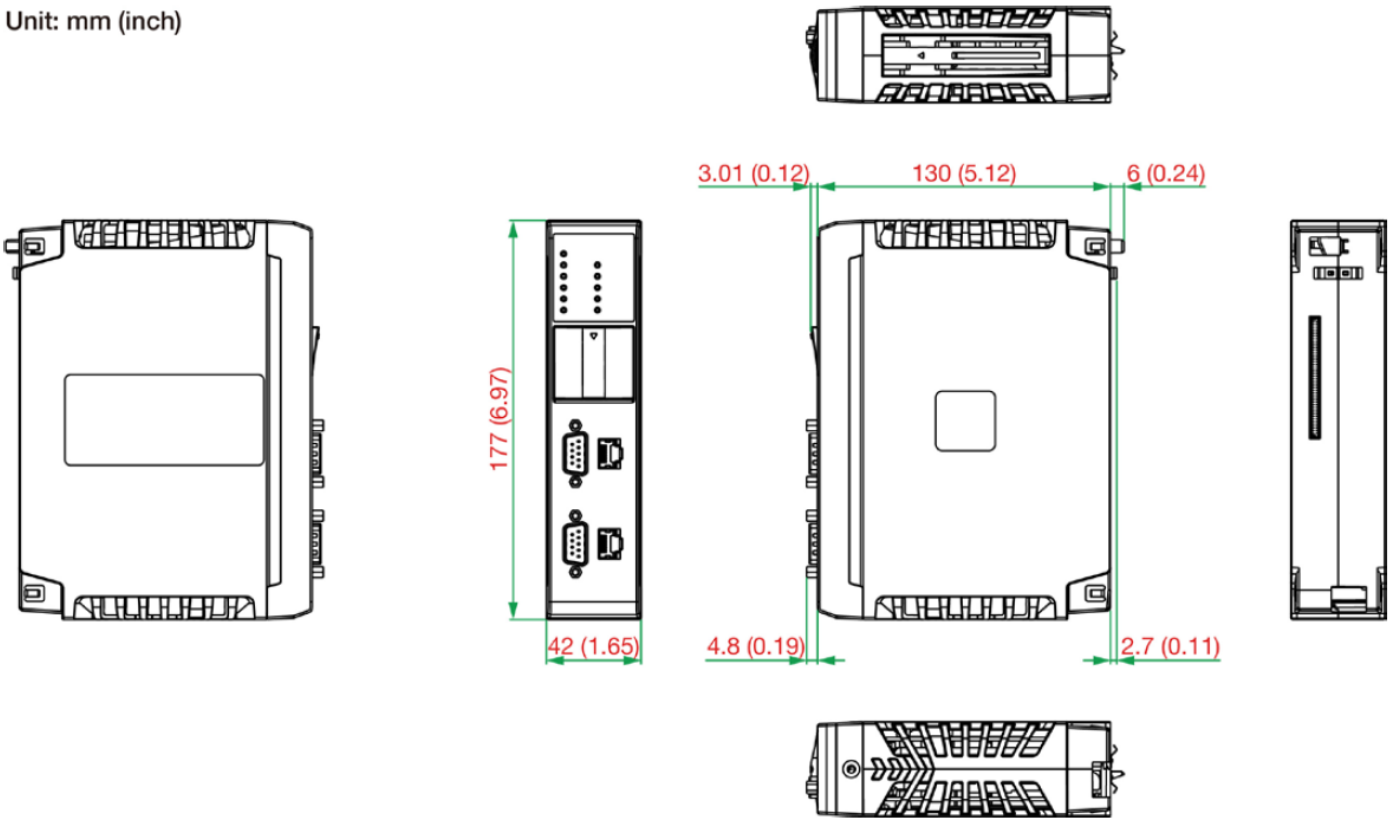
| | |
|---|---|
| Warranty Period | 5 years |
| Details | See www.moxa.com/warranty |

## 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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