

# ioPAC 8000 Series

## Rugged modular RTU controllers



- > Compliant with EN 50121-3-2, EN 50121-4, and essential sections of EN 50155
- > Supports C/C++ programming languages
- > 2-port Ethernet switch for daisy-chain topologies with by-pass function
- > Modular I/O for versatility, flexibility, and scalability
- > Rugged and compact design for harsh environments
- > Wide operating temperature: -40 to 75°C (-40 to 167°F)
- > 3-in-1 RS-232/422/485 serial port
- > Up to 32 GB SDHC data logging function



EN50155



EN 50121



## Introduction

Sturdy and dependable, ioPAC 8020-C modular RTU controllers are an ideal solution for rolling stock and trackside applications. This series tolerates temperature extremes from -40 to 75°C, is enclosed in a sealed metal casing, and is compliant with EN 50121-3-2, EN 50121-4, and essential sections of the EN 50155 anti-vibration standard. The ioPAC 8020-C further features a Linux/GNU platform adapted to data acquisition and condition monitoring. The main advantage of this open C platform is its user-friendly SDK, which helps economize on installation and configuration overhead by reducing your programming workload for key areas, including I/O control and condition monitoring, SCADA/DB interoperability, and improving smart communication controls.

The ioPAC-8020-C has a 2-port Ethernet switch that allows system integrators to easily build control networks with open Ethernet standards and daisy-chain topologies. Built-in dual power inputs ensure non-stop data transfer to the controller and uninterrupted communications management on the control network. For train-related applications, spring-type terminal blocks and optional M12 Ethernet connectors deliver reliable operations in high vibration environments. In addition, a rich selection of hot-swap I/O and communication modules is available for any combination of device applications.

## Specifications

### Computer

**CPU:** ARM9 based CPU, 32-bit/160 MHz

**OS:** Linux

**Clock:** Real-time clock with battery backup

**SDRAM:** 64 MB

**Flash:** 32 MB

**SD™ Slot:** Up to 32 GB (SD 2.0 compatible)

*Note: For units operating in extreme temperatures, industrial grade, wide-temperature SD cards are required.*

### Ethernet Interface

**LAN:** 2 auto-sensing 10/100 Mbps switch ports (M12 or RJ45)

**Ethernet Relay Function:** Hardware Normal Close

**Protection:** 1.5 KV magnetic isolation

### Serial Interface

**Serial COM1:** RS-232/422/485 (DB9 male)

**Serial Debug Port:** RS-232 (4-pin connector)

### Serial COM1 Signals

**RS-232:** TxD, RxD, DTR, DSR, RTS, CTS, DCD, GND

**RS-422:** TxD+, TxD-, RxD+, RxD-, GND

**RS-485-4w:** TxD+, TxD-, RxD+, RxD-, GND

**RS-485-2w:** Data+, Data-, GND

### Power Requirements

**Input Voltage:** 12 to 36 VDC

*Note: Compliant with EN 50155 at 24 VDC*

**Power Consumption:** 184 mA @ 24 VDC (without I/O modules)

### Physical Characteristics

**Housing:** Aluminum

**Dimensions:**

5-slot Version: 190.9 x 135 x 100 mm (7.52 x 5.31 x 3.94 in)

9-slot Version: 292.5 x 135 x 100 mm (11.52 x 5.31 x 3.94 in)

**I/O Module Slots:** 5 or 9 slots (the 9th slot is reserved)

**Weight:**

5-slot Version: 2,000 g

9-slot Version: 2,575 g

**Mounting:** DIN rail (standard), wall (with optional kit)

### Environmental Limits

**Operating Temperature:** -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

**Safety:** UL 508

**EMI:**

EN 61000-3-2; EN 61000-3-3; EN 61000-6-4;

FCC Part 15, Subpart B, Class A

**EMS:**

EN 55024, EN 61000-4-2, EN 61000-4-3,

EN 61000-4-4, EN 61000-4-5, EN 61000-4-6,

EN 61000-4-8, EN 61000-4-11, EN 61000-6-2

**Shock:** IEC 60068-2-27

**Freefall:** IEC 60068-2-32

**Vibration:** IEC 60068-2-6

**Rail Traffic:** EN 50155, EN 50121-3-2, EN 50121-4

**Green Product:** RoHS, CRoHS, WEEE

*Note: Please check Moxa's website for the most up-to-date certification status.*

**MTBF (mean time between failure)**

**Time:** 690,214 hrs

**Database:** Telcordia (Bellcore)

**Warranty**

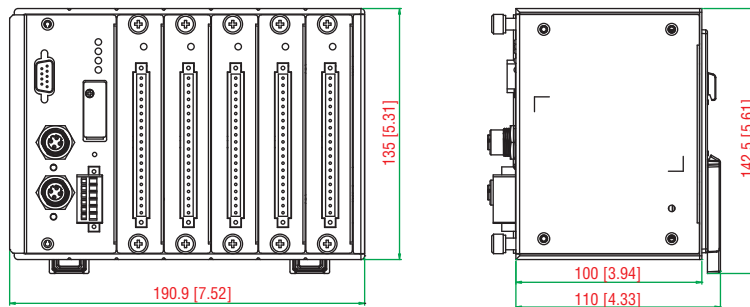
**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

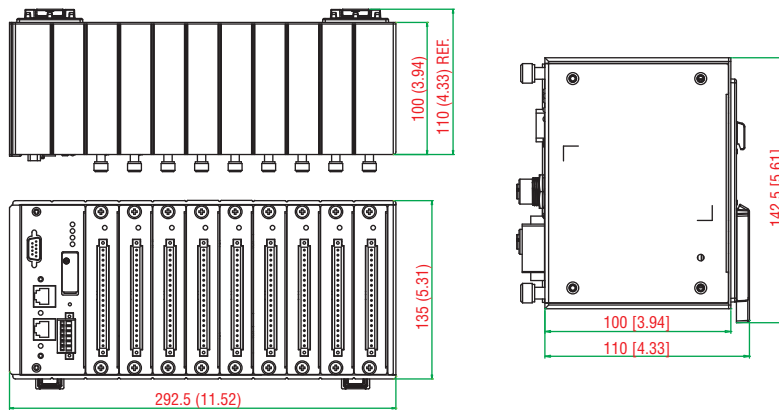
### Dimensions

Unit: mm (inch)

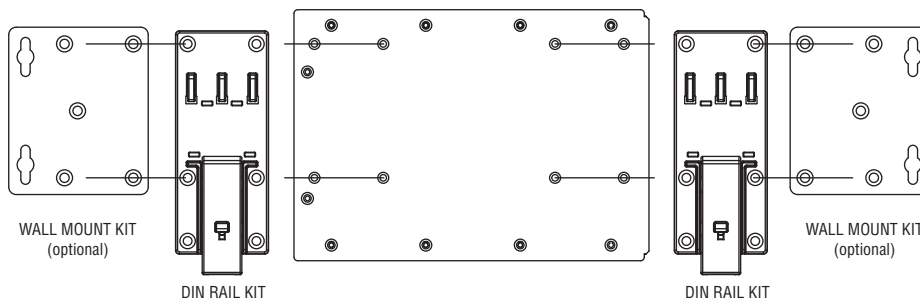
#### IoPAC 8020-5



#### IoPAC 8020-9



### Mounting kit



## : Ordering Information

### Available Models

**ioPAC 8020-5-RJ45-C-T:** Modular RTU controller with RJ45 connectors, 5 I/O slots, C/C++ programming, -40 to 75°C operating temperature

**ioPAC 8020-5-M12-C-T:** Modular RTU controller with M12 connectors, 5 I/O slots, C/C++ programming, -40 to 75°C operating temperature

**ioPAC 8020-9-RJ45-C-T:** Modular RTU controller with RJ45 connectors, 9 I/O slots, C/C++ programming, -40 to 75°C operating temperature

**ioPAC 8020-9-M12-C-T:** Modular RTU controller with M12 connectors, 9 I/O slots, C/C++ programming, -40 to 75°C operating temperature

### Optional Accessories (can be purchased separately)

**WK-75:** Wall mount kit

### I/O Modules (must be purchased separately)

**RM-1602-T:** ioPAC I/O module with 16 DIs, 24 VDC sink/source type, -40 to 75°C operating temperature

**RM-1050-T:** ioPAC I/O module with 10 DIs, 110 VDC isolated type, -40 to 75°C operating temperature

**RM-2600-T:** ioPAC I/O module with 16 DOs, 24 VDC sink type, -40 to 75°C operating temperature

**RM-3802-T:** ioPAC I/O module with 8 AIs, 4 to 20 mA, -40 to 75°C operating temperature

**RM-3810-T:** ioPAC I/O module with 8 AIs, 0 to 10 V, -40 to 75°C operating temperature

**KM-2430-T:** ioPAC communication module with 4-port Ethernet switch, M12 connectors, -40 to 75°C operating temperature

**Note:** Conformal coating available on request

### Package Checklist

- ioPAC 8020-C
- Documentation and software CD
- Ethernet cable (M12 to RJ45 or RJ45 to RJ45)
- Serial console cable