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

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)
Altitude: Up to 2000 m
Note: Please contact Moxa if you require products guaranteed to function properly at higher altitudes.

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)

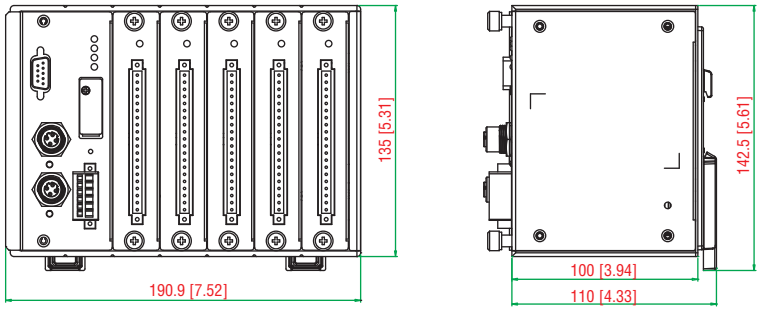
Warranty

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

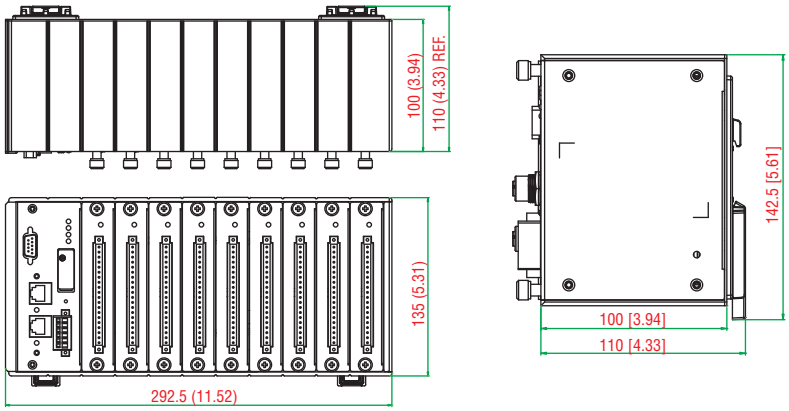
Dimensions

Unit: mm (inch)

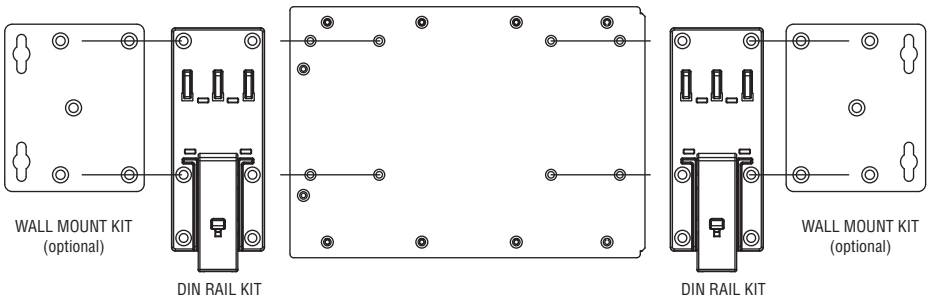
IoPAC 8020-5



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