

# ioPAC 8020

## Modular RTU controller



- > Robustness and compact design for harsh environments
- > -40 to 75°C operating temperature range
- > Anti-vibration spring lock terminal block
- > Two Ethernet ports with M12 or RJ45 connectors for daisy chain connections
- > One RS-232/422/485 serial port
- > Dual VDC power inputs
- > Hot-swappable I/O modules



### Introduction

The ioPAC 8020 is designed for front-end data acquisition and monitoring applications. With a powerful processor and a variety of interfaces, the 8020 can connect to devices such as PLCs, smart meters, controllers, and other serial devices. In addition to the serial interface, the 8020 also supports hot-swappable I/O slots for sensor signals, allowing you to choose from a variety of I/O modules for accessing sensor signals.

The ioPAC 8020 is a DIN-Rail, fanless, modular RTU controller. The

housing design for this product is optimized for robustness and compactness, and the aluminum chassis provides better protection for rolling stock, wayside, roadside, environmental monitoring, wind turbine, and other outdoor applications. In addition, the ultra wide temperature design is suitable for both tropical and high altitude environments. With two M12 Ethernet connectors, two serial ports with DB9 connectors, and a spring lock terminal block for I/O signal interfaces, the ioPAC 8020 is tailor-made for high vibration applications.

### Hardware Specifications

#### Computer

**CPU:** ARM9 based CPU, 32-bit/160 Mhz  
**SDRAM:** 8 MB  
**Flash:** 4 MB  
**I/O Scan Time:** 100ms  
**Program Cycle Time:** 100ms

#### Ethernet Interface

**LAN:** 2 auto-sensing 10/100 Mbps ports (M12 or RJ45)  
**Ethernet Relay Function:** Hardware Normal Close

#### Serial Interface

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

#### Serial 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  
**Power Consumption:**  
 CPU Module: 90 mA @ 24 VDC  
 CPU + I/O Modules: 300 mA @ 24 VDC

#### Mechanism (5 I/O slot version)

**Dimension:** 191 x 135 x 100 mm (7.52 x 5.31 x 3.94 in)  
**I/O Module Slots:** 5 or 9 slots

#### Physical Characteristics

**Housing:** Aluminum  
**Mounting:** DIN-Rail, wall, rack mounting (with optional kit)

#### Environmental Limits

**Operating Temperature:** -40 to 75°C (-40 to 167°F)  
**Operating Humidity:** 5 to 95% RH  
**Storage Temperature:** -40 to 85°C (-40 to 185°F)

#### Regulatory Approvals

**EMI:** FCC part 15, CISPR (EN55022) Class A  
**EMS:**

IEC 61000-4-2 (ESD), level 2/3  
 IEC 61000-4-3 (RS), level 2  
 IEC 61000-4-4 (EFT), level 2  
 IEC 61000-4-5 (Surge), level 3  
 IEC 61000-4-6 (CS), level 2  
 IEC 61000-4-8 (PM), level 1  
 IEC 61000-4-11 (DIP)  
 IEC 61000-6-2 (ESD), level 2/3  
 IEC 61000-6-4 (EFT), level 2

**Safety:** UL508 (Pending)

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

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

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

**Rail Traffic:** EN50155 (Pending), EN50121-3-2 (Pending), EN50121-4 (Pending)

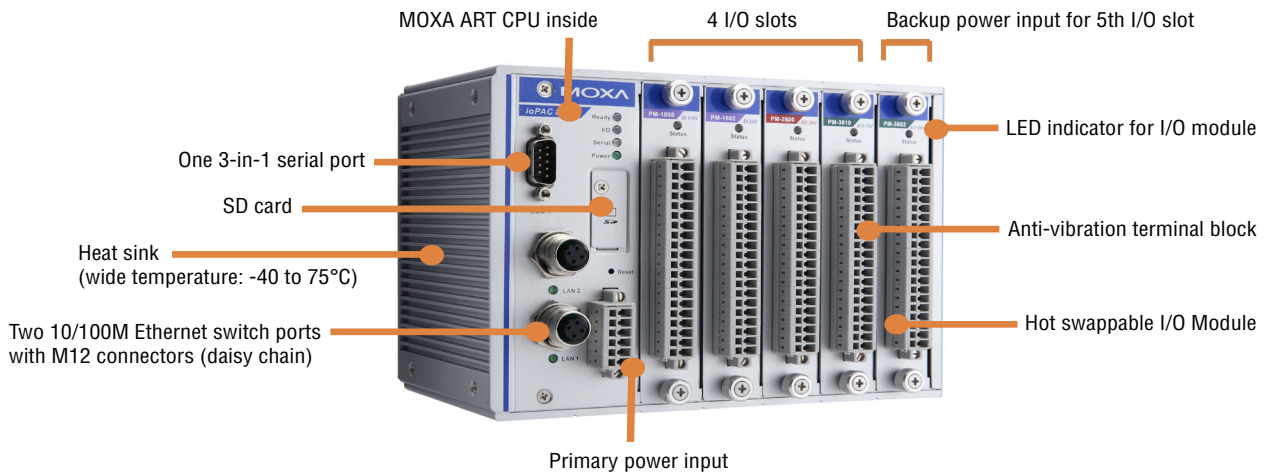
*Note: Please check Moxa's website for the most up-to-date certification status.*

#### Warranty

**Warranty Period:** 2 years

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

## Appearance



## The ioPAC is Ideal for Harsh Environments

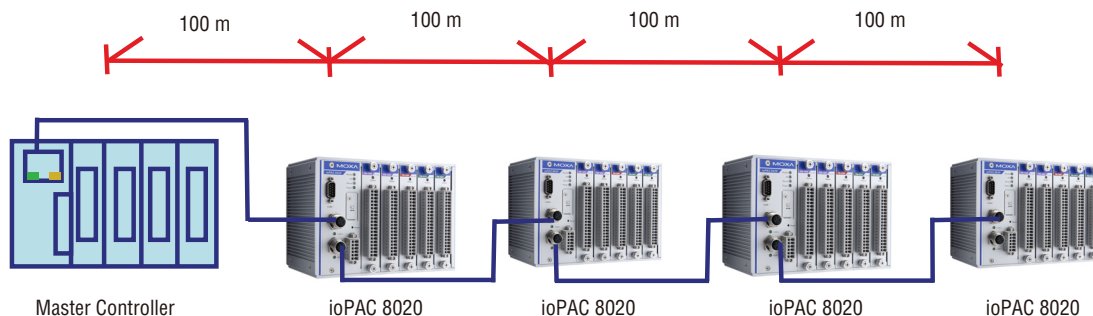
Most controllers are designed with a plastic chassis and only support a 0 to 55°C operating temperature range, making them unsuitable for high-vibration environments. With these limitations, the typical controller must be housed in a temperature-controlled room or box when used at unmanned industrial or outdoor sites.

Moxa offers industrial grade products that surpass the requirements for a variety of harsh environments. Moxa's ioPAC modular RTU controller supports a wide, -40 to 75°C operating temperature range, and its aluminum chassis can resist UV rays to prevent wear and tear.

## Non-stop Daisy Chain Supported

The Moxa ioPAC modular RTU controller has two embedded Ethernet switch ports that allow information to flow to another local Ethernet device or connect to a nearby ioPAC in a daisy chain. Applications such as rolling stock passenger information systems, security systems, and surveillance systems can make use of daisy chain Ethernet for building a controller network over open standard Ethernet networks.

The Moxa ioPAC modular RTU controller's Ethernet function also supports hardware pass-through. What this means is that the Ethernet will continue working normally if one of the daisy chained ioPAC units loses power. The only limitation is that the length of the Ethernet cables cannot exceed 100 m.



## : Anti-vibration Design

The Moxa ioPAC modular RTU controllers are designed to operate in high vibration environments, such as on vehicles and railways. The LAN, serial port, and I/O terminal block connectors are all designed to function normally when subjected to vibrations. A spring-type terminal

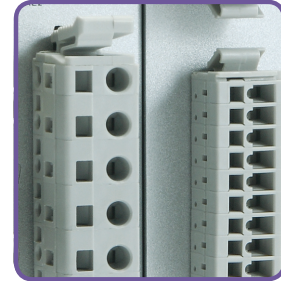
block with screws, the M12 Ethernet connector, and screw-type DB9 connector ensure that all of your connections remain functional, even when used in high vibration environments.



M12 Connector

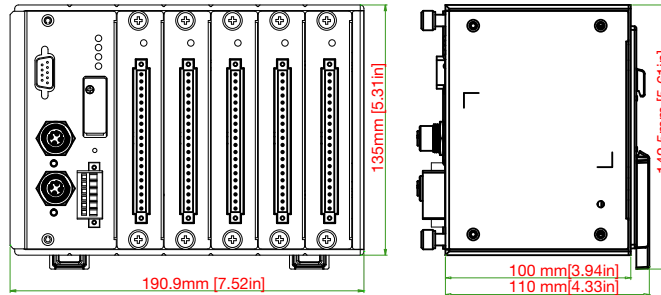


Serial DB9 Interface

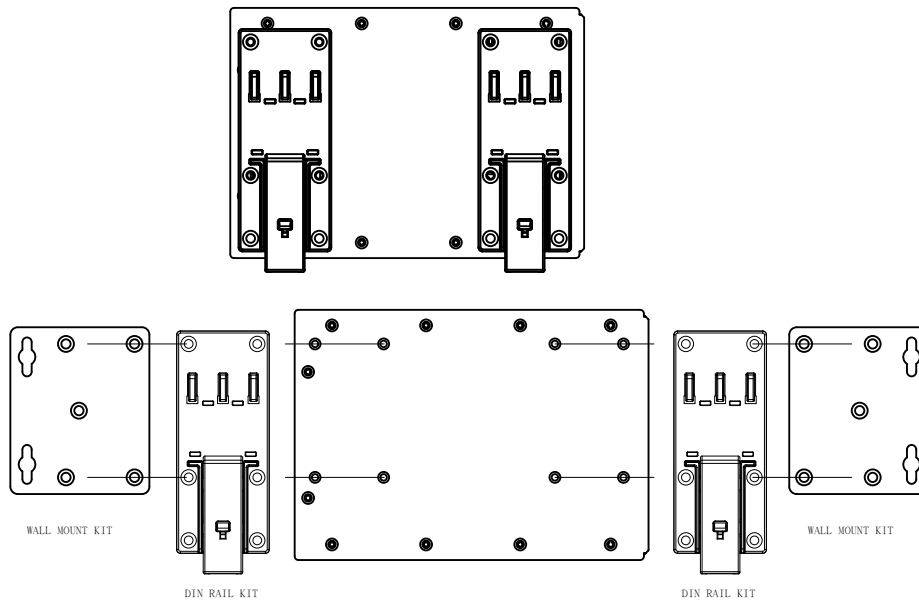


Spring Type Terminal Block

## Dimensions



You could also select the MOXA rail mounting kit



## : Ordering Information

### Available Models

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

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

### Accessories (can be purchased separately)

**RK-4U:** Rack Mounting Kits for 19" rack

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

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

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

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

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

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