

ioPAC 8020 Series

Rugged modular controllers



Features and Benefits

- Compliant with EN 50121-3-2, EN 50121-4, and a portion of EN 50155 specifications
- Supports C/C++ programming languages
- 2-port Ethernet switch for daisy-chain topologies with bypass function
- Modular I/O for versatility, flexibility, and scalability
- Rugged and compact design for harsh environments
- Wide operating temperature range: -40 to 75°C (-40 to 167°F)
- 3-in-1 serial port: RS-232, RS-422, or RS-485
- Data logging function saves data to SD cards up to 32 GB

Certifications



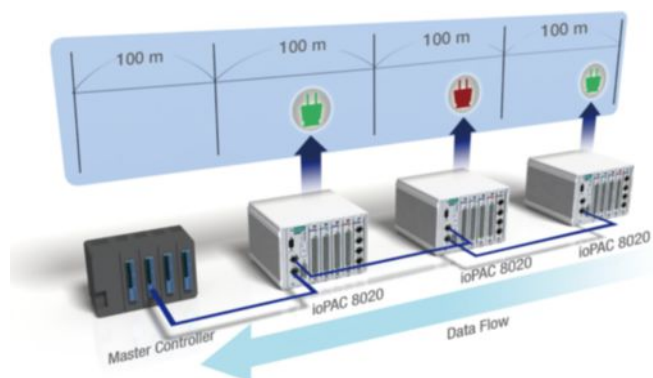
Introduction

Sturdy and dependable, ioPAC 8020 Series modular 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 relevant sections of the EN 50155 anti-vibration standard. The ioPAC 8020 Series also 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 Series 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 nonstop 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.

Ethernet Bypass Feature for Seamless Data Transmission

These devices also come with an integrated, independent, 2-port Ethernet switch for convenient daisy-chaining. In distributed Ethernet data acquisition applications, panels, units, and cabinets are often located at remote sites where space is limited. Daisy-chaining allows the devices to be connected in series either to each other or to other nearby Ethernet devices, drastically saving on both space and wiring costs. Because the Ethernet switch is independent of the main controller and includes a power-off bypass mechanism, the devices are able to maintain continuous and seamless data transmission even when a linked device fails.



Hot-Swappable Modular I/O

The controller lets you hot-swap I/O modules, allowing engineers to quickly and easily install and replace modules in the field, reducing maintenance costs and streamlining maintenance procedures.

Specifications

Computer

CPU	32-bit Arm9 160 MHz CPU
OS	Linux
Clock	Real-time clock with battery backup

Memory

Flash	32 MB (10 MB reserved for user)
SDRAM	64 MB
SD Slot	Up to 32 GB (SD 2.0 compatible)

Control Logic

Language	C/C++
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Ethernet Interface

10/100BaseT(X) Ports (M12 D-coded 4-pin female connector)	ioPAC 8020-X-M12 Series: 2, Ethernet bypass
10/100BaseT(X) Ports (RJ45 connector)	ioPAC 8020-X-RJ45 Series: 2, Ethernet bypass
Magnetic Isolation Protection	1.5 kV (built-in)

Ethernet Software Features

Configuration Options	Windows Utility (RTUAdmin)
Industrial Protocols	Modbus TCP Client (Master), Modbus TCP Server (Slave), Moxa AOPC (Active Tag)
Management	BOOTP, DHCP Client, IPv4, SMTP, UDP, TCP/IP

Serial Interface

Data Bits	7, 8
Flow Control	RTS/CTS, XON/XOFF
Parity	Even, None, Odd
Serial Standards	RS-232/422/485
Stop Bits	1, 2

Serial Software Features

Industrial Protocols	Modbus RTU Client (Master)
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Power Parameters

Power Connector	Spring-type Euroblock terminal
No. of Power Inputs	2
Input Voltage	12 to 36 VDC
Power Consumption	184 mA @ 24 VDC

Physical Characteristics

Slots	ioPAC 8020-5 Series: 5 ioPAC 8020-9 Series: 9
Housing	Metal

Dimensions	ioPAC 8020-5 Series: 190.9 x 135 x 100 mm (7.52 x 5.31 x 3.94 in) ioPAC 8020-9 Series: 292.5 x 135 x 100 mm (11.52 x 5.31 x 3.94 in)
Weight	ioPAC 8020-5 Series: 2,000 g (4.41 lb) ioPAC 8020-9 Series: 2,575 g (5.68 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit)
Wiring	Power cable, 14 to 28 AWG

Environmental Limits

Operating Temperature	-40 to 75°C (-40 to 167°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

Standards and Certifications

EMC	EN 55032/24, EN 61000-6-2/-6-4
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Railway	EN 50121-4, EN 50155
Safety	UL 508
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6

MTBF

Time	690,214 hrs
Standards	Telcordia SR332

Warranty

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

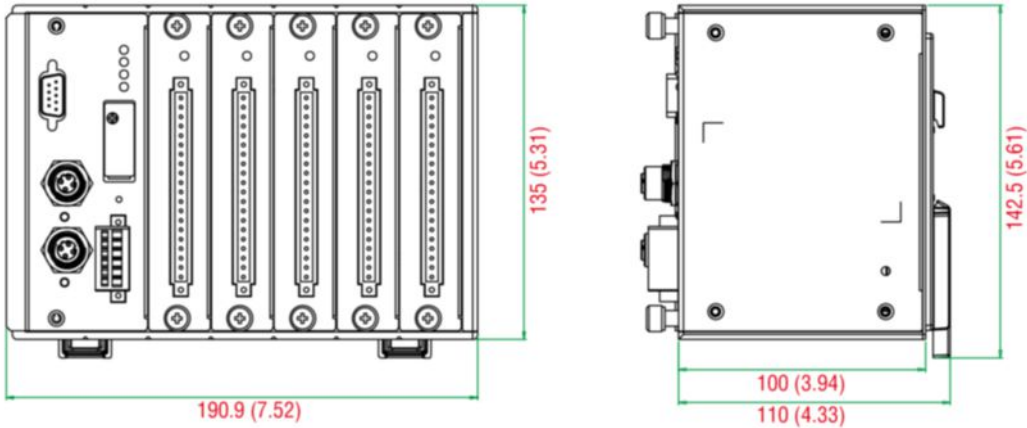
Package Contents

Device	1 x ioPAC 8020 Series modular controller
Cable	1 x 4-pin header to DB9 console port
Documentation	1 x document and software CD 1 x warranty card
Note	This product requires additional modules (sold separately) to function.

Dimensions

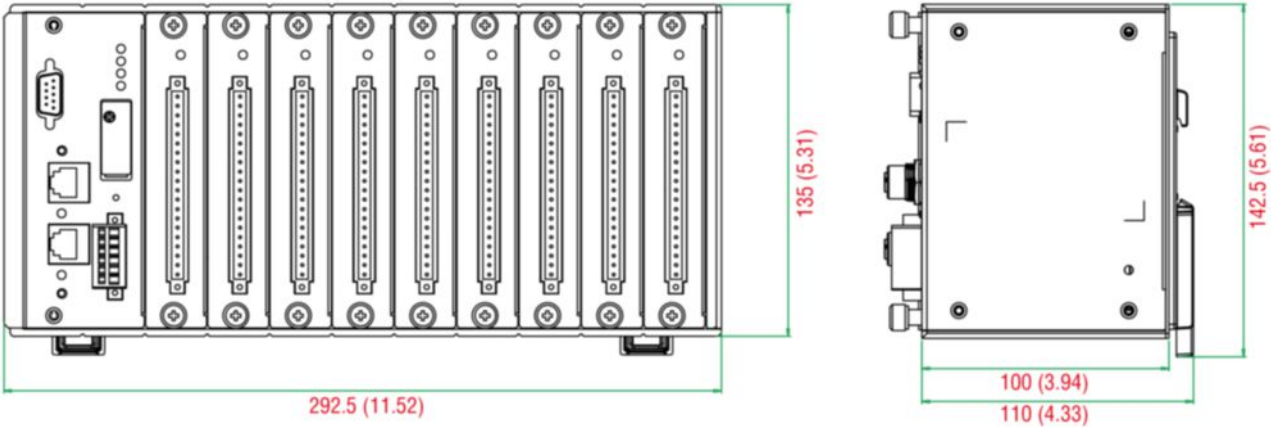
ioPAC 8020-5

Unit: mm (inch)

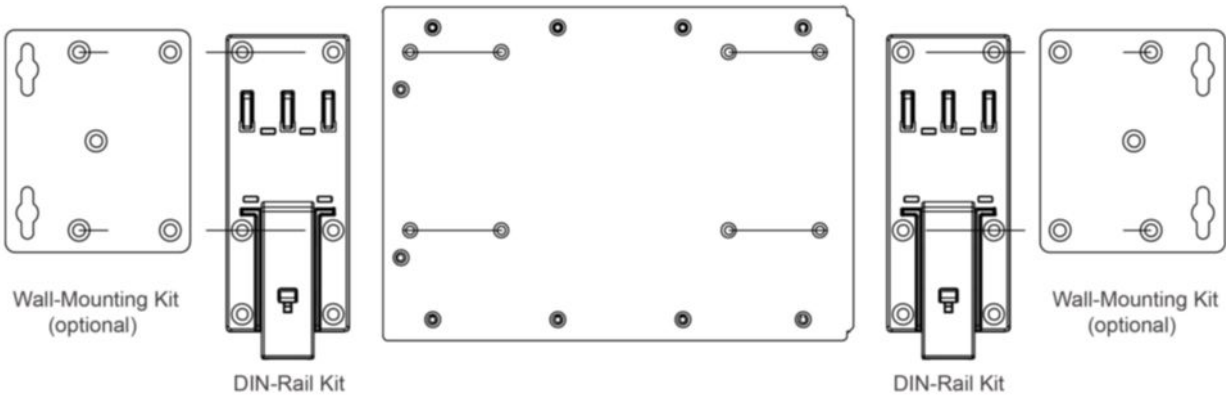


ioPAC 8020-9

Unit: mm (inch)



Mounting Kits



Ordering Information

Model Name	LAN	Slots
ioPAC 8020-5-RJ45-C-T	2 x RJ45	5
ioPAC 8020-5-M12-C-T	2 x RJ45	5

Model Name	LAN	Slots
ioPAC 8020-9-RJ45-C-T	2 x M12	9
ioPAC 8020-9-M12-C-T	2 x M12	9

Accessories (sold separately)

I/O Modules

RM-1050-T	For the ioPAC 8020 Series, 10 DIIs, 110 VDC isolated type
RM-1602-T	For the ioPAC 8020 Series, 16 DIIs, 24 VDC, sink/source type
RM-2600-T	For the ioPAC 8020 Series, 16 DOs, 24 VDC, sink type
RM-3802-T	For the ioPAC 8020 Series, 8 AIs, 4 to 20 mA
RM-3810-T	For the ioPAC 8020 Series, 8 AIs, 0 to 10 V

Communication Modules

KM-2430-T	For ioPAC 8020 Series, 4-port unmanaged Ethernet switch, M12 connectors
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Software

MX-AOPC UA Server	OPC UA Server software for converting fieldbus to the OPC UA standard
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Cables

CBL-M12D(MM4P)/RJ45-100 IP67	M12-to-RJ45 cable, IP67-rated, 1 m Applicable Models: ioPAC 8020-5-M12-C-T ioPAC 8020-9-M12-C-T
CBL-RJ458P-100	8-pin RJ45 CAT5 Ethernet cable, 1 m Applicable Models: ioPAC 8020-5-RJ45-C-T ioPAC 8020-9-RJ45-C-T

Wall-Mounting Kits

WK-75	Wall-mounting kit, 2 plates, 8 screws, 75 x 90 x 2.5 mm
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