

- IP based programmable controller for Building Management Systems
- Freely programmable using Niagara Workbench
- Versatile Input/Output configuration
 - 16 Universal Inputs: Analog or Digital Input
 - 16 Flex I/O ports: Analog Output, Digital/Pulse Input
 - Software based configuration
 - Status LEDs for all inputs and outputs
- Real-time clock with scheduling
- Expandable with optional modules
 - RK-4 Relay Module
 - Modbus IO Modules
- Two configurable communication ports
 - Ethernet port: SOX, BACnet IP, Modbus TCP
 - RS485 port: BACnet MSTP, Modbus RTU
- 24Vac/dc operating power
- Compact footprint, 35mm DIN Rail mounting



Built on
Sedona
FRAMEWORK™

General

The Ontrol P-ION 44 Controller is a powerful, freely programmable BMS controller designed for modern building management and HVAC control applications. Built on the open Sedona Framework, P-ION44 provides a powerful and easily scalable platform with exceptional reliability, interoperability, and cost efficiency.

The controller combines robust hardware design, on-board input and output ports, powerful control logic and open communication protocols to enable seamless integration of HVAC, energy management, lighting, and building infrastructure systems.

Designed for demanding building automation environments, the P-ION44 has been field-tested in a large number of installations worldwide, delivering proven performance in commercial buildings, campuses, hospitals, airports, industrial facilities and alike.

SEDONA Framework™

The Sedona Framework™ is the industry's first open-source development framework that provides a complete software platform for developing, deploying, integrating, and managing controllers. Sedona offers seamless integration and engineering of intelligent field devices for Niagara users and developers under one open platform.

The Sedona Framework distributes decision making, control and manageability to the controller and brings intelligence and connectivity to the network edge and back.

Distributed Control Logic

The P-ION uses a distributed control architecture, allowing control logic to run locally at the device level. This approach:

- Ensures autonomous operation even if the BMS network communication is interrupted
- Reduces dependency on central controllers
- Improves system reliability and response time
- Minimizes single-point-of-failure risks
- Offers an easily scalable system architecture

Integrated Input & Output ports

The P-ION44 features 32 on-board I/O ports; 16 universal input and 16 flexible I/O ports, that can be configured to support a wide range of control signals.

Universal inputs can be configured for:

- AI: Passive resistive sensors
- AI: Active voltage/current sensors
- DI: Voltage-free contacts

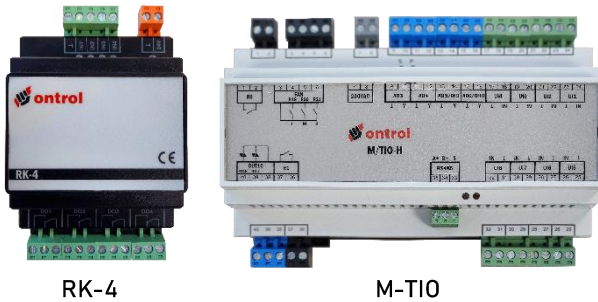
Flexible IO ports can be configured as:

- AO: 0(2) to 10V analog control
- DO: 0/10V (need ext. relay)
- DI: Voltage-free contacts
- Pulse counter



Remote IO Modules

The RK-4 relay module expands the P-ION44 with relay outputs rated 230Vac/10A, eliminating the need external power control relays. Two RK-4's can be connected to P-ION in a daisy chain with ribbon cables extending IO connectivity to 40 points. A maximum of six RK-4 modules can be driven from one P-ION via the ribbon cable plus hard-wired connection to the universal IO ports combined.



RK-4

M-TIO

The P-ION can support Ontrol and 3rd party remote IO modules via the Modbus RTU and TPC interface to cover installations with higher point counts.

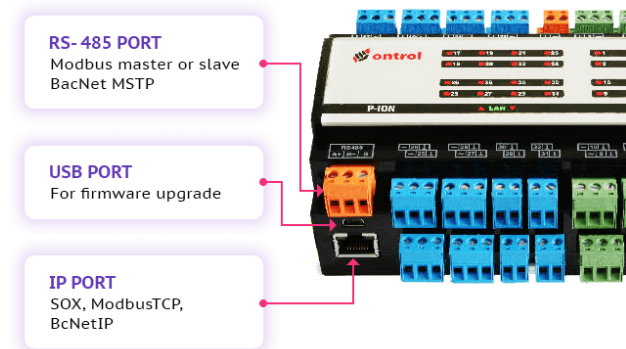
Software points are also supported from third party devices such as VFDs, energy meters, or chiller controllers via the Modbus and BACnet interfaces.

When integrating Modbus/BACnet points, it is recommended not to exceed 20 additional points per P-ION as memory constraints may kick-in depending on the application complexity.

Multiple Communication Ports

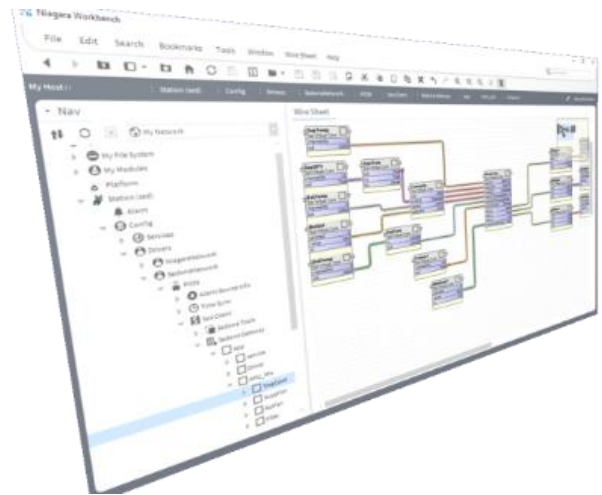
The P-ION44 includes multiple communication interfaces to support integration with building management systems, field devices and 3rd party equipment.

The Ethernet port supports BACnet IP, Modbus TCP and Sedona SOX protocols, while the RS485 serial communication port supports BACnet MSTP and Modbus RTU protocols for seamless system interoperability, simplified device connectivity eliminating the need for protocol gateways.



Niagara Workbench programming

The P-ION44 is configured using Tridium Niagara Workbench software providing a powerful graphical environment for control logic development. Logic programming is done using the well-established Niagara "wiresheets", allowing the user to add components, create logic function and links, and set properties, thus making configuration of highly complex operating scenarios a simple task.



The P-ION is also compatible with third-party Sedona engineering tools.

Real-time control

The Ontrol P-ION features a battery backed-up built-in Real-Time Clock (RTC) designed for accurate, scheduled building automation applications. Key features of the RTC in the Ontrol P-ION controllers include:

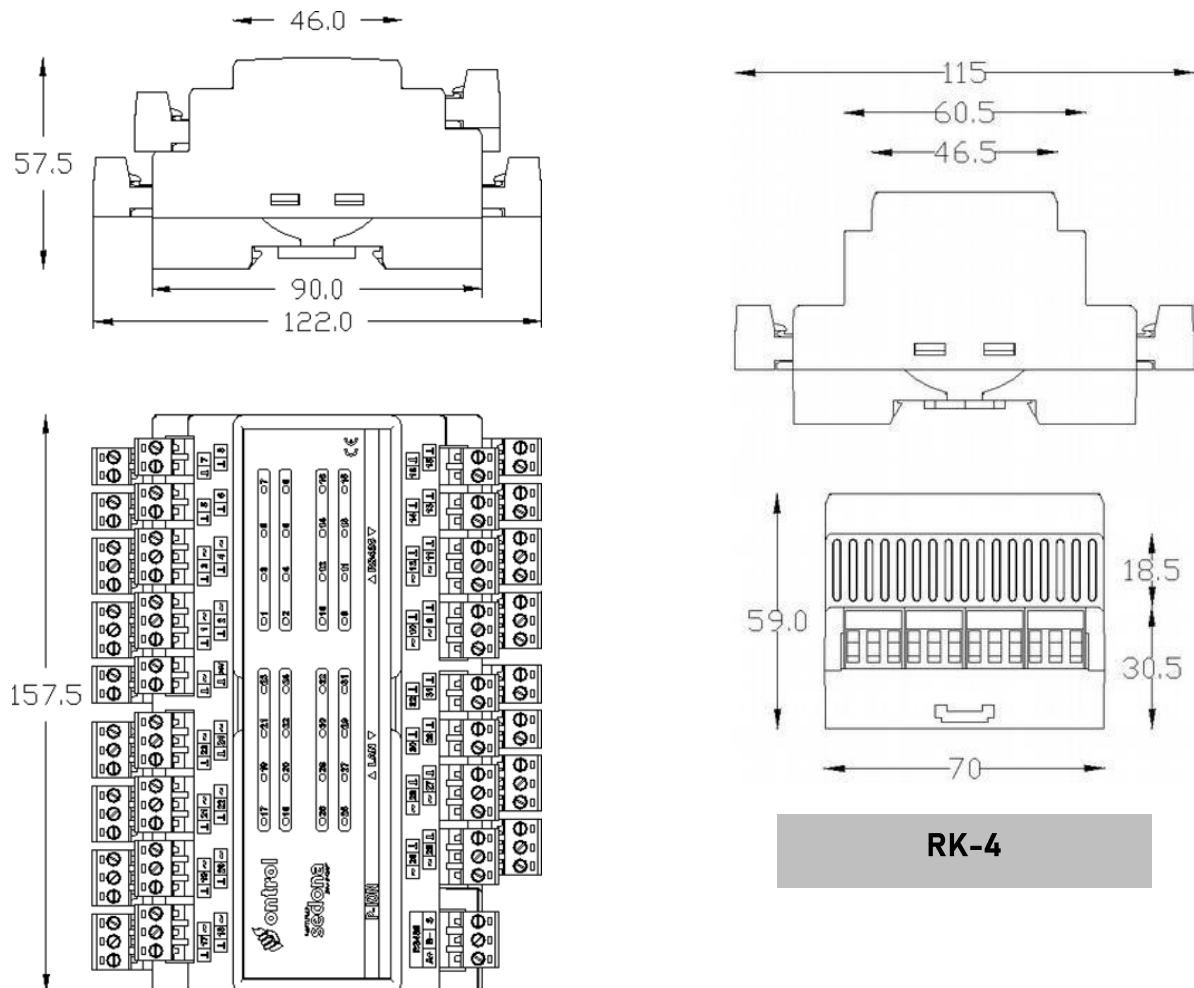
- The controller maintains the correct time and date across power interruptions, ensuring schedules are maintained.
- The RTC enables time-based control of outputs, allowing for weekly time schedules, such as occupancy modes (occupied/unoccupied) for HVAC, lighting, or other building systems.

In summary, Ontrol's P-ION is a robust, thoroughly field-proven general-purpose programmable controller to manage a variety of building systems.

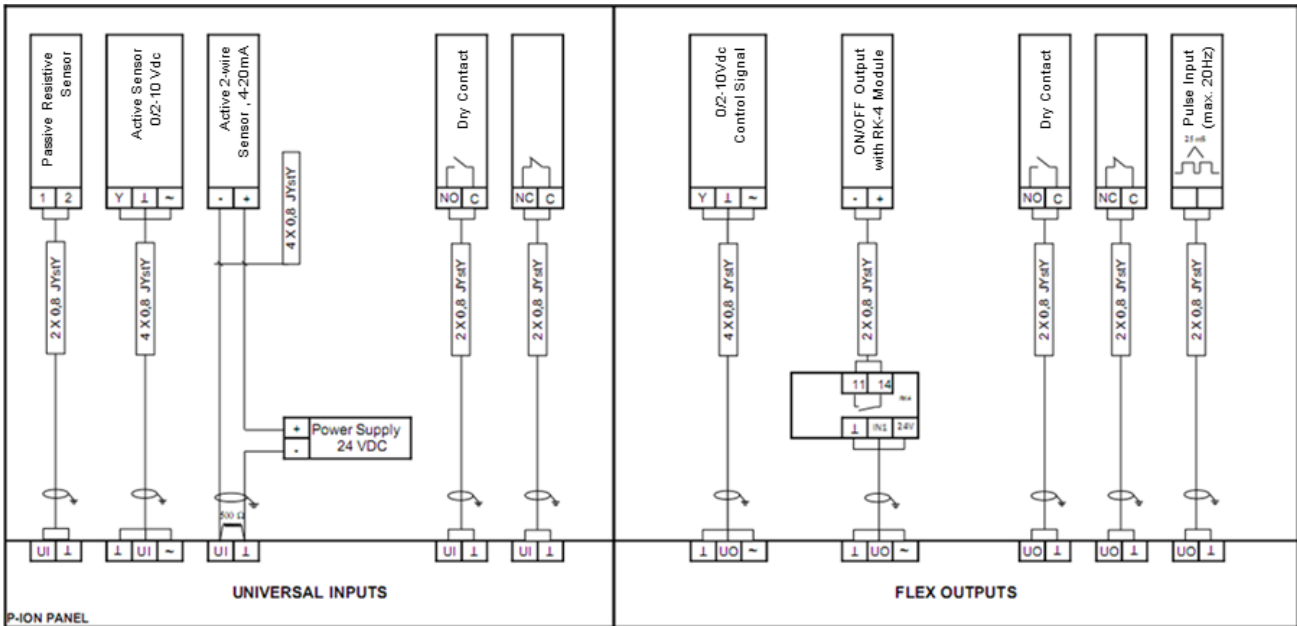
The P-ION is distinguished from competition by several unique features, such as flexible input/output ports, extreme protection against installation errors, unmatched installer-friendly terminal configuration and native Niagara Framework integration.

Product Specifications

Universal Inputs	Active: 0/2-10V, 0/4-20mA (w/ 500Ω res)	Controller	32-bit microcontroller, flash memory
	Passive: Pt1000, NTC10K3A, 0-330kΩ res	Analog Resolution	13-bit A/D converter
Flex IO Ports	Analog/Digital OUT: 0/2-10V (2mA max)	Power Supply	24 V ac/dc ± 10%
	Digital IN: Volt-free contact	Power Consumption	6 VA
Communication Port 1	Pulse IN: max. 20Hz & 50Ω contact	Housing Material	PC +ABS (Fireproof)
	RJ45 Ethernet 10/100Base-T	Working Environment	0 to 50°C (-32 to +122 °F) 5 to 95% rH (non-condensing)
Communication Port 2	Sedona SOX, BACnet IP Slave, Modbus™ TCP Master or Slave	Storage Temperature	25 to 75 °C (-13 to +167 °F)
	RS485	Product Dimensions	205 x 132 x 107 mm (boxed) 157.5 x 122 x 57.5 mm (w/terminals)
Communication Port 3	BACnet MSTP Slave, Modbus™ RTU Master or Slave	Weight	570 gr (750 gr boxed)
Communication Port 4	USB, for firmware update	Installation	35mm DIN Rail
Programming	10-pin ribbon cable for RK-4	Connections	Plug-in terminals, max 2.5 mm ²
	Tridium Niagara Workbench Sedona Programming Tools	Protection Class	IP20 according to EN60529

Product Dimensions


Typical Wiring



Ordering Information

Controller

- **P-ION 44** Programmable controller with 16 Universal Input and 16 Flexible IO ports, 1x Ethernet and 1x RS485 Communication ports, 24V ac/dc power

IO Modules (DIN Rail Mounted)

- **RK-4** Relay board, 4 x SPDT power relays (10A/250V)
- **M/TIO-H** Modbus™ RTU Input/output module for Ontrol controllers, 230Vac power, 8 Universal Inputs, 2 triac Outputs ((0.1A@230VAC / 0.5A@24VAC), 5 Relay Outputs (4x 230Vac/5A & 1x 230Vac/10A), 4 Flex IO (0/2-10 VDC, 2mA max. (2 configurable as digital inputs), Ribbon cable connection to max. 2 Ontrol relay modules (RK-4)
- **M/TIO-L** Same as above, 24Vac power