

PACSystems™ RSTi-EP I/O

High Density, High Performance Slice I/O

Smarter Architecture

Today's connected machines require innovative, high-performance control systems that minimize unplanned downtime and increase productivity and efficiency. RSTi-EP combines powerful technology and a modular, compact form factor to deliver higher performance and maximized productivity in today's connected automation systems. The RSTi-EP remote I/O system is well suited for Industrial Internet enabled applications. It features an extended operating temperature range, enhanced diagnostics, plug-and-play connectivity and high channel density— all designed to simplify machine design and maintenance. Advanced diagnostics make RSTi-EP ideal for remote applications, especially those where I/O can be difficult to reach. RSTi-EP I/O is easily expandable, so you can adapt and extend coverage as your system evolves.

Higher Performance in Half the Space

The innovative RSTi-EP I/O is a powerful combination of clean layout, high density, and small footprint. It can accommodate up to 64 modules and 1024 I/O points per drop, while its 11.5 mm I/O slices maximize limited cabinet space. By adopting the most compact I/O system on the market, it's possible to incorporate smaller cabinet sizes into user-friendly system designs. You can even eliminate external components by using optional potential distribution modules to provide easy connections to input power, output power, and functional earth.

Remote, Real-time Diagnostics

With the RSTi-EP's integrated web server and advanced diagnostics, failures in the system can be identified remotely, eliminating the need to travel to the machine, saving both time and money. The web server lets the operator view diagnostic faults and upgrade firmware over the web— simplifying start up, increasing availability and productivity without the need for additional tools or software. Additionally, actions can be taken within the application feeding off of the diagnostic information. It is simple to prioritize service trips as critical or routine maintenance without stepping out of the control room.



Plug and Play Installation

Consistent I/O cabling interfaces make installation faster and more reliable. Colorkeyed connectors allow for fewer cabling errors and noticeably shorter installation times. Better still, no tools are required for installation or removal of I/O wiring connectors, saving time and effort. Entire machine modules can be cabled and transferred into production through a streamlined commissioning process. Bulk swing-arm kits are available to enable cable pre-assembly, offloading repetitive tasks for your team during panel assembly. A single row connection level facilitates wiring, installation, and service. Separate power supplies for inputs and outputs reduce the number of power feed modules needed and save space; additionally, specific sections can be activated or deactivated without affecting production thanks to the independence of the input and output power busses.

High Availability

With the PNS101 network adapter, RSTi-EP supports PROFINET System Redundancy (PNSR). This enables synchronized independent controllers to service the I/O and transition from active to back-up controller without interruption. With controllers and processes resilient from physical disruption, you can consider unplanned downtime a thing of the past.

Simple Maintenance

RSTi-EP lays a strong foundation for installation, machine commissioning and service applications with robust and easy-to-use signal connection components. LEDs on the module and each channel help operators to quickly and easily determine I/O health and quickly diagnose any system failures.

Intuitive Integration

The RSTi-EP features outstanding performance and response time, with the high-speed system bus reading up to 256 DI/DOs in 20 microseconds. It offers intuitive I/O mapping for quick and easy integration into your control application, as well as maximum power reserves for future applications. RSTi-EP features faster backplane speeds than the original RSTi I/O and perfectly responds to growing complexity in machine and factory automation thanks to powerful flexibility and a consistent user interface.

| Feature | Benefit |
|---|---|
| Wide Range of Communication Options | <ul style="list-style-type: none"> PROFINET, PROFIBUS, Modbus TCP, EtherCAT, and Ethernet/IP |
| Small Footprint | <ul style="list-style-type: none"> Industry-best I/O density that's still easy to use Maximize or reduce cabinet space Place I/O closer to sensors for reduced wiring costs |
| Improved System Availability | <ul style="list-style-type: none"> Designed with hot-swap IO and inputs and outputs that can be switched off independently. These features enable service activities to be performed while the sensor system is active. |
| Easier Maintenance & Troubleshooting | <ul style="list-style-type: none"> Further shorten production downtimes with unique plain text diagnostics via the integrated web server. In case of an emergency stop it is simpler to identify and prioritize errors faster. |
| Module and Channel Level LEDs | <ul style="list-style-type: none"> Easy error diagnosis: Localize errors instantly with an LED directly on the channel and status indicators on every module. An indispensable benefit for secure commissioning and rapid system maintenance |
| Higher Performance | <ul style="list-style-type: none"> High speed system bus communicates up to 256 discrete inputs or discrete outputs in 20 microseconds 100 MBps Ethernet on Ethernet enabled network adapters Move more data with precision and confidence for improved application performance and productivity |
| High Availability | <ul style="list-style-type: none"> Supports PROFINET System Redundancy (PNSR) and Modbus TCP Dual LAN |

Specifications

Interface

- Copper RJ-45 for Ethernet models and DB-9 for serial network adapters

Expansion

- Up to 64 active I/O modules per network adapter Power Supply 20.4V – 28.8V DC

Environmental

| | |
|------------------------------------|--|
| Operating temperature | -20°C to +60°C (-4°F to +140°F) |
| Storage temperature | -40°C to +85°C (-40°F to +185°F) |
| Air humidity (operation/transport) | 5% to 95%, noncondensing as per DIN EN 61131-2 |

Standard Module Wire Gauge

- Between 0.14 mm² and 1.5 mm² (AWG 26 – 16)

Protection

- IP20

Module Dimensions (Height x Width x Depth)

- Network adapter: 120.0 mm (4.72 in) 52.0 mm (2.05 in) 76.0 mm (2.99 in)
- I/O module: 120.0 mm (4.72 in) 11.5 mm (0.45 in) 76.0 mm (2.99 in)
- End plate: 120.0 mm (4.72 in) 3.5 mm (0.14 in) 76.0 mm (2.99 in)
- End bracket: 120.0 mm (4.72 in) 8.0 mm (0.32 in) mm (1.42 in)

Mounting Format

- DIN Rail

Network Interfaces

- PROFINET
- PROFIBUS DP
- Modbus/TCP
- EtherCAT
- Ethernet/IP

Network Redundancy

- Media Redundancy Protocol (MRP)

System Redundancy

- PROFINET System Redundancy

I/O Redundancy

- Via Application Code

Media Connector

- Media Redundancy Protocol (MRP)

Network Redundancy

- 2x RJ45

Galvanic Isolation

- Yes

Hot Swap

- Yes

Agency Approvals

- UL
- UL HazLoc Class 1 Division 2
- CE
- ATEX Zone 2
- TUV SIL3

Marine

- DNV GL

Channel Density

- 4 - 16 points

Max I/O per Drop

- 1024

I/O Family Comparison



| Product | PACSystems RSTi | PACSystems RSTi-EP | VersaPoint /VersaSafe | VersaMax Modular | VersaMax/IP | PACSystems RX3i | PAC8000 |
|-----------------------------|--|--|---|--|----------------------------|--|---|
| Type | Distributed Slice | Distributed Slice | Distributed Slice | Chassis Based | On-machine Distributed | Chassis Based | Intrinsically Safe |
| Network Interfaces | PROFINET PROFIBUS DP Modbus/TCP Modbus/RTU DeviceNet | PROFINET PROFIBUS DP Modbus/TCP EtherCAT Ethernet/IP | PROFINET PROFIBUS DP Modbus/TCP DeviceNet | PROFINET PROFIBUS DP Modbus/TCP EGD DeviceNet GENIUS | PROFINET PROFIBUS DP | PROFINET PROFIBUS DP Modbus/TCP EGD CMX | PROFINET Modbus/TCP |
| System Redundancy | - | PNSR | - | PNSR, EGD or GENIUS | | PNSR or EGD | PNSR or Modbus/TCP |
| Hot Swap | No | Yes | No | Yes | No | Yes | Yes |
| Environmentals | IP20 0°C to 55°C (UL) 0°C to 60°C (non-UL) | IP20 -20°C to 60°C | IP20 -20°C to 55°C | IP20 0°C to 60°C -40°C to 60°C (opt.) Conformal Coat (opt.) | IP67 -20°C to 60°C | IP20 0°C to 60°C -40°C to 60°C (opt.) Conformal Coat (opt.) | IP20 -40°C to 70°C Conformal Coat |
| Agency Approvals | UL UL HazLoc C1D2CE ATEX Zone 2 | UL UL HazLoc C1D2 CE ATEX Zone 2 | UL UL HazLoc C1D2 CE ATEX Zone 2 TUV SIL3 | UL UL HazLoc C1D2 CE ATEX Zone 2 | UL UL HazLoc C1D2 CE | UL UL HazLoc C1D2 CE ATEX Zone 2 | UL UL HazLoc C1D1 CE ATEX Zone 1 Intrinsically Safe |
| Marine | - | DNV GL | - | ABS, BV, DNV GL, LR (only select models) | - | ABS, BV, DNV GL (only select models) | LR |
| I/O Module Size (W x H x D) | 12 x 99 x 70 mm | 11.5 x 120 x 76mm | 12 x 120 x 70 mm | 66.8 x 163.5 x 70 mm | 70 x 178 x 49.3 mm | 34 x 145 x 140 mm | 42 x 110 x 106 mm |
| Typical Applications | Basic Machine | Machine Control Light Process Control General Automation | Functional Safety | Machine and Light Process Control General Automation | On-machine Cabinetless I/O | Complex Machine Process Control Motion Control General Automation | Harsh Environment Process Control |
| Level of Diagnostics | Good | Better | Best | Better | Good | Best | Best |



Network Adapter



Ordering Information

| Part No. | Module Description |
|-------------------------|--|
| Network Adapters | |
| EPXPNS001 | PROFINET IRT Network Adapter, 2 Cu RJ45 Ports, 1024 bytes (Input + Output) |
| EPXPNS101 | PROFINET System Redundancy Network Adapter, 2 Cu RJ45 Ports, 1024 bytes (Input + Output) |
| EPXEIP001 | EtherNet/IP Network Adapter, 2 Cu RJ45 Ports, 1024 bytes (Input + Output) |
| EPXETC001 | EtherCAT Network Adapter, 2 Cu RJ45 Ports, 1024 bytes (Input + Output) |
| EPXMBE001 | Modbus TCP Network Adapter, 2 Cu RJ45 Ports, 2048 bytes (Input + Output) |
| EPXMBE101 | Modbus TCP Network Adapters, 2 Cu RJ45 Ports, 2048 bytes (Input +Output) |
| EPXPBS001 | PROFIBUS DP-V1 Network Adapter |
| Digital Inputs | |
| EP-1214 | 4 Points, Positive Logic 24VDC, 2,3, or 4 Wire |
| EP-1218 | 8 Points, Positive Logic, 24VDC 2 Wire |
| EP-125F | 16 Points, Positive Logic, 24VDC, 1 Wire |
| EP-12F4 | 4 Points, Positive Logic 24VDC, 2,3, or 4 Wire, Time stamp |
| EP-1318 | 8 Points, Positive Logic, 24VDC 3 Wire |
| EP-153F | 16 Points, Negative Logic, 24VDC, 0.5A |
| EP-1804 | 4 Points 110/230 VAC (65 – 277 VAC), 2 Wire, |
| EP-1901 | 1 Safe Feed-Input, 24 VDC |
| EP-1902 | 2 Safe Feed-Inputs, 24 VDC |
| EP-1922 | 2 Safe Feed-Inputs, 24 VDC, Programmable Delay |

| Part No. | Module Description |
|---------------------------------|--|
| Digital Outputs | |
| EP-2214 | 4 Points, Positive Logic 24VDC, 0.5A, 2,3, or 4 Wire |
| EP-2218 | 8 Points, Positive Logic, 24VDC, 0.5A, 2 Wire |
| EP-225F | 16 Points, Positive Logic, 24VDC, 0.5A, 1 Wire |
| EP-2614 | 4 Points, Positive Logic 24VDC, 2.0A, 2,3, or 4 Wire |
| EP-2634 | 4 Points, Positive/Negative Logic 24VDC, 2.0A, 2,3, or 4 Wire |
| EP-2714 | 4 Points, Positive Logic, 24 - 220 VDC/VAC, 6A, 2 Wire |
| EP-2814 | 4 Points, Positive Logic, 230 VAC, 1A |
| EP-291F | 16 Points, Negative Logic, 24VDC, 0.5A, 1 Wire |
| Analog Inputs | |
| EP-1813 | 8 Channels, 16 Bytes Input, 16 Bytes Output Power Measurement Module |
| EP-3124 | 4 Channels Voltage/Current 12 Bits 2, 3, or 4 Wire |
| EP-3164 | 4 Channels Voltage/Current 16 Bits 2, 3, or 4 Wire |
| EP-3264 | 4 Channels Voltage/Current 16 Bits with Diagnostics 2, 3, or 4 Wire |
| EP-3368 | 8 Channels Current 16 Bits 2, 3, or 4 Wire– requires HD Connectors (EP-8360) |
| EP-3468 | 8 Channels Current 16 Bits 2, 3, or 4 Wire, Channel Diagnostic– requires HD Connectors (EP-8360) |
| EP-3664 | 4 Channels Voltage/Current 16 Bits with Diagnostics 2, 3, or 4 Wire |
| EP-3704 | 4 Channels RTD 16 Bits with Diagnostics 2, 3, or 4 Wire |
| EP-3804 | 4 Channels TC 16 Bits with Diagnostics 2, 3, or 4 Wire |
| Analog Outputs | |
| EP-4164 | 4 Channels Voltage/Current 16 Bits 2, 3, or 4 Wire |
| EP-4264 | 4 Channels Voltage/Current 16 Bits with Diagnostics 2, 3, or 4 Wire |
| Special Function Modules | |
| EP-5111 | 1 Channel High Speed Counter, AB 100 kHz 1 DO 24VDC, 0.5A |
| EP-5112 | 2 Channel High Speed Counter, AB 100 kHz |
| EP-5212 | 2 Channel Frequency Measurement, 100 kHz |
| EP-5261 | 1 Channel Serial Communications, 232, 422, 485 |
| EP-5311 | SSI Encoder, BCD or Gray-Code Format, 5/24 VDC |
| EP-5324 | 4 Channels IO Link Communication Module, 24VDC, 0.5A |
| EP-5422 | 2 Channels PWM Output, Positive Logic, 24VDC, 2.0 A |
| EP-5442 | 2 Channels PWM Output, Positive Logic, 24VDC, 0.5 A |

| Part No. | Module Description |
|----------------------|---|
| Power Modules | |
| EP-700F | 16 Channels 24VDC Potential Distribution Functional Earth |
| EP-710F | 16 Channels 24VDC Potential Distribution +0VDC from Input Current Path |
| EP-711F | 16 Channels 24VDC Potential Distribution +24 VDC from Input Current Path |
| EP-750F | 16 Channels 24VDC Potential Distribution +0VDC from Output Current Path |
| EP-751F | 16 Channels 24VDC Potential Distribution +24 VDC from Output Current Path |
| EP-7631 | 1 Channel 24VDC Input Flow 10A |
| EP-7641 | 1 Channel 24VDC Output Flow 10A |
| Accessories | |
| EP-8100 | Label Marker for I/O Connections (use with EP-8101) |
| EP-8101 | Paper Labels for I/O Connections (use with EP-8100) |
| EP-8150 | Snap-In-Module Marker (Qty 500) |
| EP-8300 | Base connector, I/O Module (Qty 5) |
| EP-8301 | DIN Rail Termination Kit, Replacement |
| EP-8360 | High-Density IO Connector Pack (8 x 4-Signal Connectors) |
| EP-8310 | Empty Slot Filler Module |
| EP-8400 | Swing-Arm Kits, Connector Frame and Connectors (Qty 30) |
| EP-8631 | Base Connector, Power Feed, Input Current path (Qty 5) |
| EP-8641 | Base Connector, Power Feed, Output Current path (Qty 5) |



EP-8150 Label Markers

United State Office

Emerson Automation Solutions
Intelligent Platforms, LLC
2500 Austin Dr
Charlottesville, VA

Singapore Office

Emerson Automation Solutions Intelligent
Platforms Asia Pacific Pte. Ltd.
1 Pandan Cres,
Singapore, 128461

Brazil Office

Emerson Automation Solutions
Av. Hollingsworth, 325 – Iporanga
Sorocaba – SP, 18087-105

China Office

Emerson Automation Solutions Intelligent
Platforms (Shanghai) Co., Ltd
No.1277, Xin Jin Qiao Rd, Pudong,
Shanghai, China, 201206

Germany Office

Emerson Automation Solutions
ICC Intelligent Platforms GmbH
Memminger Straße 14
Augsburg, DE 86159

India Offices

Emerson Automation Solutions
Intelligent Platforms Pvt. Ltd.,
Building No.8, Ground Floor
Velankani Tech Park, No.43
Electronics City Phase I, Hosur Rd
Bangalore-560100

Americas Support – Technical and Commercial

Phone: 1-888-565-4155 or 1-434-214-8532 (if toll free 800 option is unavailable)

Email for Technical Support: support.mas@emerson.com

Email for Commercial Support: customercare.mas@emerson.com

Primary language of support: English

Europe, Middle East, & Africa Support – Technical and Commercial

Phone: +800-4-444-8001

or +420-225-379-328 (if toll free 800 option is unavailable or dialing from a mobile telephone)

Email for Technical Support: support.mas.emea@emerson.com

Email for Commercial Support: customercare.emea.mas@emerson.com

Primary languages of support: English, German, Italian, Spanish

Asia Support – Technical and Commercial

Phone: +86-400-842-8599 for Greater China

+65-6955-9413 (All Other Countries)

Email for Technical Support: support.mas.apac@emerson.com

Email for Commercial Support Asia: customercare.cn.mas@emerson.com

Primary languages of support: Chinese, English

Support Website: www.emerson.com/iac-support

Home Website: www.emerson.com/PACSystems

©2021 Emerson. All rights reserved.

The Emerson logo is a trademark and service mark of Emerson Electric Co. All other marks are property of their respective owners. The contents of this publication are presented for information purposes only, and while effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services describe herein or their use or applicability. All sales are governed by our terms and conditions, which are available on request, We reserve the right to modify or improve the designs or specifications of our products an any time without notice.