PACSystems™ RX3i CPE400 and CPL410

Edge Controllers featuring PACEdge™ Software

Designed for Real-World Demands

Emerson's PACSystems RX3i CPE400 and CPL410 edge controllers are flexible and high-performance control systems ideal for a range of applications, including water wastewater, metro, industrial steam, automotive, chemical, oil and gas, discrete manufacturing and modular machine designs. These diverse applications require a compact controller that delivers the high performance and flexibility needed to run application- specific control reliably.

The RX3i CPE400 and CPL410 compliment real-time deterministic control with embedded PACEdge software, delivers near real-time advice through market analysis, fleet and enterprise data, or asset/process knowledge to optimize business outcomes.

RX3i Edge Controllers provide an open platform for reliable, secure communication and analytics using either cloud-based or edge-based apps. Controls can now be augmented to dynamically influence business outcomes, generate new forms of revenue, and improve profitability.

Reliable, High-Speed Performance

The RX3i CPE400 and CPL410 run on a real- time operating system, allowing them to deliver reliable and secure industrial applications. They offer premier, high-speed performance and secure data handling for any multi-disciplined control system. A generous working memory accommodates large programs and extensive data storage. The quad-core high-speed microprocessor executes programs faster than ever before. They support industry-standard PROFINET® with I/O update rates as fast as 1ms and up to 64 devices. With Ethernet interface rates up to 1 Gbps, the RX3i CPE400 and CPL410 are built for rapid, reliable data interchange.

Industrial Internet Enabled with PACEdge Software

Emerson Edge Controllers use real-time hypervisor technology to run real-time deterministic control applications concurrently with the PACEdge software in a reliable and cooperative manner without impacting each other. The PACEdge Software, including PACEdge + Movicon Connext (CPE400) or PACEdge + Movicon WebHMI (CPL410) enables customers to not only connect to their preferred cloud service, but also allows them to collect, store, analyze, and visualize data next to the control system to optimize their processes for better outcome without compromising their high-performance deterministic control requirements. Fleet- level analytics and access to real-time information enabled by the RX3i CPE400 and CPL410 are critical to OEMs and machine builders looking to get the most from their equipment fleets, minimize travel and maintenance costs, and quickly create and deploy intellectual property to differentiate their machines.

Advanced Security

Industrial controls are constant targets of cyber threats. We understand the risk involved in securing our customers' most important assets. We believe in defense-in-depth architectures to secure assets from potential cyber threats.

With Achilles Level 2 Certification, the RX3i CPE400 and CPL410 have been developed to be secure by design, incorporating technologies such as Trusted Platform Modules, and secure boot. A centralized configuration allows encrypted firmware updates to be executed from a secure central location. A broad suite of cyber-security technology and tools help prevent unauthorized updates while built-in security communication protocols help protect against man-in-the middle and denial-of- service attacks.

Flexible Redundancy Tailored to Your Needs

Building on our market leadership and decades of expertise in mission-critical backup power and critical cooling solutions, PACSystems High Availability with PROFINET is a flexible and intelligent high-availability control system that helps ensure maximum uptime while reducing total cost of ownership (TCO) through easier configuration, operation, and maintenance.

Built on a scalable, synchronized, hotstandby redundancy control platform, the PACSystems High Availability on RX3i CPE400 and CPL410 solutions provides uninterrupted control of your applications and processes with total transparency.

Key Benefits

Cloud Agnostic Platform. PACEdge software allows for secure connection to the customer's preferred cloud, leveraging data to analyze and optimize business operations and improve profitability.

Co-processor Engine. A co-processor engine means that existing IIoT applications can be quickly integrated with RX3i CPE400 and CPL410 to enable more intelligent controls.

Reduced Risk. Built on the strong foundation of 40 years' experience providing real-time, deterministic controls for the world's industrial assets, the RX3i CPE400 and CPL410 are secure by design, enabling secure operations and connectivity from edge to cloud.

Reduced Lifecycle Cost. Advanced capabilities simplify system architecture and reduce applied engineering costs. Costs are further reduced with embedded PROFINET, accommodating dedicated I/O for application-specific needs

Maximum Uptime. Our market-leading PACSystems High Availability solutions RX3i CPE400 and CPL410 offer a best-in-class, high-availability control system for concurrent maintainability and elimination of single points of failure, maximizing uptime.

Specifications

General

- Dimensions: 203.5mm x 56.7mm x 153.6mm (H x W x D)
- PACSystems: Operating System - VxWorks
- PACEdge: Operating System - Linux, Ubuntu 18.04

Temperature Range

- -40°C to 70°C

Power Requirements

- Input Power (Max) – 20 Watts
- Input Voltage (Min) – 18 Vdc
- Input Voltage (Max) – 30 Vdc
- Memory Backup Mechanism – Energy Pack: IC695ACC403

Firmware Upgrade

- CPU Firmware Upgrade Mechanism – Secure Web Page

Display

- OLED Display

Program Portability

- RX3i PACSystems Applications using Family Type Conversion

Program Security

- Secure Boot
- Trusted Platform Module (TPM)

Program Storage

- PACSystems: RAM – 64 Mbytes
- PACSystems: Non-Volatile Flash – 64 Mbytes
- PACSystems: Energy Pack Capacitors, Life Expectancy – 5 years
- PACEdge: RAM – 2 GB
- PACEdge: Storage – 50 GB SSD

Auxiliary Storage

- PACEdge: 1x USB 3.0

Communications

- LAN1 – 10/100/1000 Mbps supported by 1x unswitched RJ-45
- LAN2 – 10/100/1000 Mbps supported by 2x switched RJ-45
- LAN3 – 10/100/1000 Mbps supported by 2x switched RJ-45
- Serial – 1x RS-232
- PACEdge with Linux – 10/100/1000 Mbps supported by 1xRJ-45
- USB – USB-A 3.0 x2 (Left port dedicated to PACEdge)

Redundancy Support

- Media Redundancy Protocol (MRP)
- PROFINET System Redundancy (PNSR)
- OPC UA Non-Transparent Server Redundancy

Ethernet Protocols

- SRTP
- Modbus TCP
- Ethernet Global Data (EGD)
- HART Passthrough
- PROFINET
- OPC-UA Server with secure access
- DNP3.0 Ethernet Outstation – L3

Serial Protocols

- ASCII Serial

Environmental

- IEC/EN 61131-2: 2007 (sections 5 & 6)
- Storage (unpowered)
  - Dry Heat - IEC 60068-2-2: 1974 test Bb (70°C @ 16hrs)
  - Cold Temp - IEC 60068-2-1: 2007 test Ab (-40°C @ 16hrs)
- Damp Heat
  - IEC 60068-2-30: 2005 test Db (unpowered, 55°C, 2x)
- Marine Damp Heat
  - IEC 60068-2-30: 2005 test Db (powered & unpowered, 55°C, 95%RH, 12hr x 2cycles)
- Sinusoidal Vibration
  - IEC 60068-2-6: 1995 (test Fc)
- Shock
  - IEC 60068-2-27: 1987 (test Ea)

EU

- CE Mark
- EMC Directive
  - IEC/EN 61131-2: 2007(sections 8-10, Zone B)
  - IEC/EN 61000-6-2: 2005 Ed 2.0
  - IEC/EN 61000-6-4: 2006 Ed 2.0
  - CISPR 11:2009 +A1: 2010 / EN 55011: 2009 +A1: 2010
  - CISPR 22: 2010 / EN55022: 2010/AC:2011, (Class A)
  - CISPR 24: 2010 / EN55024: 2010
  - IEC/EN 61131-2: 2007 (sections 4 & 6)
- ATEX Directive
  - Category 3 equipment - [II 3 G]
  - EN 60079-0: 2012 A+11:2013
  - EN 60079-7: 2015 [Type of Protection Ex ec]
- RoHS Directive
- REACH Regulation
- WEEE Directive

US

- FCC 47 CFR 15 Subpart B, Class A
- Hazardous Locations
  - ISA 12.12.01: 2015, Class I Div. 2 Groups ABCD
  - UL 60079-0 Ed 6.0 (2013), Class I, Zone 2 Gas Group ABCD
  - UL 60079-15 Edition 4.0 (2013), [Ex nA]

Canada

- ICES-003:2016 (Class A)
- Hazardous Locations
  - CSA C22.2 No. 213-15
  - CAN/CSA-C22.2 NO. 60079-0:15, Class I, Zone 2
  - CAN/CSA-C22.2 NO. 60079-15:12
- WEEE and Battery Regulations

Marine

- ABS, DNV-GL, BV, LR

PACEdge Default Software Components

- MQTT Broker
- Node Red
- SQLLite database
- OPC-UA Client
- Python script interpreter
- Portainer (Docker)

Movicon Default Software Components

- CPE400
  - Connext Server
- CPL410
  - WebHMI, 2000 tags

PACEdge Communications Protocol Support

Standard Integrated Protocols

- Modbus/TCP
- MQTT
- HTTPS
- FTPS
- OPC-UA Client and Server
- GE Ethernet SRTP-2
- Ethernet/IP
- Omron Ethernet/IP
- Omron FINS Ethernet
- Siemens S7 TCP
- Siemens S7-MPI
- Siemens S7-PPI
- Siemens TIA Portal
- Hilscher CIFXZ Interface Cards (Profibus, PROFINET…)
- Mitsubishi FZ Series
- Mitsubishi FX3u TCP
- Mitsubishi Q Series
- Panasonic FP MEWTOCOL
- SAIA-Burgess S-BUS Ethernet
- Beckhoff TwinCAT
- CNC Fanuc
- Altri

Optional Additional Protocol Packages

- Telemetry Package Protocols
  - IEC 60870-5-104
  - IEC 61850
  - Lacroix-Sofrel LACBUS
- Facilities Package Protocols
  - BacNET/IP Annex
  - Konnex – EIB
  - SNMP Manager (as Agent)
  - Altri

Ordering Information

Part Number	Description
IC695CPL410	RX3i CPL410 Standalone Edge Controller with PACEdge + WebHMI
IC695CKL410	RX3i CPL410 Standalone Edge Controller with PACEdge + WebHMI, plus Energy Pack
IC695CPL410CA	RX3i CPL410 Standalone Edge Controller with PACEdge + WebHMI, Conformal Coated
IC695CPE400	RX3i CPE400 Standalone Edge Controller with PACEdge + Connext
IC695CPK400	RX3i CPE400 Standalone Edge Controller with PACEdge + Connext, plus Energy Pack
IC695CPE400CA	RX3i CPE400 Standalone Edge Controller with PACEdge + Connext, Conformal Coated
IC695ACCMD0	PACSystems RX3i CPE400 Edge Controller Multi Drivers Upgrade Kit
IC695ACCMD1	PACSystems RX3i CPL410 Edge Controller Multi Drivers Upgrade Kit
IC695ACCFP0	PACSystems RX3i CPE400 Edge Controller Facilities Protocol Pack and Multi Drivers Upgrade Kit
IC695ACCFP1	PACSystems RX3i CPL410 Edge Controller Facilities Protocol Pack and Multi Drivers Upgrade Kit
IC695ACCTP0	PACSystems RX3i CPE400 Edge Controller Telemetry Protocol Pack and Multi Drivers Upgrade Kit
IC695ACCTP1	PACSystems RX3i CPL410 Edge Controller Telemetry Protocol Pack and Multi Drivers Upgrade Kit

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