PACSystems™ RX3i CPL400 and CPL410

Edge Controllers featuring PACEdge™ Technology

Designed for Real-World Demands

Emerson's PACSystems RX3i CPL400 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 PACSystems RX3i CPL400 and CPL410 augment real-time deterministic control with embedded PACEdge technology, delivering near real-time advice through market analysis, fleet and enterprise data, or asset/process knowledge to optimize business outcomes.

The CPL400 and CPL410 include PACEdge with Linux and provide an open platform for reliable, secure communication and analytics using either cloud-based or edge-based apps. Controls can now be programmed to dynamically influence business outcomes, generate new forms of revenue, and improve profitability.

Reliable, High-Speed Performance

The PACSystems RX3i CPL400 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 32 devices. With Ethernet interface rates up to 1 Gbps, the CPL400 and CPL410 are built for rapid, reliable data interchange.

Industrial Internet Enabled with PACEdge Technology

Emerson edge controllers use real-time hypervisor technology to run real-time deterministic control applications concurrently with the PACEdge with Linux technology in a safe and cooperative manner without impacting each other. PACEdge technology is an Industrial Internet-enabled coprocessor platform that enables customers to not only connect to their preferred cloud service, but also allows them to develop and run data processing, Linux-based applications next to the control system to optimize their processes for better outcomes. Fleet-level analytics and access to real-time information enabled by the CPL400 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 CPL400 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 CPL400 and CPL410 solutions provides uninterrupted control of your applications and processes with total transparency.

Key Benefits

Cloud Agnostic Platform. PACEdge with Linux technology 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 Linux-based applications can be quickly integrated with CPL400 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 CPL400 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 CPL400 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 16.04

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 – Web/Ethernet Port

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

- SQLLite database
- OPC-UA Client
- Python script interpreter
- Apache webserver

Progea Default Software Components

CPE400
- Connext Server

CPL410
- WebHMI, 2000 tags

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

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