PACEdge Software for Edge Computing
Powerful, Secure and Simplified IIoT Development

Introduction

PACEdge is an IIoT Application Enablement Platform for the development of scalable data intensive Industry 4.0 solutions requiring integration between OT and IT domains without disrupting OT assets, architectures or systems while satisfying IT cybersecurity, communications and application requirements. It has been designed specifically to be friendly to both IT and OT experts. PACEdge is capable of supporting integrations and architectures ranging from IIoT Gateways and Remote Monitoring to Edge AI/ML Analytics and Data Visualization. The PACEdge software environment provides all the tools necessary to collect, store, process, share, visualize, secure and integrate data allowing users to focus on applications and solutions instead of tools and platforms. All components necessary in an IIoT application are brought together in a scalable package to decrease your development time and increase your deployable footprint.
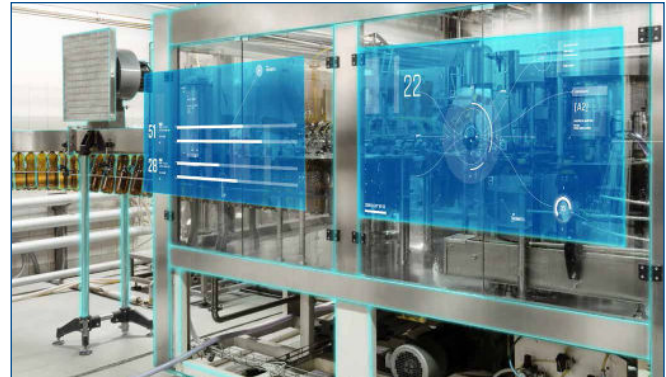
Intuitive Application Development

With drag-and-drop programming, "wiring" software and hardware interfaces has never been easier. Connect your system from the plant floor to user dashboards and beyond using an intuitive application development platform. No more command line configuration, PACEdge has web interfaces for device administration, application development and scalability.

Data Storage & Processing

Once data is collected, PACEdge can store data to both timeseries and relational databases. Having both options allows a developer to choose the database solution that best satisfies their application needs. Once data is stored, it can be processed in several ways including mathematical analysis, statistical computation, data analytics or applied to AI/ML algorithms.

Effective Visualization

PACEdge provides powerful interactive tools to make analyzing data and visualizing machine operations easier than ever before. Data can be visualized into modern looking charts and tables making it easy to interpret data and results. Machine operations can be represented by animated and interactive HMI visuals. With data and machine visualization available in a single environment, both users and developers will enjoy the modern visualization elements of PACEdge.
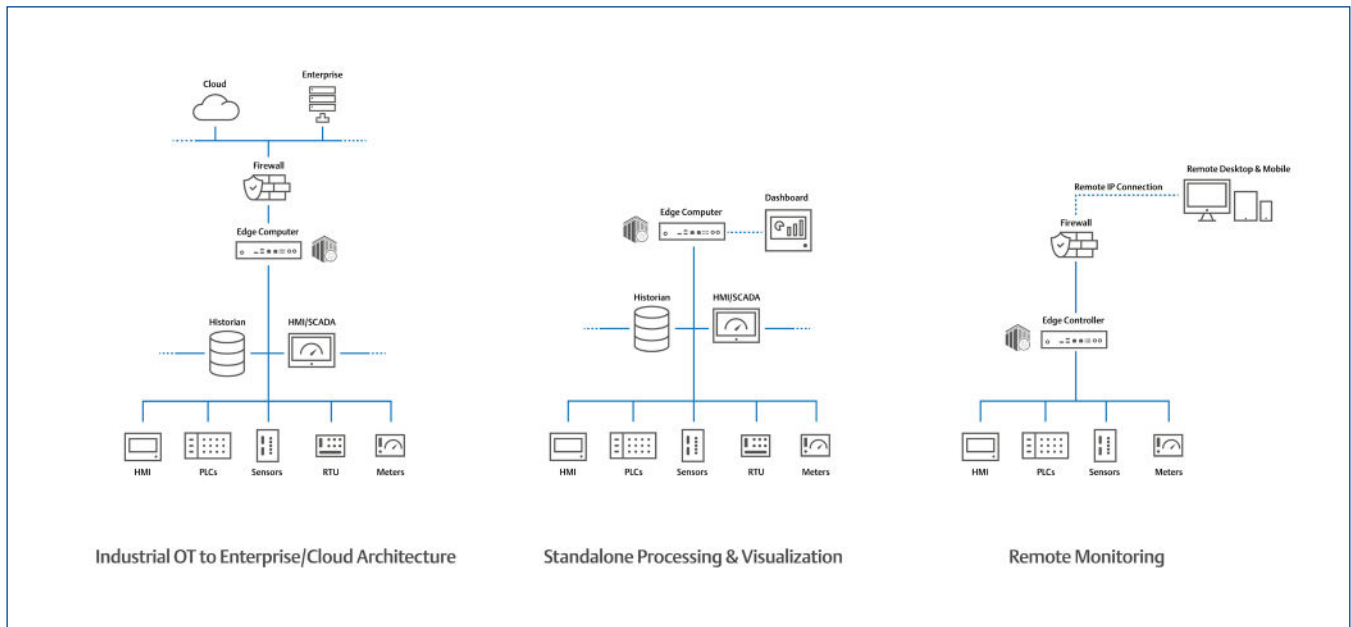
Secure Platforms & Communications

The PACEdge architecture is built with security in mind. It allows for safe de-segregation of operational data and networks so they can interact with higher level IT and cloud solutions. PACEdge also secures the transmission of data by supporting the latest encryption standards.

Data Collection, Distribution, and Integration

PACEdge can communicate with over 20 unique proprietary or open OT protocols across multiple industry sectors. This makes collecting data from sensors and controls easier than ever. Once the data is collected it can be shared with IT systems including Enterprise and Cloud systems. To do this, PACEdge can serve data via MQTT, RestAPI or from its OPC Foundation Certified OPC UA Server. PACEdge also provides Data Routing capability with no need for scripting to route data from one source to any or multiple destinations.

PACSYSTEMS™

EMERSON™

PACEdge IIoT Solution Architectures

Industrial OT to Enterprise/Cloud Architecture   Standalone Processing & Visualization   Remote Monitoring

Scalable Software & Hardware Options

The PACEdge family of products are supported by three different software tiers available across multiple industry leading Edge Computing and Edge Controller platforms. This provides customers, system architects, integrators, and engineers with the flexibility they need to ensure the software capabilities and hardware architecture meet the requirements of the solution.

PACEdge Family of Software Options

PACEdge
PACEdge software combines data collection, storage, processing and visualization into a single environment for the rapid development and deployment of IIoT application. PACEdge software is ideal for developers familiar with common software tools such as Grafana, Docker and Node-Red, and only require standard open OT & IT protocols for data collection and integration along with basic data visualization and dashboarding.

PACEdge + Movicon Connext – Option
The PACEdge + Movicon Connext software combines the core capabilities of PACEdge with additional OT and IT protocol and integration support. Connext brings with it support for over 20 additional open, legacy and proprietary protocols, a OPC Foundation certified OPC UA Client and industry leading I/O Data Server. The additional connectivity and integration capabilities of Connext increases the deployable footprint of your IIoT application. Connext also serves as a data router, excepting data over one protocol and routing it to other protocols, data bases, or standards based interfaces.

PACEdge + Movicon WebHMI – Option
The PACEdge + Movicon WebHMI software option combines the core capabilities of PACEdge and Movicon Connext with OT familiar HMI visualization for your IIoT application. WebHMI is a web-based HMI visualization tool that uses both HTML 5 and SVG technology to render real-time data, historical trends, machine animations and operator feedback in both desktop and mobile environments.

Edge Computing and Edge Controllers

	Edge Computing		Edge Controllers	
Product Line	**RXi2-LP**	**RXi2-BP**	**CPE 400**	**CPL 410**
Description	The RXi2-LP Industrial PC family delivers compact, rugged and mid-range performance computing capabilities.	The RXi2-BP family delivers compact, rugged, mid-to-high range performance computing capabilities.	The RX3i CPE400 and CPL410 Edge Controller family augment real-time control with embedded PACEdge technology.	
Target IIoT Solution Architectures	■ Edge Gateway ■ Edge-to-Enterprise Processing ■ Remote Monitoring	■ Edge Gateway ■ Edge-to-Enterprise Processing ■ Standalone Processing & Visualization ■ Remote Monitoring ■ AI/ML Algorithm Execution	■ Edge Gateway ■ Edge-to-Enterprise Processing ■ Standalone Processing & Visualization ■ Remote Monitoring ■ AI/ML Algorithm Execution	■ Edge Gateway ■ Edge-to-Enterprise Processing ■ Standalone Processing & Visualization ■ Remote Monitoring ■ AI/ML Algorithm Execution
PACEdge Software Options	■ PACEdge ■ PACEdge + Connext	■ PACEdge ■ PACEdge + Connext ■ PACEdge + WebHMI	■ PACEdge + Connext	■ PACEdge + WebHMI

Key IIoT Development Tools Included with PACEdge

PACEdge is a world-class IIoT development platform to help you rapidly build your IIoT applications. Some of the most critical software components include:

Part Number	Description
Machine Visualization & HMI: **Movicon WEBHMI**	■ Web-based HMI visualization tool ■ Supports both HTML 5 and SVG technology ■ Renders real-time data, historical trends, machine animations and operator feedback in both desktop and mobile environments ■ Includes Movicon Connext OT Protocol Management & I/O Data Server
OT Protocol Management & I/O Data Server: **Connext**	■ Industrial protocol communication management and I/O data server for simplifying integration with OT devices, sensors and controls ■ Supports for over 20 open and proprietary protocols ■ OPC UA Server & OPC Foundation certified client ■ Current Linux/.Net protocol drivers: www.progea.com/i-o-driver-list-movicon-next/

Data Processing & Flow Control: Node-RED	■ Suitable for both experts and novices. Node-RED flows can be completely created in a web-based graphical environment, while experts can use Function nodes and Python nodes to write their own code in Python or JavaScript ■ Abstracts and provides ready to use function blocks so that developers can focus on applications and not on mechanics
Data Visualization: Grafana	■ Analytics and interactive data visualization and dashboarding ■ Charts, graphs and alerts
Time Series Database: influxdb	■ Time series database for the storage and retrieval of time series data with Node-Red
Relational Database: MariaDB	■ Relational database for storage and retrieval of data with Movicon Connext or Node-Red
Docker Container Manager: portainer.io	■ Visual management of Docker Containers (logs, terminal into container, statistics, control of container)
Operating System: ubuntu	■ Linux based operating system. Current PACEdge release uses Ubuntu Server LTS 20.04.

Ordering Information

Part Number	Description	Details
R2L0N1A2AD	RXi2-LP, PACEdge, 2C, 4GB RAM, 32GB SSD	RXi2-LP w/ PACEdge. The RXi2-LP has a dual-core 1GHz processor, 4G RAM, 32G SSD & DIN rail mounting.
R2L0N2A2CD	RXi2-LP, PACEdge, 2C, 8GB RAM, 128GB SSD	RXi2-LP w/ PACEdge. The RXi2-LP has a dual-core 1GHz processor, 8G RAM, 128G SSD & DIN rail mounting.
R2B0N9E4N3A0A	RXi2-BP, PACEdge, 2C, 4GB RAM, 64GB SSD	RXi2-BP w/ PACEdge. The RXi2-BP has a dual-core 1.5GHz processor, 4G RAM, 64G SSD, 0-70C temp range, DIN rail mounting & no PCIe slot.
R2B0N1E1N3A0A	RXi2-BP, PACEdge, 4C, 8GB RAM, 128GB SSD	RXi2-BP w/ PACEdge. The RXi2-BP has a quad-core 2GHz processor, 8G RAM, 128G SSD, 0 to 70C temp range, DIN rail mounting & no PCIe slot.
R2B1N1E1N3A0A	RXi2-BP, PACEdge, 4C, 8GRAM, 128GSSD, 1-SLOT	RXi2-BP w/ PACEdge. The RXi2-BP has a quad-core 2GHz processor, 8G RAM, 128G SSD, 0-70C temp range, DIN rail mounting & 1-PCIe slot.
R2L0N1A3AD	RXi2-LP, PE+CONNEXT, 2C, 4G RAM, 32G SSD	RXi2-LP w/ PACEdge & Movicon Connext. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The RXi2-LP has a dual-core 1GHz processor, 4G RAM, 32G SSD & DIN rail mounting.
R2L0N2A3CD	RXi2-LP, PE+CONNEXT, 2C, 8G RAM, 128G SSD	RXi2-LP w/ PACEdge & Movicon Connext. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The RXi2-LP has a dual-core 1GHz processor, 8G RAM, 128G SSD & DIN rail mounting.

R2B0N9C4N3A0A	RXi2-BP, PE+CONNEXT, 2C, 4G RAM, 64G SSD	RXi2-BP w/ PACEdge & Movicon Connext. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The RXi2-BP has a dual-core 1.5GHz processor, 4G RAM, 64G SSD, 0-70C temp range, DIN rail mounting & no PCIe slot.
R2B0N1C1N3A0A	RXi2-BP, PE+CONNEXT, 4C, 8G RAM, 128G SSD	RXi2-BP w/ PACEdge & Movicon Connext. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The RXi2-BP has a quad-core 2GHz processor, 8G RAM, 128G SSD, 0-70C temp range, DIN rail mounting & no PCIe slot.
R2B1N1C1N3A0A	RXi2-BP, PE+CONNEXT, 4C, 8GRAM, 128SSD, 1SLOT	RXi2-BP w/ PACEdge & Movicon Connext. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The RXi2-BP has a quad-core 2GHz processor, 8G RAM, 128G SSD, 0-70C temp range, DIN rail mounting & 1-PCIe slot.
R2B0N1W1N3A0A	RXi2-BP, PE+WEBHMI, 4C, 8G RAM, 128G SSD	RXi2-BP w/ PACEdge & Movicon Connext & WebHMI. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The RXi2-BP has a quad-core 2GHz processor, 8G RAM, 128G SSD, 0-70C temp range, DIN rail mounting & no PCIe slot.
R2B1N1W1N3A0A	RXi2-BP, PE+WEBHMI, 4C, 8GRAM, 128GSSD, 1SLOT	RXi2-BP w/ PACEdge, Movicon Connext & WebHMI. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The RXi2-BP has a quad-core 2GHz processor, 8G RAM, 128G SSD, 0-70C temp range, DIN rail mounting & 1-PCIe slot.
UPGRADE_CONNEXT_LPBP	RXi2-LP/BP, UPGRADE to PACEDGE+CONNEXT	Upgrade a PACEdge RXi2-LP or RXi2-BP to add Movicon Connext. The Movicon license will include the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The RXi2-LP or RXi2-BP must already be licensed for the latest release of PACEdge software.
UPGRADE_WEBHMI_BP	RXi2-BP, UPGRADE to PACEDGE+WEBHMI	Upgrade a PACEdge RXi2-BP to add Movicon Connext & WebHMI. The Movicon license will include the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The RXi2-BP must already be licensed for the latest release of PACEdge software.
IC695CPE400	RX3i Rackless CPU 64MB + PACEdge+Connext	PACSystems RX3i Rackless CPU, 64MB User Memory, 6 Ethernet Ports, 1 RS-232 port, with PACEdge + Connext software, mounting plates
IC695CPL410	RX3i Rackless CPU 64MB + PACEdge+WebHMI	PACSystems RX3i Rackless CPU, 64MB User Memory, 6 Ethernet Ports, 1 RS-232 port, with PACEdge + WebHMI software, mounting plates

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