

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. It provides 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 user-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.

Fast Application Development

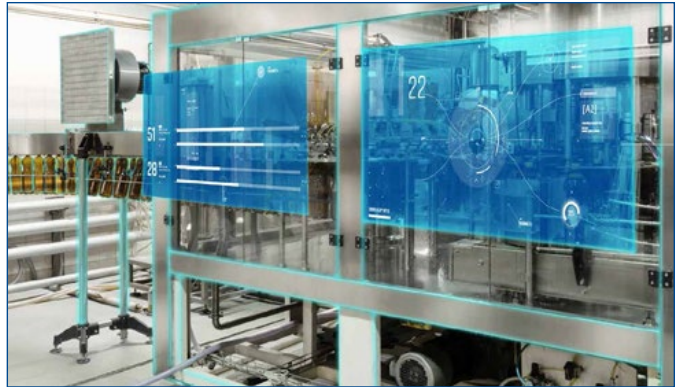
With drag-and-drop programming, automated tag data exchange, and pre-configured SQL database, "wiring" software and hardware interfaces has never been easier. Connect systems from the plant floor to user dashboards and beyond using an intuitive application development platform. No more command line configuration, PACEdge has web interfaces for device administration, application development and scalability.

Data Storage & Processing

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

For more information:
www.Emerson.com/PACSystems

PACSYSTEMS™



Effective Visualization

PACEdge provides powerful interactive tools to make analyzing data and visualizing machine operations much easier. Data can be visualized into modern looking charts and tables making it easy to interpret 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 desegregation 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. In addition, it has a centralized security center module for passwords, roles and rights management.

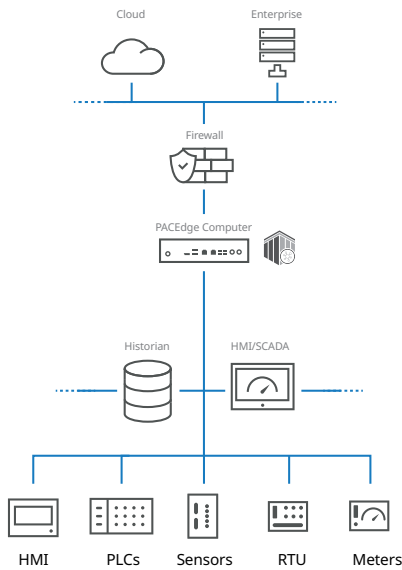

EMERSON™

Data Collection, Distribution and Integration

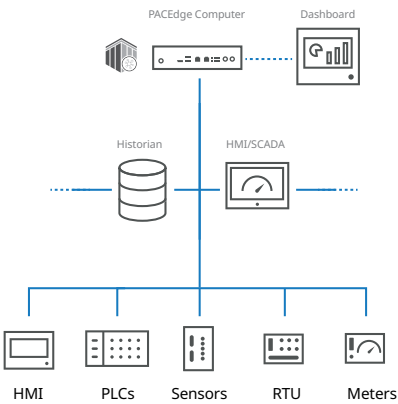
PACEdge can communicate with over 20 unique proprietary or open OT protocols across multiple industry sectors. This makes collecting data from sensors and controls easier. Once the data is collected it can be shared with IT systems including enterprise and cloud systems. To do this, PACEdge

can serve data via MQTT, Rest API 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.

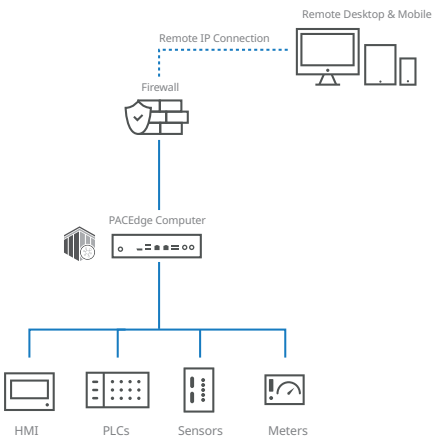
PACEdge IIoT Solution Architectures



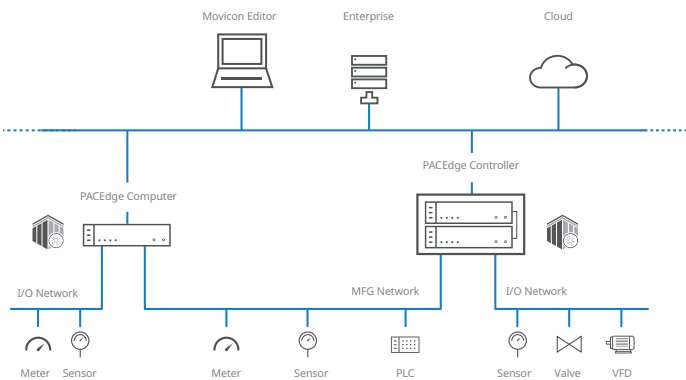
Industrial OT to Enterprise/Cloud Architecture



Standalone Processing & Visualization



Remote Monitoring



PACEdge with Movicon WebHMI

Scalable Software & Hardware Options

The PACEdge family of products is 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 applications. PACEdge software is ideal for developers familiar with common software tools such as Grafana, Docker and Node-RED, and only requires standard open OT & IT protocols for data collection and integration along with basic data visualization and dashboarding.

PACEdge + Connex – Option

The PACEdge platform with Connex™ software combines the core capabilities of PACEdge with additional OT and IT protocol and integration support. Connex brings with it support for over 20 additional open, legacy and proprietary

protocols, an OPC Foundation Certified OPC UA Client and industry-leading I/O Data Server. The additional connectivity and integration capabilities of Connex increases the deployable footprint of an IIoT application. Connex also serves as a data router, accepting data over one protocol and routing it to other protocols, databases, or standards-based interfaces.

PACEdge + Movicon™ WebHMI – Option

The PACEdge platform with the Movicon WebHMI software option combines the core capabilities of PACEdge and Connex with OT-familiar HMI visualization for your IIoT applications. WebHMI is a web-based HMI visualization tool that uses both HTML5 and SVG technology to render real-time data, historical trends, machine animations and operator feedback in both desktop and mobile environments.

PACEdge + Group Manager – Option

The PACEdge platform with a Group Management software option combines the core capabilities of PACEdge and Ansible playbooks to facilitate OS orchestration and updates, update the PACEdge version, or update Node Red content without having to SSH into individual devices. Group Manager as a service enables the user to manage groups of 10, 50, or 100 child projects securely from a single parent PACEdge device.

Edge Computing and Edge Controllers

	Edge Computing			Edge Controllers	
Product Line	IPC 2010	RXi2-LP	RXi2-BP	CPE400	CPL410
Description	IPC 2010 family of products delivers impressive performance in a compact budget	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 augments real-time control with embedded PACEdge technology.	
Target IIoT Solution Architectures	• Edge Gateway • Edge-to-Enterprise Processing • Standalone Processing & Visualization • Remote Monitoring	• 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	• Edge Gateway • Edge-to-Enterprise Processing • Standalone Processing & Visualization • Remote Monitoring
PACEdge Software Options	• PACEdge • PACEdge + Connex • PACEdge + Movicon WebHMI	• PACEdge • PACEdge + Connex	• PACEdge • PACEdge + Connex • PACEdge + Movicon WebHMI	• PACEdge + Connex	• PACEdge + Movicon WebHMI

PACEdge Software for Edge Computing

Key IIoT Development Tools Included with PACEdge

PACEdge is a world-class IIoT development platform that helps users rapidly build IIoT applications. Some of the most critical software components include:

Tool	Description
Machine Visualization & HMI: 	• Web-based HMI visualization tool • Supports both HTML5 and SVG technology • Renders real-time data, historical trends, machine animations and operator feedback in both desktop and mobile environments • Includes Connex OT Protocol Management & I/O Data Server
OT Protocol Management & I/O Data Server: 	• 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: 	• 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: 	• Analytics and interactive data visualization and dashboarding • Charts, graphs and alerts
Time Series Database: 	• Time series database for the storage and retrieval of time series data with Node-RED
Time Series & Relational Database: 	• Next-Gen Database for use with either tasks requiring time series data or relational data. For use with Node Red, Connex, or Python.
Relational Database: 	• Relational database for storage and retrieval of data with Connex or Node-RED
Docker Container Manager: 	• Visual management of Docker Containers (logs, terminal into container, statistics, control of container)
Operating System: 	• PACEdge uses an LTS aligned Linux operating system and provides quarterly security releases to their customers.

Ordering Information

Part Number	Description	Details
UIPCA21E2HE0A	PACSystems™ IPC 2010 w/ PACEdge	IPC 2010 w/PACEdge. The iPC 2010 has a dual-core 1.2 GHz processor, 2 GB RAM, 64 GB SSD, -20 °C to 70 °C operating temperature range, integral DIN rail mounting.
UIPCA21E2HC0A	PACSystems™ IPC 2010 w/ PACEdge and Movicon Connex	IPC 2010 w/PACEdge & Movicon Connex . The iPC 2010 has a dual-core 1.2 GHz processor, 2 GB RAM, 64 GB SSD, -20 °C to 70 °C operating temperature range, integral DIN rail mounting. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags.
UIPCA21E2HW0A	PACSystems™ IPC 2010 w/ PACEdge, Movicon Connex and Movicon WebHMI	IPC 2010 w/PACEdge, Connex & WebHMI The iPC 2010 has a dual-core 1.2 GHz processor, 2 GB RAM, 64 GB SSD, -20 °C to 70 °C operating temperature range, integral DIN rail mounting. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags.
R2L0N1A2AD	RXi2-LP, PACEdge, 2C, 4GB RAM, 32GB SSD	RXi2-LP w/ PACEdge. The RXi2-LP has a dual-core 1 GHz processor, 4 GB RAM, 32 GB SSD & DIN rail mounting.
R2L0N2A2CD	RXi2-LP, PACEdge, 2C, 8GB RAM, 128GB SSD	RXi2-LP w/ PACEdge. The RXi2-LP has a dual-core 1 GHz processor, 8 GB RAM, 128 GB SSD & DIN rail mounting.
R2B0N9E4N3A0A	RXi2-BP, PACEdge, 2C, 4GB RAM, 64GB SSD	RXi2-BP w/ PACEdge. The RXi2-BP has a dual-core 1.5 GHz processor, 4 GB RAM, 64 GB 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 2 GHz processor, 8 GB RAM, 128 GB SSD, 0-70C temp range, DIN rail mounting & no PCIe slot.
R2B1N1E1N3A0A	RXi2-BP, PACEdge, 4C, 8GB RAM, 128GB SSD, 1-SLOT	RXi2-BP w/ PACEdge. The RXi2-BP has a quad-core 2 GHz processor, 8 GB RAM, 128 GB SSD, 0-70C temp range, DIN rail mounting & 1-PCIe slot.
R2B0N1E1W3A0A	RXi2-BP, PACEdge, 4C, 8GB RAM, 128GB SSD, WiFi	Rxi2-BP w/ PACEdge. The Rxi2-BP has a quad-core 2 GHz processor, 8 GB RAM, 128 GB SSD, 0 to 70C temp range, 2.4 GHz+5.0 GHz WiFi adapter, DIN rail mounting & no PCIe slot.
R2B0N5E1N3A0F	RXi2-BP, PACEdge, 4C, 16GB RAM, 128GB SSD, ET	Rxi2-BP w/ PACEdge. The Rxi2-BP has a quad-core 2.0 GHz processor, 16GB RAM, 128 GB SSD, Extended temperature range, DIN rail mounting & no PCIe slot.
R2B0N5E7N3A0F	RXi2-BP, PACEdge, 4C, 16GB RAM, 4TB SSD, ET	Rxi2-BP w/ PACEdge. The Rxi2-BP has a quad-core 2.0 GHz processor, 16 GB RAM, 4T SSD, Extended temperature range, DIN rail mounting & no PCIe slot.
R2L0N1A3AD	RXi2-LP, PACEdge + Connex, 2C, 4GB RAM, 32GB SSD	RXi2-LP w/ PACEdge & Connex. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The RXi2-LP has a dual-core 1 GHz processor, 4 GB RAM, 32 GB SSD & DIN rail mounting.
R2L0N2A3CD	RXi2-LP, PACEdge + Connex, 2C, 8GB RAM, 128GB SSD	RXi2-LP w/ PACEdge & Connex. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The RXi2-LP has a dual-core 1 GHz processor, 8 GB RAM, 128 GB SSD & DIN rail mounting.
R2B0N9C4N3A0A	RXi2-BP, PACEdge + Connex, 2C, 4GB RAM, 64GB SSD	RXi2-BP w/ PACEdge & Connex. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The RXi2-BP has a dual-core 1.5 GHz processor, 4 GB RAM, 64 GB SSD, 0-70C temp range, DIN rail mounting & no PCIe slot.
R2B0N1C1N3A0A	RXi2-BP, PACEdge + Connex, 4C, 8GB RAM, 128GB SSD	RXi2-BP w/ PACEdge & Connex. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The RXi2-BP has a quad-core 2 GHz processor, 8 GB RAM, 128 GB SSD, 0-70C temp range, DIN rail mounting & no PCIe slot.
R2B1N1C1N3A0A	RXi2-BP, PACEdge + Connex, 4C, 8GB RAM, 128GB SSD, 1SLOT	RXi2-BP w/ PACEdge & Connex. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The RXi2-BP has a quad-core 2 GHz processor, 8 GB RAM, 128 GB SSD, 0-70C temp range, DIN rail mounting & 1-PCIe slot.

PACEdge Software for Edge Computing

Part Number	Description	Details
R2B0N1C1W3A0A	RXi2-BP, PE+Connex, 4C, 8GB RAM, 128GSSD, WiFi	Rxi2-BP w/ PACEdge & Movicon Connex. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The Rxi2-BP has a quad-core 2 GHz processor, 8 GB RAM, 128 GB SSD, 0-70C temp range, 2.4 GHz+5.0 GHz WiFi adapter, DIN rail mounting & 1-PCIe slot.
R2B0N5C1N3A0F	Rxi2-BP, PE+Connex, 4C, 16GB RAM, 128GB SSD, ET	Rxi2-BP w/ PACEdge & Movicon Connex. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The Rxi2-BP has a quad-core 2 GHz processor, 8 GB RAM, 128 GB SSD, Extended temperature Range, DIN rail mounting & no PCIe slot.
R2B0N1W1N3A0A	RXi2-BP, PACEdge + WebHMI, 4C, 8GB RAM, 128G SSD	RXi2-BP w/ PACEdge, Connex & WebHMI. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The Rxi2-BP has a quad-core 2GHz processor, 8GB RAM, 128 GB SSD, 0-70C temp range, DIN rail mounting & no PCIe slot.
R2B1N1W1N3A0A	RXi2-BP, PACEdge + WebHMI, 4C, 8GB RAM, 128GB SSD, 1SLOT	RXi2-BP w/ PACEdge, Connex & WebHMI. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The Rxi2-BP has a quad-core 2 GHz processor, 8 GB RAM, 128 GB SSD, 0-70C temp range, DIN rail mounting & 1-PCIe slot.
R2B0N1W1W3A0A	RXi2-BP, PE+WebHMI, 4C, 8GB RAM, 128GSSD, WiFi	Rxi2-BP w/ PACEdge, Movicon Connex & WebHMI. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The Rxi2-BP has a quad-core 2 GHz processor, 8 GB RAM, 128 GB SSD, 0-70C temp range, 2.4GHz+5.0GHz WiFi adapter DIN rail mounting & no PCIe slot.
R2B0N5W1N3A0F	RXi2-BP, PE+WebHMI, 4C, 16GB RAM, 128GB SSD, ET	Rxi2-BP w/ PACEdge & Movicon Connex & WebHMI. Movicon license includes the Automation Driver Pack, Basic Driver Pack & 2k OPC UA Tags. The Rxi2-BP has a quad-core 2 GHz processor, 8 G RAM, 128 GB SSD, Extended temperature Range, DIN rail mounting & no PCIe slot.
R2B0N1R1N3A0A	RXi2-BP, GroupMGR10, 4C, 8GB RAM, 128GB SSD	Rxi2-BP w/ PACEdge & Group Manager. The Group Manager includes support for up to 10 devices. The Rxi2-BP has a quad-core 2 GHz processor, 8 GB RAM, 128 GB SSD, 0 to 70C temp range, DIN rail mounting & no PCIe slot.
R2B0N1S1N3A0A	RXi2-BP, GroupMGR50, 4C, 8GB RAM, 128GB SSD	Rxi2-BP w/ PACEdge & Group Manager. The Group Manager includes support for up to 50 devices. The Rxi2-BP has a quad-core 2 GHz processor, 8 G RAM, 128 GB SSD, 0 to 70C temp range, DIN rail mounting & no PCIe slot.
R2B0N1T1N3A0A	RXi2-BP, GroupMGR100, 4C, 8GB RAM, 128GB SSD	Rxi2-BP w/ PACEdge & Group Manager. The Group Manager includes support for up to 100 devices. The Rxi2-BP has a quad-core 2 GHz processor, 8 GB RAM, 128 GB SSD, 0 to 70C temp range, DIN rail mounting & no PCIe slot.
UPGRADE_PACEDGE_LPBP	RXi2-LP/BP, UPGRADE to add PACEdge	Upgrade a PACEdge RXi2-LP or RXi2-BP to add PACEdge. The license will include all PACEdge core functionality and is only available to those looking to upgrade their existing RXi2-LP/BP.
UPGRADE_CONNEX_LPBP	RXi2-LP/BP, UPGRADE to PACEdge + Connex	Upgrade a PACEdge RXi2-LP or RXi2-BP to add Connex. 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 Connex & 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-ADBA	RX3i Rackless CPU 64MB, PACEdge + Connex	PACSystems RX3i Rackless CPU, 64MB User Memory, 6 Ethernet Ports, 1 RS-232 port, with PACEdge + Connex software, mounting plates.
IC695CPL410-ACAN	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.

Wi-Fi / Cellular Kits

Part Number	Description	Details
UIPC-WMC-4G-GB	RXi2-BP, PE+Connex, 4C, PACSystems IPC 2010 Wi-Fi / Cellular Kit - Global	Global Communications Version (4G – GSM & Wi-Fi), Router RUT241, 4-Pin Power Adapter with I/O Access, 2x Mobile antennas (swivel, SMA male) 1x Wi-Fi antenna (swivel, RP-SMA male), Ethernet cable (0.25 m), SIM Card Kit, IPC 2010 Mounting Clip, Quick Start Guide.
UIPC-WMC-4G-NA	PACSystems IPC 2010 Wi-Fi / Cellular Kit - North America	North American Communications Version (4G –GSM+LTE & Wi-Fi), Router RUT241, 4-Pin Power Adapter with I/O Access, 2x Mobile antennas (swivel, SMA male) 1x Wi-Fi antenna (swivel, RP-SMA male), Ethernet cable (0.25 m), SIM Card Kit, IPC 2010 Mounting Clip, Quick Start Guide.
WMC-4G-GB	PACSystems Wi-Fi / Cellular Kit - Global	Global Communications Version (4G – GSM & Wi-Fi), Router RUT241, 4-Pin Power Adapter with I/O Access, 2x Mobile antennas (swivel, SMA male) 1x Wi-Fi antenna (swivel, RP-SMA male), Ethernet cable (0.25 m), SIM Card Kit, DIN Rail Mount, Quick Start Guide.
WMC-4G-NA	PACSystems Wi-Fi / Cellular Kit – North America	North American Communications Version (4G –GSM+LTE & Wi-Fi), Router RUT241, 4-Pin Power Adapter with I/O Access, 2x Mobile antennas (swivel, SMA male) 1x Wi-Fi antenna (swivel, RP-SMA male), Ethernet cable (0.25 m), SIM Card Kit, DIN Rail Mount, Quick Start Guide.

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