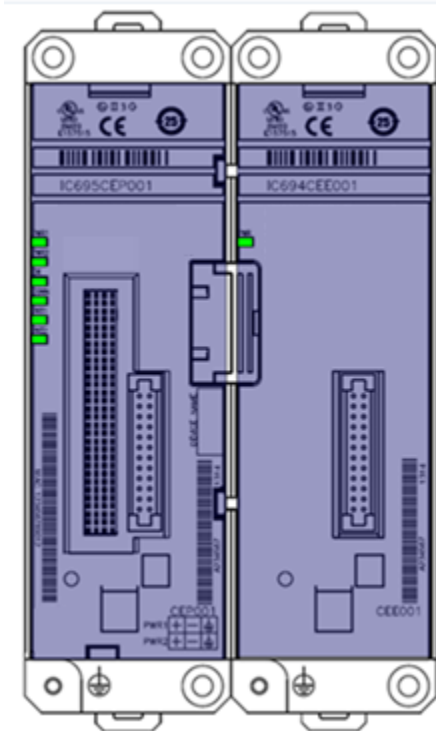# PACSystems^{TM} RX3i

CEP CARRIER

(IC695CEP001 & IC694CEE001)

EMERSON.

Warnings and Caution Notes as Used in this Publication

⚠ WARNING

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.

In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

⚠ CAUTION

Caution notices are used where equipment might be damaged if care is not taken.

Note: Notes merely call attention to information that is especially significant to understanding and operating the equipment.

These instructions do not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met during installation, operation, and maintenance. The information is supplied for informational purposes only, and Emerson makes no warranty as to the accuracy of the information included herein. Changes, modifications, and/or improvements to equipment and specifications are made periodically and these changes may or may not be reflected herein. It is understood that Emerson may make changes, modifications, or improvements to the equipment referenced herein or to the document itself at any time. This document is intended for trained personnel familiar with the Emerson products referenced herein.

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Introduction

The PACSystems RX3i Carrier IC695CEP001 interfaces a remote node, consisting of one RX3i I/O module, to a PROFINET I/O Local Area Network (LAN).

The optional RX3i Expansion Carrier IC694CEE001 attaches to the RX3i CEP001 Carrier and provides the ability to add one additional RX3i IC694 I/O module to the remote node.

The RX3i CEP001 Carrier functions as a PROFINET IO-Device. The RX3i CEP001 Carrier's main Remote I/O functions include:

- Scanning all the modules within the remote node (input and output scan)
- Publishing data on the PROFINET network to a PROFINET IO-Controller at a user-specified production period
- Receiving data from a PROFINET IO-Controller on the PROFINET network at a customer-specified production period
- Managing PROFINET communication and module configuration between a PROFINET IO-Controller and modules within the remote node
- Managing the state of the I/O when communications is lost
- Publishing fault information (alarms, diagnostics, and such) to the PROFINET IO-Controller
- Provides power to the CEE001 Expansion Carrier

The insertion and removal of I/O modules is the same as in an RX3i Universal Backplane. Refer to GFK-2314, PACSystems RX3i System Manual.

The RX3i CEP001 Carrier provides two RJ-45 Ethernet receptacles. It supports 10/100BASE-TX Ethernet standard interface.

Features

- Full programming and configuration services for all supported RX3i I/O Modules using PAC Machine Edition. Refer to the section, Supported I/O modules
- Support daisy-chain/line, star, or ring (redundant media) network topologies
- Two switched Ethernet ports: two eight-conductor RJ-45 shielded-twisted pair 10/100 Mbps copper interfaces
- USB port for field updates of firmware using Win Loader
- Supports Hot-standby CPU Redundancy using PROFINET I/O: requires RX3i CEP001 2.01 GSDML version 2.3 or later
- Supports HART® Pass Through using PROFINET

Note: *The USB port is for firmware upgrades only. It is not intended for permanent connection.*

The CEP001 Carrier requires a user-supplied +24 Vdc power source.

Ordering Information

CAT Number	Description
IC695CEP001	RX3i CEP001 Carrier with RJ-45 Copper Ethernet Interface
IC694CEE001	RX3i CEE001 Expansion Carrier

Specifications

Specification	Description		
PROFINET support	PROFINET Version 2.3 Class A IO-Device		
RX3i Controller version required	CPU320/CPU315 Primary Firmware Release 8.95 or later CPU320/CPU315 Boot Firmware Release 5.10 or later CPE310/CPE305 Primary Firmware Release 8.95 or later CPE310/CPE305 Boot Firmware Release 7. 10 or later CRU320 Primary Firmware Release 8.95 CRU320 Boot Firmware Release 5.10 or laterIC69PNC001 PROFINET IO-controller with firmware version 2.26 or later		
RXi Controller version required	RXi Controller, ICRXICTL000, with firmware version 7.80 or later is compatible with CEP001 up to version 2.01 but is not compatible with CEP001 version 2.30.		
PAC Machine Edition version required	Version 8.6 with SIM 3 or later		
Power requirements[1]	IC695CEP001: 5.25W (0.22 A) at 24 Vdc with or without Expansion Carrier (IC694CEE001) DC power supply input range: 19.2 to 30 Vdc		
Module dimensions	177.2 x 51 x 35 mm (6.98" x 2.01" x 1.38"). Same for CEP001 and CEE001.		
Operating temperature	0°C to 60 °C (32°F to 140 °F) maximum surrounding air temperature		
Number of Ethernet port connectors	IC695CEP001: Two RJ-45 10/100Base-TX receptacles IC694CEE001: None		
USB connector (for firmware upgrades)	IC695CEP001: One Micro-B connector. USB 2.0 compliant running at full-speed (12 MHz) in device mode IC694CEE001: None		
PNS status and control bits	32 input status bits and 32 output control bits		
I/O data update on the PROFINET LAN	Configurable: 1 ms, 2 ms, 4 ms, 8 ms, 16 ms, 32 ms, 64 ms, 128 ms, 256 ms and 512 ms		
Number of IP addresses	One; supports Classless Inter-Domain Routing (CIDR)		
Number of MAC addresses	Three; one per external port and one internal. External MAC addresses are only used for specialized Ethernet protocols such as MRP or LLDP.		
I/O station maximum limits	Number of I/O modules per station	IC695CEP001:	One
		IC695CEP001 with IC694CEE001:	Two
	I/O data per station	1024 bytes total 512 bytes of input data 512 bytes of output data	
Configuration	Configured using PAC Machine Edition when used with a PACSystems RX3i PROFINET Controller module as part of an RX3i High-speed I/O LAN system. V2.3 GSDML file available for import into 3rd-Party tools.		

Note: For product standards, general operating specifications, and installation requirements, refer to GFK-2314, PACSystems RX3i System Manual.

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[1] *Value does not include the power consumption of the installed I/O modules. When calculating the total power requirements, add the power consumption of the I/O modules according to the I/O module datasheet.*

Installation Location

This product is intended for use with the RX3i system. Its components are considered open equipment (having live electrical parts that may be accessible to users) and must be installed in an ultimate enclosure that is manufactured to provide safety. At a minimum, the enclosure shall provide a degree of protection against solid objects as small as 12mm (fingers, for example). This equates to a NEMA/UL Type 1 enclosure or an IEC60529 IP20 rating providing at least a pollution degree 2 environment. For details about installing RX3i rack systems, refer to PACSystems RX3i System Manual, GFK-2314.

Installation in Hazardous Areas

The following information is for products bearing the UL marking for Hazardous Areas or ATEX marking for explosive atmospheres:

CLASS 1 DIVISION 2 GROUPS ABCD

> ⚠ **WARNING**
>
> - This equipment is an open-type device and is meant to be installed in an enclosure suitable for the environment that is only accessible with the use of a tool.
>
> - Suitable for use in Class I, Division 2, Groups A, B, C and D Hazardous Locations, or nonhazardous locations only.
>
> - Explosion hazard - substitution of components may impair suitability for Class I, Division 2.
>
> - When in hazardous locations, turn off power before replacing or wiring modules

ATEX Zone 2

This module must be mounted in an enclosure certified in accordance with EN60079-15 for use in Zone 2, Group IIC and rated IP54. The enclosure shall only be able to be opened with the use of a tool.

Normal Operation of Individual LEDs

Power LEDs

The RX3i CEP001 Carrier has two Power LEDs, PWR1 and PWR2 that indicate whether the power is applied and is within range corresponding to the two power sources.

🟢	Green, ON	Power is applied at the minimum specified level
⚪	OFF	The power supply does not have power or has failed.

OK LED

The OK LED indicates whether the CEP001 Carrier can perform normal operation.

🟢	Green, ON	RX3i CEP001 is OK
🟡	Amber, ON	Either the RX3i CEP001 Carrier or IO module has a fault
🟡	Amber, blink pattern	Fatal error. Flashes once between error codes.
🟡	Fast blinking	CEP001 has no valid MAC addresses
⚪	OFF	CEP001 has an unrecoverable fault

Connect LED

The CONN LED indicates the status of PROFINET connections.

🟢	Green, ON	At least one PROFINET connection (AR) exists with an IO-Controller
🟡	Amber, blink pattern	Fatal error. Flashes once between error codes blinked on the OK LED
🟡	Amber, blink in 1Hz	No device name configured
⚪	OFF	No PROFINET connection (AR) exists

Port LEDs

The RX3i CEP001 has two Port LEDs, PRT1 and PRT2 that indicate link speed, link connection and link activity corresponding to the two external Ethernet ports.

🟢	Green, ON	Link connected, 100 Mbps
🟢	Green, blinking	Port active, 100 Mbps
🟡	Amber, ON	Link connected, 10 Mbps
🟡	Amber, blinking	Port active, 10 Mbps
🟡	Amber, blink pattern	Fatal error. Flashes once between error codes blinked on the OK LED
⚪	OFF	The associated Ethernet port is not connected to an active link (can be disabled by configuration)

Note: *Multiple LEDs can blink in patterns that indicate special conditions, such as a request for module identification. Refer to PACSystems RX3i PROFINET Scanner IC695CEP001 User Manual, GFK-2883.*

Power LED (IC694CEE001)

The RX3i Expansion Carrier CEE001 has one PWR LED to indicate whether the power provided by the RX3i CEP001 Carrier is within range.

🟢	Green, ON	OK
🟡	Amber, ON	Power 24Vdc and/or 5Vdc is not in specified range
⚪	OFF	No power

Quick Start

Carrier Installation Requirements

The CEP001 Carrier and optional Expansion Carrier CEE001 can be mounted on a DIN-rail or on a panel.

Figure 1: Dimension

Adequate installation space is required for:

1. Clearance for communications port cables.

2. Power wiring.

3. Operating the DIN latch.

The RX3i CEP001 Carrier with an I/O module attached requires an enclosure with minimum depth of 165 mm.

Rated thermal specifications are based on a clearance of 5.1 cm (2") above and below the equipment and 2.54 cm (1") to the left of the RX3i CEP001 Carrier.
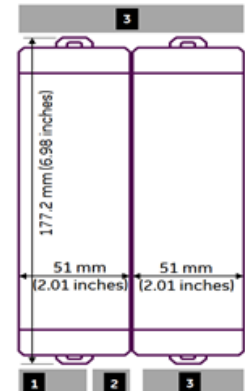
Figure 2: Connecting Expansion Carrier
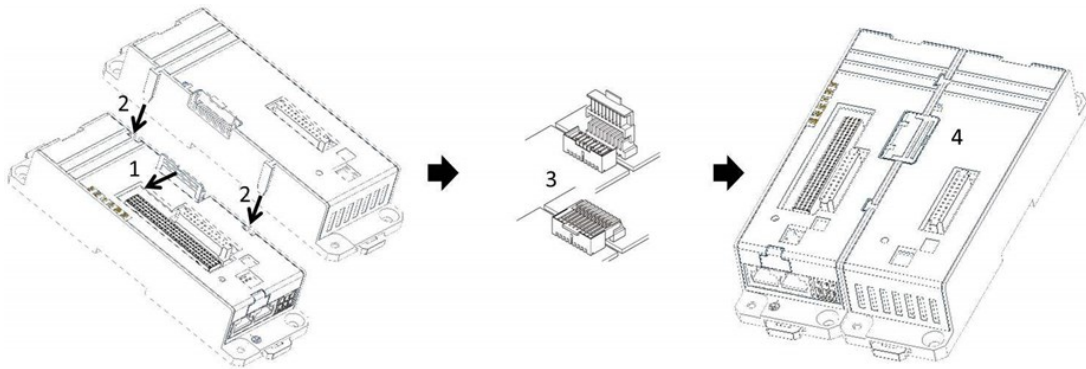
Connecting the CEE001 Expansion Carrier to the CEP001 Carrier

1. Open the connector cap on the RX3i CEP001 Carrier.

2. Slide and install the RX3i CEE001 Expansion Carrier along the guide slots on the RX3i CEP001 Carrier.

3. When the Expansion Carrier is aligned with the CEP001 Carrier, engage the expansion connectors.

4. Close the connector cap.

5. Secure the Expansion Carrier to the DIN rail or panel. Refer to Installing an RX3i CEP001 Carrier on a DIN-rail or Panel Mounting.

6. Connect the grounding hole on the CEE001 to the panel or enclosure as described in grounding.

Installing an RX3i CEP001 Carrier on a DIN-rail

The carrier mounts on a standard EN 50022, 35 x 7.5 mm DIN-rail. Conductive (unpainted) finish is required for proper grounding.

For best resistance to vibration, the DIN-rail should be installed horizontally on a panel using screws spaced approximately 15 cm (6") apart.

1. With a small flathead screwdriver, pull out the two DIN-rail latches and stand the carrier on the DIN-rail.

2. Push in the two DIN-rail latches so that the latches hold the DIN-rail.

Figure 3: Installing on DIN Rail
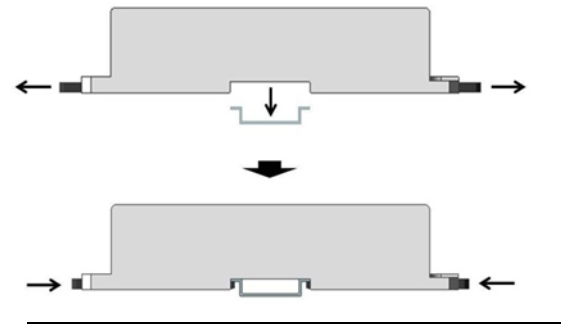
Panel Mounting

For applications requiring maximum or long-term resistance to mechanical vibration and shock, the panel-mounting method is strongly recommended. A minimum panel thickness of 2.4 mm (.093") is required. The mounting diagram below applies to both the CEP001 Carrier and CEE001 Expansion Carrier.

> *Note:*
>
> - *Tolerances on all dimensions are ±0.2 mm (0.078") non-cumulative.*
>
> - *Apply 1.1 to 1.4 Nm (10 to 12 in/lbs.) of torque to M3.5 (#6-32) steel screws threaded into tapped holes in the panel.*

Figure 4: Panel Mounting
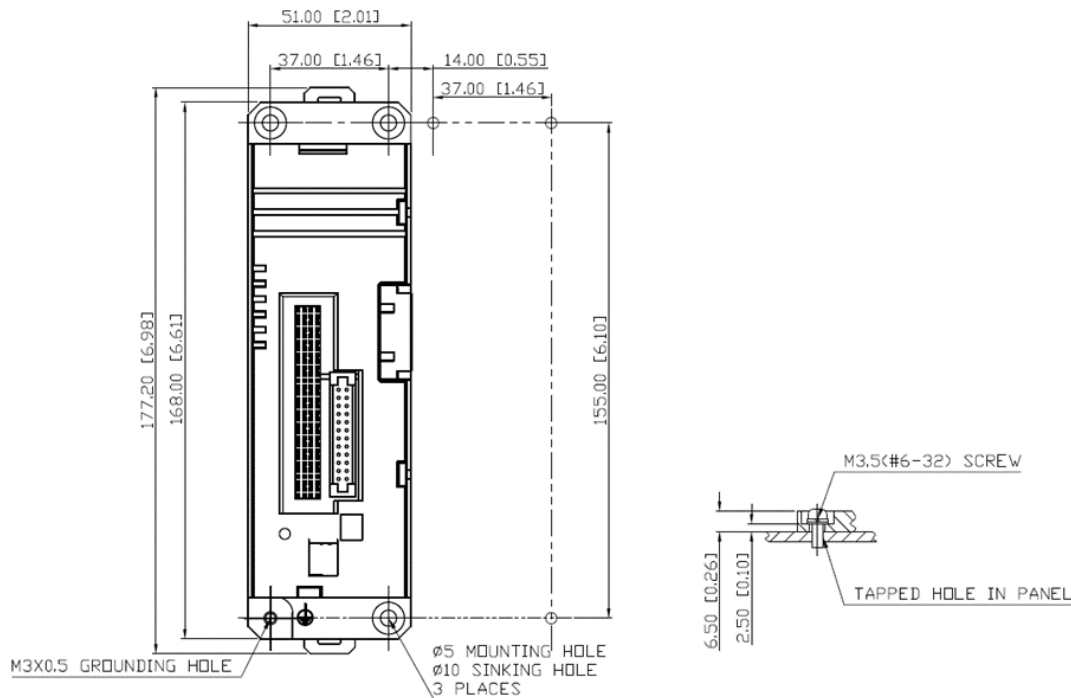
Grounding

The RX3i CEP001 Carrier and CEE001 Expansion Carrier each provide two grounding connection contacts:

- Grounding clips at the back of the carrier, which require DIN-rail installation
- Grounding screw hole at bottom-left of the carrier

Note: *When the Carrier is mounted on a DIN-rail, the grounding clips on the back of the Carrier do not provide an adequate ground connection. The Carrier's metal back must also be grounded using a separate conductor. The star lock washer method is suitable for a shield ground, but not suitable for a safety ground.*

Ground each Carrier to the panel or enclosure using a minimum AWG #12 (3.3 mm2) wire with ring terminals. Use an M3 screw, star lock washer and a flat washer to connect the wire at the Carrier's grounding hole. Connect the other end of the ground wire to a tapped hole in the grounded mounting panel or enclosure, using a machine screw, star lock washer and flat washer. Alternately, if the panel has a ground stud, use a nut and star lock washer for each wire on the ground stud to ensure adequate grounding. Where connections are made to a painted panel, the paint should be removed so clean, bare metal is exposed at the connection point. Terminals and hardware used should be rated to work with the aluminum carrier material.

Figure 5: Ground Shield Connection

AWG #12 (3.3mm²)or larger wire

Screw, star lock washer, flat washer, ring terminal, installed in tapped hole.

Paint removed from panel here
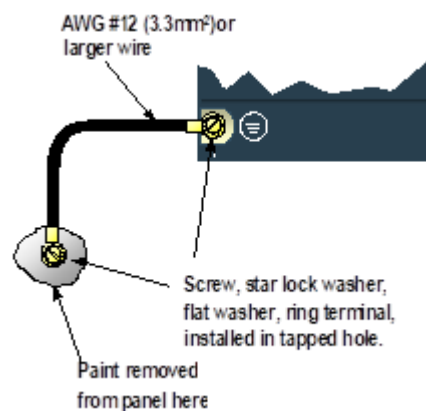
⚠ WARNING

All CEP001 Carriers in a system must be grounded to minimize electrical shock hazard. Failure to do so can result in severe personal injury.

Installing Modules on the Carrier

The insertion and removal of I/O modules is the same as in an RX3i Universal Backplane. For details, refer to GFK-2314, PACSystems RX3i System Manual.

⚠ Caution

Failure to do so Do not install a Power Supply module on the CEP001 or CEE001 Carrier. Attempting to do so could damage the module and/or the Carrier.

Unsupported Modules

> ### ⚠ Caution
>
> If an unsupported module is inserted in the CEP001 or CEE001 Carrier, the module will not be recognized correctly and could cause damage to the Carrier or the module.

When an unsupported I/O module is inserted into either the RX3i CEP001 Carrier or RX3i CEE001 Expansion Carrier, no alarm is reported to indicate this.

For the latest updated list of supported I/O modules, refer to the section, Supported I/O Modules.

Some unsupported I/O modules have the same Distinguishing Class (for example, IC694MDL740 has the same Distinguishing Class as IC694MDL742).

Connecting Power Supplies

You will need:

- One 24 Vdc power supply which provides a low voltage/limited current (LVLC) power source. (For example, the combination of an isolated DC supply and a fuse, listed 30 Vdc minimum and 3 A maximum, connected in series with the input.)
- Power cord with 28 to16 AWG / 0.08 to1.32 mm2 wires
- Ferrules for 28 to16 AWG wires (optional)
- Frame ground wire, 28 to16 AWG
- Input power terminal block; provided (Dinkle Part Number 0156-2B-B3269806BK)
- Small flathead screwdriver (jeweler's size 14)

Note: *Two power supplies are required if using redundant power supplies.*

Before inserting the wires into the power connector terminal block, use a small flathead screwdriver to press the spring on the terminal block.

1. Using the power cord, attach the power supply to the power terminal block as displayed in the following figure.
   Recommended wire stripping length is 6 to7 mm (0.25").
2. If using redundant power supplies, connect the second power supply to the input power terminal block.
3. Insert the input power terminal block into the Input Power connector.

Note: *For CE Mark purposes, input power lines to the CEP001 Carrier should be limited 30 m (98 ft) or less. There are no user-serviceable fuses in the CEP001 Carrier.*

Connecting Power to RX3i CEP001 Carrier

Figure 7: Terminal Connection
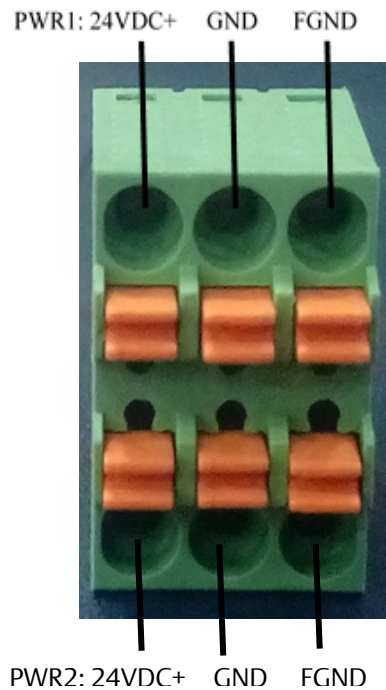
Figure 6: Terminal Connection

Adding a Redundant Power Supply

To add a redundant power supply to a system that is already in operation

1. Remove power from the primary power supply to the RX3i CEP001 carrier

2. Remove the power terminal block from the carrier.

3. Without disturbing the primary power supply input lines, connect the redundant power supply input lines to the power terminal block.

4. Insert the power terminal block into the Input Power connector.

5. Apply power to the redundant power supply. The PWR2 LED on the RX3i CEP001 carrier should turn on.

6. Apply power to the primary power supply. The PWR1 LED on the CEP001 Carrier should turn on.

Note: *For the procedure to swap a redundant power supply, refer to PACSystems RX3i PROFINET Scanner IC695CEP001 User Manual, GFK-2883.*

Connecting the CEP001 to the PROFINET Network

Figure 8: Profinet Connection
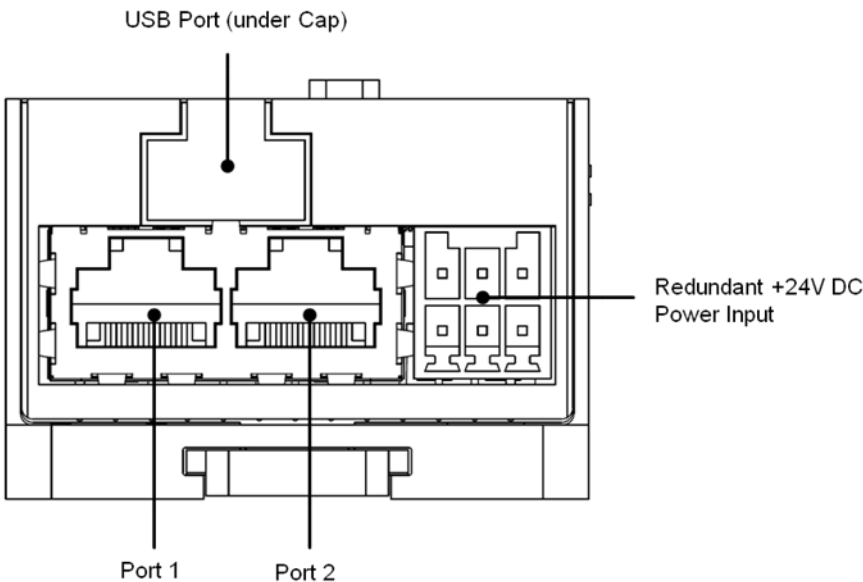
The two external RJ-45 Ethernet ports, which provide 10/100 Mbps copper interfaces, are on the bottom of the CEP001 Carrier.

Devices connected to the RX3i CEP001 ports should have Ethernet Auto-negotiation enabled. The RX3i CEP001 Carriers and other participating devices can be connected in a daisy-chain/line, or star topology.

⚠ Caution

Do not connect both ports on the Ethernet interface, directly or indirectly, to the same device to form a circular network unless Media Redundancy is enabled with one node actively set up as the Media Redundancy Manager.

Supported Network Media Types and Distances

PROFINET I/O over-wired infrastructure must be 100Mbps full-duplex or faster. The hardware can operate at 10Mbps but should not be used for PROFINET.

Media Type	Connector Type	Wavelength (nm)	Media Type	Core Size (μm)	Modal Bandwidth (MHz – Km)	Maximum Distance
10/100BASE-TX	RJ-45	-	CAT5/CAT5e/CAT6	-	-	100 m (328 ft)

Assigning an I/O Device Name to the CEP001

Before attempting to connect to or configure the CEP001, the I/O Device Name must be set with a Discovery and Configuration Protocol (DCP) tool.

Configuring the CEP001/CEE001 Node and Resident I/O Modules on a PROFINET Network

PAC Machine Edition is the primary tool used to configure an RX3i PROFINET network. The GSDML file for the RX3i CEP001 is included with PAC Machine Edition or may be downloaded from the support website. See links provided at the end of this document.

To obtain the GSDML for import into a 3rd-Party tool, contact Emerson.

Supported I/O Modules

The following table indicates the minimum CEP001 firmware version required for compatibility with the listed I/O modules and whether the module can be installed in the RX3i Expansion Carrier CEE001.

Catalog Number	Module Description	Distin-guishing Classes[2]	Earliest CEP001 Compatible Version	CEE001[3] Comp-atible
Discrete Input Modules				
IC693MDL230	8 Circuit Input 120 Vac Isolated	8 in	2.30	Y
IC693MDL231	8 Circuit Input 240 Vac Isolated	8 in	2.50	Y
IC693MDL240	16 Circuit Input 120 Vac	16 in	2.30	Y
IC693MDL241	16 Circuit Input 24 Vac / Vdc	16 in	2.50	Y
IC693MDL260	32 Circuit Input 120 Vac, Input Filtering Off	32 in	2.50	Y
IC693MDL260	32 Circuit Input 120 Vac, Input Filtering On	32 in/32 out	2.50	Y
IC693MDL632	8 Circuit Input 125 Vdc Positive / Negative Logic	8 in	2.30	Y
IC693MDL634	8 Circuit Input 24 Vdc Positive / Negative Logic	8 in	2.50	Y
IC693MDL635	16 Circuit Input 125 Vdc Positive / Negative Logic	16 in	2.30	Y
IC693MDL645	16 Circuit Input 24 Vdc Positive / Negative Logic	16 in	2.40	Y
IC693MDL648	16 Circuit Input 48 Vdc Positive / Negative Logic Fast	16 in	2.30	Y
IC693MDL654	32 Circuit Input 5/12 Vdc Positive / Negative Logic	32 in	2.50	Y
IC693MDL655	32 Circuit Input 24 Vdc Positive / Negative Logic Fast	32 in	2.50	Y
IC693MDL660	32 Circuit Input 24 Vdc Positive / Negative Logic, Input Filtering Off	32 in	2.30	Y
IC693MDL660	32 Circuit Input 24 Vdc Positive / Negative Logic, Input Filtering On	32 in/32 out	2.30	Y
IC694MDL230	8 Circuit Input 120 Vac Isolated	8 in	2.30	Y
IC694MDL231	8 Circuit Input 240 Vac Isolated	8 in	2.50	Y
IC694MDL240	16 Circuit Input 120 Vac	16 in	2.30	Y

_____

[2] *The RX3i CEP Carrier and the RX3i CEP Expansion Carrier currently does not support fault reporting or "Interrupts" from this module.*

[3] *The RX3i CEP Carrier and the RX3i CEP Expansion Carrier currently does not support all HART features in this module. HART® Pass Through or Remote Get HART Device Information COMMREQ support only (no HART variables in IO Data). HART-compatible CPU and PNC001 versions are required.*
The RX3i CEP Carrier and the RX3i CEP Expansion Carrier cannot distinguish between modules within the same Distinguishing Class type. This means that any module physically present that is within the same class as the one configured will not alert the user with a System Configuration Mismatch fault on the Controller Fault Table. Refer to GFK-2222 Chapter 3 for CPU operation during System Configuration Mismatch faults.

Catalog Number	Module Description	Distin- guishing Classes[2]	Earliest CEP001 Compatible Version	CEE001[3] Comp- atible
IC694MDL241	16 Circuit Input 24 Vac / Vdc	16 in	2.50	Y
IC694MDL250	16 Circuit Input 120 Vac Isolated	None	1.00	Y
IC694MDL260	32 Circuit Input 120 Vac	None	2.50	Y
IC694MDL632	8 Circuit Input 125 Vdc Positive / Negative Logic	8 in	2.30	Y
IC694MDL634	8 Circuit Input 24 Vdc Positive / Negative Logic	8 in	2.50	Y
IC694MDL635	16 Circuit Input 125 Vdc Positive / Negative Logic	16 in	2.30	Y
IC694MDL645	16 Circuit Input 24 Vdc Positive / Negative Logic	16 in	2.40	Y
IC694MDL646	16 Circuit Input 24 Vdc Positive / Negative Logic Fast	16 in	1.00	Y
IC694MDL648	48 Vdc Input Pos/Neg Fast (16 Points)	16 in	2.30	Y
IC694MDL654	32 Circuit Input 5/12 Vdc Positive / Negative Logic	32 in	2.50	Y
IC694MDL655	32 Circuit Input 24 Vdc Positive / Negative Logic Fast	32 in	2.50	Y
IC694MDL658	32 Circuit Input 48 Vdc Positive / Negative Logic Fast	32 in	2.50	Y
IC694MDL660	32 Circuit Input 24 Vdc Positive / Negative Logic	None	2.30	Y
IC695MDL664	16 Circuit Input with diagnostic	None	1.00	N
Discrete Output Modules				
IC693MDL310	12 Circuit Output 120 Vac 0.5A	16 out	2.50	Y
IC693MDL330	8 Circuit Output 120/240 Vac 2A	8 out	2.40	Y
IC693MDL340	16 Circuit Output 120 Vac 0.5A	16 out	2.50	Y
IC693MDL350	16 Circuit Output 120/240 Vac Isolated	16 out	2.50	Y
IC693MDL390	5 Circuit Output 120/240 Vac 2A Isolated	8 out	2.30	Y
IC693MDL732	8 Circuit Output 12/24 Vdc 0.5A Positive	8 out	2.50	Y
IC693MDL734	6 Circuit Output 125 Vdc 1A Positive/Negative	8 out	2.50	Y
IC693MDL740	16 Circuit Output 12/24 Vdc 0.5A Positive	16 out	2.50	Y
IC693MDL741	16 Circuit Output 12/24 Vdc 0.5A Negative	16 out	2.50	Y
IC693MDL752	32 Circuit Output 5/24 Vdc 0.5A Negative	32 out	2.50	Y
IC693MDL753	32 Circuit Output 12/24 Vdc 0.5A Positive	32 out	2.50	Y
IC693MDL754	32 Circuit Output 24 Vdc 0.75A Positive, Diagnostics Off	32 out	2.30	Y
IC693MDL754	32 Circuit Output 24 Vdc 0.75A Positive, Diagnostics On	32 in/32 out	2.30	Y
IC693MDL930	8 Circuit Output 4A Relay Isolated	8 out	2.30	Y
IC693MDL931	8 Circuit Output Relay Form BC Isolated	8 out	2.50	Y
IC693MDL940	16 Circuit Output 2A Relay	16 out	2.30	Y
IC694MDL310	12 Circuit Output 120 Vac 0.5A	16 out	2.50	Y
IC694MDL330	8 Circuit Output 120/240 Vac 2A	8 out	2.40	Y
IC694MDL340	16 Circuit Output 120 Vac 0.5A	16 out	2.50	Y
IC694MDL350	16 Circuit Output 120/240 Vac Isolated	None	2.50	Y
IC694MDL390	5 Circuit Output 120/240 Vac 2A Isolated	None	2.30	Y
IC693MDL732	8 Circuit Output 12/24 Vdc 2A Positive	8 out	2.50	Y

Catalog Number	Module Description	Distin-guishing Classes[2]	Earliest CEP001 Compatible Version	CEE001[3] Comp-atible
IC693MDL734	6 Circuit Output 125 Vdc 1A Positive/Negative	8 out	2.50	Y
IC694MDL740	16 Circuit Output 12/24 Vdc 0.5A Positive	16 out	2.50	Y
IC694MDL741	16 Circuit Output 12/24 Vdc 1A Negative	16 out	2.50	Y
IC694MDL742	16 Circuit Output 12/24 Vdc 1A Positive	16 out	1.00	Y
IC694MDL752	32 Circuit Output 5/24 Vdc 0.5A Negative	32 out	2.50	Y
IC694MDL753	32 Circuit Output 12/24 Vdc 0.5A Positive	32 out	2.50	Y
IC694MDL754	32 Circuit Output with ESCP	None	2.30	Y
IC694MDL916	16 Circuit Output 4 A Relay	None	1.00	Y
IC694MDL930	8 Circuit Output 4 A Relay Isolated	8 out	2.30	Y
IC694MDL931	8 Circuit Output Relay Form BC Isolated	8 out	2.50	Y
IC694MDL940	16 Circuit Output 2 A Relay	16 out	2.30	Y
IC695MDL765	16 Circuit Smart Output 24/125 Vdc 2A Positive Logic	None	1.00	N
Mixed Discrete Input/output Modules				
IC693MDR390	8 Circuit Mixed 24 Vdc Input / Relay Output	8 in/8 out	2.40	Y
IC693MAR590	8 Circuit Mixed 120 Vac Input / Relay Output	8 in/8 out	2.30	Y
IC694MDR390	8 Circuit Mixed 24Vdc Input/Relay Output	8 in/8 out	2.40	Y
Analog Input Modules				
IC693ALG222	16 Point Analog Voltage Input	ALG IN 16	2.50	Y
IC693ALG223	16 Point Analog Current Input	ALG IN 16	2.50	Y
IC694ALG222	16 Point Analog Voltage Input	ALG IN 16	2.50	Y
IC694ALG223	16 Point Analog Current Input	ALG IN 16	2.50	Y
IC695ALG112	12 Point Isolated Analog Current/Voltage Input	None	2.01	N
IC695ALG600	8 point Universal Analog Input Module	None	2.01	N
IC695ALG616	16 Point Analog Current / Voltage Input[2]	None	1.00	N
IC695ALG626	16 Point Analog Current / Voltage Input (HART Support)[2,3]	None	1.00[4]	N
Analog Output Modules				
IC693ALG392	8 Point Analog Current / Voltage Output	ALG OUT 8	2.50	Y
IC694ALG392	8 Point Analog Current / Voltage Output	ALG OUT 8	2.50	Y
IC695ALG704	4 Point Analog Current / Voltage Output	None	2.50	N
IC695ALG708	8 Point Analog Current / Voltage Output	None	2.50	N
IC695ALG728	8 Point Analog Current / Voltage Output (HART Support)[2,3]	None	1.00[4]	N
IC695ALG808	8 Point Isolated Analog Current / Voltage Output [2]	None	1.00	N
Analog Mixed Modules				

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[4] _The RX3i CEP001 Carrier and the RX3i CEE001 Expansion Carrier do not support Interrupts from this module._
  The RX3i CEP001 Carrier does not support HART features which are logic-driven. HART data obtained via HART Pass Through is available.
  RX3i CEP001 version 2.30 is required for HART Pass Through functionality. Refer to additional Compatibility
   information below.

Catalog Number	Module Description	Distin-guishing Classes[2]	Earliest CEP001 Compatible Version	CEE001[3] Comp-atible
IC693ALG442	4 Input / 2 Output, Current / Voltage	ALG IN 4, ALG OUT 2	2.30	Y
IC694ALG442	4 Input / 2 Output, Current / Voltage	ALG IN 4, ALG OUT 2	2.30	Y
Thermocouple Input Modules				
IC695ALG312	12 Point Isolated Thermocouple input	None	2.50	N
High-speed Counter Modules				
IC695HSC308	High-Speed Counter Module, 1.5MHz, 16 Inputs, 14 Outputs	None	2.40	N
Specialty Modules				
IC694PSM001	Power Sync and Measurement Module	None	2.01	Y

Important Product Information

Release History for IC695CEP001

Version	Firmware Release	Date	Comments
IC695CEP001-ACAJ	2.71	Oct 2020	Firmware updated to address an issue reported on 'MRP enabled' bit available in CEP input status data.
IC695CEP001-ACAH	2.70	Sep 2019	Following Emerson's acquisition of this product, changes have been made to apply appropriate branding and registration of the product with required certification agencies. No change in form-fit-functionality. Firmware updated to address an issue reported on 'Get Remote HART Device information' COMMEREQ.
IC695CEP001-ABAG	2.60	Nov 2018	Connector problem resolved.
IC695CEP001-AAAG	2.60	Sep 2016	Added support for the Remote Get HART Device Information COMMREQ. Information from a HART device connected to an RX3i Analog Module in an IC695CEP001 RX3i CEP Carrier may be read into the user application using the Remote Get HART Device Information COMMREQ.
IC695CEP001-AAAF	2.50	Dec 2015	Added support for additional I/O Modules (see Supported I/O Modules above).
IC695CEP001-AAAE	2.40	June 2015	Added support for additional I/O Modules (see Supported I/O Modules above).
IC695CEP001-AAAD	2.30	June 2015	Added support for additional I/O Modules (see Supported I/O Modules above) and for HART Pass Through functionality.
IC695CEP001-AAAC	2.01	Nov 2014	Added Hot-standby CPU redundancy using PROFINET I/O and support for additional RX3i I/O modules: IC695ALG112, IC695ALG600, and IC694PSM001
IC695CEP001-AAAA	1.00	Jan 2014	Initial release

Upgrades

Upgrade kit: 41G1897-MS10-000-A7.zip is available at the support links provided at the end of this document.

Release History for IC694CEE001

Version	Date	Comments
IC694CEE001-BA	Sep 2019	Following Emerson's acquisition of this product, changes have been made to apply appropriate branding and registration of the product with required certification agencies. No changes to material, process, form, fit or functionality.
IC694CEE001-AA	Apr 2017	Initial Release

Compatibility

The PROFINET Scanner modules require the CPU firmware and programming software versions listed in the following table.

PAC Machine Edition	PAC Machine Edition version 8.6 SIM 3 or later
RX3i CPU Version	PACSystems RX3i CPU, CPU320/CPU315 Primary Firmware Release 8.95 or later CPU320/CPU315 Boot Firmware Release 5.10 or later CPE310/CPE305 Primary Firmware Release 8.95 or later CPE310/CPE305 Boot Firmware Release 7. 10 or later CPE330 Primary Firmware Release 8.95 or later CRU320 Primary Firmware Release 8.95 CRU320 Boot Firmware Release 5.10 or later
RX3i PNC Version	PACSystems RX3i PROFINET IO-Controller, IC695PNC001, with firmware version 2.26 or later
RXi Controller Version	Effective with IC695CEP001 Firmware version 2.30, the PACSystems RXi Distributed I/O Controller, ICRXICTL000, is no longer compatible with IC695CEP001. ICRXICTL000 with firmware version 7.80 or later may be used with CEP001 version 2.01 or earlier.
RX3i I/O Modules	For a complete list of modules supported by the current firmware release, refer to the section, Supported I/O Modules, above.
HART Pass Through	HART Pass Through entails usage of PC-based applications, RX3i Analog modules with HART functionality and (optionally) supporting PROFINET products. HART Pass Through operation is described in the PACSystems HART Pass Through User Manual, GFK-2929.

Problems Resolved in This Release

Subject	ID code	Description
'MRP Enabled' bit in CEP input status data is not working as specified in the manual GFK-2883	SFDC case number: 01323576 Rally **case number**: DE5803	The 'MRP Enabled' bit in CEP input status data is always showing the value 0 even though the MRP configuration is enabled in PNC and CEP

New Features and Enhancements

None

Restrictions and Open Issues

Restriction / Issue	Description
Pulling and plugging a module during HSB roll switch can make the I/O module not able to be recognized.	When configuring RX3i CEP001 under PROFINET HSB redundancy, if you pull the I/O module installed on an RX3i CEP001 while switching the current primary/backup CPU role, then plug the I/O module back in and switch the primary/backup CPU role back, the I/O module might be lost. It is not suggested to pull/plug an I/O module during PROFINET HSB redundancy roll switch. To recover, cycle power to the RX3i.
Module diagnosis alarms are not stable, especially when multiple diagnoses appear at same time.	Whenever fault reporting is configured for an I/O module, and a fault occurs and is subsequently resolved, the fault might not be reported via the PROFINET diagnosis appears / diagnosis disappears alarm sequence. This situation is more likely to be encountered when multiple alarms occur in rapid succession. Refer to Diagnosis Disappears alarms may be out of sequence with Diagnosis Appears alarms below.
When supporting PROFINET System Redundancy, set StartupMode to Advanced	The RX3i CEP001 GSDML does not have the attribute Interface Submodule Item/Application Relations/@StartupMode. The default is Legacy according to the GSDML specification. This setting does not matter for simplex. However, for PROFINET System Redundancy the StartupMode needs to be set to Advanced. Refer to Protocol (IEC 61158-6-10) in IO APDU Substitutions. The SRInfoBlock required for System Redundancy is only available in IODConnect.Req with StartupMode:=1.
Hot swap of ALG626 module while Online with attached HART device causes CEP blink trap 1-2.	Whenever the IC695ALG626 module is hot swapped while online with sixteen HART devices attached to it, the IC695CEP001 may enter a blink trap1-2. To recover, cycle power to the CEP001.
IC695ALG312 module is not detected after hot insertion	CEP does not detect the ALG312 module, when it is hot inserted. This can be observed in the Profinet Controller, where "Addition of IO Module" is not reported and ALG312 module OK LED keeps blinking. To overcome this, CEP should be power cycled. After the power cycle CEP properly detects ALG312 module and "Addition of IO Module" is reported with LED become solid green.
Hot insertion of IO module may cause loss of CEP PROFINET connection for a few seconds	Occasionally, the RX3i CEP may disconnect for a few seconds and then automatically reconnect when any of the below listed IO modules are hot inserted. IC694MDL660, IC694MDL754, IC693MAR590, IC693MDL632, IC694MDL930, IC693MDL930, IC694 MDL230, IC693MDL230, IC693MDL240, IC693MDL635, IC694MDL940, IC693MDL940, IC693MDL648, IC693MDL390, IC693ALG442

Operational Notes

Note	Description
HART Pass Through feature for IC695ALG626, IC695ALG628[5] & IC695ALG728 modules	If used specifically for HART Pass Through, the supporting RX3i PROFINET Controller (PNC001) and PROFINET Scanner (PNS001 or CEP001) must also contain HART-compatible firmware: IC695PNC001-AK Firmware Release 2.30 IC695PNS001-ABAH Firmware Release 2.30 IC695CEP001-AAAD Firmware Release 2.30.

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[5] If used, IC695ALG628 must be installed in the RX3i CPU Rack. At time of publication, it is not supported by PROFINET scanners IC695PNS001 or IC695CEP001. Refer to IPIs for IC695PNS001 or IC695CEP001 for future updates.

Note	Description
No alarm report when inserting an unsupported I/O module	Whenever an unsupported I/O module is inserted into either the RX3i CEP001 Carrier or RX3i CEE001 Expansion Carrier, no alarm is reported to indicate this. For a list of supported I/O modules, refer to the section, Supported I/O Modules above. Some unsupported I/O modules have the same Distinguishing Class (for example, IC694MDL740 has the same Distinguishing Class as IC694MDL742). If an unsupported module is inserted in the CEP001 or CEE001 Carrier, the module will not be recognized correctly.
Wait time is too long to enter download mode	If, while using WinLoader, power is lost to the RX3i CEP001 Carrier during a firmware update, a delay of more than 50 seconds might be required before the RX3i CEP001 Carrier can enter the firmware update mode again.
USB port drivers	When connecting the USB cable to the RX3i CEP001 Carrier, you may receive a warning for installing a driver that has not passed Windows® Logo testing. Each RX3i CEP001 Carrier is recognized as a separate Windows device with separate installation, as each has a unique serial number. This is normal operation for this release.
Network parameters for IO-devices	If the network parameters (IP Address, subnet mask, and gateway IP) assigned by the DCP tool are different from the configuration in the IO-Controller and the IO-Controller is configured to assign IP settings to devices, when the I/O Controller assigns its IP settings, the settings previously stored from the DCP tool are lost. On a reset, the IO-Device is set to factory default values (0.0.0.0/0.0.0.0/0.0.0.0) as prescribed by the PROFINET specification.
No Extra Module alarms	The RX3i CEP001 Carrier and RX3i CEE001 Expansion Carrier ignore all extra equipment. No Extra I/O Module faults or Loss of I/O Module faults are generated for unconfigured modules.
Diagnosis Disappears alarms may be out of sequence with Diagnosis Appears alarms	For RX3i Intelligent modules Diagnosis Disappears alarms are generated by cyclically polling diagnostic data. These alarms may be slower than Diagnosis Appears alarms from the same module, which are generated by an interrupt. Example: When re-applying field power, new channel alarms such as Hi/Low alarms may occur before the Loss of Field Power alarm clears. Affected modules are: IC695MDL664 IC695MDL765 IC695ALG616 IC695ALG626 IC695ALG728 IC695ALG808
RXi Support	RXi Controller do not support for RX3i CEP Rel. 2.30
CEP001 fails to show attached I/O module in PROFINET network scan when hardware configuration is absent	If there is no hardware configuration in the controller, and the PROFINET network is subsequently scanned, the scan may show no I/O module present in CEP001, even when an I/O module is physically present.
Generic I/O module	Whenever an I/O module attached to CEP001 is physically changed, and the hardware configuration is not updated, the I/O module may show as a Generic IO module in a subsequent PROFINET network scan.
View live data for more than 30 devices simultaneously.	Emerson Device Essentials software (v 01.04.00) may stop responding when trying to view live data for more than 30 number of HART devices simultaneously. Recommended to view HART data for less than 30 devices simultaneously. (Not to include into IPI)

Additional Information

Manuals can be downloaded from the support website. See links provided at the end of this document.

PACSystems RX3i PROFINET Scanner IC695CEP001 User Manual   GFK-2883

PACSystems RX3i PROFINET Controller User Manual   GFK-2571

PACSystems RX3i PROFINET Controller Command Line Interface Manual   GFK-2572

PACSystems RX3i CPU Reference Manual   GFK-2222

PACSystems RX3i CPU Programmer's Reference Manual   GFK-2950

PACSystems RX3i System Manual   GFK-2314

PACSystems RX3i HART Pass Through User's Manual   GFK-2929

General Contact Information

Home link: http://www.emerson.com/industrial-automation-controls

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Any escalation request should be sent to: mas.sfdcescalation@emerson.com

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