

## **Instructions to printer**

**DO NOT PRINT THIS PAGE**

This document is intended to be printed in *color* as a 5.5 (width) x 6.5 inch (length) booklet with stapled binding.

Use high-quality, glossy 20lb (75 g/m<sup>2</sup>) paper.

Print double-sided. Fold sheet of 8.5" x 11" in two, trim length, and staple spine.

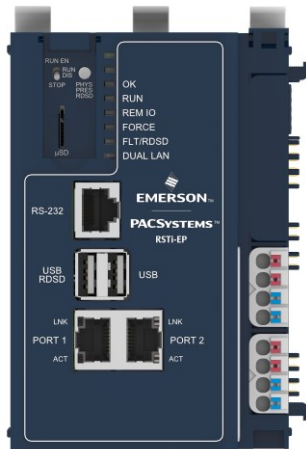
The European version can use A4 in place of 8.5" x 11".

# RSTi-EP CPE200 Series Controllers

## Quick Start Guide

GFK-3109B

Dec 2022



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# Initial Checks

Upon receiving your equipment, carefully inspect all shipping containers for damage. If any part of the system is damaged, notify the carrier immediately. The damaged shipping container should be saved as evidence for inspection by the carrier.

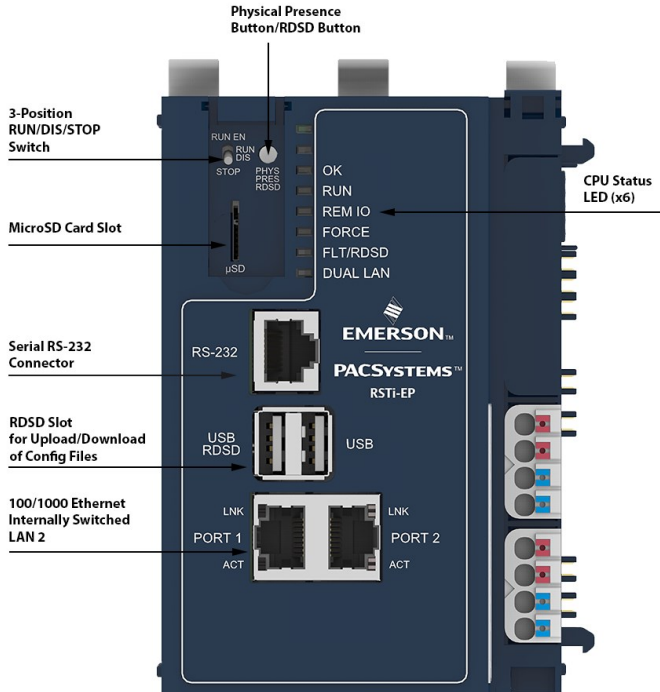
As the consignee, it is your responsibility to register a claim with the carrier for damage incurred during shipment. Emerson will fully cooperate with you, however, should such action be necessary.

After unpacking the equipment, record all serial numbers. Serial numbers are required if you should need to contact Customer Care during the warranty period. All shipping containers and all packing material should be saved should it be necessary to transport or ship any part of the system.

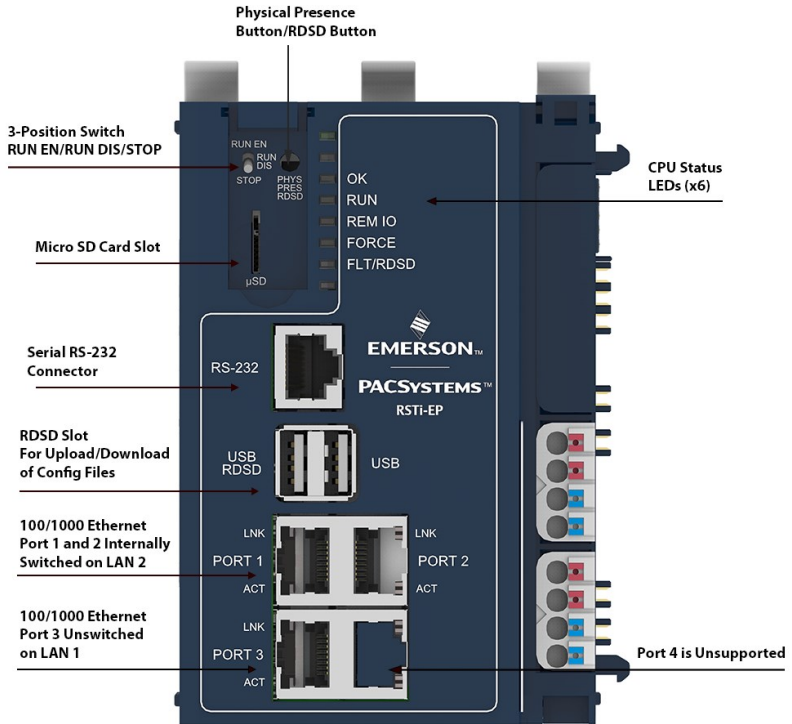
Verify that all components of the system have been received and that they agree with your order. If the system received does not agree with your order, contact Customer Care.

# Front Panel Description

Figure 1: Front Panel View of EPXCPE205



**Figure 2: Front Panel View of EPXCPE210/215/220/240**



# Displays and LED Indicators

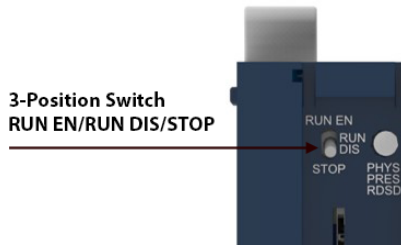
| Label            | Function                  | Description/Notes   |
|------------------|---------------------------|---|
| OK               | LED                       | Multi-function PLC LED.   |
| RUN              | LED                       | Multi-function PLC LED.   |
| REM IO           | LED                       | Remote IO state LED. PLC LED that will indicate whether ALL or SOME PROFINET devices are connected.   |
| FORCE            | LED                       | PLC LED that indicates a "forced" value is present in User Logic.   |
| FLT/RDSD         | LED                       | PLC LED that will indicate a STOP-FAULT condition, IP Conflict Detected, and also the RDSD state.   |
| DUAL LAN         | LED                       | PLC LED that indicates EPXCPE205 LAN mode configuration. This LED is not labeled on any other EPXCPE model.   |
| RUN EN           | RUN/STOP Switch           | PLC in Run Outputs Enabled.   |
| RUN DIS          | RUN/STOP Switch           | PLC in Run Outputs Disabled.  |
| STOP             | RUN/STOP Switch           | PLC in Stop.  |
| PHY PRES<br>RDSD | Physical<br>Presence/RDSD | Button for Physical Presence actions (i.e. password change), RDSD and reset to factory defaults.<br>RDSD – Single press to perform an upload.<br>RDSD – Double press to perform a download.<br>Is used to initiate Reset to Factory Default Settings. |
| μSD              | Micro SD card             | Port for the micro SD card.   |
| RS232            | Serial Port               | Port for serial communications. Only support RS-232.  |
| USB<br>RDSD      | USB 2.0/RDSD              | USB connection for RDSD, and potentially other features in the future.  |
| PORT X           | Ethernet Port             | Ethernet Ports. X = 1, 2, 3, or 4.  |
| LNK              | Ethernet Port LED         | LED that indicates Ethernet Link and Speed. Belongs to the Ethernet Connector.  |
| ACT              | Ethernet Port LED         | LED that indicates Ethernet activity on the link. Belongs to the Ethernet Connector.  |

# Ethernet Port LEDs

- The Ethernet Port LEDs are located in the PHY connector itself. They are controlled by the PHY
- There are two LEDs per port, one for Link/Speed (“LNK”) and one for Activity (“ACT”)
- **Ethernet LinkSpeed (“LNK”):**
  - **GREEN** indicates 1 Gbps
  - **AMBER** indicates 100 Mbps
  - **OFF** indicates 10 Mbps (currently not supported per spec)
- **Ethernet Activity (“ACT”):**
  - **GREEN** indicates Link
  - **BLINKING GREEN** indicates activity on the link

---

**Figure 2: 3-Position Switch RUN EN/RUN DIS/STOP**





## Front Display LEDs

| LED Label     | LED State                  | Operating State                                     |
|---------------|----------------------------|---|
| OK            | Green (steady)             | Powered up, the controller is up and ready.         |
|               | Amber (steady)             | Thermal warning – a warm condition                  |
|               | Red (steady)               | Thermal shutdown<br>- hot temperature condition     |
| OK<br>RUN     | Green (flashing in unison) | Reset to factory defaults                           |
| RUN<br>REM IO | Green (flashing in unison) | Programmable parts update                           |
| RUN           | Green (steady)             | The controller is running with I/O outputs enabled  |
|               | Green (flashing)           | Fatal error blink code during power up              |
|               | Amber (steady)             | The controller is running with I/O outputs disabled |
| REM IO        | Green (steady)             | All PROFINET devices connected                      |
|               | Green (flashing)           | Unit is starting up (see LED power-up sequence)     |
|               | Amber (steady)             | Some PROFINET devices connected                     |
| FORCE         | Amber (steady)             | The controller has a forced value(s)                |

| LED Label                       | LED State        | Operating State  |
|---------------------------------|------------------|--|
| FLT/RDSD                        | Green (steady)   | USB device present and RDSD is ready                           |
|                                 | Green (steady)   | RDSD Operation completed successfully                          |
|                                 | Green (flashing) | RDSD download operation in progress                            |
|                                 | Amber (flashing) | RDSD upload operation in progress                              |
|                                 | Red (steady)     | The controller is in a Stop-Fault state                        |
|                                 | Red (flashing)   | RDSD has failed  |
|                                 | Red (flashing)   | If RDSD is not being performed, indicates IP conflict detected |
| DUAL LAN<br>(EPXCPE205<br>only) | Green (steady)   | Dual LAN operating mode  |
|                                 | Off              | Single LAN operating mode                                      |

# RUN/STOP Switch

The EPXCPE models all feature a 3-position switch, labeled: “STOP, RUN DIS, RUN EN” (Figure 1 and Figure 2).

| Run/Stop Switch Position | CPU Sweep Mode                             |
|--------------------------|--|
| RUN EN                   | The CPU runs with I/O outputs enabled      |
| RUN DIS                  | The CPU runs with I/O outputs disabled     |
| STOP                     | The CPU is not allowed to go into RUN mode |

## Connectors and Ports

### Ethernet Ports

The following tables indicate the default IP address for each ethernet port.

---

#### Important

When storing a hardware configuration with a new IP address to the PACSystems controller while connected via Ethernet, the connection will succeed and then immediately disconnect because the PACSystems controller is now using a different IP address than the programmer. The user must enter the new IP address in Target Properties PAC Machine Edition’s Inspector window before connecting and reuploading the program for it to be stored in the user flash.

---

| <b>EPXCPE205 Single LAN Mode</b> |                              |        |
|----------------------------------|------------------------------|--------|
|                                  | Port 1                       | Port 2 |
| Default IP Address               | 192.168.0.100<br>10.10.0.100 |        |
| Subnet Mask                      | 255.255.255.0                |        |
| Gateway                          | 0.0.0.0                      |        |

| <b>EPXCPE205 Dual LAN Mode*</b> |               |             |
|---------------------------------|---------------|-------------|
|                                 | Port 1        | Port 2      |
| Default IP Address              | 192.168.0.100 | 10.10.0.100 |
| Subnet Mask                     | 255.255.255.0 |             |
| Gateway                         | 0.0.0.0       |             |

\*Dual LAN Mode is the default configuration for the EPXCPE205.



| <b>EPXCPE210/215/220/240</b> |               |        |               |        |
|------------------------------|---------------|--------|---------------|--------|
|                              | Port 1        | Port 2 | Port 3        | Port 4 |
| Default IP Address           | 10.10.0.100   |        | 192.168.0.100 | N/A    |
| Subnet Mask                  | 255.255.255.0 |        |               |        |
| Gateway                      | 0.0.0.0       |        |               |        |

## Serial COM Port (RS-232)

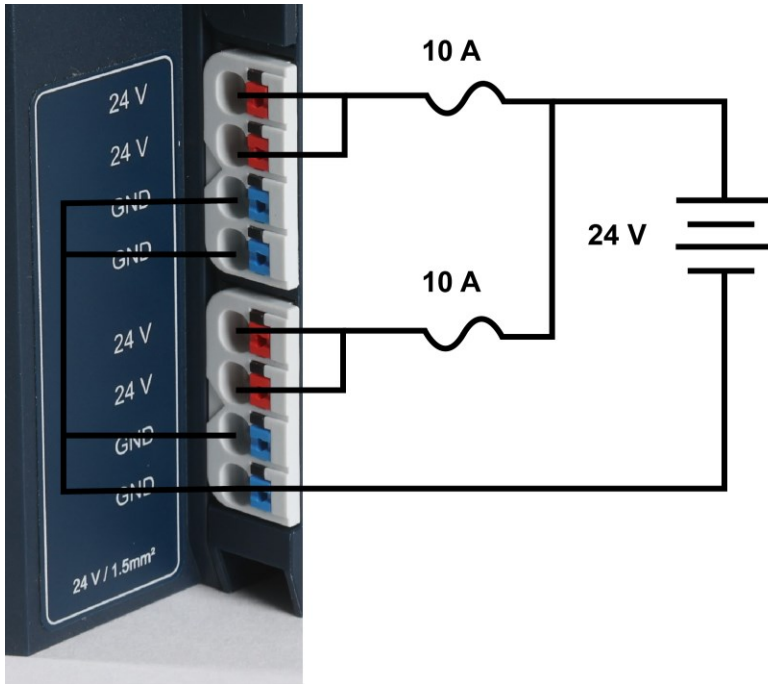
| Pin No. | Signal Name | Description         |
|---------|-------------|---------------------|
| 1       | DSR         | Data Set Ready      |
| 2       | DCD         | Data Carrier Detect |
| 3       | DTR         | Data Terminal Ready |
| 4       | GND         | Signal Ground       |
| 5       | RXD         | Receive Data        |
| 6       | TXD         | Transmit Data       |
| 7       | CTS         | Clear to Send       |
| 8       | RTS         | Request to Send     |

## Power Connectors

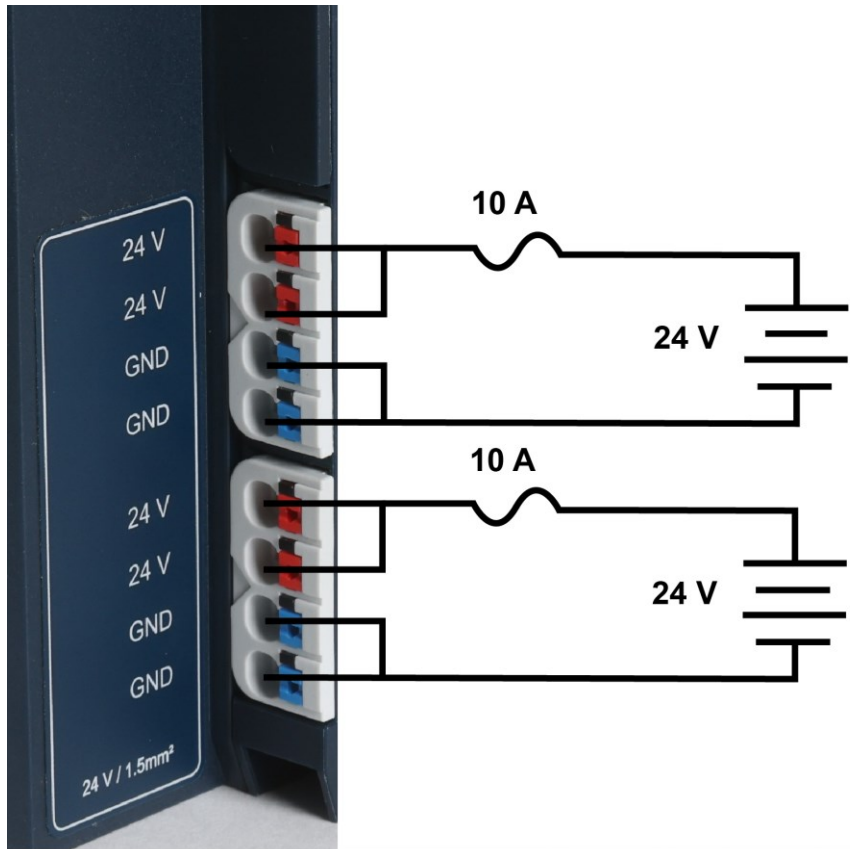
| Supply   |                 |
|--|-----------------|
| Supply voltage for system and inputs   | 20.4 V – 28.8 V |
| Supply voltage for outputs   | 20.4 V – 28.8 V |
| Max. feed-in current for input modules (including current for RSTI-EP internal 5V DC --> 1.5A@24V) | 8.5 A + 1.5 A   |
| Max. feed-in current for output modules  | 10 A            |
| Current consumption from system current path $I_{SYS}$   | 116 mA          |
| Connection data  |                 |
| Type of connection   | Spring style    |

|   |  |  |
|---|--|--|
| Conductor cross-section   | Single-wired, fine-wired   | 0.14 – 1.5 mm <sup>2</sup> (AWG 26 – 16) |
| <b>Connection LEDs</b>  |  |  |
| PWR LED   | <b>Green:</b> Supply voltage > 18Vdc<br><b>Red:</b> At least one current path < 18 V |  |
|  | <b>1 -Green:</b> Input current path supply voltage > 17 V D                          |  |
|   | <b>2- Red:</b> Input current path supply voltage < 17 V DC                           |  |
|   | <b>3 Blue:</b> Ground  |  |
|   | <b>4 Blue:</b> Ground  |  |
|  | <b>1- Green:</b> Output current path supply voltage > 17 V DC                        |  |
|   | <b>2- Red:</b> Output current path supply voltage < 17 V DC                          |  |
|   | <b>3 Blue:</b> Ground  |  |
|   | <b>4 Blue:</b> Ground  |  |

**Figure 3: Power Feed Minimum Current Draw**



**Figure 4: Power Feed Maximum Current Draw**





# MicroSD Card Interface

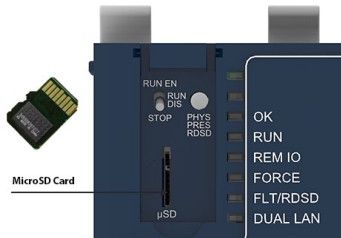
The MicroSD card slot is located under the front door, just below the RUN/STOP switch (Figure 5). It supports ServReq 56/57 data retention/restore functionality discussed in GFK-2950.

The interface supports SD, SDHC, and SDXC MicroSD cards up to Version 3.0. The card formatting is required to be either FAT or FAT32 with MBR partitioning.

Insert the card into the slot, oriented as described below. Apply pressure on it until you feel some resistance. The card will latch into place and can then be read by the equipment. To remove, apply pressure again to eject the card from the slot.

---

**Figure 5: MicroSD Card**



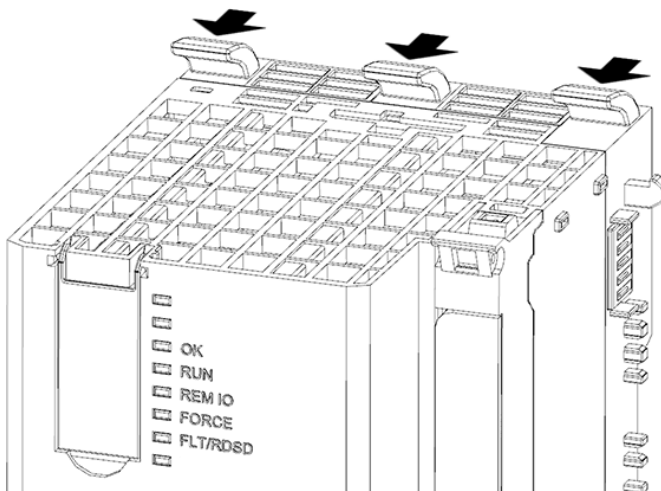
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**Note:** The MicroSD card needs to be inserted in the slot with the correct orientation. The pins of the card need to face towards the right side of the controller.

# DIN Rail Installation

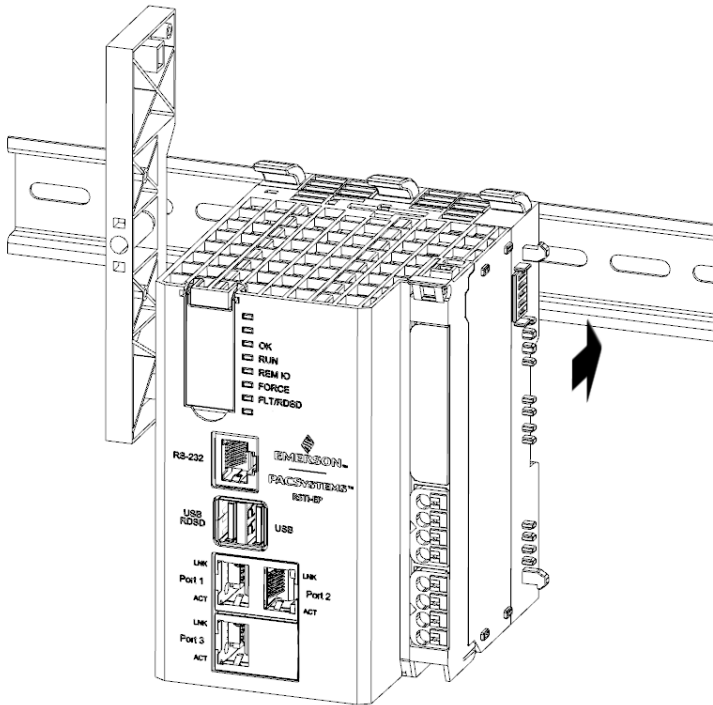
1. Begin by releasing the three closed levers located on the top of the CPE200 controller. Pull the levers toward the face of the controller to the open position.

**Figure 3: Release Levers**



2. Attach the controller to the DIN rail. The controller should rest on the rail, but be able to move freely side-to-side.

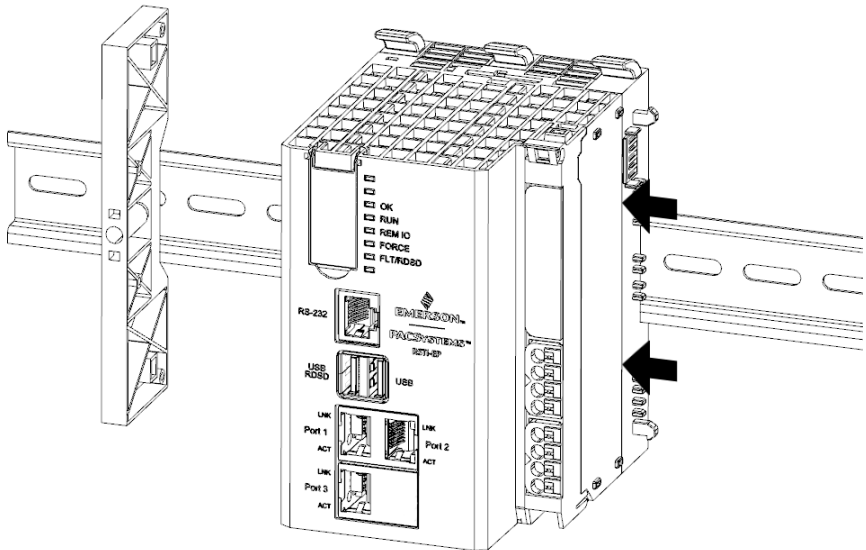
**Figure 4: Mount to DIN Rail**



- Slide the controller along the DIN rail into place. The controller should be in the left-most position and rest against a stop block (if applicable).

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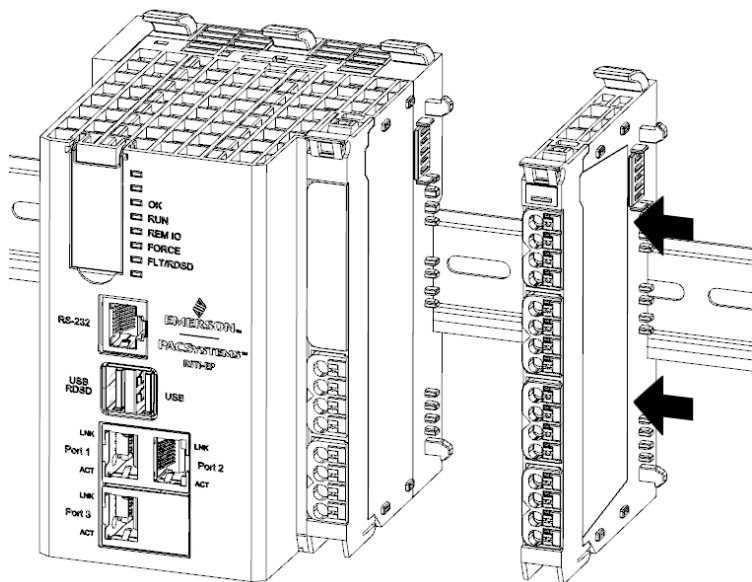
**Figure 5: Slide Controller to the Left**



- Repeat the steps for each of the IO modules. Connect the first IO module into connectors on the right side of the controller. Each subsequent IO module will connect to the previous module.

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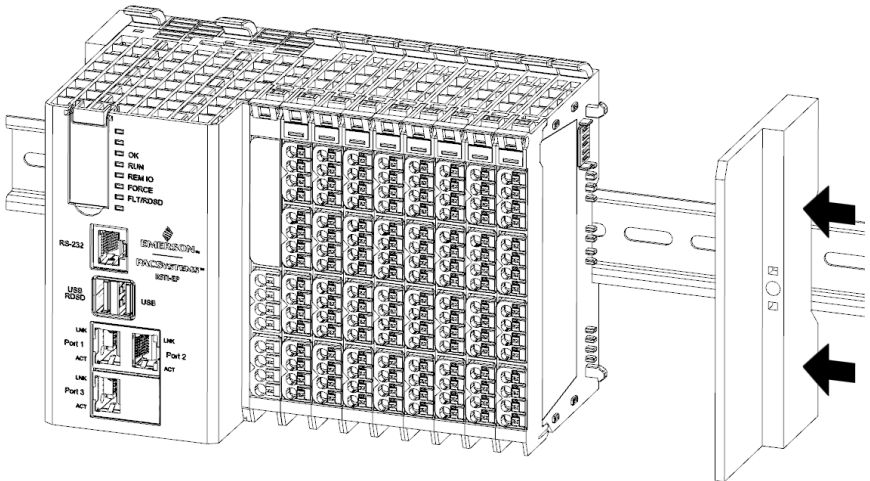
**Figure 6: Slide and Connect Each I/O Module**



- After all the I/O modules have been connected, mount the protective endplate into the last I/O module to protect the exposed connectors.

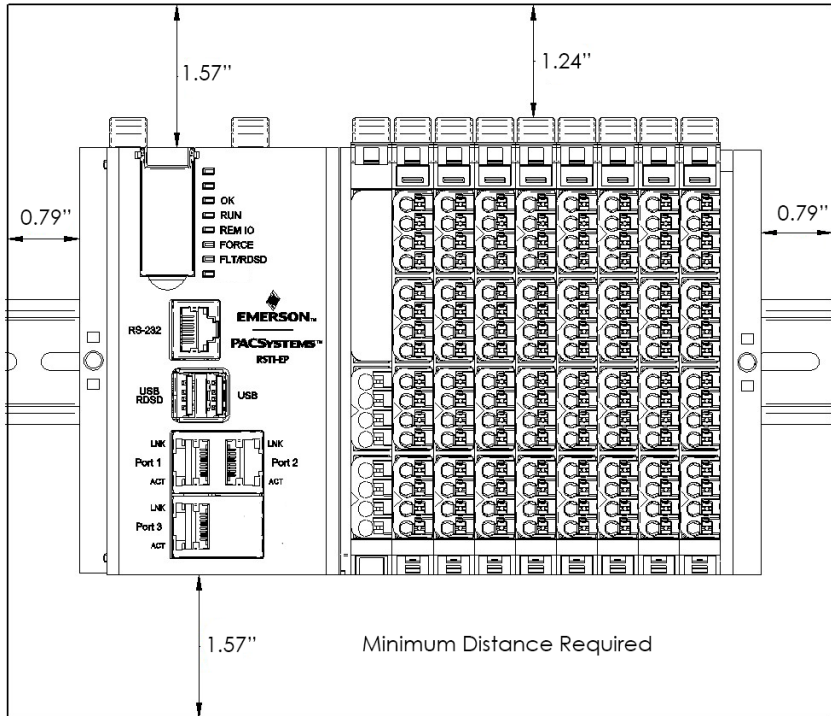
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**Figure 7: Slide the End Plate into the Last Module**



# Thermal Requirements

Figure 14: Minimum Distance Requirements



# Controller Start-up

## Required Components

- EPXCPE200 controller
- Power for this equipment this equipment shall be provided by one or two independent power supplies that provide an SELV source with a minimum 32 V dc listed fuse with 10A max rating for each independent power rail. The 4-pole pluggable terminal block for the power input and output terminal block header located on the front is installed on the connection frame that is shipped with the package. This mating connector accepts wire sizes 26 to 16 AWG (0.361 mm to 1.29mm). Strip the insulation from the lines to a length of approx. 0.4 in  $\pm$  0.04 in (10 mm  $\pm$  1 mm), (even if you are using wire-end ferrules. If you use wire-end ferrules with plastic collars, strip the wires to 0.5 in  $\pm$  0.04 in (12 mm  $\pm$  1 mm). To insert fine stranded wires without wire-end ferrules, the pusher must be pressed in with a screwdriver and released to latch the wire
- The temperature rating for copper wire: 80 °C. Wiring should be stripped before connecting to the mating connector and cannot exceed 30 m in length
- A DIN rail, typically mounted in an enclosure
- A computer running PAC Machine Edition (PME) configuration and programming software. PME Version 10.00.0.9413.  
Ethernet cable for connecting the programming computer running PME to the EPXCPE controller.



## Basic Installation Steps

For start-up and configuration of the EPXCPE, complete the following steps:

1. Mount the EPXCPE to a DIN-rail as outlined in section DIN Rail Installation.
2. Connect the EPXCPE to the power supply.
3. Plug the Ethernet cable from the programmer computer (the computer that runs PAC Machine Edition) into Port 3. (For the EPXCPE205, connect the Ethernet cable to Ports 1 or 2.)
4. Plug the Ethernet cable for the PROFINET network into Port 1 or Port 2.
5. Apply power to the EPXCPE.

# LED Behavior During Startup

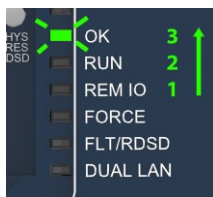
After connecting to the power supply, apply power to the EPXCPE. The controllers will require several seconds to power up.

## Power-up LED Sequence:

1. The CPU's REM IO LED will blink **GREEN** when the power is applied before turning it off.
2. The RUN LED will turn solid **GREEN** before turning it off.
3. The OK LED will turn solid **GREEN and remain on**.

---

**Figure 8: LED Illumination Sequence**



# Installation in Hazardous Areas

Refer to Installation and Maintenance Requirements (GFK-3110) that shipped with the device.

## Network Configuration

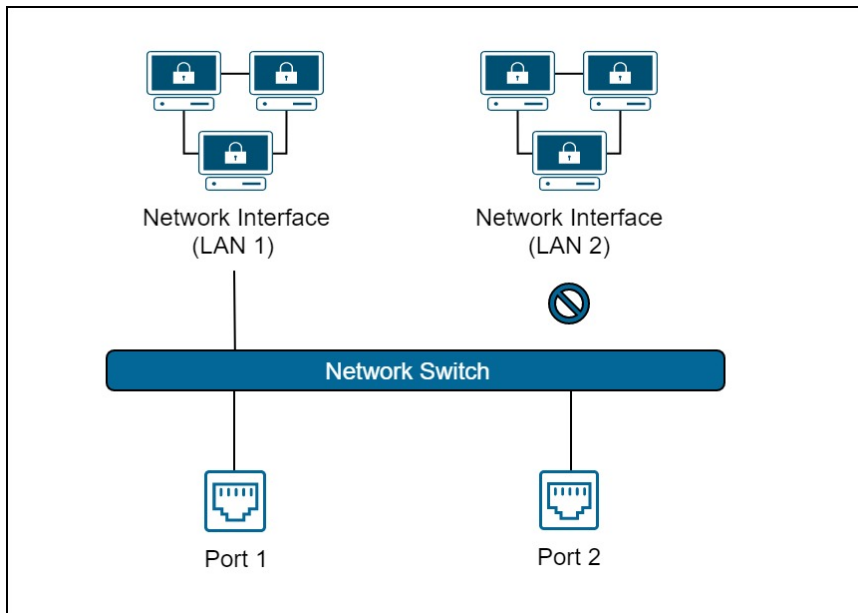
For information regarding default IP addresses, please consult the section Ethernet Ports.

### EPXCPE205

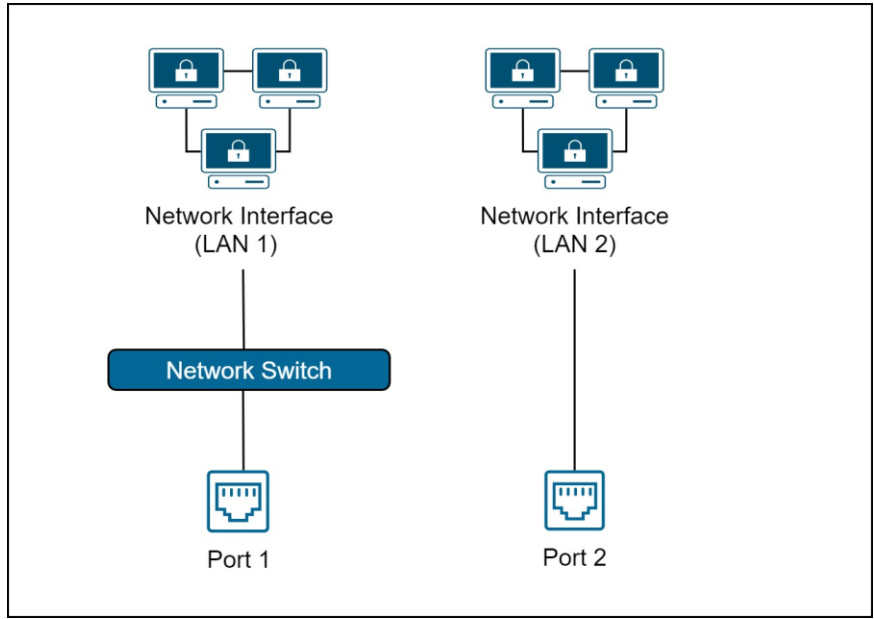
The EPXCPE205 operating mode can be configured for Single LAN mode or Dual LAN mode. The default operating mode is Dual LAN mode.

|                 |   |
|-----------------|---|
| Single LAN Mode | All protocols including MRP will be supported.                  |
|                 | Dual LAN LED will be <b>OFF</b> .                               |
| Dual LAN Mode   | LAN 2 (port 2) All protocols are supported except PROFINET MRP. |
|                 | Dual LAN LED will turn solid <b>GREEN</b> .                     |

**Figure 6: Single LAN Mode**



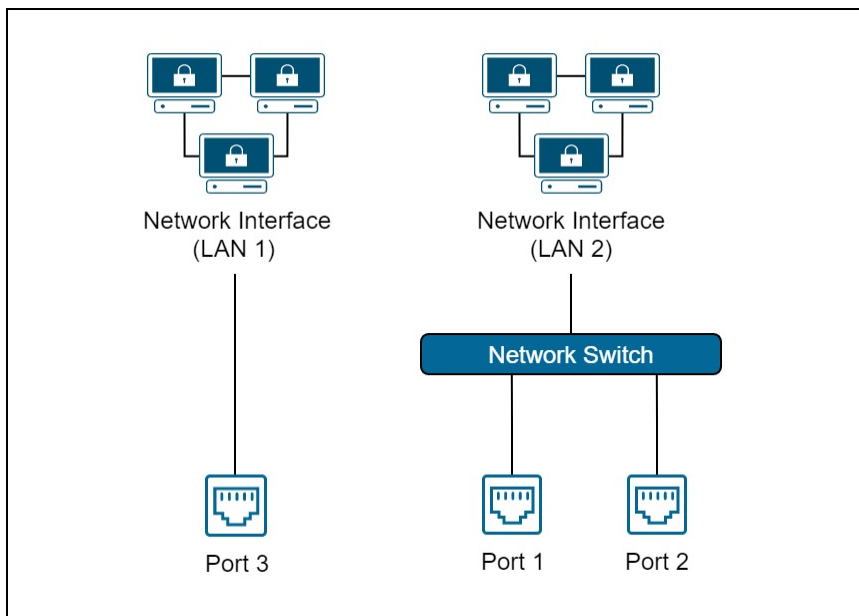
**Figure 7: Dual LAN Mode**



## EPXCPE210/215/220/240

|       |  |
|-------|--|
| LAN 1 | Port 3. Unswitched. All protocols are supported except PROFINET. |
| LAN 2 | Ports 1 and 2. Switched. All protocols are supported.            |

**Figure 8: Network Configuration**



# EPXCPE205 Network Configuration Procedure

The EPXCPE205 supports two network operating modes: Single LAN and Dual LAN operating modes. To switch between the modes, the user must use the Set Operating Mode menu, which is accessible from the controller web page. (See steps below.)

**IMPORTANT: Changing the operating modes will clear all user-stored controller logic. The IP addresses, controller, and IO faults will remain.**

1. Begin by navigating to the controller web page by entering the IP address of the LAN you are connected to into the web browser.
2. At the top-right of the page, select the Operating Mode tab and select **Change Operating Mode**.
3. Once redirected to the change operating mode page, select the operating mode you wish to configure. **Note:** if the user selects the operating mode that they are currently in, nothing will happen.
4. To confirm the selection, press and hold the physical presence button on the controller until the webpage says to release it.
5. The controller will now reboot and come up in the new operating mode.

# Update Firmware Webpage Password

Login to the webpage and select **Administrator** and follow the process of changing the password.

The webpage password can be updated while the PLC is in all modes (Run IO enabled, Run IO disabled, Stop, or Stop Fault).



# Reset to Factory Defaults

---

## IMPORTANT

1. **Before beginning, ensure the following:**
  2. **The controller is in STOP disabled mode.**
  3. **No USB stick is inserted.**
  4. **The Password Web Page is not waiting for input (password change).**
- 

1. Begin by pressing the Physical Presence button (PHY PRES) for 10 seconds, The OK LED and RUN LEDs will blink **GREEN**, indicating the Reset to Factory is occurring.
2. Release the PHY PRES button.
3. Blinking will cease and the board will be reset.
4. The following actions will result.
  - a. Resets the IP addresses to their factory defaults shown in section Ethernet Ports
  - b. Resets the Web page firmware password to its default setting. (Password is **sierra**)
  - c. Deletes controller and IO faults
  - d. Clears NVRAM

## Removable Data Storage Device (RDSD)

The EPXCPE user program and/or memory contents may be saved to a USB device via a single press of the push button or loaded into the CPU from a USB device via a double press of the pushbutton. Similarly, data can be selected and saved. In this way, an application may be cloned and copied from one device to another

If the USB device in use already has a PACS\_folder (user program) and a single press of the pushbutton occurs, a backup of the existing PACS\_folder is made (PACS\_folder\_backup) and then the upload occurs. If the archive already exists on the USB device, a new archive will be created, and the upload will take place.

If one needs to restore the backup version, delete the PACS\_folder on the USB device and then rename the folder PACS\_folder\_backup to PACS\_folder at the root of the USB device.

# Periodic Maintenance

## Real-Time Clock Battery

The EPXCPE200 is shipped with a real-time clock (RTC) battery pre-installed. Over time this battery will need to be replaced. No action is needed during the initial installation.

Should the RTC battery fail, the CPU date and time will reset to 12:00 AM, 01-01-2001 at start-up. The CPU operates normally with a failed or missing RTC battery; however, the initial CPU time-of-day (TOD) clock information will be incorrect.

To replace the RTC battery and reset the RTC time, refer to the RX3i, & RSTi-EP CPU Reference Manual (GFK-2222AS) or later.

### **Battery required:**

Lithium 3v BR2032 by Panasonic or Rayovac  
(Emerson Part Number: IC690ACC001B )

# Additional Information

|  |          |
|--|----------|
|  |          |
| PAC Logic Developer-PLC Getting Started                                  | GFK-1918 |
| PACSystems RX3i and RSTi-EP CPU Reference Manual                         | GFK-2222 |
| PACSystems RX3i and RSTi-EP TCP/IP Ethernet Communications User's Manual | GFK-2224 |
| PACSystems TCP/IP Ethernet Communications Station Manager Manual         | GFK-2225 |
| PACSystems RXi, RX3i, and RSTi-EP Controller Secure Deployment Guide     | GFK-2830 |
| PACSystems RX3i and RSTi-EP CPU Programmer's Reference Manual            | GFK-2950 |
| PACSystems HART® Pass-Through User Manual                                | GFK-2929 |
| PACSystems RX3i PROFINET IO Controller User Manual                       | GFK-2571 |
| PROFINET I/O Devices Secure Deployment Guide                             | GFK-2904 |
| PACSystems DNP3 Outstation User Manual                                   | GFK-3103 |
| PACSystems RSTi-EP User Manual   | GFK-2958 |
| PACSystems Functional Safety Manual                                      | GFK-2956 |

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## **Technical Support**

<http://www.emerson.com/industrial-automation-controls/support>

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