

PACSystems™ RX3i

RACKLESS ENERGY PACK

(IC695ACC403)



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Caution Notes as Used in this Publication



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

Caution

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

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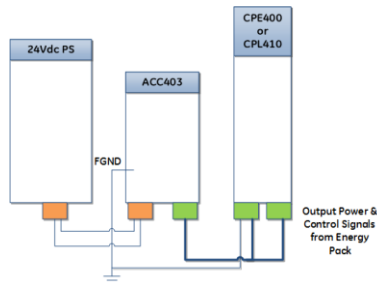
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1 Overview

An Energy Pack is used in conjunction with a Controller to preserve user memory in the Controller during power fluctuations or outages.

If system power is lost, the Energy Pack maintains power long enough for a Controller to write its user memory contents to non-volatile memory. When system power is restored, the user memory is restored if the Controller is configured to power up from RAM.

Figure 1.1: Interconnect Wiring Diagram



Ordering Information

IC695ACC403	Energy Pack. Includes base, CapPack module and Energy Pack to Controller cable.
IC695ACC413	Replacement CapPack module.
IC695CBL003	Replacement 0.6m (24") Energy Pack to Controller cable.

2 Hardware Installation

The Energy Pack can be mounted on a standard EN50022 DIN rail or an equipment panel. It is designed to be mounted adjacent to the Controller and connected to the Controller using the provided cable (IC695CBL003).

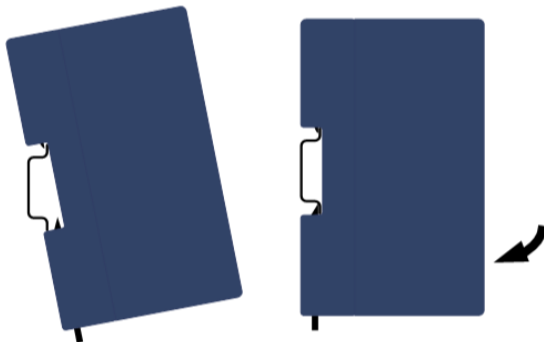
Heat dissipation: When mounting the Energy Pack, allow a minimum clearance of 25.4mm (1 inch) on all four sides of the unit (right, left, top and the bottom).

2.1 Mounting the Energy Pack on a DIN Rail

The Energy Pack snaps easily onto the DIN rail. No tools are required.

- 1) Incline Energy Pack so that top edge of plastic recess (**Figure 2.1**) engages top of DIN rail
- 2) Swivel the Energy Pack so that bottom spring-loaded plastic clip engages bottom of DIN rail.
- 3) Listen for click as plastic clip springs back, securing the Energy Pack onto the DIN rail.

Figure 2.1: Snap Mount to DIN Rail



2.2 Panel-Mounting the Energy Pack

Recommended fasteners:

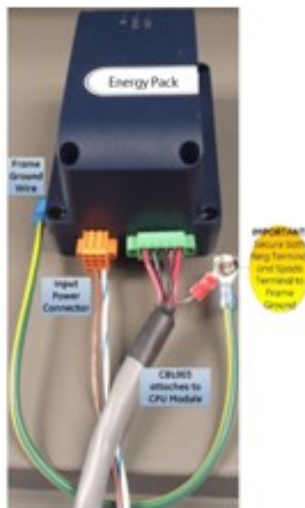
Four M4-0.7 machine screws with minimum length of 25mm (or 8-32, 1" min. length) and nuts.

⚠ Caution

- Over tightening the mounting screws could crack the plastic housing.

3 Cable Connections

Figure 3.1: Input Power and Output Power/Control Connections



3.1 Connect Input Power to Energy Pack

IMPORTANT

Before connecting input power, see complete installation instructions in the PACSystems Controllers: Battery and Energy Pack Manual, GFK-2741E or later.

You will need:

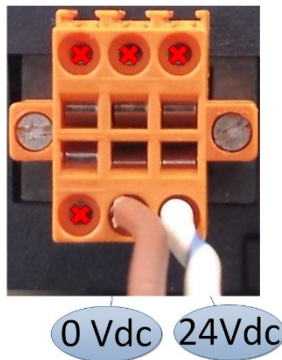
- A 24Vdc, 72W SELV power supply
 - A power cord with 18 AWG (0.82mm²) copper wires
 - An 18 AWG (0.82mm²) copper wire for frame ground
 - An input power terminal block – provided (Weidmuller part number 1748010000)
 - A small flat-head screwdriver (such as a 1.4mm jeweler’s screwdriver)
1. Using the power cord, connect the power supply output to the Energy Pack’s input power terminal block.

To insert the wires in the power terminal block connector, you may need to use the small screwdriver to release the spring clamp on the terminal block.

Recommended wire stripping length is 7mm (0.28 in).

Figure 3.2: Energy Pack Input Power Mating Connector (bottom view)

✘
*These terminals are reserved.
Do not connect them to power
or to ground.*



2. Insert the plug into the Energy Pack's Input Power connector and securely tighten the attaching screws.
- 3.

3.2 Connecting the Energy Pack to the Controller

With power to the system turned off, use the supplied cable (IC695CBL003) to connect the output of the Energy Pack (green connector) to the 24Vdc input on the Controller (3-pin green connector) and to the serial communication link (using the 5-pin green connector). Refer to **Figure 4.1**.

4 Grounding

Proper grounding of this device is essential. All ground wires must be as short as possible and terminated at the same grounding point.

Figure 4.1: Frame Ground Connection



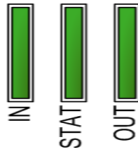
5 Initial Power-up

When 24Vdc power is first applied to the Energy Pack, the power-up process goes through the following steps:

1. The IN LED turns on green.
2. The Energy Pack performs a self-diagnostic test. If this test passes, output power to the Controller is turned on and the OUT LED turns on green.
3. Charging of the CapPack begins and the STAT LED blinks green.

When charging of the CapPack is complete, the STAT LED turns on solid green and the Energy Pack signals to the controller that it can start run-time operation. The Controller will not start running its application until the Energy Pack signals that it is fully charged.

Figure 5.1: LEDs on CAP Pack



6 LED and Status Indications

The LEDs on the Energy Pack indicate its status.

LED	LEDState	Energy Pack Status
IN	Green, solid	Input power is applied and within the specified range.
	Red, solid	Input power is outside the specified range.
	Off	Input power is not applied.
STAT	Green, blinking	CapPack Charging in progress. No faults.
	Green, solid	CapPack is fully charged and no faults.
	Amber, blinking	CapPack is nearing end-of-life. The CapPack must be replaced soon. Backup is still guaranteed.
	Red, blinking	Internal fault: Cycle power to the Energy Pack. If this does not clear the fault, contact Technical Support and replace the Energy Pack.
	Red, solid	CapPack has reached end-of-life. Replace the CapPack. Backup is not guaranteed.
	Off	No power applied.
OUT	Green, solid	Output power is within the specified range.
	Red, solid	Output power is present but outside spec.
	Off	Output power is not present.

6.1 LED Indications: Special Cases

All LEDs blinking in unison: See Firmware Updates, page 15.

6.2 Energy Pack Status Bit Operation

As shown in the table below, a CPU application program can automatically monitor the status of the attached Energy Pack via %S0014 (PLC_BAT) and %SA0011 (LOW_BAT). For more details, refer to the chapter on Diagnostics in PACSystems RX7i and RX3i CPU Programmer's Reference Manual, GFK-2950.

PLC_BAT (%S0014)	LOW_BAT (%SA0011)	Energy Pack Status
0	0	Energy Pack connected and operational (may be charging)
1	1	Energy Pack not connected or has failed
0	1	Energy Pack is nearing its end-of-life and should be replaced.

7 Replacing the CAP Pack Module

The CAP Pack can be removed and replaced while power is applied to the Energy Pack (hot swapped.)

Caution

- When hot swapping CapPacks, do not cycle power until the new CapPack is fully charged and operational. Cycling power before the STAT LED on the CapPack is solid green can result in Controller memory not being preserved.

Do not hot remove/insert the CapPack during the firmware update process.

1. Loosen the four screws on the CapPack and carefully pull the CapPack off the base.
2. Install the new CapPack on the base, first engaging the module-to-base connectors and then pressing the CapPack into place.

Caution

- Over tightening the mounting screws could crack the plastic housing.
3. Use the four screws provided to secure the CapPack to the base.
 4. When the CapPack is first inserted, the STAT LED blinks green while the CapPack is charging. Do not remove power to the Energy Pack while the CapPack is charging because this could result in Controller memory not being preserved.
The Energy Pack LEDs and the Controller status bits indicate when charging is complete and the Energy Pack is ready to support backup.
 5. To remove a Failed Battery fault and clear the battery status bits, clear the Controller fault table.
 - For details on status bit operation, refer to the *PACSystems RX7i and RX3i CPU Reference Manual*, GFK-2222 (rev. Y or later).

8 Firmware Updates

The firmware for the Energy Pack is automatically updated by the Controller. At power-up, the Controller checks the version of Energy Pack firmware to verify compatibility with the Controller firmware. If an update is needed, the Controller performs it automatically.

8.1 LED Indications for Firmware Updates

Firmware Update Mode	All three LEDs blink green
Failed to Load Firmware	All three LEDs blink red

9 Additional Information

PACSystems RX3i CPU Reference Manual, GFK-2222Y or later

PACSystems Controllers: Battery and Energy Pack Manual, GFK-2741E or later

PACSystems RX3i / Series 90-30 Installation and Maintenance Requirements, GFK-2975

For user manuals, product updates and other information go to the Support website, <https://www.emerson.com/Industrial-Automation-Controls/support> and refer to *Controllers and IO, RX3i Rackless Controllers*.

Contact Information:

Technical Support:

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

General Information

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

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