

PACSystems™ RX7i

IC698CHS009/119

GFK-2362
January 2005

Racks, 9-slot, Front and Rear Mount

The RX7i rack can be used for all RX7i CPU and I/O configurations, Series 90™-70 I/O, and VME modules.

Backplane connectors are spaced on 0.8" (20.3mm) centers to accommodate single-width RX7i modules, VME modules, and single-width Series 90-70 modules. Double-width Series 90-70 modules use two slots each.

The rack accepts a power supply in slot 0 and a CPU in slot 1. The IC698CPE010/020 and IC698CRE020 CPUs with Ethernet daughter card are double-width modules and use slots 1 and 2. The remaining slots can be used for one of the following I/O combinations:

- Seven single-width modules (with no double-width modules installed),
- Four double-width modules, or
- A combination of double-width and single-width modules.

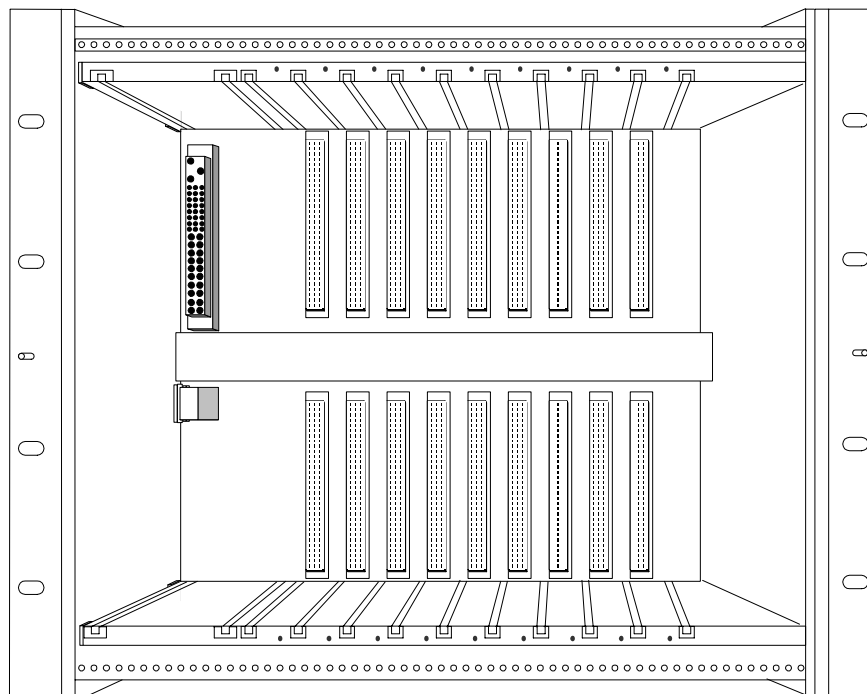
For a list of supported modules, see the *PACSystems RX7i Installation Manual*, GFK-2223. The power supply capacity may limit the number of modules in a rack.

Integration of VME modules must be in accordance with guidelines which are described in the RX7i User's Guide to Integration of VME Modules, GFK-2235.

RX7i racks are considered open equipment, and therefore must be installed in a protective enclosure rated IP54 or greater.

Features

- Provides slot sensing for rack-type I/O modules. No jumpers or DIP switches on the I/O modules are required for addressing of these modules.
- Provides automatic daisy chaining of interrupt acknowledge and bus grant signals so no blank slot jumpers (IC697ACC772) are required.
- Provides J2 backplane connectors to allow high-speed VME transfers of up to 64 data bits per cycle.
- Accepts plug-in RX7i power supplies
- Supports an optional cooling fan assembly (required for IC698CPE020/CRE020).



Rack Mounting

RX7i racks are considered open equipment, and therefore must be installed in a protective enclosure rated IP54 or greater.

Overall rack dimensions are 11.15"H x 12.6"W x 7.25"D (283 x 320 x 184mm). The following figures show mounting dimensions for the rear mount and front mount racks.

Note: If your installation includes a fan assembly, a minimum clearance of 23cm (9 inches) between RX7i racks is recommended so that an individual fan can be removed and replaced.

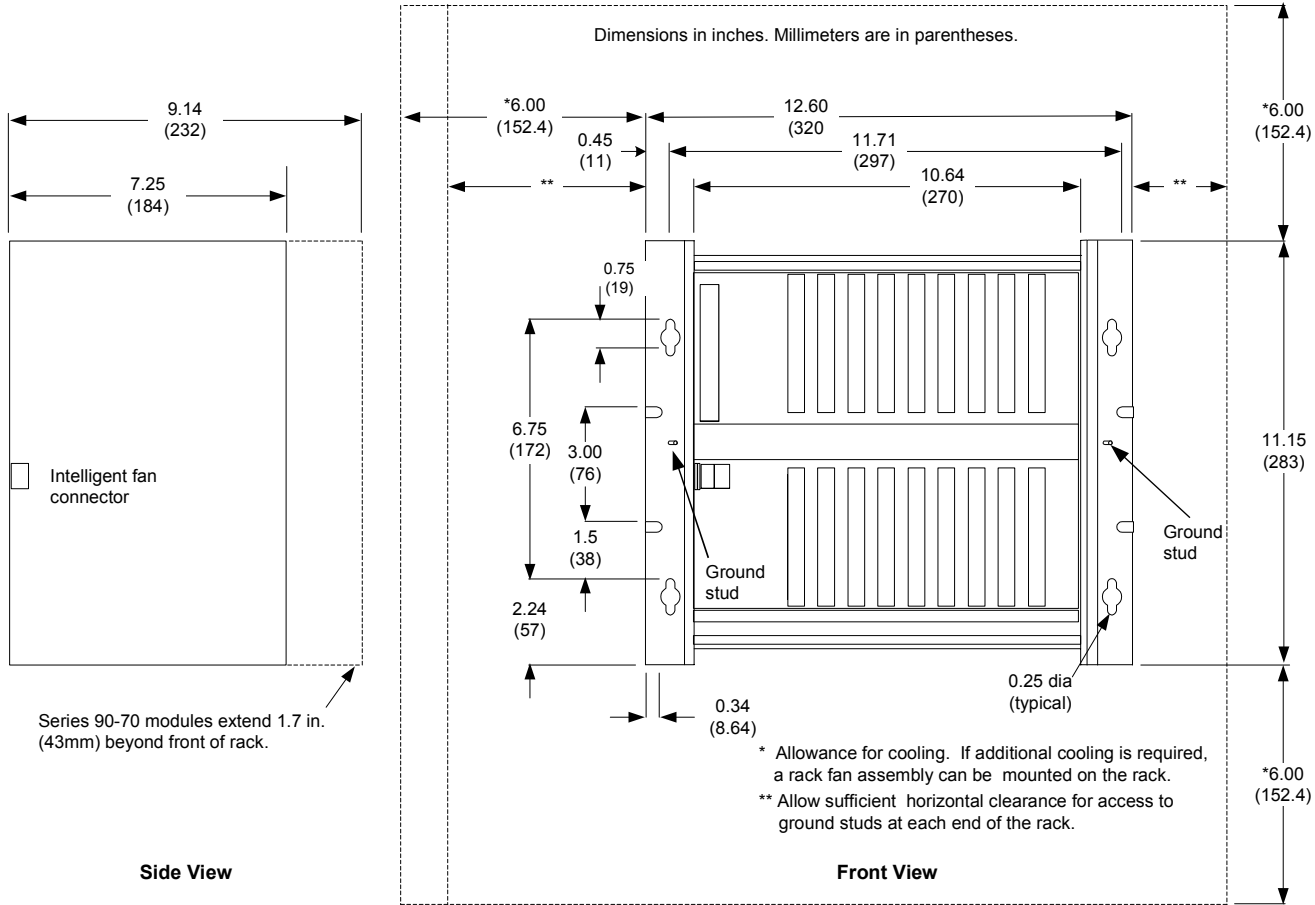
The rear-mount rack mounts in a 10" (254 mm) deep enclosure. The rack must be mounted in the orientation shown in the following figures. Sufficient space must be left around the rack to allow air flow

for module cooling. Mounting requirements (front or rear mount) must be determined according to the application. Mounting flanges are an integral part of rack side panels.

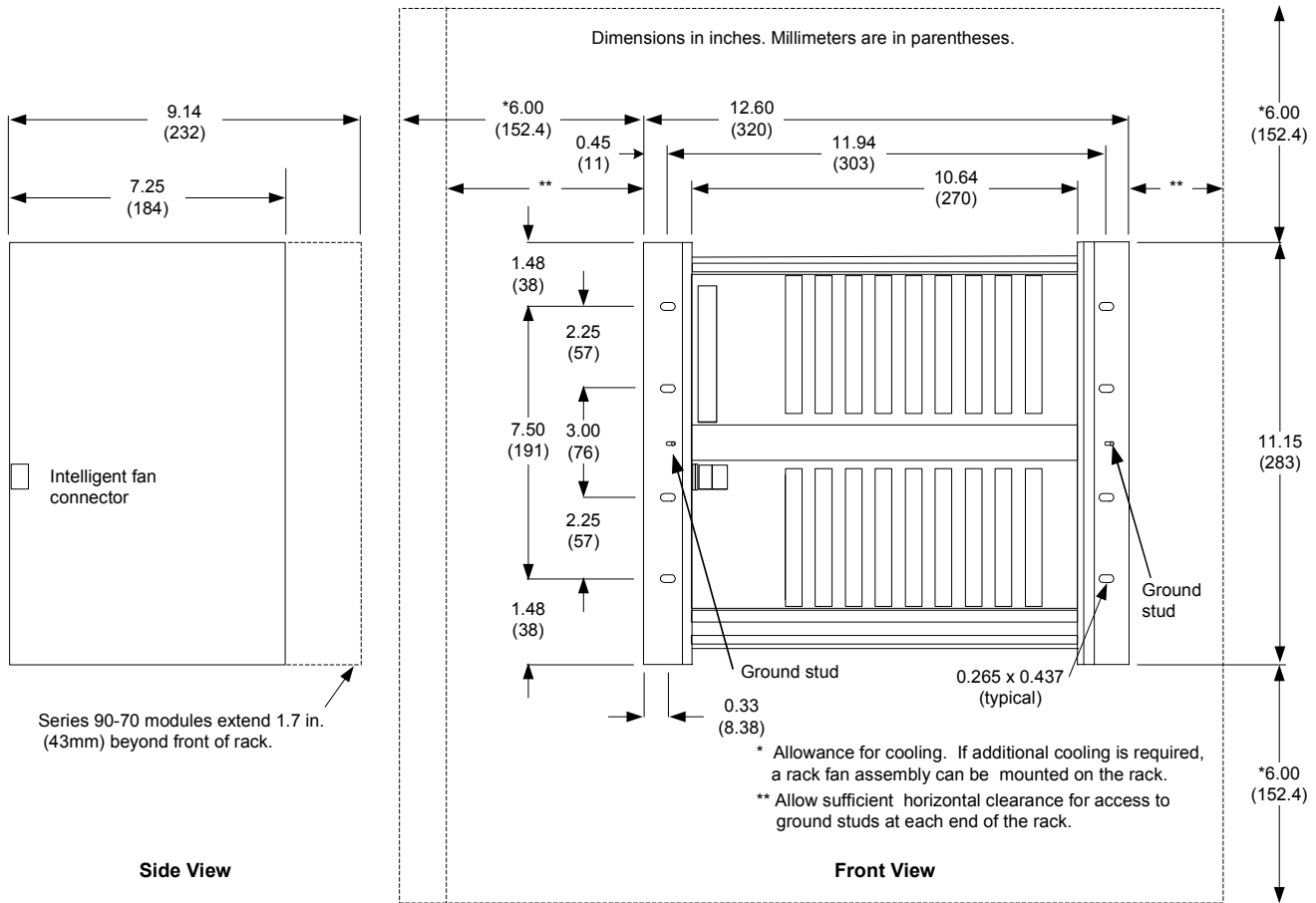
These racks accommodate two module types:

- Rack-type RX7i and Series 90-70 single-width I/O modules, which use a detachable field wiring terminal board. Each I/O module accepts up to forty AWG #14 (2.10 mm²) wires. The wire bundle is routed out the bottom of the terminal board cavity where a cleat is provided for a tie wrap to secure the bundle to the terminal board housing.
- VME modules, which have varying methods of connecting to field devices.

Mounting Dimensions for Rear Mount Rack



Mounting Dimensions for Panel (Front) Mount Rack



Slot Addressing

I/O point references for modules in an RX7i rack are configured using the Machine Edition Logic Developer-PLC software. For information on configuration, see the software online help and the *Proficy™ Machine Edition Logic Developer-PLC Getting Started* manual, GFK-1918.

Shield Ground

RX7i Modules

The power supply, CPU, and all RX7i modules have metal faceplates that are screwed directly to the enclosure at the top and bottom to ensure the faceplate is grounded to frame ground.

Series 90-70 Modules

Some Series 90-70 I/O modules have a ground clip that contacts the conductive bottom rail when the

module is fully inserted. Shield connections in the user connectors are routed to this ground clip through conductors on the module.

Safety Ground

The #8-32 ground studs on the sides of the rack must be connected to earth ground with not less than an AWG #12 (3.33 mm²) wire. Use of a nut and star washer for each wire on the GND stud is recommended to ensure adequate grounding. Refer to applicable electrical safety codes.

Warning

If the ground lug is not connected to earth ground, the rack is not grounded. The rack must be grounded to minimize electrical shock hazard, which may result in severe personal injury, and maintain certification to standards.

System Noise Protection

The following steps must be taken to properly ground the PLC system to reduce the possibility of errors due to electrical noise.

1. Make sure that the power supply mounting screws are properly secured.
2. The GND terminal on the power supply must be connected to the GND terminal on either side of the rack using AWG #12 (3.33 mm²) wire. Use of a ring terminal and star washer is recommended.
3. The GND terminal on the rack must be connected to a reliable earth ground.

Note: RX7i modules use faceplates fitted with an EMI gasket (a metal strip along the side of the faceplate) to ensure contact of the gasket with the faceplate of each adjacent module in the rack, forming a continuous EMI shield for the modules in the rack. (RX7i power supplies have the gasket on both sides of the faceplate.) The EMI gasket should be facing to the right when installed as one views the front of the rack. This EMI shield makes the rack less susceptible to external electrical noise and minimizes the level of electrical noise radiated by the rack. If the rack is not fully populated with gasketed faceplates, it must be installed in a metal enclosure to achieve similar noise improvement. Gasketed filler faceplates may be ordered as needed. (IC698ACC735 – single-width; IC698ACC720 - double-width)

Module Retention

Series 90-70 double width I/O modules have molded latches that automatically snap onto the upper and lower rails of the rack when the module is fully inserted. Some VME modules or Series 90-70 single width modules may not have these latches.

RX7i modules are mechanically tied to frame ground using screws that secure the top and bottom of the faceplates to the enclosure. For high vibration applications, other modules can be secured to the rack using M2.5x8 screws.

To remove an RX7i or Series 90-70 module, first remove the field half of the terminal board (if it is an I/O module). If screws have been used to secure modules to the rack, remove the screws. Then grasp the top and bottom of the module to depress the latch releases (CPU and Ethernet modules do not

have latches) while pulling the module out. For detailed information on removing I/O terminal boards, refer to the applicable Installation Manual or individual data sheets for I/O modules.

Warning

Do not remove (or insert) modules when the power supply or any externally-connected power sources are on. Hazardous voltages may exist. Personal injury, damage to the module, or unpredictable operation of the device or process being controlled may result.

Insulating Strips for High Voltage Modules

The RX7i rack is shipped with an Insulator Kit that includes enough parts to update three Series 90-70 I/O modules.

An insulator strip is required on a high voltage module that is installed to the immediate right of a module with a metal faceplate. Insulating strips should be installed on the following modules that have versions earlier than:

IC697MDL240D
 IC697MDL241D
 IC697MDL250G
 IC697MDL251E
 IC697MDL640E
 IC697MDL340G
 IC697MDL341E
 IC697MDL350F
 IC697BEM731W
 IC697BEM713H

Note: Current versions of these modules are shipped with the insulators installed. The strip is visible on the back of the printed wiring assembly.

To install the insulating strip:

The plastic insulating strip is installed on the back side of the printed wiring assembly, along the edge of the I/O connector to prevent the possibility of high voltage I/O cards short-circuiting to the metal faceplates of VME cards. (Follow the installation instructions included with the kit). Use part number 44A752213-G01 to order additional kits as necessary.

Rack Fan Assembly

Rack Fan Assemblies are available in several versions for forced air cooling when heat build-up could be a problem.

Note: A Rack Fan is **required** if the IC698CPE020, IC698CRE020 or IC698PSA350 is installed in the rack.

Three rack fan assemblies are available:

- IC697ACC621 for 120VAC power source
- IC697ACC624 for 240VAC power source
- IC697ACC644 for 24VDC power source

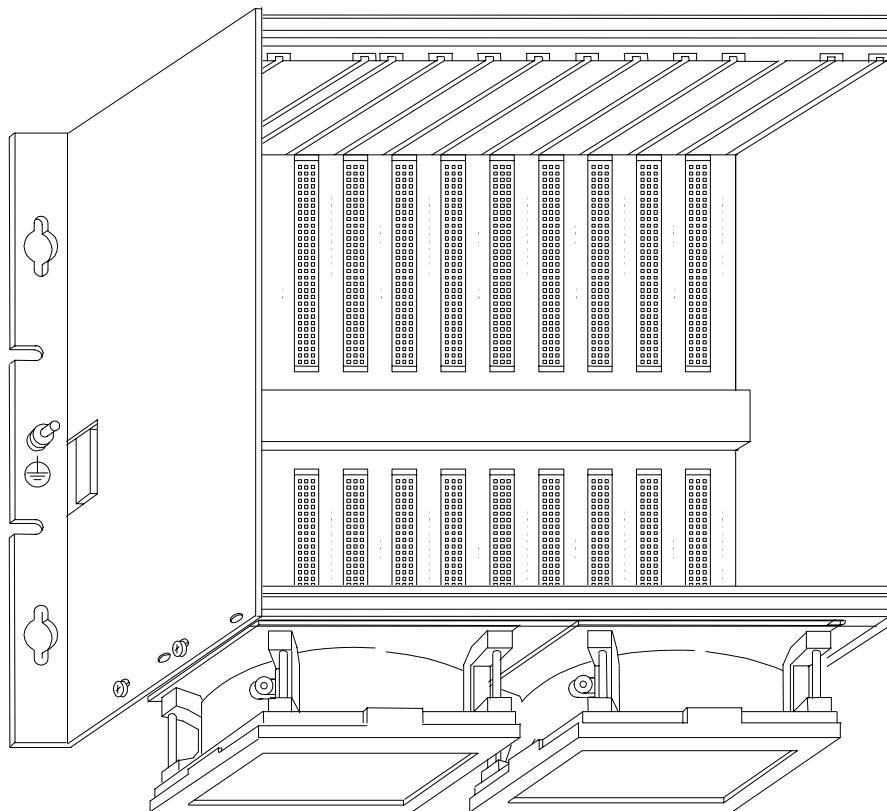
It is recommended that the fans be wired to the same source of power as the PLC to ensure that the fans are running when the PLC is active.

The following illustration shows the position of the fan assembly mounted on a rack. It is mounted on the bottom of the rack with air flow from the bottom toward the top of the rack. When using the fan assembly, filler faceplates are required to block unused openings so that the normal bottom-to-top airflow is maintained.

For detailed specifications and installation instructions, refer to the documentation for the Rack Fan Assembly.

Note: A minimum of 23cm (9 inches) between RX7i racks is required to remove and replace an individual fan.

Typical Fan Assembly Mounted on Rack (AC Type Fan Assembly Shown)



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Rack Specifications*

Number of Slots:	Slots 1 through 8 are 0.8" (20.3mm) wide. (The CPU is installed in slot 1.) Slot 9 is 1.6" wide. If a single width module is installed in slot 9, it is recommended that a single-width filler faceplate be used to close the extra width opening. Slot 0 (power supply slot) is 2.4" (61.0mm) wide.
Maximum Current (from RX7i power supplies) 100 watt supply: +5V +12V -12V 350 watt supply: +5V +12V -12V	20 amps Total output power –100W 2 amps 1 amps 60 amps Total output power – 350W 12 amps 4 amps
I/O References	User configurable with programming/configuration software
Dimensions	<u>Height</u> <u>Width</u> <u>Depth</u> (Note that all Series 90-70 modules extend 1.7" (43 mm) beyond front of rack.) 11.15" 12.6" 7.5" 283mm 320mm 190mm
VME	System designed to support VME64
* For environmental specifications and compliance to standards (for example, FCC or European Union Directives), refer to Appendix A of the <i>PACSystems RX7I Installation Manual</i> , GFK-2223.	

Ordering Information

Description	Catalog Number
Rack - 9 slots, rear mount	IC698CHS009
Rack - 9 slots, front mount	IC698CHS109
Rack Fan Assembly (required for CPE020/CRE020, PSA350), 120 VAC	IC697ACC621
Rack Fan Assembly (required for CPE020/CRE020, PSA350), 230 VAC	IC697ACC624
Rack Fan Assembly (required for CPE020/CRE020, PSA350), 24 VDC	IC697ACC644
Gasketed filler faceplate, single-width	IC698ACC735
Gasketed filler faceplate, double-width	IC698ACC720
Note: For Conformal Coat option, or Low Temperature Testing option please consult the factory for price and availability.	

The following statements are required to appear for Class I Div 2 Hazardous Locations.

1. EQUIPMENT LABELED WITH REFERENCE TO CLASS I, GROUPS A, B, C, and D, DIV. 2 HAZARDOUS LOCATIONS IS SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C, D OR NON-HAZARDOUS LOCATIONS ONLY.

2. WARNING – EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.
3. WARNING – EXPLOSION HAZARD – DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.