

Programmable Controller IC697PWR721/722

GFK-0624E
November 1994

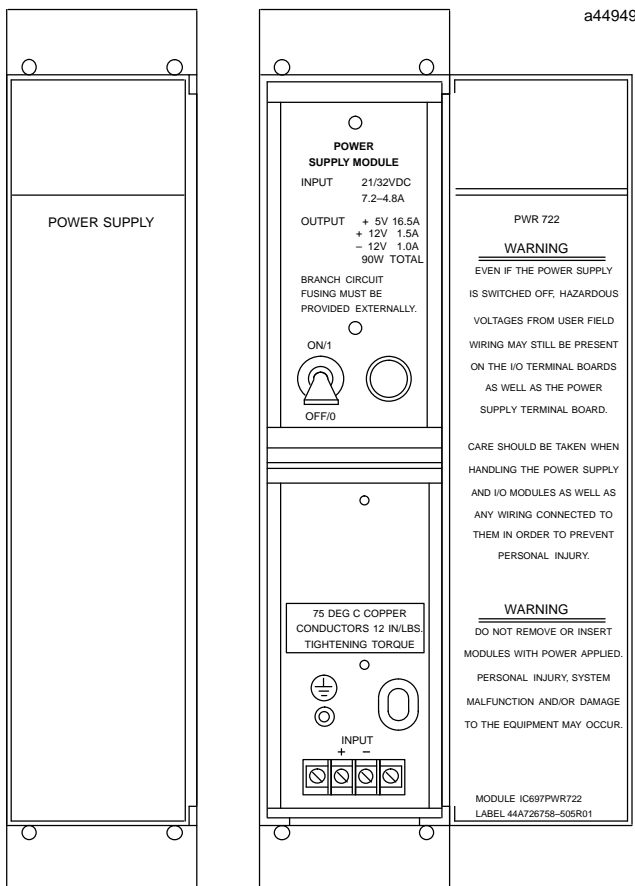
24 VDC Power Supply, 90W, with Adapter 24 VDC Power Supply Module, 90W

Features

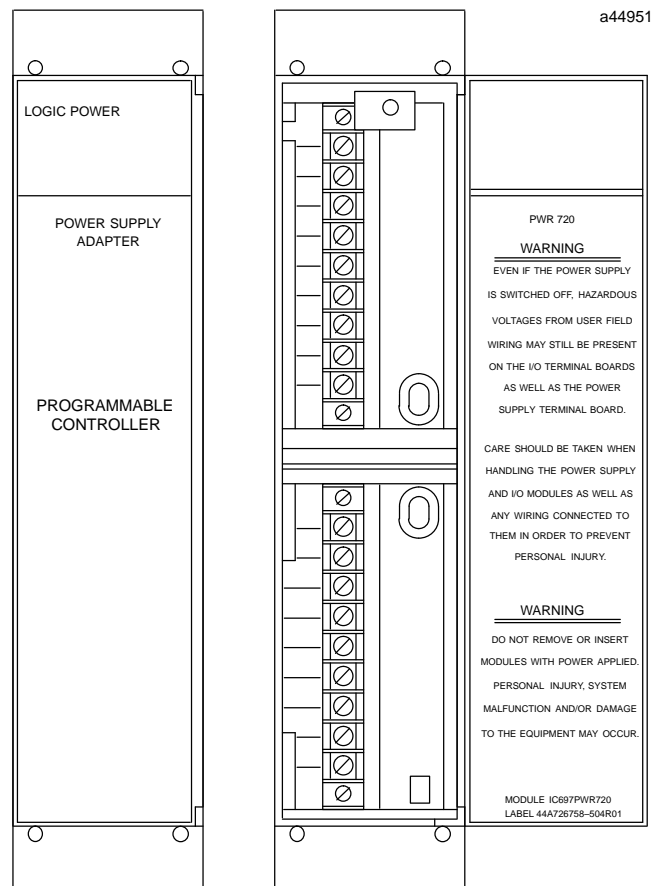
- Operation from +21 VDC to +32 VDC
- Three regulated DC output voltages, 90W total
 - +5 VDC output at 16.5 amps
 - +12 VDC output at 1.5 amps
 - -12 VDC output at 1.0 amp
- Mounts external to rack
- Electronic short circuit overcurrent protection provided on all outputs
- Input power fail and system reset signals

Functions

The **24 VDC Power Supply Module (IC697PWR722)** is a module that can be attached to the left side of a rack, or can be mounted as a stand alone unit. It provides +5 volt, +12 volt and -12 volt regulated DC power outputs as well as a ttl compatible logic shut-down signal, named TTL. This power supply module must be connected to a Power Supply Adapter (PSA) module (IC697PWR720) which plugs into the power supply slot in an IC697CHS* rack. The PSA module connects the power supply outputs to the IC697CHS* rack backplane and monitors the TTL signal, as well as the +5V, in order to provide logic level sequencing signals to the backplane. The physical connection from the power supply to the PSA is through a cable that is connected to the power supply at the factory.



24 VDC POWER SUPPLY



POWER SUPPLY ADAPTER

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The 24 VDC power supply module can be used either in a single rack application, or can also be used to provide power to a second rack if the total load is within the supply rating. Interconnection to the second rack is made through an available prewired cable (IC697CBL700). Protection is provided for overcurrent and overvoltage fault conditions.

Operation of the Power Supply

This power supply module can operate from a 24 VDC power source, which can range from 21 to 32 VDC.

Overvoltage Protection

The power supply includes an electronic overvoltage protection circuit. This circuit will turn the output off if the 5 V bus exceeds 6.55 \pm .45 volts. The power supply will reset after the overvoltage condition is removed. External overvoltage on the output that triggered the overvoltage protection will not cause the power supply fuse to open. However, if an internal fault in the power supply caused the overvoltage condition, the fuse may open. If this should happen, replace this fuse with a 3AG 8 amp, 250 V fuse.

Overcurrent Protection

The power supply provides electronic overcurrent protection on all outputs. If the maximum current rating is exceeded on an output, the voltage will collapse to a low value. It will remain in that state until the load is either removed or reduced. A current overload (including a short circuit condition) will not cause the fuse to open.

Inrush

When input voltage is initially applied, internal energy storage elements will draw a surge current from the 48 VDC input power source which can be in the range of 100 amps depending on the installation and power source impedance characteristics. Standard best practices should be used for installations where minimizing inrush current is a consideration. Typical best practices include providing local energy storage which can be either system batteries or capacitors at each power supply input, and minimizing resistance from the storage elements to prevent significant voltage drop during the initial energy transfer.

Dual Rack Operation

A single power supply can provide power for two racks under the following conditions:

- Only 5 V power is required in the second rack, and the total power required by both racks is within the capability of the supply.
- The current drawn by the second rack is less than 5.2 amperes.
- The two racks must be mounted in close proximity as limited by the 3-foot connecting cable.

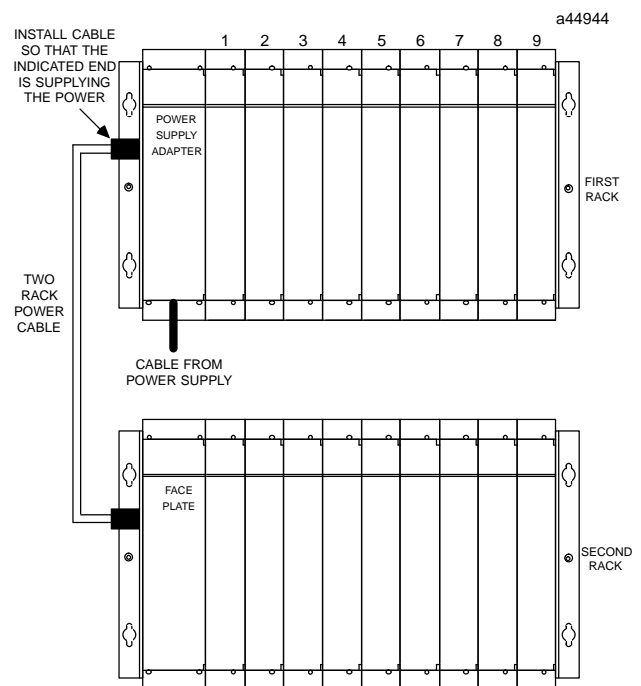


Figure 1. Dual Rack Configuration Showing Location of Power Supply Adapter

The connecting cable used for dual rack operation is listed in the ordering instructions. This cable carries the +5 volt power bus as well as the power sequencing signals. It uses a 9-pin D-type connector which connects directly to the backplane through an opening in the rack frame. When the power supply is to be attached to the left side of the rack, the two-rack power cable should be plugged into the rack connector **before** mounting the power supply.

Note that the cable carries power and power sequencing signals only. Inter-rack communication and bus interface modules must be provided separately. See the applicable *Programmer Controller Installation Manual* for application information.

Mounting

The **Power Supply module** can be mounted two ways. Either way it must mount vertically as shown in this Data Sheet to ensure proper convection cooling.

- As shipped from the factory, with the right side plate attached, it can be used as a stand alone unit by mounting it on a panel (see Figure 4).
- It can also be attached to the left side of the rack when used in a panel mount application by removing the right side plate from the power supply and attaching the power supply to the rack using available hardware (see Figures 2 and 3). Mounting holes for the left side power supply mounting configuration have been added to the standard rack. The following rack revisions must be used for this application:
 - 9 slot rack - IC697CHS790D (or later)
 - 5 slot rack - IC697CHS750C (or later)

Note

It is essential that the Power Supply panel mount screws and rack attachment screws be securely tightened. This will provide proper support as well as improving the grounding.

The **Power Supply Adapter module** plugs into the power supply slot (leftmost slot) in a rack. The PSA connection to the power supply is through a cable connected to the power supply at the factory. The usable maximum cable distance from the center of the power supply inlet to the PSA inlet (when in rack) is 24 inches. This distance cannot be exceeded between the two units when a power supply is installed as a stand alone unit. The free end of the power supply cable has spring spade lugs which must be connected to designated terminals on the terminal boards on the PSA.

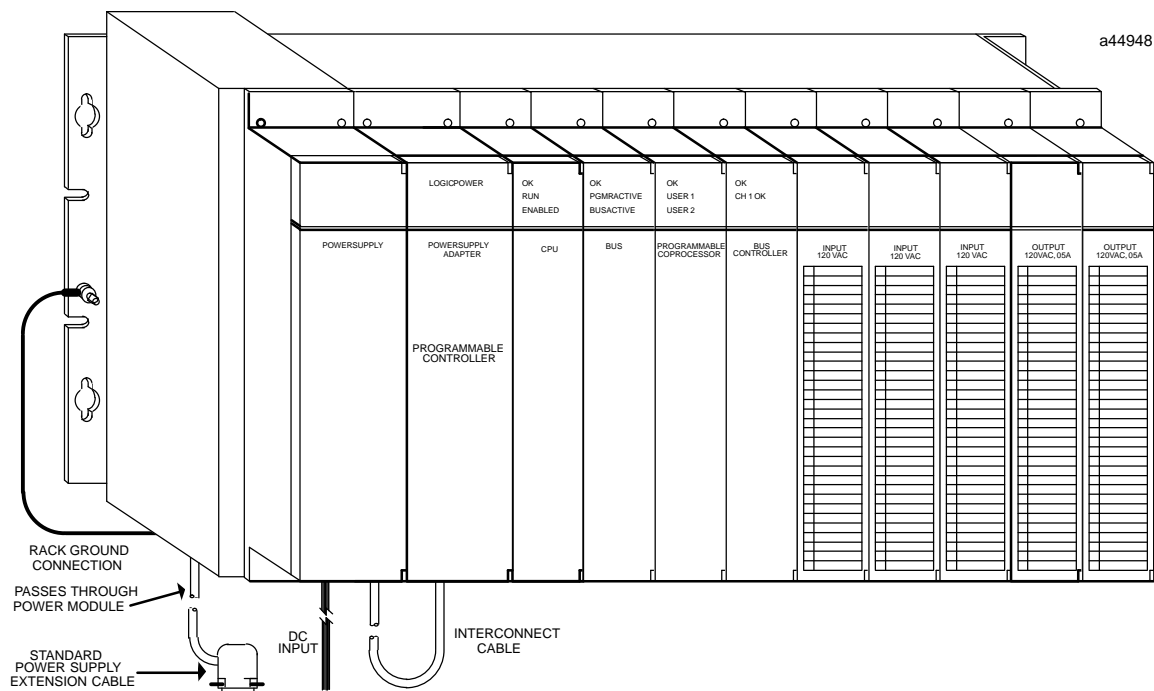


Figure 2. 24 VDC Power Supply Installation: Left Side of Rack

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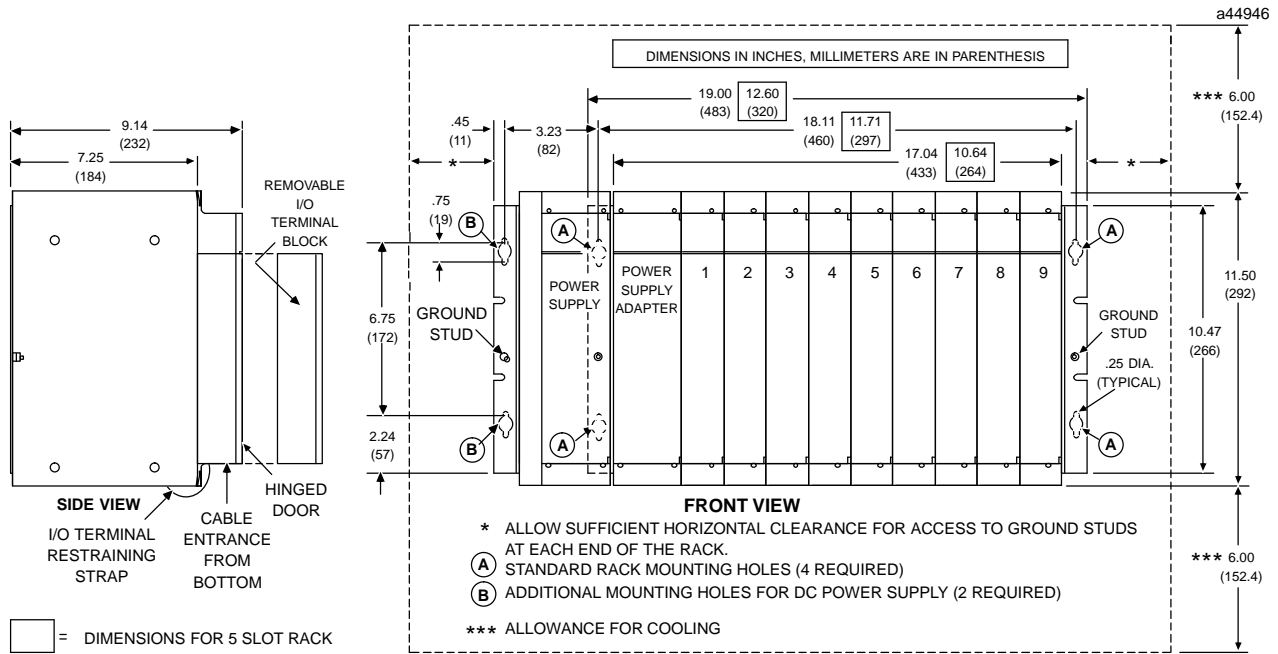


Figure 3. Rack Mounting Dimensions with Power Supply Attached

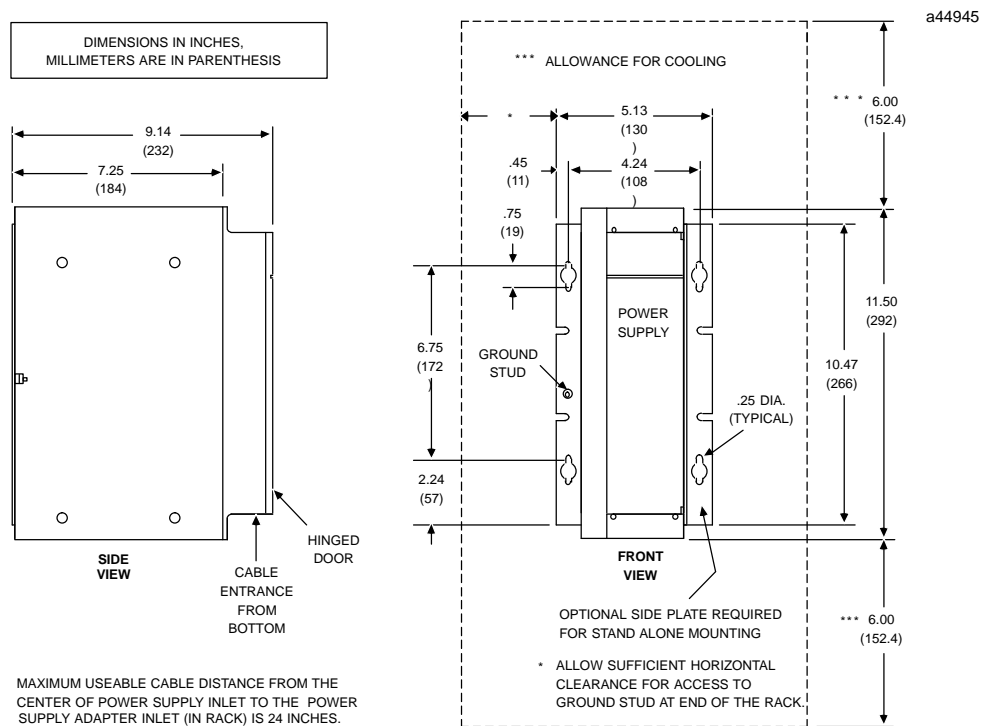


Figure 4. 24 VDC Power Supply Installation: Stand Alone

Power Supply Adapter Module Door

The PSA door can easily be opened by grasping the upper left corner of the door with your right thumb or a fingernail and gently pulling the door towards you. Use care when opening the door since pulling from the bottom can cause the hinge or the door to break. For additional information about the PSA module, refer to GFK-0626, which is the data sheet for that module.

Input Voltage and Grounding

The power input terminal board provides two terminals (labeled + and -) for 24 VDC power. Power input connections should be made with AWG #16 (1.3 mm²) copper wire rated for 75 °C (167 °F).

Two green/yellow ground wires are provided and connected to the power supply module at the factory. One of these wires is connected from a ground stud on the power supply module front panel to the ground stud on the module mounting flange. One end of the other ground wire is also connected to the ground stud on the module mounting flange. You must connect the free end of this ground wire to the ground stud on the IC697CHS* rack mounting flange.

A ground wire from the DC input power source should be connected to the ground lug on the front of

the power supply module using AWG #12 (3.3 mm²) copper wire rated for 75 °C (167 °F) and a ring terminal to ensure adequate grounding. Use of a nut and star washer for each wire on the GND lug is recommended.

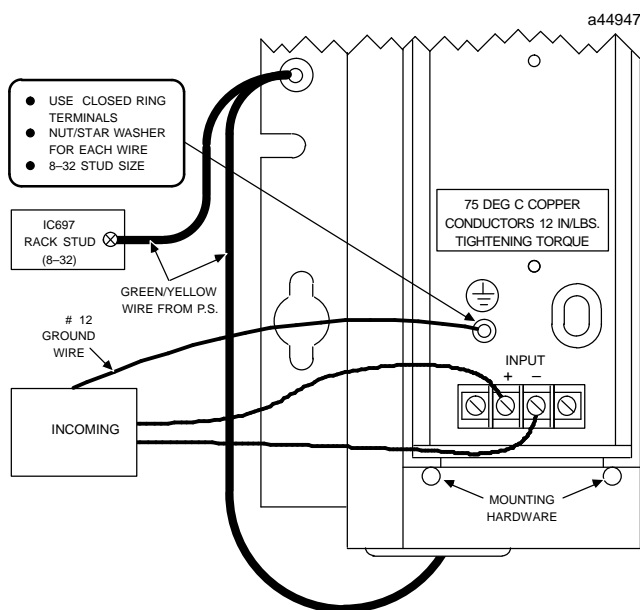


Figure 5. Wiring for Input Voltage and Grounding

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Table 1. Specifications for IC697PWR722

Input	
Nominal:	24 VDC
Range:	21 to 32 VDC
Power:	156 watts maximum at full load
Inrush Energy:	22 joules maximum at 32 VDC input
Output	
Power:	90 watts maximum (total combined power from all outputs must be less than 90 watts)
Voltage Regulation:	+5.02 to +5.12 VDC (5.07 volts nominal) at 16.5A maximum +11.58 to +12.42 VDC (+12 volts nominal) at 1.5A maximum -11.4 to -12.6 VDC (-12 volts nominal) at 1.0A maximum
Protective Limits	
Overvoltage Limit:	6.1 to 7.0 volts (electronic overvoltage protection)
Overcurrent Limit:	+5 VDC Output: 26A, maximum +12 VDC Output: 4A, maximum -12 VDC Output: 2A, maximum
Holdup Time:	10 ms minimum (from loss of DC input)
Environmental	
Operating Temperature:	0° to 60° C (32° to 140° F)
Storage Temperature	-40° C to +85° C (-40° F to +185° F)
Humidity:	5 to 95% non-condensing
Vibration:	3.5 mm, 5-9 Hz: 1.0 G 9-150 Hz
Shock:	15 g's for 11 msec
Complies with Standards	
JIS	C 0912, JIS C 0911
UL	508
CSA	C22.2 No. 142 - M1987
NEMA/ICS	2-230.40
ANSI/IEEE	C-37.90A-1978
VDE	805, 806, 871-877
FCC	15J Part A
VME	System designed to support the VME standard C.1

Table 2. Ordering Information

Description	Catalog Number
Power Supply module, +24 VDC Input, 90W, with Adapter	IC697PWR721
Power Supply module, +24 VDC Input, 90W	IC697PWR722
Power Supply Adapter module	IC697PWR720
Power Supply Extension Cable (includes cable and faceplate for vacant power supply slot in second rack)	IC697CBL700