Programmable Controller
IC697PWR711-FM/713-FM

GFK-0716B
July 1995

Power Supply Module 120/240 VAC, 100W FM Certified

Features

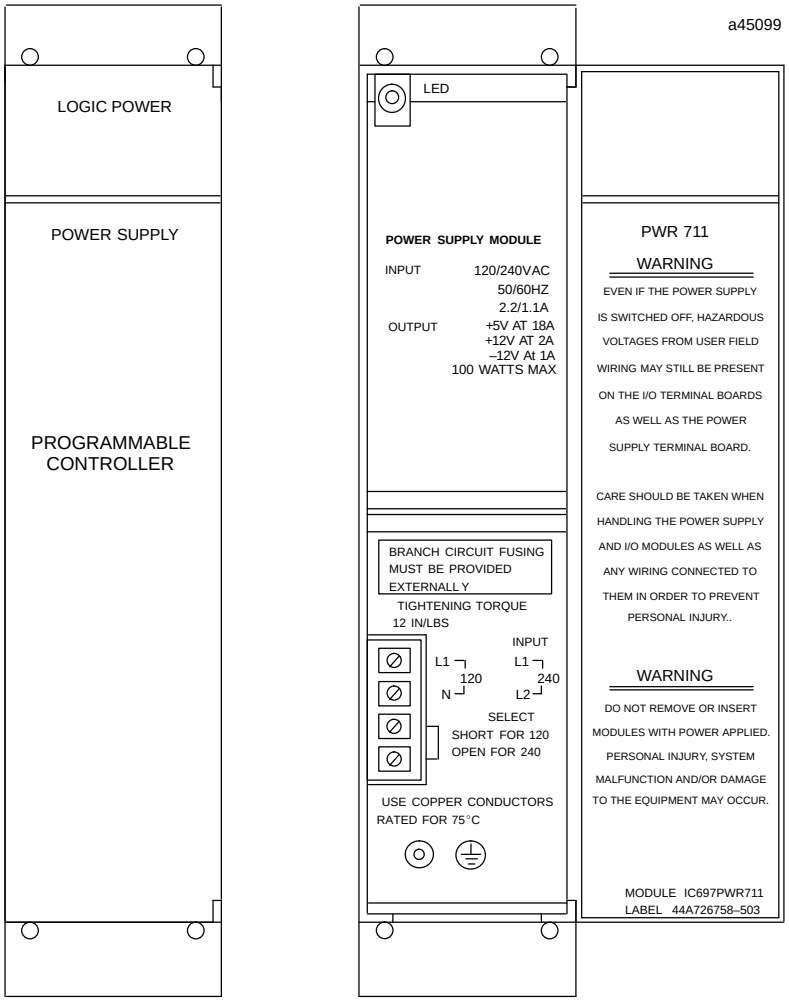
- FM certified
- Operation from 120 VAC or 240 VAC
- Three output voltages, 100W total
  - +5 VDC output up to 18 Amp
  - +12 VDC output up to 2 Amp
  - -12 VDC output up to 1 Amp
- Slide-in rack mount construction
- Electronic short circuit overcurrent protection
- Two rack operation from a single power supply

Functions

The **120/240 VAC, 100 Watt Power Supply Module** is a rack-mounted unit that plugs directly into a 48-pin backplane-mounted connector in the leftmost slot in the rack. It provides +5 volt, +12 volt and -12 volt power, and logic level sequencing signals to the backplane.

This power supply may be used either in a single rack application, or may 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 through a prewired cable (see the ordering instructions on the last page of this data sheet).

The power supply output will ride through a one-cycle total loss of input power at full load. Protection is provided for overcurrent and overvoltage fault conditions.



Operation of the Power Supply

This Power Supply Module can operate from either a 120 V or 240 V nominal line (this is jumper selectable, as illustrated on page 3). For these two ranges, the power supply can accept an input voltage range of from 90 to132 VAC or from 180 to 264 VAC, 47 to 63 Hz.

Overvoltage Protection

The power supply includes an electronic overvoltage protection circuit. This circuit will turn the output off if the 5 V bus exceeds 6.2 +0.5 V. The power supply must be turned off to be reset. 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. Replace this fuse with a 3AG 3 amp, 250 V fuse.

Overcurrent Protection

The power supply provides electronic overcurrent protection for each of the 3 outputs. If the maximum current rating is exceeded, 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.

This power supply does not comply with FCC requirements in non-industrial applications for conducted EMI on AC power lines.

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 available 3-foot connecting cable.

The connecting cable used for dual rack operation is listed in Table 1, Ordering Information. This cable carries the +5 volts 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. 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 *Programmable Controller Installation Manual.* for application information.

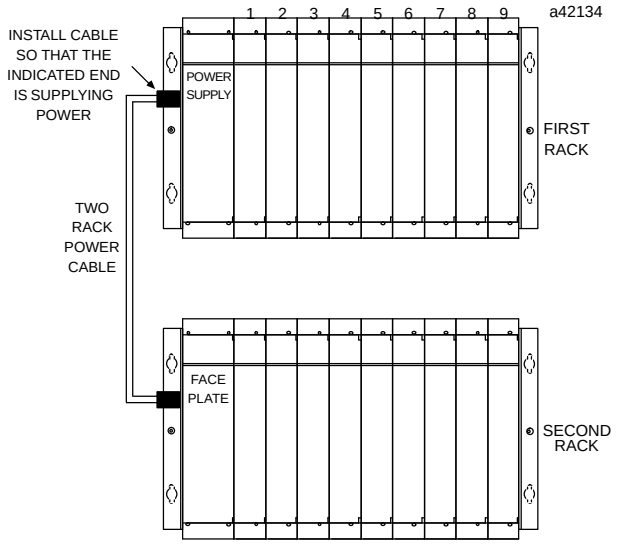


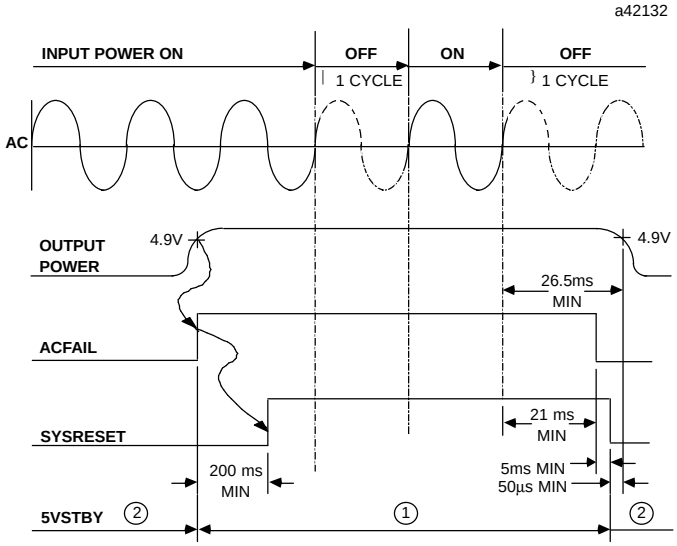
Figure 1. Dual Rack Configuration

Timing Diagram

The timing diagram below shows the relationship of the ac input power to the dc outputs and to the two system signals generated by the power supply: *ACFAIL* and *SYSRESET*. The 5VSTBY output may be used for user battery backup schemes as shown.

On application of power, the ACFAIL signal goes false soon after the 5 V bus is within specification. The system is held in the Reset state by *SYSRESET* for at least 200 ms after 5 V power is available (during this time, outputs are forced off).

If AC input power is interrupted, the 5 V bus will remain within specifications for at least one cycle. The system is then given an additional 5mS to complete an orderly shutdown before *SYSRESET* stops all processing.



(1) 5VSTBY CONNECTED TO POWER SUPPLY 5VDC

(2) 5VSTBY DISCONNECTED FROM POWER SUPPLY 5VDC BY A TRANSISTOR TO ALLOW CONNECTION OF USER BATTERY SOURCE.

Mounting

The Power Supply is a plug-in module which is secured to the rack with four M 2.5 screws (included). Be certain that these screws are tightened both to secure the power supply to the rack, and to assure proper power supply-to-rack grounding.

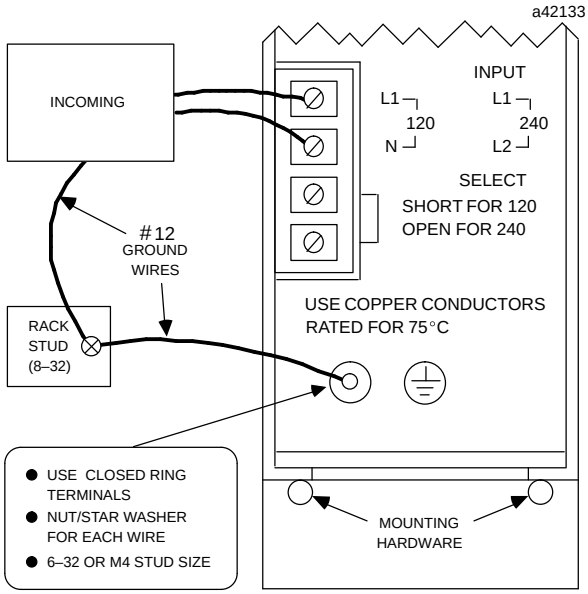
Power Supply Door

The power supply 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.

Input Voltage and Grounding

The power input terminal board provides two points for connecting 120 V or 240 V power and two additional points which must be shorted together if line voltage is 120 V and must be open if line voltage is 240 V. Power input connections should be made with copper AWG #16 (1.32 mm^2) wire rated for 75°C (167°F).

It is recommended that the GND terminal on the power supply be connected to the GND terminal on the rack and to earth using copper AWG #12 (3.33 mm^2) 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.



Note

Input power interruptions which exceed the power supply holdup time (21 ms minimum) will result in a complete power down/power up cycle of *ACFAIL* and *SYSRESET*.

System Noise Immunity

Three easy steps must be taken to properly ground the programmable controller system to reduce the possibility of errors due to electrical noise.

1. Make sure that the power supply mounting screws, especially the bottom two, 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 mm^2) wire. Use of a ring terminal and starwasher is recommended.
3. The GND terminal on the rack must be connected to a good earth ground.

Figure 2. Specifications FOR IC697PWR711/713 †

Nominal Rated Voltage:	120 VAC or 240 VAC
Input Voltage Range:	90-132 V or 180-264 V, 47-63 Hz
Input Power:	160 watts maximum at full load
Input Half Cycle Peak Inrush	55 amp (typical), 77 amp (maximum)
Output Power:	100 watts maximum (total for all 3 outputs)
Output Voltage:	+5 VDC: 4.90 to 5.25 volts (5.07 volts nominal)
	+12 VDC: 11.75 to 12.6 volts
	-12 VDC: -12.6 to -11.75 volts
Protective Limits -	
Overvoltage Limit:	+5 VDC Output: 5.7 to 6.7 volts
Overcurrent Limit:	+5 VDC output: 26 amp, maximum
	+12 VDC output: 4 amp, maximum
	-12 VDC output: 2 amp, maximum
Holdup Time:	21 ms minimum (from loss of AC input)
VME	System designed to support the VME standard C.1

† Refer to GFK-0867B, or later for product standards and general specifications.

Table 1. Ordering Information

Description	Catalog Number
Power Supply,120 / 240VAC, 100W, FM Certified	IC697PWR711-FM IC697PWR713-FM
Power Supply Extension Cable (includes cable and faceplate for vacant power supply slot in second rack).	IC697CBL700