
Section 5. Power Supply

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Notes:

Description

The power supply automatically selects between two ranges of ac input power and converts the input power into three separate dc outputs. The power supply provides power for the following:

- System board
- Channel adapters
- Diskette drives
- Fixed disk drives
- Auxiliary device
- Keyboard.

The power switch and two light-emitting diodes (LED) are located on the front. The green LED indicates the power supply is operating. The yellow LED indicates fixed disk activity. Bits 6 and 7 of System Control Port A (hex 0092) control the 'system status' line used to illuminate the fixed disk activity LED.

Inputs

The power supply operates with two ranges of input power and automatically selects the appropriate range. The following figure shows the input requirements for both ranges:

Input Voltage		Maximum Current	
Nominal	Range	Nominal Draw	Frequency
100 - 125 Vac	90 - 137 Vac	5 Amps	50 - 60 \pm 3 Hz
200 - 240 Vac	180 - 265 Vac	3 Amps	50 - 60 \pm 3 Hz

Figure 5-1. Input Requirements

Input Protection

The input power line is protected against an over-current condition by an internal fuse.

Ground Leakage Current

The system unit ground leakage current does not exceed 500 microamps at any nominal input voltage.

Outputs

The power supply provides three voltages; +5, +12, and -12 Vdc.

Output Protection

A short circuit placed on any dc output (between outputs or between an output and dc return) latches all dc outputs into a shutdown state with no damage to the power supply.

If an over-voltage fault occurs (internal to the power supply), the supply latches all dc outputs into a shutdown state before any output exceeds 130% of its nominal value.

If either of these shutdown states is actuated, the power supply returns to normal operation only after the fault has been removed and the power switch has been turned off for at least one second.

Voltage Sequencing

At power on, the output voltages track within 50 milliseconds of each other when measured at the 50% points.

No Load Operation

The power supply is capable of operation with “no load” on the outputs. The output regulation is $\pm 25\%$ and the ‘power good’ signal can be in either state.

Auto Restart

If the power supply outputs drop out of regulation due to an ac line outage, the power supply automatically restarts (generates output voltages) when ac power returns.

Power Good Signal

A 'power good' signal indicates proper operation of the power supply and is active high during normal operation. The 'power good' signal can source 100 microamps and sink 1 milliamp.

The power supply provides the 'power good' signal to indicate proper operation of the power supply and to reset system logic. At power on, the 'power good' signal has a turn-on delay of at least 100 milliseconds but not greater than 500 milliseconds after the +5 output has reached its minimum sense level. At power off, the 'power good' signal remains active for at least 10 milliseconds after ac power is removed and goes inactive before any voltage falls below the output regulation limits. If the 'power good' signal goes inactive due to an ac line outage, it is regenerated as described above when ac power returns. The following figure shows the minimum sense levels for the output voltages.

Level (Vdc)	Minimum (Vdc)
+5	+4.5
+12	+10.8
-12	-10.2

Figure 5-2. Sense Level

Model 50 Power Supply Connector

The power supply uses a 50-pin card-edge connector mounted on the side of the power supply. The system board plugs into the card edge connector, eliminating the need for separate cabling. The following figure shows the signals and voltages assigned to the power-supply output connectors.

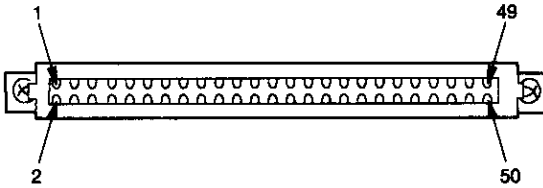


Figure 5-3. Model 50 Power Supply Connector

Pin	I/O	Signal	Pin	I/O	Signal
1	NA	-12 Vdc	2	NA	Signal Ground
3	NA	+ 12 Vdc	4	NA	Signal Ground
5	NA	+ 12 Vdc	6	NA	Signal Ground
7	NA	+ 12 Vdc	8	NA	Signal Ground
9	NA	+ 12 Vdc	10	NA	Signal Ground
11	NA	+ 12 Vdc	12	NA	Signal Ground
13	NA	+ 12 Vdc	14	NA	Signal Ground
15	NA	+ 5 Vdc	16	NA	Signal Ground
17	NA	+ 5 Vdc	18	NA	Signal Ground
19	NA	+ 5 Vdc	20	NA	Signal Ground
21	NA	+ 5 Vdc	22	NA	Signal Ground
23	NA	+ 5 Vdc	24	NA	Signal Ground
25	NA	+ 5 Vdc	26	NA	Signal Ground
27	NA	+ 5 Vdc	28	NA	Signal Ground
29	NA	+ 5 Vdc	30	NA	Signal Ground
31	NA	+ 5 Vdc	32	NA	Signal Ground
33	NA	+ 5 Vdc	34	NA	Signal Ground
35	NA	+ 5 Vdc	36	NA	Signal Ground
37	NA	+ 5 Vdc	38	NA	Signal Ground
39	NA	+ 5 Vdc	40	NA	Signal Ground
41	NA	+ 5 Vdc	42	NA	Signal Ground
43	NA	+ 5 Vdc	44	NA	Signal Ground
45	NA	+ 5 Vdc	46	NA	Signal Ground
47	NA	+ 5 Vdc	48	NA	Signal Ground
49	I	System Status	50	O	Power Good

Figure 5-4. Power Supply Connector Voltages and Signal Assignments

Model 60 Power Supply Connectors

The power supply uses a 15-pin connector for the system board and two 4-pin connectors for the two fixed disk drive locations. The following figures show the signals and voltages assigned to the connectors on the end of the power supply cables.

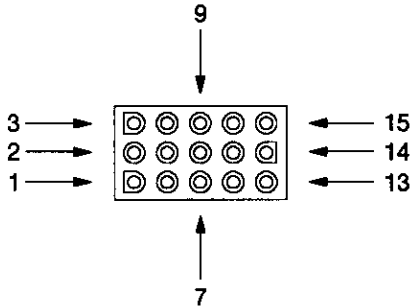


Figure 5-5. Model 60 System Board Power Supply Cable Connector

Pin	I/O	Signal	Pin	I/O	Signal
1	NA	+ 5 Vdc	2	NA	Signal Ground
3	NA	+ 12 Vdc	4	NA	+ 5 Vdc
5	NA	Signal Ground	6	NA	Signal Ground
7	NA	+ 5 Vdc	8	NA	Signal Ground
9	NA	-12 Vdc	10	NA	+ 5 Vdc
11	NA	Signal Ground	12	O	Power Good
13	NA	+ 5 Vdc	14	NA	Signal Ground
15	I	System Status			

Figure 5-6. Power Supply Connector Voltage and Signal Assignments, System Board



Figure 5-7. Model 60 Fixed Disk Power Supply Cable Connectors

Pin	I/O	Signal	Pin	I/O	Signal
1	NA	+ 12 Vdc	2	NA	Signal Ground
3	NA	Signal Ground	4	NA	+ 5 Vdc

Figure 5-8. Power Supply Connectors Voltage and Signal Assignments, Fixed Disk