
Power-On Self Test: RAM and Processor Verification

A power-on self test in the computer's ROM automatically runs whenever the computer is started up after being fully shut down (the test does not run if the computer is only restarted). If the test detects a problem, the status LED located above the power button on the front of the computer will flash in the following ways*:

- 1 Flash: No RAM is installed or detected.
- 2 Flashes: Incompatible RAM types are installed.
- 3 Flashes: No RAM banks passed memory testing.
- 4 Flashes: No good boot images are detected in the boot ROM (and/or there is a bad sys config block).
- 5 Flashes: The processor is not usable.

* **Note:** The status LED lights up when the power button is depressed at startup. Do not count this light as one of the diagnostic flashes.

Front Panel Board Troubleshooting

Certain no power symptoms can sometimes be caused by a failed front panel board or power button. However, troubleshooting these parts by swapping them out with known-good parts can be time-consuming. An alternative approach is to build a simple front panel board troubleshooting tool, as illustrated, and then use the procedures described below to test the board and button before actually replacing them.

The tool consists of a known-good front panel board, with a known-good power button and front panel board cable attached.

To use the tool in troubleshooting the front panel board and power button, do the following:



1. Shut down the computer.
2. Disconnect the installed front panel board cable from the logic board.
3. Connect the front panel board cable from the troubleshooting tool to the logic board.
4. Try to start up the computer by pressing the power button on the troubleshooting tool.

Then proceed with the front panel board troubleshooting steps as described in the [“Symptom Charts”](#) in this chapter.

Power Supply Verification

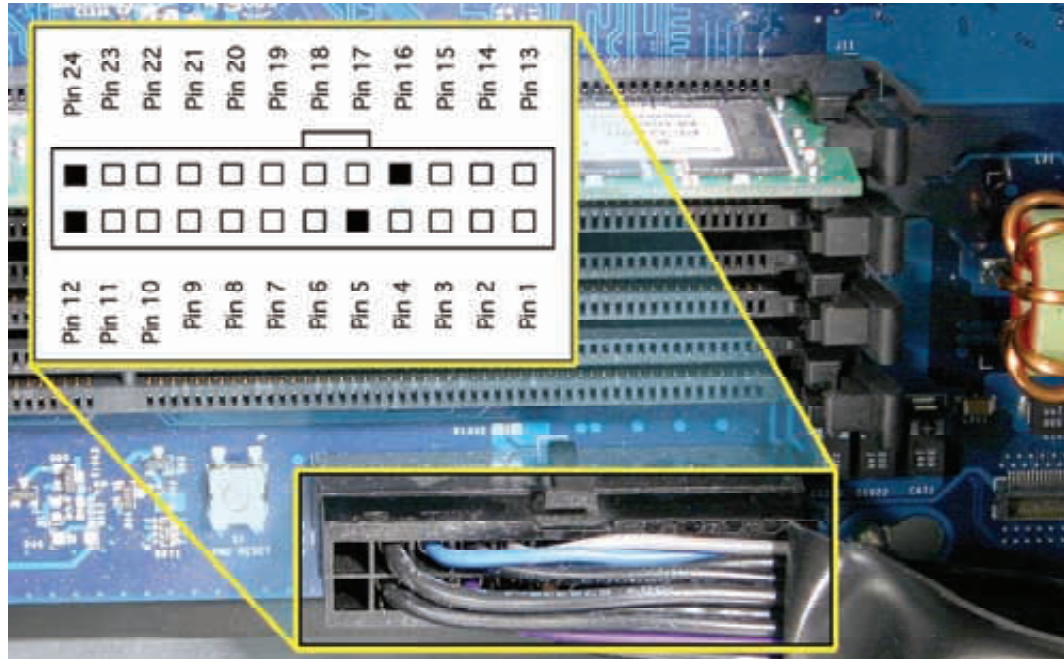
To power on, the computer’s logic board requires a “trickle” power of +5V. If the system fails to power on, first reset the PMU. Then follow the procedure outlined below to determine whether the problem is related to the power supply.

Note: To verify the power supply, you need a volt meter.

1. Remove the power cord from the computer.
2. Open the computer, lay it on its side with the access side facing up.
3. Remove the front inlet fan assembly.
4. Remove the black plastic cap covering the 24-pin power supply cable connector (the P1 or largest connector). The cap fits tightly over the connector. To remove it, rock the cap gently forward and backward as you lift up.

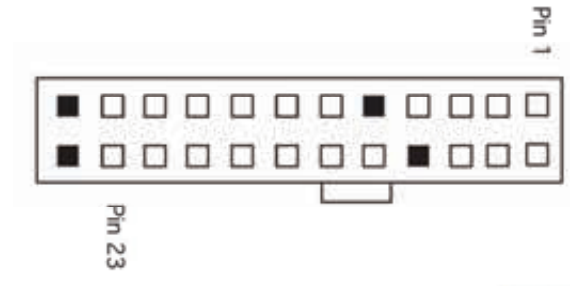
Note: This is a top view of the connector when it is plugged into the logic board.

5. Press the release latch on the connector and disconnect the cable from the logic board.



6. Plug a known good power cord into the computer. Do not turn on the computer.
7. On the power supply cable connector: connect the black lead of the volt meter to pin 23 and connect the red lead of the volt meter to pin 1.

Note: This is a bottom view of the connector when it is unplugged and facing up.



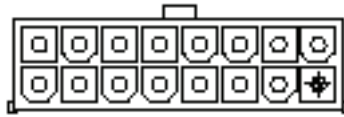
The volt meter should measure approximately +5V. If you do not get a reading of +5V, recheck the volt meter connections and measure the voltage again. If the voltage is still not present, replace the power supply.

Pinouts

Power Supply P1 Connector

Pin #	Signal	Pin#	Signal
1	+5Vstb	13	GND
2	GND	14	Power ON
3	FANtach	15	GND
4	GND	16	EMPTY
5	EMPTY	17	GND
6	GND	18	RTNaud (GND)
7	+12Vaud (12V2)	19	GND
8	GND	20	+5V sense
9	+3.3V sense	21	GND
10	GND	22	-12V
11	GND	23	GND
12	EMPTY	24	EMPTY

Power Supply P2 Connector

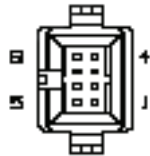


Pin#	Signal	Color	Pin#	Signal	Color
1	+3.3V	Orange	9	+5V	Red
2	+3.3V	Orange	10	+5V	Red
3	+3.3V	Orange	11	+5V	Red
4	+3.3V	Orange	12	+12V3	Yellow
5	Reserve		13	+12V3	Yellow
6	+12Vfan	Yellow	14	+12V1	Yellow
7	+12Vfan(12V2)	Yellow	15	+12V1	Yellow
8	+25V	White	16	RTNfan(GND)	Black

Power Supply P3 Connector

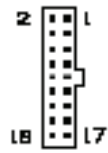
Pin#	Signal	Color	Pin#	Signal	Color
1	+5V	Red	5	+5V	Red
2	GND	Black	6	GND	Black
3	GND	Black	7	GND	Black
4	12V2	Yellow	8	+12V2	Yellow

Front Inlet Fan Connector



Pin#	Signal
1	FAN CPU Cpu AF MOTOR
2	FAN CPU AF TACH
3	FAN GND
4	FAN 12V
5	FAN CPU BF MOTOR
6	FAN CPU BF TACK
7	TEMP SENSE D-
8	TEMP SENSE D+

Front Panel Board Connector



Pin#	Signal	Type
1	25V	
2	V-GND	
3	FW TPA	Twisted Pair Shield 110 Ohm
4	FW TPA +	Twisted Pair Shield 110 Ohm
5	CHASSIS GND FW	
6	CHASSIS GND USB	
7	FW TPB	Twisted Pair Shield 100 Ohm
8	FW TPB+	Twisted Pair Shield 100 Ohm
9	USB PWR	
10	USB GND	
11	USB	Twisted Pair Shield 60 Ohm
12	USB+	Twisted Pair Shield 60 Ohm
13	LED	
14	PWR BTN	
15	AUDIO SENSE	
16	AUDIO COM	Twisted TRI
17	AUDIO RIGHT	Twisted TRI
18	AUDIO LEFT	Twisted TRI

Optical and Serial ATA Hard Drive Cable Connectors

Power		Optical		SP1 (HD1)		SP2 (HD2)	
Pin#	Color	Pin#	Color	Pin#	Color	Pin#	Color
1	BLK	4	BLK				
2	BLK	3	BLK				
3	BLK	1	BLK				
4	BLK			2	BLK	2	BLK
5	BLK			3	BLK	3	BLK
6	BLK			1	BLK	1	BLK
7	BLK			4	BLK	4	BLK

Media Bay Temperature Sensor Cable



7 Pin Connector	Signal	5 Pin Connector	4 Pin Connector
1	3.3V	1	1
2	[] G B CLK	2	
3] [G B DAT	2	
4	GND	4	2
5	OVER TEMP	5	
6	DOOR AJAR 1		3
7	3.3V SLEEP		4