Technical Information

Specifications for Power Macintosh 8600 series computers

Technical Information

Main unit

Processor card

- The Power Macintosh 8600/250 processor card contains a 250 megahertz (MHz) PowerPC™ 604e processor (with a built-in floating-point unit) and a 1 megabyte (MB) Apple Inline Cache (level 2).
- The Power Macintosh 8600/300 processor card contains a 300 MHz PowerPC 604e processor (with a built-in floating-point unit) and a 1 MB Apple Inline Cache (level 2).
- 100 MHz cache bus
- 50 MHz system bus

Memory

- 32 MB of dynamic random-access memory (DRAM), supplied in removable Dual Inline Memory Modules (DIMMs), with capacity to support expansion to a maximum of 512 MB
- 2 MB of built-in video RAM (VRAM) supplied in removable DIMMs, with capacity to support a maximum of 4 MB
- 4 MB of read-only memory (ROM)
- 8 kilobytes (KB) of nonvolatile parameter memory
- 1 MB of static random-access memory (SRAM) used as an Apple Inline Cache. (The cache size is not expandable because the RAM is soldered to the processor card.)

For more information and instructions on expanding your DRAM or VRAM, see Chapter 8, “Installing PCI Expansion Cards and Additional Memory,” in your *Power Macintosh User’s Manual*.

Graphics modes

You can connect and use many monitors with the Power Macintosh 8600 built-in video circuitry, including the following Apple monitors:

- Apple Multiple Scan 14, 15, 15AV, 1705, and 20 Displays
- AppleVision 850, 850AV, 1710, and 1710AV Displays
- Apple High-Resolution RGB Monitor
- Apple Two-Page Monochrome Monitor
- Apple AudioVision 14 Display
- Macintosh 12" Monochrome Display
- Macintosh 12" RGB Display
- Macintosh 16" Color Display
- Macintosh 21" Color Display
- Macintosh Color Display (14")
- Macintosh Portrait Display

You can also use a television as a monitor. For more information, see Chapter 7, "Connecting Additional Equipment," in your *Power Macintosh User's Manual*.

Peripheral component interconnect (PCI) expansion cards that can support other monitors and special video requirements are available from other manufacturers. See your Apple-authorized dealer for information.

Note: On some monitors from manufacturers other than Apple, the connector pinout designates one pin for both green video and timing synchronization. These "sync on green" monitors are not compatible. If you're not sure what type of monitor you have, check with your dealer.

You can use the Monitors & Sound control panel or the Control Strip to set a video mode that is supported by both your monitor and the built-in video circuitry. Refer to the manual that came with your monitor for a list of video modes that it supports.

The following table lists the resolutions supported by the built-in video circuitry, along with the number of colors (or grays) supported with 2 MB of VRAM and with the optional expansion to 4 MB of VRAM.

Resolution	Maximum color depth* with 2 MB VRAM	Maximum color depth* with 4 MB VRAM	Vertical refresh rate
512 x 384	Millions	Millions	60 Hz
640 x 480	Millions	Millions	60 Hz, 67 Hz
640 x 870	Millions	Millions	75 Hz
800 x 600	Millions	Millions	60 Hz, 72 Hz, 75 Hz
832 x 624	Millions	Millions	75 Hz
1024 x 768	Thousands	Millions	60 Hz, 72 Hz, 75 Hz
1152 x 870	Thousands	Millions	75 Hz
1280 x 960	256	Thousands	75 Hz
1280 x 1024	256	Thousands	75 Hz

* 256=8-bit color depth, thousands=16-bit color depth, millions=32-bit color depth

Video support

All video input ports support 24-bit RGB format as well as 16-bit component (YUV) format.

Video input ports

Connector	Standard	Resolution
Composite/S-video	NTSC	up to 640 x 480
Composite/S-video	PAL/SECAM	up to 768 x 576

Video output ports

Connector	Standard	Resolution
Composite/S-video	NTSC	256 x 192 320 x 240 512 x 384 640 x 480
Composite/S-video	PAL	320 x 240 384 x 288 640 x 480 768 x 576

Internal disk drives

The following drives were installed in your computer at the factory:

- Apple SuperDrive 1.4 MB high-density floppy disk drive
- Apple SCSI hard disk drive (“Fast” SCSI-2)
- 24x-speed CD-ROM drive
- Optional Zip disk drive (removable media)

For more information about “Fast” SCSI-2, see “SCSI Interfaces” later in this booklet.

Clock/calendar

- CMOS custom circuitry with long-life battery

WARNING If the clock begins to lose accuracy, see an Apple-authorized dealer or service provider for a battery replacement. Do not attempt to replace the clock battery yourself.

Keyboard

- Supports all Apple Desktop Bus (ADB) keyboards

Mouse

- Supports all models of the ADB mouse

Interfaces

- One ADB port supporting up to three ADB input devices (such as a trackball, keyboard, or mouse) daisy-chained through a low-speed, synchronous serial bus
- Monitor port supporting color and grayscale monitors of various sizes and resolutions. (See “Graphics Modes” earlier in this booklet.)
- Three internal expansion card slots supporting PCI expansion cards. Install only expansion cards that come with Macintosh drivers and are compliant with the PCI 2.0 standard. NuBus™ cards cannot be used in these expansion slots.
- One printer port and one modem port. Both ports are RS-232/RS-422 serial ports, 230.4 kilobit (Kbit) per second maximum (up to 2.048 megabit [Mbit] per second if clocked externally), and are compatible with GeoPort devices such as the GeoPort Telecom Adapter.
- One built-in 10Base-T Ethernet connector for direct connection to 10Base-T networks. (If both AAUI and 10Base-T connectors are plugged in, the computer uses the 10Base-T connector by default.)
- One built-in AAUI Ethernet port for connecting to high-speed Ethernet networks. Requires the appropriate AAUI transceiver adapter (10Base-T, thin coaxial, or thick coaxial).
- One 3.5-mm sound output port for headphones or line-level devices
- One 3.5-mm sound input port for stereo sound input. The sound input port supports the Apple PlainTalk Microphone that comes with some Macintosh computers. The sound input port also supports a standard stereo (miniplug-to-RCA) cable adapter for connecting stereo equipment to your computer.

  The sound input port does not support the omnidirectional microphone (the round microphone shipped with some earlier models of Macintosh) or the attenuated RCA adapter provided with some Macintosh models.
- One pair of RCA-type audio ports for stereo input (left and right)
- One pair of RCA-type audio ports for stereo output (left and right)
- Two video input ports that support the NTSC, PAL, and SECAM video standards
- Two video output ports that support the NTSC and PAL video standards

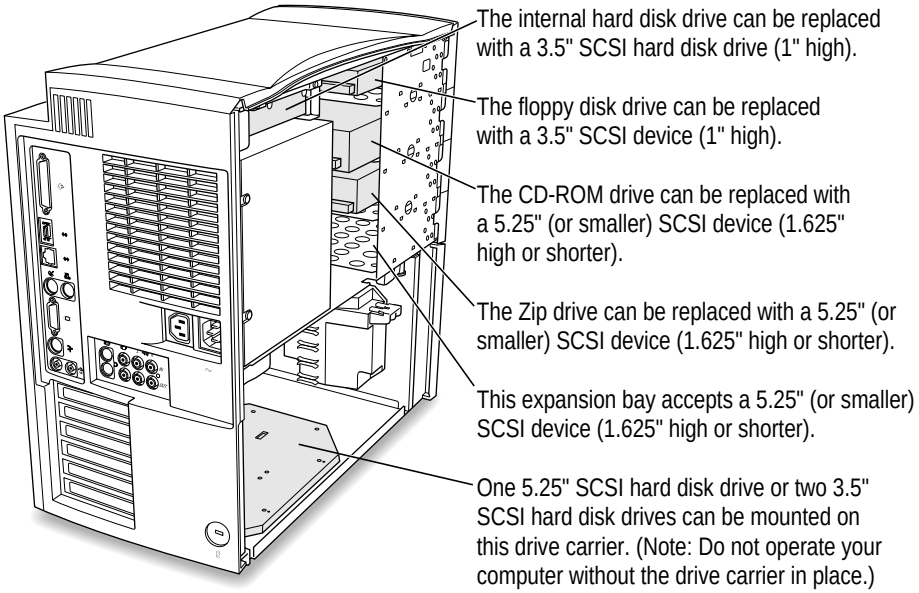
SCSI interfaces

Your computer has two SCSI interfaces:

- an external standard SCSI-2 chain
- an internal “Fast” SCSI-2 chain

The external SCSI chain supports up to seven external SCSI devices. For information on connecting external SCSI devices to your Macintosh, see your *Power Macintosh User’s Manual.*

The internal SCSI chain supports the internal hard disk, CD-ROM drive, and optional Zip drive. An Apple-authorized dealer or service provider can connect up to seven SCSI devices to the internal SCSI chain. The illustration below shows all of the internal expansion options.



The internal SCSI chain supports “Fast” SCSI-2, which can transfer data at up to 10 MB per second (twice the rate of the external standard SCSI-2 chain). If you obtain a SCSI device that supports “Fast” SCSI-2, you should receive faster performance if it is connected to the internal SCSI chain.

All devices on the same SCSI chain must have unique ID numbers, but devices on different SCSI chains may use the same SCSI ID number. (For example, you could have a CD-ROM drive with ID number 3 connected to the internal SCSI chain and a tape drive with ID number 3 connected to the external SCSI chain.)

The drives that were installed in your computer at the factory, as well as the computer itself, have already reserved certain SCSI ID numbers. Other ID numbers are available for assignment to SCSI devices that are added after you buy your computer, as described in the following table.

SCSI chain	SCSI ID number	Device
Internal	0	Factory-installed hard disk (terminated)
	1	Available
	2	Available
	3	Factory-installed CD-ROM drive
	4	Available
	5	Factory-installed Zip drive (optional)
	6	Available
	7	Power Macintosh computer (terminated)
External	0	Available
	1	Available
	2	Available
	3	Available
	4	Available
	5	Available
	6	Available
	7	Power Macintosh computer (terminated)

IMPORTANT The factory-installed internal hard disk and the Power Macintosh computer are both terminated. Other SCSI devices attached to the internal SCSI interface must not be terminated. If you attach a terminated device to the internal SCSI interface, damage to the computer's main logic board can occur.

IMPORTANT Some older SCSI devices may require updated drivers. (A “driver” is special software that is installed in your System Folder.) Contact the device manufacturer for information on obtaining driver software.

Audio system

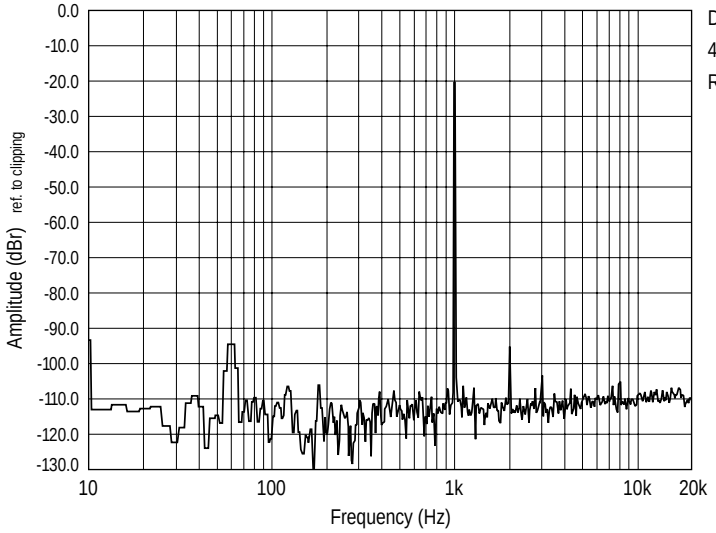
- Custom sound circuitry, including a stereo generator (digital-to-analog converter, or DAC)—capable of driving stereo miniplug headphones or audio equipment—and stereo sampling hardware (analog-to-digital converter, or ADC) for recording stereo sound
- 16-bit stereo input and output
- Sample rates of 44.1 and 22.05 kilohertz (kHz)

Typical specifications

- Sound input connector line level: 2.8 volts peak-to-peak (Vpp) nominal, into 3.0-kilohm (kΩ) impedance (minimum)
- RCA-type input connector line level: 2.4 Vpp nominal, into 13.5-kΩ impedance (minimum)
- Sound output connector line level: 2.7 Vpp nominal, into 32-kΩ impedance
- RCA-type output connector level: 2.9 Vpp nominal into 2-kΩ impedance (minimum)
- Sound input signal-to-noise ratio (SNR): greater than (>) 83 decibels (dB) A-weighted with no audible discrete tones
- RCA-type input SNR: >77 dB A-weighted with no audible discrete tones
- Sound output SNR: >84 dB A-weighted with no audible discrete tones
- RCA-type output SNR: >84 dB A-weighted with no audible discrete tones
- Bandwidth: 10 Hz to 18 kHz (+0.1 dB, –3.0 dB) at 44.1-kHz sample rate
- RCA-type input total harmonic distortion plus noise (THD + N): less than (<) 0.018 percent A-weighted; measured 10 Hz to 30 kHz with a 2.4-Vpp sine wave input

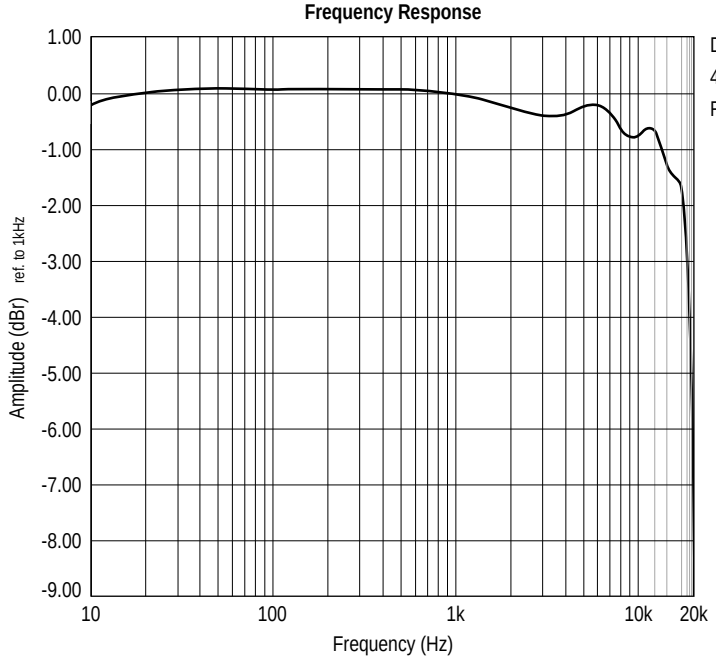
The following graphs show typical audio data for the Power Macintosh. (Your computer's data may vary, depending on the equipment you have connected.)

Signal-to-Noise Ratio

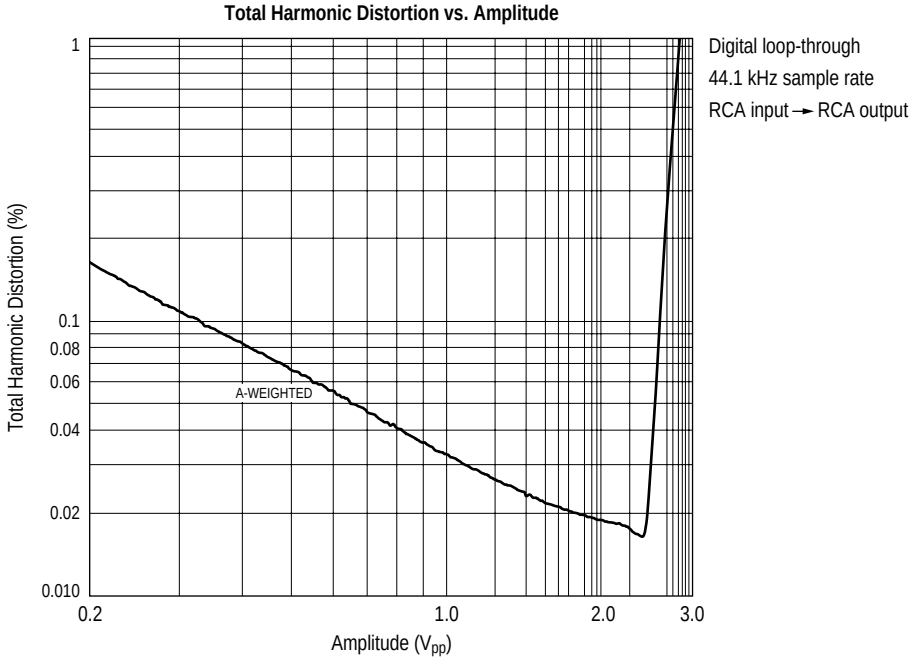


Digital loop-through
44.1 kHz sample rate
RCA input → RCA output

Frequency Response



Digital loop-through
44.1 kHz sample rate
RCA input → RCA output



Video system

Video input

- Type: composite or S-video
- Timing: industry standard NTSC/PAL/SECAM
- Polarity: sync negative
- Voltage level: 0.7 Vpp minimum, 1.0 Vpp typical, 1.4 Vpp maximum
- Impedance: 75 ohms (Ω) internally terminated
- DC offset: no more than +1.0 volts (V)

Video output

- Type: composite and S-video (available simultaneously)
- Timing: industry standard NTSC or PAL
- Polarity: sync negative (no sync on “S” chroma signal)
- Voltage level: 1.0 Vpp +/– 5% into a 75 Ω resistive load (“S” chroma .7 Vpp)
- Impedance: 75 Ω source
- DC offset: +0.2 V maximum (loaded)

AC line input

- Line voltage: 100–120 volts (V) and 220–240 V alternating current (AC), RMS single phase
- Frequency: 50–60 Hz
- Power: 461 watts (W) maximum continuous; 572 W peak input

AC line output

- Output receptacle: 100–120 V, 3 amperes (A) AC, 220–240 V, 1.5 A AC RMS (determined by actual input voltage); 3 A maximum at 100 V

DC power

- Continuous output power: 300 W
- Peak output power (for 12 seconds at startup): 389 W

Output voltage	Maximum output current*
+5 V	31 A†
+3.3 V	32 A†
+12 V	2 A
–12 V	0.85 A
+5 V (trickle)	0.1 A
+5 V (drives)	5.5 A
+12 V (drives)	6.7 A

*Total power output cannot exceed 300 W continuous.
†Total combined current in 5 V and 3.3 V outputs cannot exceed 36.5 A.

Power requirements for devices you can connect

Apple Desktop Bus (ADB)

- The mouse draws up to 10 milliamperes (mA).
- The keyboard draws 25–80 mA (varies with keyboard model used).
- The maximum current available for all ADB devices: 500 mA.

Note: The ADB port can support up to three daisy-chained ADB devices.

Audio and telecommunications devices

The following table shows power allowances for external devices connected to input ports.

Device	Voltage	Current	Power
Microphone	+5 V	20 mA	100 mW
A device connected to the printer port or modem port*	+5 V	500 mA	2.5 W
S-video input device	+12 V	250 mA	3 W

*Such as the GeoPort Telecom Adapter

Expansion cards and other internal devices

If you add an expansion card, a 5.25-inch storage device, or a 3.5-inch storage device to your computer, make sure the component's power requirements don't exceed the maximum power allowances allocated to it by the computer.

The maximum power allowances for expansion cards in your computer can accommodate three 15-watt or two 25-watt cards. Detailed guidelines are presented in the following table.

Device	Voltage	Current	Power
Expansion card (15 watts)*	+5 V +12 V –12 V +3.3 V	3 A 0.500 A 0.100 A 2 A	15 W 6 W 1.2 W 6.6 W
Expansion card (25 watts)†	+5 V +12 V –12 V +3.3 V	5 A 0.500 A 0.100 A 2 A	25 W 6 W 1.2 W 6.6 W
Storage device (such as a hard disk)	+5 V +12 V +12 V	9 A 3 A 7.5 A peak‡	45 W 36 W —

*15-watt expansion cards should not consume more than 15 watts of total power.
†25-watt expansion cards should not consume more than 25 watts of total power.
‡Peak power is for startup only and must not occur in normal operation.

Size and weight

Weight	Height	Width	Depth
Main unit			
15.9 kg*	439 mm	246 mm	440 mm
35 lb.*	17.3 in.	9.7 in.	17.3 in.
Mouse			
0.11 kg	33 mm	61 mm	107 mm
4 oz.	1.3 in.	2.4 in.	4.2 in.

*Weight varies depending on type of hard disk and may be greater if optional devices are installed.

Environment

Operating temperature

- 10° C to 40° C (50° F to 104° F)

Storage temperature

- –40° C to 47° C (–40° F to 116.6° F)

Relative humidity

- 5% to 95% (noncondensing)

Altitude

- 0 to 3048 m (0 to 10,000 ft.)

CD-ROM drive

Disc speed

- 24x (twenty-four times) maximum speed (constant 5135 RPM)

Disc diameters supported

- 120 mm (4.7 inches)
- 80 mm (3.2 inches)

Data capacity

- 656 MB, Mode 1
- 748 MB, Mode 2

Modes supported

- Audio CD
- CD-ROM: Modes 1 and 2
- CD-ROM XA: Mode 2, Forms 1 and 2
- CD-I: Mode 2, Forms 1 and 2
- Photo CD: Single-session and multisession
- Video CD

Laser

- Type: Semiconductor GaAlAs laser
- Wavelength: 795 ± 25 nanometers
- Output power: 0.2 to 0.6 milliwatts
- Beam divergence: 55°

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