Technical Information

Specifications for Power Macintosh 5400 series computers

Technical Information

Main unit

Processor

A PowerPC™ 603e processor with the following features:

- 180 megahertz (MHz) processor clock
- built-in floating point unit (FPU)
- 40 MHz system bus
- 32 kilobytes (K) internal cache (16K data, 16K instruction)

Memory

- 16 megabytes (MB) of dynamic random-access memory (DRAM), expandable to a maximum of 136 MB in two sockets. The main logic board has 8 MB of DRAM soldered to it, and an 8 MB DRAM DIMM is installed in one of the sockets. DRAM DIMMs installed later should be 64-bit wide, 168-pin fast-paged mode, with 70-nanosecond (ns) RAM access time or faster.
- 1 MB of built-in video RAM
- 4 MB of read-only memory (ROM)
- 8K of nonvolatile parameter memory
- One socket for an optional High Performance Module (256K Level 2 Cache)

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 ATA (AT Attachment) hard disk drive, also known as an Integrated Device Electronics (IDE) hard disk drive
- Tray-loading CD-ROM drive (5.25-inch, 1/2-height 8x-speed).

Video

Graphic modes supported

Your Power Macintosh 5400 series computer can display the graphic modes listed in the following table. In addition, your computer can display video input in some modes.

Resolution	Color depth	Vertical scan rate	Video input supported
640 x 480	16-bit	60 Hz and 67 Hz	yes
800 x 600	16-bit	60 Hz	yes, 8-bit or less color depth
800 x 600	8-bit	72 Hz	no
832 x 624	8-bit	75 Hz	yes

Video output

With the optional Apple External Video Connector kit, your computer can be connected to an Apple Video Presentation System or a liquid crystal display (LCD) panel. Your Macintosh can also support video mirroring (connecting a second monitor for display purposes) on the following monitors at the resolutions indicated with an X:

	640 x 480 at		800 x 600 at		832 x 624 at
	60 Hz	67 Hz	60 Hz	72 Hz	75 Hz
Apple Basic Color Monitor (14")	x				
Apple Color Plus 14" Display		x			
Apple High-Resolution RGB Monitor (13")		x			
Apple Multiple Scan 14 Display	x	x		x	x
Apple Multiple Scan 15 Display	x	x	x	x	x
Apple Multiple Scan 17 Display	x	x	x	x	x
Apple Multiple Scan 20 Display	x	x	x	x	x
Macintosh Color Display (14")		x			
SVGA monitors*	x		x	x	
VGA monitors*	x				

*A plug adapter may be required to connect an SVGA or VGA monitor.

Video input

With the optional Apple Video System video input card, you can view and record video from a video camera, VCR, or other video equipment. (If the optional Apple TV/FM Radio System is also installed, you can record video from broadcast or cable television.)

- Format: composite or S-video
- Transmission Format: industry standard NTSC/PAL/SECAM
- Polarity: sync negative
- Level: 0.8 volts peak-to-peak (Vpp) minimum to 2.0 Vpp maximum ("S" chroma level 1.4 Vpp maximum)
- Impedance: 75 ohms (Ω) internally terminated
- DC offset: +/–1.0 volts (V) maximum

Sound

- 16-bit stereo input
- 16-bit stereo output featuring SRS 3D Surround Sound technology
- Sample rates of 11.025, 22.05, and 44.1 kilohertz (kHz)
- Sound input connector line level: 2 Vpp maximum, into 10 kilohms (kΩ) impedance
- Sound output connector line level: 2 Vpp maximum, into 32 Ω impedance
- Signal-to-noise ratio (SNR): 75 decibels (dB) minimum, 80 dB typical (A-weighted, 2 Vpp output, 1 kHz, digital record and playback, sound input port to sound output port, with SRS 3D Surround Sound turned off)
- Frequency response: 20 Hz–18 kHz (–3 dB relative to 1 kHz under the same conditions as the SNR measurement)

Clock/calendar

- CMOS custom circuitry with long-life battery

WARNING If the clock begins to lose accuracy, see your 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 synchronous serial bus
- The optional Apple External Video Connector kit provides one monitor-out port. By connecting a second monitor, an LCD panel, or the Apple Presentation System to the port, you can simultaneously display on the attached device the images displayed on your computer's built-in monitor. (You cannot increase the size of your desktop by connecting a second monitor to this monitor-out port.) For a list of supported monitors, see "Video Output" earlier in this booklet.
- One internal expansion slot supporting 6.88-inch 15-watt Peripheral Component Interconnect (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 this expansion slot.
- One internal expansion slot supporting communication cards (such as modem, fax, Ethernet)
- One internal expansion slot supporting video input cards using NTSC, PAL, and SECAM
- One internal expansion bay for the optional Apple TV/FM Radio System
- Two RS-232/RS-422 serial GeoPort-compatible ports
- One 3.5-mm sound output port for line-level devices such as powered loudspeakers
- One 3.5-mm headphone jack

- One 3.5-mm sound input port for stereo sound input. The sound input port supports the Apple PlainTalk Microphone. (You can also connect non-Apple microphones.) In addition, the sound input port supports a standard stereo (miniplug-to-RCA) cable adapter for connecting stereo equipment to your computer. It does not support the Apple Omni microphone (the round microphone shipped with some earlier models of Macintosh) or the attenuated RCA adapter provided with some models of Macintosh.
- One external standard SCSI port that supports up to six external SCSI devices

IMPORTANT Some older SCSI devices or SCSI devices not manufactured by Apple 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.

Additional features

- Built-in microphone
- Built-in stereo speakers
- Support for optional infrared remote control
- Front panel push-button controls for volume and picture
- Power on and off from keyboard and optional remote control (included with the optional Apple TV/FM Radio System)

Size and weight

Weight	Height	Width	Depth
Main unit			
21.15 kg*	445 mm	383 mm	406 mm
47 lbs.*	17.5 in.	15.1 in.	16 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 any optional equipment.

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 percent to 95 percent (noncondensing)

Altitude

- Works below 3048 m (10,000 ft.)

Power

AC line input

- Line voltage: 90–264 volts (V) alternating current (AC), RMS single phase, automatically configured
- Frequency: 47–63 Hz
- Power: 220 watts maximum continuous

DC power

- Continuous output: 73 watts (60 W maximum during sleep mode)

Current type	Maximum current*
+5 V	10.7 A†
+5 V (trickle)	0.1 A
+3.3 V	5 A†
+12 V	1.5 A
–12 V	0.1 A

*Total power output cannot exceed 98 W.
†Not more than 10.7 A total combined current on +5 V and +3.3 V outputs.

Some Important Information About Your Computer

This update contains important information you need to know about your computer that is not contained in your user's manual.

About using your CD-ROM drive

Your computer comes with an 8-speed (8x) CD-ROM drive, one of the fastest speeds available. The 8x CD-ROM drive reads CD-ROM discs very quickly, but because of the high rotation speed of the drive, an unbalanced CD-ROM disc can wobble in the drive and cause the computer to vibrate. This vibration does not damage your computer or the CD-ROM disc itself, but you should be aware of the possibility just in case it occurs.

An unbalanced CD-ROM disc usually has artwork or labeling on it that causes the disc's weight to be unevenly distributed. For example, the label (or "paint") on the CD-ROM disc may be noticeably thicker on one side than the other, or there may be an adhesive label attached to the disc. Removing an adhesive label may reduce or eliminate the vibration.

Don't worry: If you're using a CD-ROM disc and you feel (or hear) that the computer is vibrating, you don't need to do anything special. As noted, the vibration damages neither your computer nor the CD-ROM disc.

If you use virtual memory or a RAM disk

Virtual memory is a feature on your Macintosh that enables you to increase the memory on your computer by using hard disk space as random-access memory (RAM). A *RAM disk* is a portion of your computer's RAM that you use like a disk to store programs and other files temporarily.

If you turn on both virtual memory and the RAM disk in the Memory control panel (in the Control Panels folder in the Apple menu), don't set both of them at or near their maximum values. Doing so can result in unpredictable or reduced performance by your computer.

Note: Not all application programs work well with virtual memory turned on. See your user's manual for more information. For more information on both the virtual memory and RAM disk features, see the Memory topic of Macintosh Guide, available from the Guide (?) menu.

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CD-ROM drive

The following table shows typical power consumption for the internal CD-ROM drive.

Power consumption (typical)	
+5 V DC	350 milliamperes (mA)
+12 V DC	300 mA

Power requirements for devices you can connect

Apple Desktop Bus (ADB)

- Mouse draws up to 10 milliamperes (mA)
- Keyboard draws 25–80 mA (varies with keyboard model used)
- Maximum current available for all ADB devices and all serial 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	1 mA	5 mW
GeoPort telecom adapter & ADB devices	+5 V	500 mA	2.5 W
S-video input connector	+12 V	250 mA	3 W

Expansion cards and devices

If you add an expansion card to your computer, make sure the component's power requirements don't exceed the maximum power allowances allocated to it by the computer.

Power allowances are presented in the following table.

Device	Voltage	Current	Power
PCI expansion card (15 watts)*	+3.3 V	2 A	6.6 Watts
	+5 V	3 A	15 Watts
	–12 V	500 mA	6 Watts
Communication expansion card†	+5 V	500 mA	2.5 Watts
	+12 V	100 mA	1.2 Watts
Video input expansion card‡	+5 V	200 mA	1 Watt
	+12 V	300 mA	3.6 Watts

*The PCI expansion card should not consume more than 15 watts of power total.
†The communication card should not consume more than 2.5 watts of power total.
‡The video input card should not consume more than 4.6 watts of power total.

Specifications for CD-ROM drive

Disc speed

- 8x (eight-times speed)

Disc diameter

- 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: 770 to 795 nanometers
- Output power: 0.2 to 0.6 milliwatts
- Beam divergence: 55°

030-9831-A
Printed in U.S.A.