# Technical Information

## Main unit

### Processor

A PowerPC™ 603e processor with the following features:

- processor speed: You can tell which processor speed your computer has by its name—for example, if you bought the Power Macintosh 5500/225, you have a 225 megahertz (MHz) processor clock. You can also use Apple System Profiler, available in the Apple (🍎) menu, to find out your processor speed and other information about your computer.
- built-in floating point unit (FPU)
- 50 MHz system bus
- 32 kilobytes (K) internal cache (16K data, 16K instructions)

### Memory

The following come with your computer:

- a minimum of 32 megabytes (MB) of dynamic random-access memory (DRAM) preinstalled in one of the two Dual Inline Memory Module (DIMM) sockets

  Each DIMM socket can accommodate a DIMM of up to 64 MB, for a possible maximum of 128 MB. DRAM DIMMs installed later should be 5 volt (V) 64-bit wide, 168-pin Extended Data Output (EDO) DIMMs, with 60-nanosecond (ns) RAM access time or faster and a 2K refresh count. The Single Inline Memory Modules (SIMMs) from older Macintosh computers are not compatible with your computer and should not be used. DIMMs that require a 4K refresh count also should not be used.
- 2 MB of built-in video memory using synchronous graphic RAM (SGRAM)
- 4 MB of read-only memory (ROM)
- one slot for an optional 50-MHz High Performance Module (256K level 2 cache). Some models come with a High Performance Module already installed.

*Note:* High Performance Modules used in other Power Macintosh computers, such as the Power Macintosh 6400 and 5400, cannot be used in this computer.

#### Internal storage devices

The following storage devices were installed in your computer at the factory:

- Apple SuperDrive 1.4 MB high-density floppy disk drive
- Apple ATA (Advanced Technology Attachment) hard disk drive, also known as an Integrated Device Electronics (IDE) hard disk drive

An optional tray-loading CD-ROM drive may also have been installed. (To determine the speed of your CD-ROM drive, if one was installed, look at the information on the box your computer came in.)

## Optional CD-ROM drive specifications

Your computer is available with CD-ROM drives of different speeds. The following information applies to all of these CD-ROM drives except where a specific model is named.

#### Disc diameter

120 millimeters (mm) (4.7 inches) and 80 mm (3.2 inches)

#### Average access time for 12x speed drives (typical)

- Normal speed: 380 ms (milliseconds)
- Maximum speed: 150 ms

#### Data capacity

- 656 megabytes (MB), Mode 1
- 748 MB, Mode 2

#### Maximum playing time

- 74 minutes, 42 seconds

#### Data streaming rates for 12x speed drives in user kilobytes (K) per second

- Normal speed: 150K, Mode 1
  171.1K, Mode 2
- Maximum speed: 1944K, Mode 1
  2223K, Mode 2

#### Playback formats supported by hardware

- 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
- CD-I:  Ready
- CD-I:  Bridge
- Photo CD:  Single session and multisession
- Video CD
- CD-WO (write once) playback

#### Laser

- Type:  Semiconductor GaAlAs laser
- Wavelength:  770 to 820 nanometers
- Output power:  0.2 to 0.6 milliwatts
- Beam divergence:  55°

## Video and graphics

Your computer has the following video and graphic capabilities built into the logic board:

- ATI 3D RAGE II 64-bit graphics and multimedia accelerator chip
- 2 MB synchronous graphic RAM (SGRAM)
- Hardware acceleration of 2-dimensional (2D) QuickDraw graphics and video—accelerates tasks such as scrolling, text and graphic display, and screen redraw.
- Hardware acceleration of video for full-screen, full-motion, TV-quality playback of QuickTime movies—accelerates and improves full-screen display of certain QuickTime movies and enhances video capture when used with an optional video input card.

- Hardware acceleration of 3-dimensional (3D) QuickDraw 3D rendering—accelerates QuickDraw 3D rendering up to 6 times faster than software-only rendering; provides real-time 3D shaded object manipulation, animation, and virtual world navigation; and enhances the realism of 3D interactive titles and games.
- Hardware support for 3D features, including the following:
  - 16-bit Z-buffer for hidden surface removal
  - six perspectively correct, texture-mapping functions
  - video textures and texture lighting
  - flat and Gouraud shading
  - alpha blending, transparency, and fog effects
  - support for QuickDraw 3D Rendering Acceleration Virtual Engine (RAVE)

**IMPORTANT** For best video performance, Apple recommends setting your display to a resolution of 640 x 480 and a color depth of 16 bits when running full-screen 3D graphics.

### Graphics modes supported

Your computer's built-in monitor (and the external monitor, if you have one connected to the optional Apple external video connector) can display the graphics modes listed in the following table. If your computer came with 16 MB of RAM, you may need to install more RAM in order to use 3D graphics acceleration.

**IMPORTANT** Some display resolutions that are not supported by your computer are listed in the Monitors & Sound control panel. For optimum results, use only the resolutions and scan rates listed in the following table.

| Resolution | Color depth* | Vertical scan rate in hertz (Hz) | Video input supported† | 2D Acceleration supported | 3D Acceleration supported |
|---|---|---|---|---|---|
| 640 x 480 | 8-bit | 60 Hz and 67 Hz | yes | yes | no |
| | 16-bit | 60 Hz and 67 Hz | yes | yes | yes |
| | 32-bit | 60 Hz and 67 Hz | no | yes | ‡ |
| 800 x 600 | 8-bit | 60 Hz and 72 Hz | yes | yes | no |
| | 16-bit | 60 Hz and 72 Hz | yes | yes | ‡ |
| | 32-bit | 60 Hz and 72 Hz | no | yes | no |
| 832 x 624 | 8-bit | 75 Hz | yes | yes | no |
| | 16-bit | 75 Hz | yes | yes | ‡ |
| | 32-bit | 75 Hz | no | yes | no |
| 1024 x 768 | 8-bit | 60 Hz | yes | yes | no |
| | 16-bit | 60 Hz | yes | yes | no |

* A color depth of 32 bits (also referred to as 24-bit color) can display millions of colors; a color depth of 16 bits can display thousands of colors; a color depth of 8 bits can display 256 colors.

† Video input is only supported on your computer's built-in monitor.

‡ Depends on the application window size.

### External monitors supported

If your computer came with the optional Apple External Video Connector, it can be connected to monitors with resolutions of up to 1024 x 768 for video mirroring. You can connect the following monitors at the resolutions indicated with an “X” in the following table:

| | 640 x 480 | 640 x 870 | 800 x 600 | 832 x 624 | 1024 x 768 |
|---|---|---|---|---|---|
| Apple High Resolution RGB Monitor (13") | | | | | |
| Apple Multiple Scan 14 Display | x | | x | x | x |
| Apple 15" Portrait | | x | | | |
| Apple Multiple Scan 15 Display | x | | x | x | x |
| AudioVision 15 | x | | x | x | x |
| Apple Color 16" | | | | x | |
| Apple Multiple Scan 17 Display | x | | x | x | x |
| Apple Multiple Scan 1705 Display | x | | x | x | x |
| AppleVision 1710 Display | x | x | x | x | x |
| AppleVision 1710AV Display | x | x | x | x | x |
| Apple RGB Monitor (19") | | | | | x |
| Apple Multiple Scan 20 Display | x | x | x | x | x |
| VGA | x | x | x | x | x |

### Video input

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

- Input format: composite or S-video
- Transmission format: industry standard NTSC/PAL/SECAM
- Polarity: sync negative or sync positive depending on video mode
- 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 V maximum

## Sound

- Built-in microphone
- Built-in stereo speakers
- 16-bit stereo input
- 16-bit stereo output featuring SRS 3D Surround Sound technology

  *Note:* You can hear SRS 3D Surround Sound technology through the sound output port on the back of your computer but not through the headphone jack on the front of the computer.
- 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 32Ω 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–18kHz (-3 dB relative to 1 kHz under the same conditions as the SNR measurement)
- Front-panel push-button controls for volume

More information about the sound input and output ports on your computer is contained in the later section, “Interfaces.”

## Clock/calendar

- CMOS custom circuitry with long-life battery

**WARNING** If the clock begins to keep time inaccurately, have an Apple-authorized dealer or service provider replace the battery. The service provider will dispose of the battery according to the local environmental guidelines. Do not attempt to replace the clock battery yourself.

## Keyboard

- Supports all Apple Desktop Bus (ADB) keyboards
- Power on and off from the keyboard

## Mouse

- Supports all models of the ADB mouse

## Interfaces

- One Apple Desktop Bus (ADB) port supporting up to three ADB input devices (such as a trackball, keyboard, or mouse) daisy-chained through a serial bus
- One internal expansion slot supporting a 6.88-inch 15-watt PCI (peripheral component interconnect) expansion card. 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 an internal modem or Ethernet card. (Depending on the configuration of your computer, a card may already be installed in this slot.)

- One internal video expansion slot supporting a video input card using the NTSC, PAL and SECAM formats. (Depending on the configuration of your computer, the video input card may already be installed in this slot.)
- Optional TV tuner card that allows you to connect your computer to an external TV antenna or cable TV service and FM radio antenna. (You may have either the Apple TV/FM Radio System or the Apple TV System.) Some models of your computer come with this option already installed. You can also purchase and install it later.
- One optional Apple external video connector. If you have it, this connector allows you to attach to your computer an external monitor that "mirrors" your computer's built-in display.
- Two RS-232/RS-422 serial GeoPort-compatible ports. (Only one of these is available if you have an internal modem installed.)
- One 3.5-mm sound output port for line-level devices, such as powered loudspeakers, on the back of the computer
- One 3.5-mm headphone jack on the front of the computer
- One external standard SCSI port that supports up to six external SCSI 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. (You can purchase an Apple PlainTalk Microphone from your Apple-authorized dealer.) 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.
- Support for an optional infrared remote control which allows remote power on and off (if you install the optional Apple TV/FM Radio System or Apple TV System and software)

## 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.)

## Weight

Weight varies depending on type of hard disk and any optional equipment.

- 21.15 kg (47 lbs.)

## Dimensions

- Depth x height x width: 406 mm x 445 mm x 383 mm (16" x 17.5" x 15.1")

## Power

### AC line input

- Line voltage: 90–264 V alternating current (AC), RMS single phase
- Frequency: 47–63 Hz
- Power consumption: 140 watts (W) maximum continuous input power. Typical AC power is 47 W for a 250 MHz computer with a 603e processor, 3 gigabyte (GB) hard disk, 28.8 bits-per-second (bps) modem, High Performance Module (level 2 cache), and a CD-ROM drive installed.

### DC power

- Continuous output: not to exceed 98 watts

| Current type | Maximum current* |
|---|---|
| +5 V | 10.7 A† |
| +5 V (trickle) | 0.1 A |
| +3.3 V | 5 A† |
| +12 V | 4 A |
| –12 V | 0.25 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.

### Sleep mode

The AC power for a computer without PCI cards installed is approximately 60 W in sleep mode.

### Optional CD-ROM drive

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

| Power consumption (typical) | |
|---|---|
| +5 V DC | 350 milliamperes (mA) |
| +12 V DC | 500 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

Your computer can accommodate only 6.88-inch PCI expansion cards. 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. Typical power needs of each kind of card are presented in the following table.

| Expansion card | Voltage | Current | Power |
|---|---|---|---|
| PCI card (15 watts)* | +3.3 V<br>+5 V<br>–12 V | 2 A<br>3 A<br>500 mA | 6.6 W<br>15 W<br>6 W |
| Communication card† | +5 V<br>+12 V | 500 mA<br>100 mA | 2.5 W<br>1.2 W |
| Video input card‡ | +5 V<br>+12 V | 200 mA<br>300 mA | 1 W<br>3.6 W |

* Each PCI 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.

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*Specifications for Power Macintosh 5500 series computers*



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