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TITLE

Power Macintosh G3: Technical Information Guide

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TOPIC

This article contains the information published in the Power Macintosh G3 Technical Information Guide, which is included with every Power Macintosh G3 desktop system.

DISCUSSION

Processor

266 megahertz (MHz) PowerPC 750 processor/66 MHz system bus
233 megahertz (MHz) PowerPC 750 processor/66 MHz system bus
300 megahertz (MHz) PowerPC 750 processor/66 MHz system bus

Memory

Dynamic Random Access Memory

The computer comes with 32 megabytes (MB) of synchronous dynamic random-access memory (SDRAM), supplied in removable Dual Inline Memory Modules (DIMMs). The main logic board has three expansion slots, which accept DIMMs that meet these specifications:

- 8, 16, 32, 64, or 128 MB DIMMs
- DIMMs must be 3.3 volt (V), unbuffered, 64-bit wide, 168-pin
- 100 MHz/10 nanosecond (ns) cycle time or faster using Synchronous Dynamic Random Access Memory (SDRAM).

Note: If you install DIMMs with different speeds, they will all operate at the speed of the slowest DIMM installed.

Important: Power Macintosh G3 series computers use Synchronous Dynamic Random Access Memory (SDRAM) DIMMs. DIMMs from older Macintosh computers are not compatible with your computer and should not be used even though they will fit into the DRAM DIMM slots.

To increase DRAM to the maximum of 384 MB, fill all three slots with 128 MB DIMMs.

(Note: *The printed version of the Technical Information Guide does not contain this additional information: a Power Macintosh G3 in a desktop enclosure is capable of taking 128MB DIMMs. However, smaller 128MB DIMMs must be used due to space constraints. For additional information, refer to Tech Info Library article 24343, "[Power Macintosh G3 \(Desktop\): 128MB Memory DIMM Support](#)"*)

Video Memory

Your computer comes with 2 MB of Synchronous Graphic RAM (SGRAM) video memory built into the logic board. The logic board contains a video memory expansion slot that accepts a DIMM to increase video memory up to a maximum of 6 MB. The DIMM must meet these specifications:

- 2 MB or 4 MB SGRAM SO-DIMM.
- DIMM must be 32-bit wide, 144-pin
- DIMM must have 83 MHz/12 ns cycle time or faster

Important: Use only SGRAM SO-DIMMS and never use 256K or 512K video memory DIMMs used in older Macintosh computers.

Other Memory:

- 4 MB of read-only memory (ROM)
- 8 kilobytes (KB) of nonvolatile parameter memory
- 512K to 1 MB of static RAM used as a level 2 cache integrated into the processor module

For more information and instructions on expanding your DRAM or video memory, see Chapter 3, "Installing PCI Expansion Cards and Additional Memory," in Setting Up Your Power Macintosh G3 series computer manual.

Graphics Modes

The table that follows shows the modes available for monitors that can be connected to the monitor port, along with the number of colors or grays supported with 2 MB of video memory (SGRAM) and with the optional expansion to 4 MB or 6 MB of SGRAM. The table also lists the screen refresh rates in hertz (Hz) and kilohertz (kHz). 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 with Power Macintosh computers. 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 display 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 display modes that it supports.

Display Modes and Color Depths						
Display Mode (resolution)	Screen Refresh Rate		Clock	Pixel Color Depth (bits per pixel)*		
	vertical	horizontal		2MB	4MB	6MB
512 x 384	70.130 Hz	31.488 kHz	21.160	32	32	32
640 x 480	59.940 Hz	31.469 kHz	25.175	32	32	32
640 x 480	66.667 Hz	35.000 kHz	30.24	32	32	32
640 x 480	72.809 Hz	37.861 kHz	31.500	32	32	32
640 x 480	75.000 Hz	37.500 kHz	31.500	32	32	32
640 x 480	85.008 Hz	43.269 kHz	36.000	32	32	32
640 x 870	75.000 Hz	68.850 kHz	57.283	16	32	32
800 x 600	56.250 Hz	35.156 kHz	36.000	32	32	32
800 x 600	60.317 Hz	37.879 kHz	40.000	32	32	32
800 x 600	72.188 Hz	48.077 kHz	50.000	32	32	32
800 x 600	75.000 Hz	46.875 kHz	49.500	32	32	32
800 x 600	85.061 Hz	53.674 kHz	56.250	32	32	32
832 x 624	74.550 Hz	49.725 kHz	57.283	32	32	32
1024 x 768	60.004 Hz	48.363 kHz	65.000	16	32	32
1024 x 768	70.069 Hz	56.476 kHz	75.000	16	32	32
1024 x 768	75.029 Hz	60.023 kHz	78.750	16	32	32
1024 x 768	74.927 Hz	60.241 kHz	80.000	16	32	32
1024 x 768	84.997 Hz	68.677 kHz	94.500	16	32	32
1152 x 870	75.062 Hz	68.681 kHz	100.00	16	32	32
1280 x 960	75.000 Hz	75.000 kHz	126.000	8	16	16
1280 x 1024	60.020 Hz	63.981 kHz	108.000	8	16	32
1280 x 1024	75.025 Hz	79.976 kHz	135.000	8	16	16
1280 x 1024	85.024 Hz	91.146 kHz	157.500	8	16	16
1600 x 1200	60.000 Hz	75.000 kHz	162.000	8	16	16
1600 x 1200	65.000 Hz	81.250 kHz	175.500	8	16	16
1600 x 1200	70.000 Hz	87.500 kHz	189.000	8	16	16
1600 x 1200	75.000 Hz	93.750 kHz	202.500	8	16	16
The following five configurations are available only on Power Macintosh G3 computers with the revision 2 logic board:						
1280 x 960	75.000Hz	75.000kHz	126.000MHz	8	16	32
1280 x 1024	75.025Hz	79.976kHz	135.000MHz	8	16	32
1280 x 1024	85.024Hz	91.146kHz	157.500MHz	8	16	32
1920 x 1080	59.994Hz	70.313kHz	180.000MHz	8	16	16
1920 x 1080	71.992Hz	84.375kHz	216.000MHz	8	16	16

Table Notes:

* This mode is derived from VESA 640 x 400 timings (used primarily as a games mode).

Image bit depths:

32 bits=millions of colors

16 bits=thousands of colors

8 bits=256 colors

Internal Disk Drives

The following drives come factory-installed in your computer:

- Apple SuperDrive 1.4 MB high-density floppy disk drive
- Apple ATA hard disk drive
- 24x-speed ATAPI CD-ROM drive
- Internal 100Mb Zip drive for fast, easy storage or backup (some configurations)

Interfaces

- One ADB port supporting up to three ADB input devices (such as a keyboard, mouse, or trackball) daisy-chained through a low-speed, synchronous serial bus
- Monitor port supporting color and grayscale monitors of various sizes and resolutions Two internal ATA connectors: one supports the hard disk drive and one supports the built-in CD-ROM drive
- Three internal expansion card slots supporting PCI expansion cards. Install only expansion cards that come with Macintosh drivers and are compliant with the PCI 2.1 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. (**Note:** *The original information printed in the guide is incorrect. The ports are compatible with LocalTalk and GeoPort cables. The GeoPort Telecom Adapter with Apple Telecom software is not supported.*)
- One built-in 10Base-T Ethernet RJ-45 connector for direct connection to 10Base-T networks
- One 3.5-mm sound output port for headphones or amplified speakers
- 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.

Optional Audio/Video Interfaces

Some Power Macintosh G3 models include the following audio/video interfaces:

- Two pairs of RCA-type audio ports for stereo input and output
- Two composite video ports for video input and output
- Two S-video ports for video input and output

All the video ports support the NTSC and PAL video standards. The video input ports also support the SECAM video standard.

SCSI Interface

Your computer has one standard SCSI chain, which is capable of transferring data at up to 5 MB per second. The SCSI chain can support up to seven internal and external SCSI devices. This section describes the internal SCSI expansion options. For information on connecting external SCSI devices, see *Setting Up Your Power Macintosh G3 Series Computer* manual. An Apple-authorized dealer or service provider can install internal SCSI devices.

The computer has two internal expansion bays. Each one accepts a 3-1/2" or 5-1/4" storage device that is up to 1.625" (41.3 mm) high. Some models come with a Zip drive already installed in one of these bays. An Apple-authorized dealer or service provider can install internal SCSI devices, along with any necessary data cabling or brackets to properly secure each SCSI device inside the computer. (Models with an internal Zip drive have an internal SCSI cable that includes an extra SCSI connector for the second expansion bay. Models without an internal Zip drive do not come with an internal SCSI cable; a dealer or service provider must install a SCSI cable in order to connect internal devices to the SCSI chain.) An Apple-authorized dealer or service provider could also replace the CD-ROM drive with a 5.25-inch (or smaller) device as tall as 1.625 inches (41.3 mm), or replace the floppy disk drive with a 3.5-inch device as tall as 1.04 inches (26.0 mm).

All internal and external devices on the SCSI chain must have unique ID numbers. SCSI ID numbers 0 through 6 are available. If the computer came with an internal Zip drive, the drive already has SCSI ID number 5 assigned to it. The computer itself has been assigned SCSI ID number 7.

Important: Some older SCSI devices may require updated drivers to work with your computer. (A "driver" is special software that is installed in your System Folder.) Contact the device manufacturer for information on obtaining driver software.

Clock/Calendar

CMOS custom circuitry with long-life battery

Keyboard

Supports all Apple Desktop Bus (ADB) keyboards

Mouse

Supports all models of the ADB mouse

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)

Warning: Do not attempt to replace the clock battery yourself. If the clock begins to lose accuracy, have an Apple-authorized service provider replace the battery. The service provider will dispose of the battery according to the local environmental guidelines.

Typical Audio Specifications

Sound input using the sound input port:

- Input impedance (preamp off): more than 80 kilohm (k Ω)
- Maximum input voltage (preamp off): 1 Volt (V rms) = 2.8 Volts peak-to-peak (V pp), nominal
- Input impedance (preamp on): more than 5 k Ω
- Maximum input voltage (preamp on): 62 millivolts (mV rms) = 175 mV pp , nominal

Sound output using the sound output port:

- Output impedance: 33 Ω , nominal
- Maximum output voltage: 0.94 V rms = 2.65 V pp

Noise, Distortion, and Bandwidth:

- Sound input signal-to-noise ratio (SNR): 85 decibels (dB) unweighted (add +8 dB to estimate A weighting)
- Total harmonic distortion: 0.05%
- Bandwidth: 20 Hz 20 kHz at 44.1-kHz sample rate (Other sample rates scale the upper cut off frequency.)

AC line input:

- Line voltage: 100 120 volts alternating current(V AC) and 200 240 V AC, rms, single phase, manually set by voltage selector switch
- Frequency: 50/60 Hz
- Power: 250 watts (W) maximum continuous; 360 W peak input

AC line output:

- Output receptacle: 100 120 V AC; 3 amperes (A) maximum, or 200 240 V AC; 1.5 amperes (A) maximum (determined by actual input voltage)

DC power:

Continuous output: 161 W

Peak output (for 12 seconds at startup): 210 W

Output Voltage	Maximum Current
+5V	18.3A
+5V (trickle)	0.1A
+3.3V	12.5A
+12V	6.2A
-12V	0.4A

- Total continuous power output cannot exceed 161 W.
- Not more than 104 W total combined power.

Apple Desktop Bus (ADB)

- The mouse draws up to 10 milliamperes (mA).
- The keyboard draws 2580 mA (varies with keyboard model used).
- The maximum current available for all ADB devices is 500 mA.
- The ADB port can support up to three ADB devices.

Audio and Telecommunications Devices

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

Device	Voltage	Current	Power
Microphone	+5V	20mA	100mW
A device connected to the printer port or modem port	+5V	500mA	2.5W

Expansion Cards and Other Internal Devices

If you add an expansion card 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, two 25-watt cards, or one 15-watt card and one 25-watt card. Some detailed guidelines are presented in the following table.

Device	Voltage	Current	Power
Expansion card (15 watts)*	+5V	3A	15W
	+12V	0.500A	6W
	-12V	0.100A	1.2W
	+3.3V	2A	6.6W
Expansion card (25 watts)**	+5V	5A	25W
	+12V	0.500A	6W
	-12V	0.100A	1.2W
	+3.3V	2A	6.6W
Storage devices (such as a hard disk)	+5V	3A	15W
	+12V	2.3A	27.6W
	+12V	6.2A peak***	-
Notes:			
* 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.			

CD-ROM drive

Disc speed:

- o 24x (twenty-four times speed)

Disc diameters supported:

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

Data capacity:

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

Modes supported:

- o Audio CD
- o CD-ROM: Modes 1 and 2
- o CD-ROM XA: Mode 2, Forms 1 and 2

EXTENDED Information - Apple Internal Use - Service Providers and Support Professional

Document Information

Product Area: Computers
 Category: Power Macintosh
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