

Illustrated Parts & Service Map

HP Compaq dc7800 Convertible Minitower Business PC



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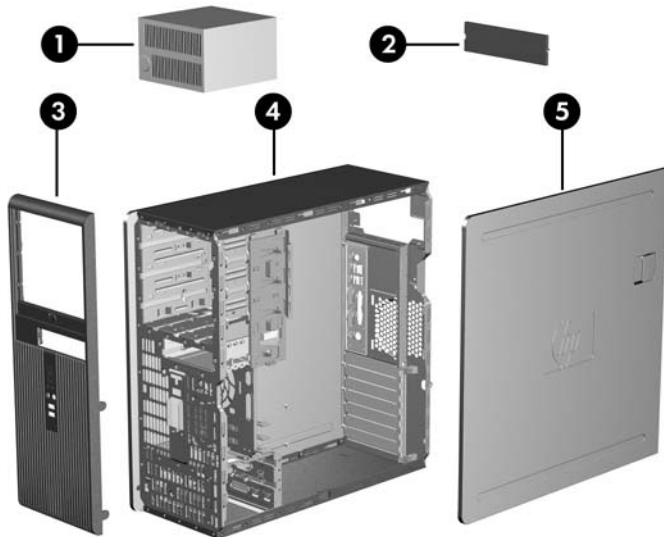
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Key Specifications

Processor Type	Intel Core 2 Duo, Core 2 Quad, Pentium dual-core, Celeron
RAM Type	DDR2-SDRAM DIMMs, PC2-5300 (667 MHz) non-ECC or PC2-6400 (800 MHz) non-ECC
Maximum RAM Supported	8 GB
Expansion Slots	<ul style="list-style-type: none"> 1 PCIe-x16 2 PCIe-x1 3 PCI
Graphics Adapter	Intel GMA 3100 integrated
Drive Support	<ul style="list-style-type: none"> 4 SATA (HDD + Optical) RAID 1 Support FDD, Media Card Reader, Removable HDD
I/O Interfaces	Serial (2, 1 optional), parallel (1), USB 2.0 (8), RJ-45 (1), front and rear audio jacks (2 each), PS/2 ports (2), VGA connector (1), USB header on system board

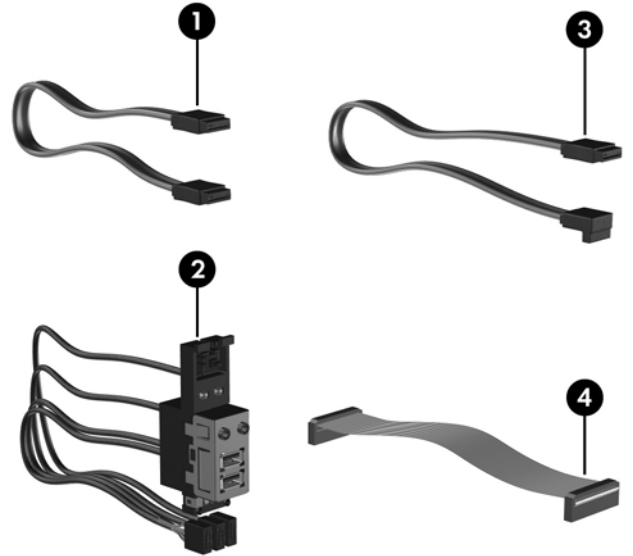
Spare Parts



System Unit

1	Power supply, 365W	437799-001
*	Power supply, 365W, 80% efficient	437800-001
2	5.25-inch bezel blank	335937-001
3	Front bezel	450714-001
4	Chassis	not spared
5	Access panel	450713-001
*	3.5-inch diskette drive bezel blank	459913-001

* Not shown



Cables

1	SATA ODD cable, 14 inch, 2 straight ends	391740-001
2	Front I/O with USB	450708-001
3	SATA HDD cable, 18 inch, 1 straight end, 1 angled end	393958-001
4	Diskette drive cable	439216-001

*Not shown

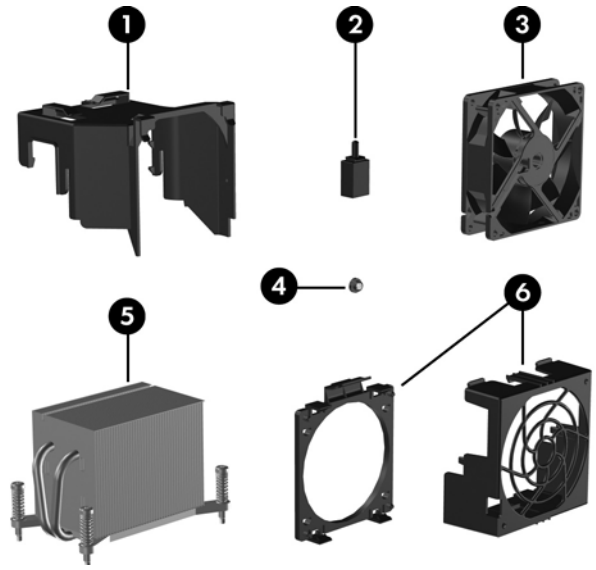
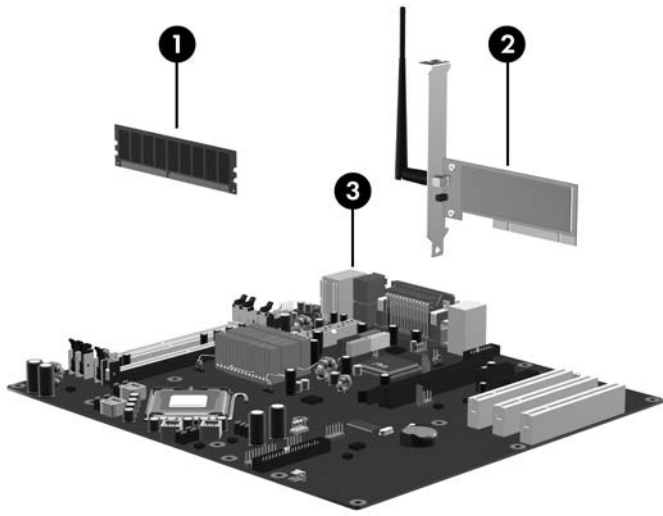
Keyboards (not illustrated)

PS/2, Basic	435302-xxx		
USB, Basic	435382-xxx		
USB SmartCard	435385-xxx		
Arabic	-171	Korean (Hangul)	-AD1
Belgian	-181	LA Spanish	-161
BHCSY	-B41	Norwegian	-091
Brazilian Portuguese	-201	PRC	-AA1
Czech	-221	Portuguese	-131
Danish	-081	Romanian*	-271
Finnish	-351	Russian	-251
French	-051	Slovakian	-231
French Arabic	-DE1	Spanish	-071
French Canadian	-121	Swedish	-101
German	-041	Swiss	-111
Greek	-151	Taiwanese	-AB1
Hebrew	-BB1	Thai	-281
Hungarian	-211	Turkish	-141
International	-B31	U.S.	-001
Italian	-061	U.K.	-031
Japanese	-291		

*Not for 435385-xxx

Mass Storage Devices (not illustrated)

Diskette drive with bezel	431452-001
Media card reader, 3.5-inch	407187-001
Media card reader, 5.25-inch	444582-001
16X SATA DVD±RW and CD-RW drive with LightScribe	447310-001
16X SATA DVD-ROM drive	419496-001
48X CD-RW/DVD-ROM combo drive	419497-001
500 GB SATA hard drive	457909-001
250 GB, 7200-RPM SATA hard drive, 8-MB cache	449980-001
250 GB, 7200-RPM SATA hard drive, 8-MB cache	440747-001
160 GB, 7200-RPM SATA hard drive, 8-MB cache	449979-001
160 GB, 7200-RPM SATA hard drive, 8-MB cache	440499-001
160 GB, 10000-RPM SATA hard drive, 16-MB cache	439995-001
80 GB, 7200-RPM SATA hard drive, 8-MB cache	449978-001
80 GB, 7200-RPM SATA hard drive, 8-MB cache	440754-001
80 GB, 10000-RPM SATA hard drive, 16-MB cache	439994-001



Standard and Optional Boards

Memory modules		
1	512 MB, PC2-5300, CL5	396520-001
1	1 GB, PC2-5300, CL5	398038-001
1	2 GB, PC2-5300, CL5	450367-001
1	512 MB, PC2-6400, CL6	418952-001
1	1 GB, PC2-6400, CL6	418951-001
1	2 GB, PC2-6400, CL6	457624-001
Other boards		
2	Belkin 802.11a/g WLAN adapter for use in the United States and most of the world	391866-002
*	Belkin 802.11a/g, WLAN adapter for use in the rest of the world	391866-001
*	Broadcom NIC, PCIE	430654-001
*	Agere International 56K Modem	398661-001
*	nVidia GeForce 8440 GS 256-MB video card with dual-link DVI-I and TV (S-Video) outputs. LP	445743-001
*	nVidia GeForce 8440 GS 256-MB video card with DMS59 and TV (S-Video) outputs. LP	445744-001
*	DVI-D ADD2 graphics	398333-001
*	1394 card 2 external, 1 internal port	393308-001
*	Intel, Gigabit NIC	398754-001
*	ReadyBoost module, 1 GB	455971-001
System boards with thermal grease, alcohol pad, and CPU socket cover		
3	System board	437795-001
*	System board, excludes ES/CS	450706-001
Intel Celeron Processors with alcohol pad and thermal grease		
*	440, 512-KB cache, 2.0 GHz	449166-001
*	430, 512-KB cache, 1.8 GHz	449165-001
*	420, 512-KB cache, 1.8 GHz	449164-001
Intel Pentium Dual Core Processors with alcohol pad and thermal grease		
*	E2180, 1-MB cache, 2.0 GHz	457656-001
*	E2160, 1-MB cache, 1.8 GHz	457622-001
Intel Core 2 Quad Processors with alcohol pad and thermal grease		
*	Q6700, 8-MB cache, 2.66 GHz	455402-001
*	Q6600, 8-MB cache, 2.40 GHz	452451-001
Intel Core 2 Duo Processors with alcohol pad and thermal grease		
*	E6850, 4-MB cache, 3.00 GHz	450792-001
*	E6750, 4-MB cache, 2.66 GHz	450791-001
*	E6550, 4-MB cache, 2.33 GHz	450694-001
*	E4500, 2-MB cache, 2.20 GHz	449452-001
*	E4400, 2-MB cache, 2.00 GHz	449451-001

* Not shown

Miscellaneous Parts

1	Fan duct	450707-001
2	Hood sensor	392417-001
3	Chassis fan	450711-001
4	Grommet, hard drive isolation	450712-001
5	Heatsink with alcohol pad and factory-applied thermal grease	450715-001
6	Fan holder, system fan	450710-001
*	Solenoid lock	392416-001
*	Fan	443215-001
*	Fan, heatsink	455310-001
*	Fan holder, CPU	450709-001
*	Mouse, PS2, optical	417966-001
*	Mouse, optical	390938-001
*	Mouse, scroll	390937-001
*	Battery, real-time clock	153099-001
*	Internal speaker	430129-001
*	Second serial port, LP	393601-001
*	Modem cable	198220-001
*	Hard drive, removable carrier	444873-001
*	Hard drive, removable frame	444872-001
*	Miscellaneous screw kit, includes:	414180-001
	<ul style="list-style-type: none"> • #6-32 x .250 hitop screw with serrations (192308-001)(14 ea) • #6-32 x .312 hitop screw with serrations (192308-002) (4 ea) • #6-32 x .187 hitop screw with serrations (192308-003) (6 ea) • Screwlock, ext tooth, 4-40 (106902-001) (2 ea) • 8x5/16L, .185x.03 Shldr (334248-001) (4 ea) • Flathead, plastite, phillips (247481-001) (8 ea) • M3 x 5mm hitop (247348-001) (8 ea) • Thumbscrew (368224-002) (2 ea) • #6-32 x .250, Taptite, T15S (101517-067) (12 ea) • Torx, pan head, slotted (101517-066) (1 ea) • Plastite, 8x5/16L, .185DX (334248-002) (1 ea) 	

*Not shown

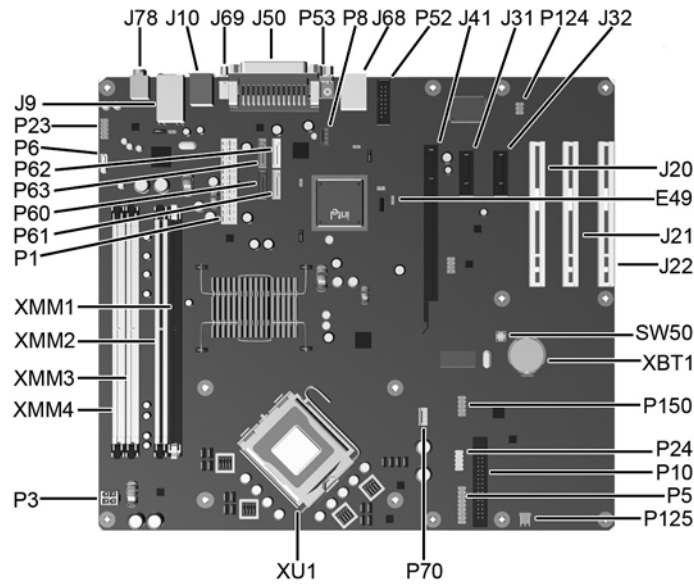
LP = Low profile

FH = Full height

Modem RJ-11 adapters (not illustrated)

Austrian	417561-011	Italian	316904-065
Belgian	316904-181	Netherlands	316920-335
Czechoslovakian	234963-221	Polish	316904-241
French	316904-051	Saudi Arabian	316904-AR1
German	316904-045	Scandinavian	382848-DH1
Greek	316904-151	Swiss	417562-111
Hungarian	234963-215	Turkish	316904-141
Israel	316904-BB1	United Kingdom	158593-035

System Board



System Board Connectors and Jumpers (position of some untitled components may vary in location)

E49	Password	P24	Front USB
J9	RJ-45 over dual USB	P3	CPU power
J10	Quad stack USB	P5	Power button/LED
J20	PCI slot 1	P52	Second serial port
J21	PCI slot 2	P53	Serial port connector
J22	PCI slot 3	P6	Internal speaker
J31	PCIe X1, slot 1	P60	SATA0
J32	PCIe X1, slot 2	P61	SATA1
J41	PCIe X16	P62	SATA4
J50	Parallel port connector	P63	SATA5
J68	Dual stack keyboard/mouse	P70	Primary CPU fan
J69	VGA connector	P8	Primary chassis fan
J78	Double stack audio connector	SW50	Clear CMOS
P1	Main power	XBT1	Real-time-clock battery
P10	Diskette drive	XMM1	DIMM 1
P124	Hood lock	XMM2	DIMM 2
P125	Hood sensor	XMM3	DIMM 3
P150	Media reader/ReadyBoost connector	XMM4	DIMM 4
P23	Front audio	XU1	Processor

System Setup and Boot

Basic system information regarding system information, setup, power management, hardware, and passwords is maintained in the Setup Utility held in the system ROM. The Setup Utility is accessed by pressing the F10 key when prompted (on screen) to do so during the boot sequence. If the screen prompt opportunity is missed, a restart will be necessary.

Computer Setup Menu

Heading	Option/Description
File	System Information - Lists the following main system specifications: <ul style="list-style-type: none"> Product name SKU number (some models) Processor type/speed/stepping Cache Size (L1/L2) Memory size/speed/ no. channels Integrated MAC Address System BIOS Chassis serial number Asset tracking number
	About - Displays copyright notice.
	Set Time and Date - Allows you to set system time and date.
	Flash System ROM - Allows you to select a drive containing a new BIOS.
	Replicated Setup - Save to Removable Media and Restore from Removable Media
	Default Setup <ul style="list-style-type: none"> Save Current Settings as Default Restore Factory Settings as Default
	Apply Defaults and Exit - Applies the selected default settings and clears any established passwords.
	Ignore Changes and Exit - Exits Computer setup without applying or saving any changes.
	Save Changes and Exit - Saves changes to system configuration or default settings and exits Computer Setup.
	Storage
Storage Options <ul style="list-style-type: none"> Removable Media Boot Legacy Diskette Write SATA Emulation 	
DPS Self-Test - Allows you to execute self-tests on ATA hard drives.	
Boot Order - Allows you to specify boot order. <ul style="list-style-type: none"> Shortcut to Temporarily Override Boot Order 	

Computer Setup Menu (Continued)

Heading	Option / Description
Security	Setup Password - Allows you to set and enable the setup (Administrator) password.
	Power-On Password - Allows you to set and enable power-on password.
	Password Options - When any password exists allows you to lock legacy resources, enable/disable network server mode, specify password requirement for warm boot, and allows you to enable/disable Setup Browse Mode.
	Smart Cover (some models) - Allows you to lock/unlock cover lock and set status of cover removal sensor.
	Device Security (some models) - Enables/disables all I/O ports, audio, network controllers, SMBus controller, and embedded security devices.
	Network Service Boot - Enables/disables boot from OS on a server.
	System IDs - Allows you to set Asset tag, ownership tag, Chassis serial number, UUID, and keyboard locale setting.
	DriveLock Security - Allows you to assign/modify a hard drive password for added security.
	System Security (some models) - Allows you to enable/disable: <ul style="list-style-type: none"> Data Execution Prevention Virtualization Technology Virtualization Technology Directed I/O Trusted Execution Technology Embedded Security Device Support OS management of Embedded Security Device through OS Virtual Appliance options Smart Card BIOS Password Support
	Setup Security Level - Provides method to allow users limited access to change specified setup options without knowing Setup password.
Power	OS Power Management - Allows you to enable/disable Runtime Power Management, Idle Power Savings, ACPI S3 Hard Disk Reset, ACPI S3 PS2 Mouse Wakeup, USB Wake on Device Insertion (some models), Unique Sleep State Blink Rates.
	Hardware Power Management - Allows you to enable/disable SATA bus power management.
	Thermal - Allows you to control minimum permitted fan idle speed.
Advanced	Power-On Options - Allows you to set: <ul style="list-style-type: none"> POST mode - QuickBoot, FullBoot, or FullBoot every 1-30 days. POST messages - Enable/disable MEBx Setup prompt - Enable/disable or hidden/displayed F9 prompt - Enable/disable F10 prompt - Enable/disable F12 prompt - Enable/disable Factory Recovery Boot Support - Enable/disable Option ROM prompt - Enable/disable WOL After Power Loss - Enable/disable Remote wakeup boot source - Remote server/local hard drive After Power Loss - Off/on/previous state POST delay - None, 5, 10, 15, or 20 seconds Limit CPUID
	Execute Memory Test (some models) -Restarts computer and executes POST memory test.
	BIOS Power-On - Allows you to set the computer to turn on at a preset time.
	Onboard Devices - Allows you to set resources or disable onboard system devices.
	PCI Devices - Lists installed PCI devices with their IRQ settings and allows you to reconfigure IRQ or disable devices.
	PCI VGA Configuration - Allows you to specify which VGA controller will be used when multiple video adapters are available.
	Bus Options (some models) - Allows you to enable/disable PCI SERR# Generation and PCI VGA palette snooping.
	Device Options - Allows you to set: <ul style="list-style-type: none"> Printer Mode - Bi-Directional, EPP & ECP, Output Only Num Lock state at power-on - off/on S5 Wake on LAN - enable/disable Processor cache - enable/disable Integrated video - enable/disable Multi-Processor - enable/disable Internal speaker - enable/disable Monitor Tracking - enable/disable NIC PXE Option ROM Download - enable/disable

System Hardware Interrupts

IRQ	System Function	IRQ	System Function
0	Timer Interrupt	8	Real-Time Clock
1	Keyboard	9	Unused
2	Interrupt Controller Cascade	10	Unused, available for PCI
3	Serial Port (COM B)	11	Unused, available for PCI
4	Serial Port (COM A)	12	Mouse
5	Unused, available for PCI	13	Coprocessor
6	Diskette Drive	14	Primary ATA (IDE) Controller
7	Parallel Port (LPT 1)	15	Secondary ATA (IDE) Controller

Failsafe Boot Block ROM

The computer comes with a reprogrammable flash system ROM (read only memory). To upgrade the ROM, download the latest ROM BIOS image from the HP Web site (www.hp.com) and follow the online GUI/instructions.

Your system ROM includes a Failsafe Boot Block that is protected during the flash process and allows the computer to be restarted in the unlikely event of an unsuccessful ROM flash. If the system detects an invalid system ROM during the boot sequence, the Failsafe Boot Block attempts to locate a valid BIOS image on removable media. To recover from the Boot Block recovery mode complete the following steps:

Boot Block Recovery

1. Remove any bootable media from the computer and turn off power.
2. Insert a flash drive or CD containing the ROM BIOS in the root directory. The media must be formatted using the FAT12, FAT16, or FAT32 file system.
3. Turn on power to the system.
4. The system will automatically flash the ROM. After a successful flash, the system will either automatically restart or prompt the user to unplug the unit, wait 5 seconds, reattach the power cord, and then press the power button.

NOTE: BitLocker prevents Windows Vista from booting when a CD containing the BIOS image file is in an optical drive. If BitLocker is enabled, remove this CD before attempting to boot to Windows Vista.

Password Security

Establishing a Setup password:

1. Turn on or restart the computer. If you are in Windows, click **Start > Shut Down > Restart**.
2. As soon as the computer is turned on, press **F10** when the monitor light turns green to enter Computer Setup. Press **Enter** to bypass the title screen, if necessary. If you do not press **F10** when prompted, a restart will be necessary.
3. Select **Security > Setup Password** and follow the instructions on the screen.
4. Before exiting, click **File > Save Changes and Exit**.

Changing a password:

1. Turn on or restart the computer. If you are in Windows, click **Start > Shut Down > Restart**. To change the Setup password, go to step 2. To change the Power-on password, go to step 3.
2. To change the Setup password, as soon as the computer is turned on, press **F10** when the monitor light turns green to enter Computer Setup. Press **Enter** to bypass the title screen, if necessary.
3. When the key icon appears, type your current password, a slash (/) or alternate delimiter character, your new password, another slash (/) or alternate delimiter character, and your new password again as shown:

current password/new password/new password.

NOTE: Type the new password carefully since the characters do not appear on the screen.

4. Press **Enter**.

The new password will take effect the next time the computer is restarted.

Deleting a password

1. Turn on or restart the computer. If you are in Windows, click **Start > Shut Down > Restart**. To delete the Setup password, go to step 2. To delete the Power-On password, go to step 3.
2. To change the Setup password, as soon as the computer is turned on, press **F10** when the monitor light turns green to enter Computer Setup. Press **Enter** to bypass the title screen, if necessary.
3. When the key icon appears, type your current password followed by a slash (/) or alternate delimiter character as shown. Example: `currentpassword/`
4. Press **Enter**.

Security Features

NOTE: For more information about Setup Utilities refer to the Computer Setup Menu on the previous page or in the *Service Reference Guide*.

Diagnostic Functions

Diagnostic functions are provided by the Setup Utility (in system ROM) and by Insight Diagnostics. Insight Diagnostics provides detailed system information including:

- Processor type and speed
- Memory amount, mapping, and integrity
- Hardware peripheral availability/settings
- Hard drive type, space used/available
- System identification, asset tracking

Insight Diagnostics may be found on the *Documentation and Diagnostics* CD that shipped with the computer. The tool may also be downloaded from the hp Web site using the following procedure:

1. Go to www.hp.com
2. Click the **Software & Download driver** link.
3. Enter the product number (for example, dc7800) in the text box and press the **Enter** key.
4. Select the specific product.
5. Select the OS.
6. Click the **Diagnostics** link.
7. Select **HP Insight Diagnostics Offline Edition**.
8. Select the proper language and click **Download**.

NOTE: The download includes instructions on how to create a bootable CD.

Clearing CMOS

1. Turn off the computer and any external devices, and disconnect the power cord from the power outlet.
2. Remove the chassis access panel.
3. On the system board, press and hold the CMOS button for 5 seconds.
4. Replace the chassis access panel and reconnect the power cord.
5. Turn on the computer and allow it to start.

Error Conditions and Messages

Feature	Purpose	How It Is Established
Floppy drive controller	Prevents the transfer of data to or from the floppy drive.	Setup Utilities
Device Boot Disabling	Prevents booting from and/or all of these devices: Internal or external USB, Internal ODD, or Internal FDD	Setup Utilities
Security Option	Prevents use of computer until password is entered. Can apply to both initial startup and restart.	Setup Utilities
BIOS Write Protect	Restricts ability to change ROM BIOS without approval.	Setup Utilities.
USB Controller	Allows you to disable or enable all USB devices.	Setup Utilities

Diagnostic LEDs

LED	Color	LED Activity	State/Message
Power	Green	On	Computer on
Power	Green	1 blink every 2 seconds	Normal Suspend Mode
Power	Red	1 blink every second followed by a 2 second pause	CPU thermal shutdown
Power	Red	3 blinks, 1 blink every second followed by a 2 second pause	Processor not installed
Power	Red	4 blinks, 1 blink every second followed by a 2 second pause	Power failure (power supply overload)
Power	Red	5 blinks, 1 blink every second followed by a 2 second pause	Pre-video memory error
Power	Red	6 blinks, 1 blink every second followed by a 2 second pause	Pre-video graphics error
Power	Red	7 blinks, 1 blink every second followed by a 2 second pause	System board failure (ROM)
Power	Red	8 blinks, 1 blink every second followed by a 2 second pause	Invalid ROM based on Checksum
Power	Red	9 blinks, 1 blink every second followed by a 2 second pause	System powers on but is unable to boot
Power	Red	10 blinks, 1 blink every second followed by a 2 second pause	Bad option card
Power	Red	11 blinks, 1 blink every second followed by a 2 second pause	The current processor does not support a feature previously enabled on this system.
none	none	System does not power on and LEDs are not flashing	System unable to power on

Common POST Error Messages

Screen Message	Probable Cause	Recommended Action
101-Option ROM Error	1. System ROM checksum error. 2. Expansion board option ROM checksum 3. System board	1. Verify ROM, reflash if required 2. Remove suspected card, reboot 3. Clear CMOS memory, reboot 4. Replace system board
103-System Board Failure	DMA, timers	1. Clear CMOS memory. 2. Remove expansion boards. 3. Replace system board.
164-Memory Size Error and 201-Memory Error	Incorrect memory configuration	1. Run Setup (F10). 2. Check DIMMs for proper seating, type, and HP compatibility. 3. Remove DIMMs singularly and reboot to isolate faulty DIMM. 4. Replace system board.
214-DIMM Configuration Warning	Populated DIMM configuration is not optimized	Rearrange the DIMMs so that each channel has the same amount of memory.
301-, 304-Keyboard error	Keyboard failure.	Check keyboard connection or keys. Check connector for bent or missing pins. Replace keyboard. If 304, possible system board problem.
501-Display Adapter Failure	Graphics display controller.	1. Reseat graphics card. 2. Clear CMOS. 3. Check monitor connection. 4. Replace graphics card.
1720-SMART Hard Drive Detects Imminent Failure	Hard drive is about to fail.	1. Determine if hard drive is giving correct error message. Enter Computer Setup and run the Drive Protection System test under Storage > DPS Self-test . 2. Apply hard drive firmware patch if applicable. 3. Back up contents and replace hard drive.
1796-SATA Cabling Error	One or more SATA devices are improperly attached. For optimal performance, the SATA 0 and SATA 1 connectors must be used before SATA 2 and SATA 3.	Ensure SATA connectors are used in ascending order. For one device, use SATA 0. For two devices, use SATA 0 and SATA 1. For three devices, use SATA 0, SATA1, and SATA 2.
1801-Microcode Patch Error	Processor not supported by ROM BIOS.	1. Upgrade BIOS to proper version. 2. Change the processor.