Illustrated Parts & Service Map

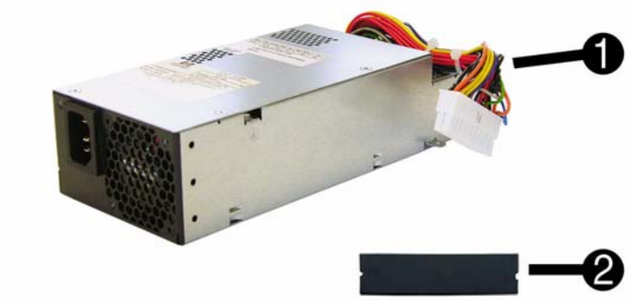
HP rp3000 Point of Sale

Document Number 506600-002. 2nd Edition December 2009.

Key Specifications

Processor Type	Intel Atom 230 processor
RAM Type	DDR2-SDRAM DIMMs, PC2-3200, PC2-4200, or PC2-5300
Maximum RAM Supported	4 GB
Expansion Slots	Full-height, half-height PCI slot or support for 1 optional PCIe x1 slot (full-height, half-length)
Graphics Adapter	Integrated Intel GMA 950 graphics
Drive Support	• 1 hard disk drive • 1 optical disk drive
Bays	• 1 external 5.25-inch • 1 internal 3.5-inch
I/O Interfaces	USB 2.0 (6), USB+POWER (2)(some models), RS232 individually configurable to power 5V and 12V (2), RJ-11, PS/2 (2), video, line in, line out, RJ-45

Spare Parts



System Unit

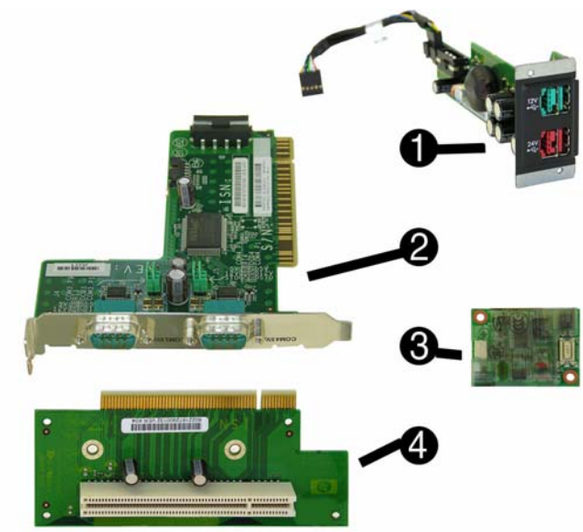
1	Power supply, 150W	502354-001
2	5.25-inch bezel blank	335937-001
3	Front bezel assembly, includes keys	502358-001
*	Chassis assembly	not spared

Cables

1	SATA cable kit, contains one 10-inch cable and one 14.5-inch cable, both with 2 angled ends	502359-001
2	Power switch with holder	502355-001

Mass Storage Devices (not illustrated)

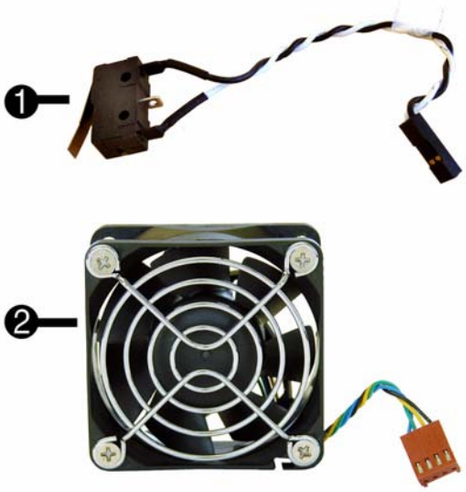
16X SATA DVD±RW and CD-RW drive with LightScribe	447310-001
16X SATA DVD-ROM drive	419496-001
160 GB SATA hard drive	449979-001
250 GB SATA hard drive	449980-001



Standard and Optional Boards

Misc boards		
1	USB+POWER card assembly	502353-001
2	Powered serial card	445775-001
3	Modem, LSI MDC, includes internal RJ-11 cable	502361-001
4	PCI riser card	502351-001
5	PCIe x1 riser card assembly	502352-001
*	ReadyBoost module kit. 1 GB	462851-001
System boards with thermal grease, alcohol pad, and CPU socket cover		
*	System board, includes processor; for use in models with serial numbers of xxx947xxxx or earlier	502350-001
*	System board, includes processor; for use in models with serial numbers of xxx947xxxx or later**	578194-001
Memory modules (PC2-6400, CL6)		
*	512 MB	418952-001
*	1 GB	418951-001
*	2 GB	457624-001

** Not shown*
***EUP Lot 6 and Jack Black color change*

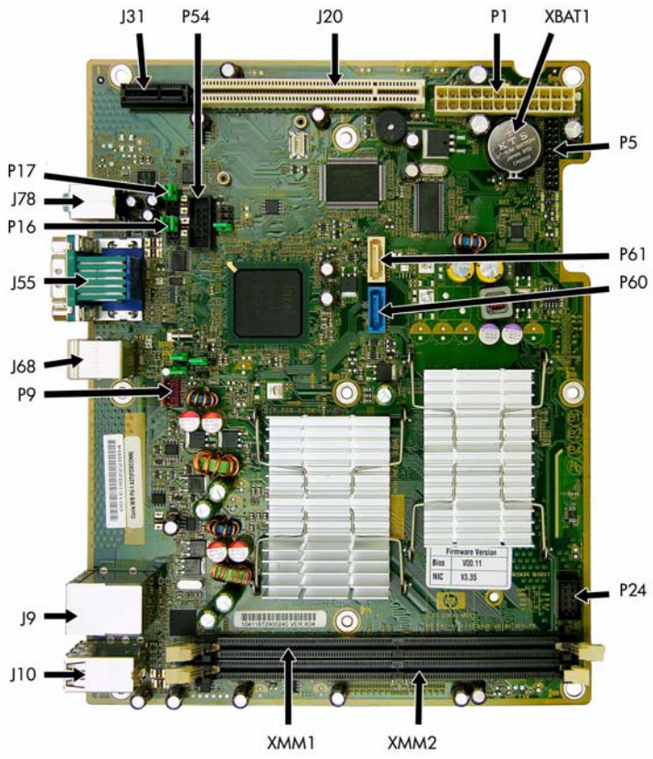


Miscellaneous Parts

1	Optical drive sensor	502357-001
2	Chassis fan, 60mm	502356-001
*	Battery	502362-001
*	Mouse, PS2, optical	417966-001
*	Mouse, optical, USB	390938-001
*	Floating COM port assembly	445768-001
*	Hardware kit, includes: - RJ-11 bracket - Slot cover, black - Foot, rubber, rectangular - USB+POWER cover	502360-001

**Not shown*

System Board



System Board Connectors and Jumpers (component location may vary)

J9	RJ-45 over dual USB	P16	Fan command/fan sink header
J10	Quad stack USB	P17	Digital audio expansion header
J20	PCI slot 1	P24	Front USB connector
J31	PCIe X1	P54	Primary serial port
J55	Parallel port over dual VGA ports	P60	SATA0
J68	Stacked mouse/keyboard connectors	P61	SATA1
J78	Double stack audio connector	XBAT1	Real-time-clock battery socket
P1	Main power connector	XMM1	DIMM 1
P5	Power button/LED connector	XMM2	DIMM 2
P9	Fan connector		

Keyboards (not illustrated)

PS/2, Basic USB, Basic		**435302-xxx 435382-xxx**	
Arabic	-171	LA Spanish	-161
Belgian	-181	Netherlands	-331
BHCSY	-B41	Norwegian	-091
Czech	-221	Polish	-121
Danish	-081	Portuguese	-131
Finnish	-351	Russian	-251
French	-051	Slovakian	-231
French Arabic	-DE1	Spanish	-071
German	-041	Swedish	-101
Greek	-151	Swiss	-111
Hebrew	-BB1	Turkish	-141
Hungarian	-211	U.K.	-031
International	-B31	U.S.	-001
Italian	-061		

Front Panel LEDs and Audible Codes

Color	Beeps	LED Activity	State/Message
Green	None	On	Computer on
Green	None	1 blink every 2 seconds	Suspend to RAM mode
Red	2	2 blinks, once per second, followed by a 2 second pause	Processor thermal protection activated
Red	4	4 blinks, once per second, followed by a 2 second pause	Power failure (power supply overload)
Red	5	2 blinks, once per second, followed by a 2 second pause	Pre-video memory error
Red	6	2 blinks, once per second, followed by a 2 second pause	Pre-video graphics error
Red	7	2 blinks, once per second, followed by a 2 second pause	System board failure (ROM detected failure prior to video)
Red	8	2 blinks, once per second, followed by a 2 second pause	Invalid ROM based on bad checksum
Red	9	2 blinks, once per second, followed by a 2 second pause	System powers on but is unable to boot
Red	10	2 blinks, once per second, followed by a 2 second pause	Bad option card
Red	None	2 blinks, once per 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	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	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.
301-, 304-Keyboard error	Keyboard failure.	Check keyboard connection or keys. Check connector for bent of 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.

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. For more information about Setup Utilities refer to the *Service Reference Guide.*

Computer Setup Menu

Heading	Option/Description
File	System Information - Lists the following main system specifications: • Product name • SKU number (some models) • Processor type/speed/stepping • Cache size (L1/L2) • Memory size/speed/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 Rmv Media and Restore from Rmv Media
	Default Setup • Save Current Settings as Default • Restore Factory Settings as Default
	Apply Defaults and Exit - Applies the selected default settings.
	Ignore Changes and Exit - Exits Computer setup without saving changes.
	Save Changes and Exit - Saves changes to system configuration or default settings and exits Computer Setup.
Storage	Device Configuration - Lists all installed BIOS-controlled storage devices. The following options are available: Hard Disk SATA 0 • Emulation Type • Multisector Transfers • Translation Mode • CD-ROM SATA 1 • Default Values IDE/SATA
	Storage Options • Removable Media • SATA0 • SATA1
	DPS Self-Test - Allows you to execute self-tests on ATA hard drives.
	Boot Order - Allows you to specify boot order. • Shortcut to Temporarily Override Boot Order
Security	Setup Password - Allows you to set and enable the setup (Admin) 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.
	Device Security - 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.
	OS Security (some models) - Allows you to enable/disable Data Execution Prevention to prevent OS security breaches.
	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 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 S5 Maximum Power Savings and enable/disable SATA bus power management.
	Thermal - Allows you to control minimum permitted fan speed.
Advanced	Power-On Options - Allows you to set: • POST mode - QuickBoot, FullBoot, or FullBoot every 1-30 days. • POST messages - Enable/disable • F9 prompt - Enable/disable • F10 prompt - Enable/disable • F12 prompt - Enable/disable • Factory Recovery Boot Support - Enable/disable • Option ROM prompt - 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 • I/O APIC Mode - Enable/disable • Hyper-threading - Enable/disable • Limit CPUID Maximum value to 3
	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: • 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 • Monitor Tracking - enable/disable • NIC PXE Option ROM Download - enable/disable

Drive Protection System (DPS)

The Drive Protection System (DPS) is a diagnostic tool built into the hard drives installed in some computers. DPS is designed to help diagnose problems that might result in unwarranted hard drive replacement.

Running DPS will not affect any programs or data stored on the hard drive. The test resides in the hard drive firmware and can be executed even if the computer will not boot to an operating system. The time required to execute the test depends on the manufacturer and size of the hard drive; in most cases, the test will take approximately two minutes per gigabyte.

Use DPS when you suspect a hard drive problem. If the computer reports a SMART Hard Drive Detect Imminent Failure message, there is no need to run DPS; instead, back up the information on the hard drive and contact a service provider for a replacement hard drive.

Accessing DPS Through Computer Setup

When the computer does not power on properly you should use Computer Setup to access the DPS program. To access DPS, perform the following steps:

1. Turn on or restart the computer.
2. When the F10 Setup message appears in the lower-right corner of the screen, press **F10**. A choice of five headings appears in the Computer Setup Utilities menu: **File**, **Storage**, **Security**, **Power**, and **Advanced**.
3. Select **Storage > DPS Self-Test.**

Note: If no DPS-capable hard drives are installed, the DPS Self-Test option will not display.

4. Select the hard drive to test and follow the screen prompts to complete the testing process.

When the test has been completed, one of three messages will be displayed:

- Test Succeeded. Completion Code 0.
- Test Aborted. Completion Code 1 or 2.
- Test Failed. Drive Replacement Recommended. Completion Code 3 through 14.

Resetting the Password Jumper:

1. Shut down the operating system properly, then turn off the computer and any external devices, and disconnect the power cord from the power outlet.
2. With the power cord disconnected, press the power button again to drain the system of any residual power.
3. Remove the computer cover.
4. Locate the header and jumper.
5. Remove the jumper from pins 1 and 2. Place the jumper on either pin 1 or 2, but not both, so that it does not get lost.
6. Replace the computer cover or access panel.
7. Reconnect the external equipment.
8. Plug in the computer and turn on power. Allow the operating system to start. This clears the current passwords and disables the password features.
9. To establish new passwords, repeat steps 1 through 4, replace the password jumper on pins 1 and 2, then repeat steps 6 through 8. Establish the new passwords in Computer Setup. Refer to the Computer Setup (F10) Utility Guide for Computer Setup instructions.

Clearing and Resetting the CMOS

The computer's configuration memory (CMOS) stores information about the computer's configuration.

Using Computer Setup to Reset CMOS

Using Computer Setup to reset CMOS also clears the power-on and setup passwords. To reset CMOS through Computer Setup, you must first access the Computer Setup Utilities menu. When the Computer Setup message appears in the lower-right corner of the screen, press the **F10** key. Press **Enter** to bypass the title screen, if necessary.

Note: If you do not press the **F10** key while the message is displayed, you must turn the computer off, then on again, to access the utility.

A choice of five headings appears in the Computer Setup Utilities menu: **File**, **Storage**, **Security**, **Power**, and **Advanced**.

To reset CMOS to the factory default settings first set time and date, then use the arrow keys or the **Tab** key to select **File > Default Setup > Restore Factory Settings as Defaults**. Then select **Apply Defaults and Exit** from the **File** menu. This resets the soft settings that include boot sequence order and other factory settings. It will not, however, force hardware rediscovery. See the *Desktop Management Guide* for further instructions on reestablishing passwords. For instructions on Computer Setup, see the *Computer Setup (F10) Utility Guide*.

Resetting the CMOS Jumper

1. Turn off the computer and any external devices, and disconnect the power cord from the power outlet. The power must be disconnected from the system to clear CMOS.
2. Disconnect the keyboard, monitor, and any other external equipment connected to the computer.
3. Remove the computer cover.
   Caution: Clearing CMOS will restore CMOS values to factory defaults and will erase any customized information including passwords, asset numbers, and special settings. It is important to back up the computer setup configuration before resetting CMOS values in case it is needed later. Back up is easily done through Computer Setup. See the Computer Setup (F10) Utility Guide for information on backing up the computer setup configuration.
4. Locate the green two-prong jumper labeled CMOS.
5. Remove the CMOS jumper from pins 1 and 2 and put the jumper on pins 2 and 3.
6. Put the jumper back on pins 1 and 2.
7. Replace the computer cover or access panel.
8. Reconnect the external devices.
9. Plug in the computer and turn on power.

Note: You will receive POST error messages after clearing CMOS and rebooting advising you that configuration changes have occurred. Use Computer Setup to reset any special system setups along with the date and time.

Diagnostic Functions

Diagnostic functions are provided by the Setup Utility (in system ROM) and by HP Insight Diagnostics. HP 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 using the following procedure:

1. Go to www.hp.com
2. Click the **Software & Download driver** link.
3. Enter the product number (for example, dc7900) 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. Click **Download**.

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