

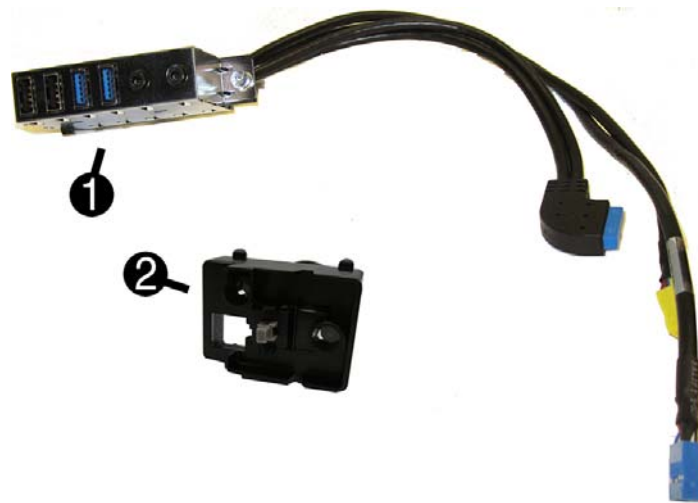
# Illustrated Parts & Service Map

## HP ProDesk 480 G1 Microtower



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### Key Specifications

<b>Processor Type</b>	Intel® 4th Generation Pentium®, Core™ i3, i5, i7
<b>RAM Type</b>	1600 MHz DDR3 SDRAM
<b>Maximum RAM</b>	16 GB
<b>Expansion Slots</b>	<ul style="list-style-type: none"> <li>• (1) PCI Express x16</li> <li>• (3) PCI Express x1</li> </ul>
<b>Chipset</b>	Intel H81
<b>Expansion Slots</b>	<ul style="list-style-type: none"> <li>• 1 PCIe 3.0, x16</li> <li>• 3 PCIe 2.0, x1</li> </ul>
<b>Removable Storage</b>	<ul style="list-style-type: none"> <li>• (1) external Slimline</li> <li>• (2) internal 3.5-inch storage drive bay; (1) configurable as a 2.5-inch bay</li> </ul>
<b>I/O Interfaces</b>	Front: (2) USB 2.0 ports; (2) USB 3.0 ports microphone; headphone Rear: (4) USB 2.0 ports; (1) VGA video port; (1) DVI-D video port; (1) RJ-45 network connector; (1) RS-232 serial port; (1) RS-232 serial (optional 2nd port); 3.5mm audio in/out jacks; PS/2 keyboard and mouse ports
<b>Operating Systems</b>	<ul style="list-style-type: none"> <li>• Windows 8.1</li> <li>• Windows 7</li> <li>• Novell SUSE Linux Enterprise Desktop 11</li> <li>• FreeDOS 2.0</li> </ul>

### Spare Parts



### System Unit

1	Front bezel	745047-001
*	Front bezel for use in the People's Republic of China	745048-001
2	Access panel	745046-001
3	Power supply, 300W, Energy Star 5.0	712298-001
*	Power supply, 300W, Energy Star 6.0	748824-001
*	Power supply, 300W, active PFC	715184-001
*	Power supply, 300W, active PFC, SEPA	752628-001
*	Power supply, 300W, regular	715185-001
*	5.25-inch bezel blank	745036-001

\* Not shown

### Cables

1	Front I/O assembly	745049-001
2	Power switch/LED assembly	745050-001
*	SATA data cable, 14 inch, 2 straight ends	745051-001
*	DMS-59 to dual VGA cable	463023-001
*	DMS-59 to dual DVI cable	463024-001
*	Adapter, DisplayPort to VGA	632484-001
*	Adapter, DisplayPort to DVI	662723-001
*	Adapter, DisplayPort to HDMI	617450-001
*	Adapter, DVI to VGA	657401-001
*	Adapter, DVI-I to VGA (BFR/PVC free)	720216-001
*	Adapter, DVI-I to VGA (standard)	202997-001
*	DisplayPort cable	487562-001

\*Not shown

### Keyboards (not illustrated)

<b>PS/2</b>	<b>724718-xx1</b>
<b>USB</b>	<b>724720-xx1</b>
<b>USB, unbranded, Katydid*</b>	<b>729339-xx1</b>
<b>Wireless, HP Elite (includes USB dongle)**</b>	<b>724722-xx1</b>
<b>Smart card, CCID</b>	<b>701671-001</b>
<b>Wireless kit (keyboard, mouse, dongle)</b>	<b>730323-xx1</b>
<b>Washable***</b>	<b>700510-xx1</b>
Arabic	-17x LA Spanish -16x
Belgian	-18x Norwegian -09x
Brazilian Portuguese	-20x People's Republic of China -AAx
Bulgaria	-26x Portuguese -13x
Czech	-22x Romanian -27x
Danish	-08x Russian -25x
Finnish	-35x Saudi Arabia -DEx
French	-05x Slovakian -23x
French Canadian	-12x South Korea -KDx
German	-04x Spanish -07x
Greek	-15x Swedish -10x
Hebrew	-BBx Swiss -11x
Hungarian	-21x Taiwanese -ABx
International	-37x Thai -28x
International English	-L3x Turkish -14x
Italian	-06x U.S. -00x
Japanese	-29x U.K. -03x

\*-001, -161, -201, -281, -291, -AA1, -AB1 only  
\*\*-201 only

\*\*\*-001, -121, -161, -201 only

### Mass Storage Devices (not illustrated)

DVD-ROM drive	682550-001
DVD±RW drive	690418-001
Blu-ray BD-RW SuperMulti XL Drive	682219-001
2 TB, 7200 rpm hard drive, 3.5 inch	747993-001
1 TB, hybrid SSD, 2.5-inch hard drive	724937-001
1 TB, 7200 rpm hard drive, 3.5 inch	747992-001
500 GB hard drive, hybrid SSD, 2.5-inch hard drive	724938-001
500 GB, 7200 rpm hard drive, 3.5-inch	751283-001
256 GB Solid State Drive (SSD), self-encrypting (SED)	680020-001
180 GB Solid State Drive (SSD)	754076-001
128 GB Solid State Drive (SSD)	665961-001
120 GB Solid State Drive (SSD)	756459-001
20 GB Solid State Drive (SSD)	683305-001

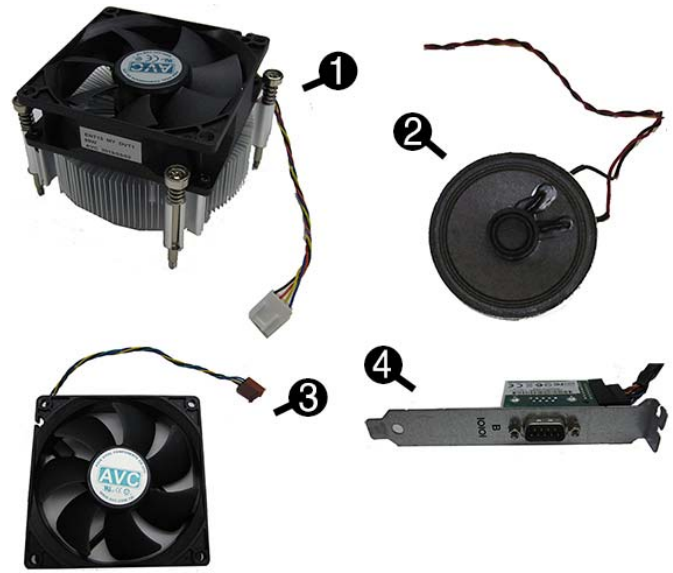
## Standard and Optional Boards

System boards (includes replacement thermal material)		
*	System board for use in models without Windows 8	747910-001
*	System board for use in models with Windows 8 Standard	747910-501
*	System board for use in models with Windows 8 Professional	747910-601
*	System board for use in models with NetClone (the People's Republic of China only)	759333-001
Memory modules (PC3-12800, CL11)		
*	8-GB	689375-001
*	4-GB	671613-001
*	2-GB	671612-001
Graphics boards		
*	Nvidia NV5315 PCIe x16 graphics card, 1 GB	720837-001
*	Nvidia NV5310 PCIe x16 graphics card, 512 MB	707252-001
*	AMD Radeon HD8490 DP PCIe x16 graphics card, 1 GB	717219-001
*	AMD Radeon HD8470 PCIe x16 graphics card, 2 GB (the People's Republic of China only)	729085-001
*	AMD Radeon HD8350 DH PCIe x16 graphics card, 1 GB DDR3	717220-001
*	AMD Radeon HD8350 PCIe x16 graphics card, 1 GB DDR3 (the People's Republic of China only)	729084-001
*	Nvidia GeForce GT630 DP PCIe x16 graphics card, 2 GB	702084-001
Other boards		
*	DisplayPort module	735966-001
*	Intel PRO/1000 single port GbE NIC, includes bracket	728562-001
*	Intel Dual Band Wireless-N 7260 802.11 a/b/g/n (2x2) Wireless NIC	745668-001
Intel Core i7 processors (include thermal material)		
*	4771 3.5 GHz, 8-MB L3 cache, 84W	742563-001
*	4770, 3.4 GHz, 8-MB L3 cache, 84W	727373-001
*	4770s, 3.1 GHz, 8-MB L3 cache, 65W	732507-001
Intel Core i5 processors (include thermal material)		
*	4670, 3.4 GHz, 6-MB L3 cache, 84W	727381-001
*	4670s, 3.1 GHz, 6-MB L3 cache, 65W	732506-001
*	4570, 3.2 GHz, 6-MB L3 cache, 84W	727380-001
*	4570s, 2.9 GHz, 6-MB L3 cache, 65W	732505-001
*	4430, 3.0 GHz, 6-MB L3 cache, 84W	745033-001
*	4430s, 2.7 GHz, 6-MB L3 cache, 65W	745034-001
Intel Core i3 processors (include thermal material)		
*	4340, 3.6 GHz, 4-MB L3 cache, 54W	742562-001
*	4330, 3.5 GHz, 4-MB L3 cache, 54W	742561-001
*	4130, 3.4 GHz, 3-MB L3 cache, 54W	742560-001
Intel Pentium processors (include thermal material)		
*	G3430, 3.3 GHz, 3-MB L3 cache, 54W	742566-001
*	G3420, 3.2 GHz, 3-MB L3 cache, 54W	742565-001
*	G3220, 3.0 GHz, 3-MB L3 cache, 54W	742564-001
*	G1830, 2.8 GHz, 2-MB L3 cache, 54W	758757-001
*	G1820, 2.7 GHz, 2-MB L3 cache, 54W	758756-001

\* Not shown

## 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.
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. Use F2 Diagnostics to run DPS Self-test. 2. Apply hard drive firmware patch if applicable. 3. Back up contents and replace hard drive.



## Miscellaneous Parts

1	Fan sink	745054-001
2	Speaker	745053-001
3	Fan	745052-001
4	Serial port, PCI card	638815-001
*	Fan, BFR/PVC free	748825-001
*	Printer port, PCI card	638817-001
*	Card reader, 14-in-1, USB 3.0, 3.5-inch, UHS-I	716390-001
*	Card reader, 15-in-1, USB 3.0, 3.5-inch, UHS-II	736299-001
*	Adapter, USB 3.0 to 2.0	736835-001
*	HP Ultralim Keyed Cable Lock	703372-001
*	Hard drive carrier, 2.5-inch to 3.5-inch	703597-001
*	Hard drive adapter bracket, 2.5-in or 3.5-in hard drive in 5.25-in bay	397117-001
*	WLAN antennas	583345-001
*	Mouse, PS2, optical	674315-001
*	Mouse, USB, HP Elite	674318-001
*	Mouse, washable	724795-001
*	Mouse, wireless, HP Elite (Brazil only)	674317-001
*	Mouse, USB, optical	674316-001
*	Mouse, USB, Portia	719901-001

\*Not shown

## Diagnostic LEDs

LED	Color	LED Activity	State/Message
Power	White	On	Computer on
Power	White	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	Current processor does not support a feature previously enabled.
none	none	System does not power on and LEDs are not flashing	System unable to power on

## System Setup and Boot

Access the Setup Utility during computer boot by pressing the **F10** key. If you do not press **F10** at the appropriate time, you must restart the computer and again press **F10** when the monitor light turns green. NOTE: Not all settings are available for all models.

### Computer Setup Menu

Heading	Option/Description	
File	System Information - Lists the following main system specifications: <ul style="list-style-type: none"> <li>Product name</li> <li>Manufacturer</li> <li>SKU number (some models)</li> <li>Processor type/speed/stepping</li> <li>Cache size (L1/L2/L3)</li> <li>Installed memory size/speed/ch</li> <li>Integrated MAC Address</li> <li>Chassis serial number</li> <li>Asset tracking number</li> <li>System BIOS</li> </ul>	
	About - Displays copyright notice.	
	Set Time and Date - Allows you to set system time and date.	
	Replicated Setup - Allows you to save or restore system configuration to/from a USB flash drive.	
	Default Setup - Allows you to save current settings as default or 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 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 may display depending on configuration: <ul style="list-style-type: none"> <li>CD-ROM</li> <li>Hard Disk</li> <li>SMART (ATA disks only)</li> <li>Diskette</li> </ul>
		Storage Options - Allows you to set: <ul style="list-style-type: none"> <li>SATA Emulation - Choose how the SATA controller and devices are accessed by the OS. SATA Emulation choices are AHCI, RAID, or IDE.</li> <li>Removable Media Boot - Enables/disables ability to boot the system from removable media.</li> </ul>
Boot Order - Specify boot order for UEFI and legacy boot sources. Also specify hard drive boot order. <ul style="list-style-type: none"> <li>Shortcut to Temporarily Override Boot Order</li> </ul>		
Security		Setup Password - Set and enable the setup (Admin) password.
	Power-On Password - Set and enable power-on password.	
	Password Options - Allows to you enable/disable: <ul style="list-style-type: none"> <li>Lock Legacy Resources</li> <li>Setup Browse Mode</li> <li>Password prompt on F9 &amp; F12</li> <li>Network Server Mode</li> </ul>	
	Smart Cover - Allows you to lock/unlock the smart cover and set the cover removal sensor to disable/notify user/setup password.	
	Device Security - Set Device Available/Device Hidden for: embedded security device, system audio, network controller, USB controller, serial/parallel ports, and SATA ports.	
	USB Security - Set Device Available/Device Hidden for front USB ports, rear USB ports, accessory USB ports.	
	Slot Security - Disable the PCI, PCIe, and Mini Card slots.	
	Network Boot - Enables/disables boot from OS (NIC models only).	
	System IDs - Allows you to update asset tag, ownership tag, UUID, keyboard locale setting.	
	Master Boot Record Security - enables/disables MBR.	
	System Security - Allows you to set: <ul style="list-style-type: none"> <li>Data Execution Prevention (enable/disable)</li> <li>SVM CPU Virtualization (enable/disable)</li> <li>Virtualization Technology (VTx) (enable/disable)</li> <li>Virtualization Technology/Directed IO (VTd) (enable/disable)</li> <li>Trusted Execution Technology (enable/disable)</li> <li>Embedded Security Device (enable/disable)</li> <li>Reset to Factory Settings (Do not reset/Reset)</li> <li>Measure boot variables/devices to PCR1 (enable/disable)</li> <li>OS management of Embedded Security Device (enable/disable)</li> <li>Reset of Embedded Security Device through OS (enable/disable)</li> <li>No PPI provisioning (Windows 8 only; enable/disable)</li> <li>Allow PPI policy to be changed by OS (enable/disable)</li> </ul>	
	DriveLock Security - Allows you to assign or modify a master or user password for hard drives.	
	Secure Boot Configuration (Windows 8 only) <ul style="list-style-type: none"> <li>Legacy Support (enable/disable)</li> <li>Secure Boot (enable/disable)</li> <li>Key Management (enable/disable)</li> <li>Fast Boot (enable/disable)</li> </ul>	
	Power	OS Power Management - Allows you to enable/disable Runtime Power Management, Idle Power Savings, Unique Sleep State Blink Rates.
		Hardware Power Management - Enable/disable SATA power management, S5 maximum power savings., PCI express power management, network controller, USB 3.0 controller
		Thermal - Control minimum fan speed.
Advanced	Power-On Options - Allows you to set: <ul style="list-style-type: none"> <li>POST mode (QuickBoot, Clear Memory, FullBoot, or FullBoot Every x Days)</li> <li>POST messages (enable/disable)</li> <li>Press the ESC key for Startup Menu (enable/disable)</li> <li>Option ROM Prompt (enable/disable)</li> <li>After Power Loss (off/on/previous state)</li> <li>POST Delay (none, 5, 10, 15, 20, or 60 seconds)</li> <li>Remote Wakeup Boot Source (remote server/local hard drive)</li> <li>Factory Recovery Boot Support (enable/disable)</li> <li>Bypass F1 Prompt on Configuration Changes (enable/disable)</li> </ul>	
	BIOS Power-On - Set the computer to turn on at a preset time.	
	Bus Options - Allows you to enable/disable PCI SERR# Generation and PCI VGA palette snooping.	
	Onboard Devices - Allows you to set resources for or disable on-board system devices.	

Advanced (continued)	Device Options - Allows you to set: <ul style="list-style-type: none"> <li>Printer mode (Bi-Directional, EPP + ECP, Output Only)</li> <li>Num Lock State at Power-on (off/on)</li> <li>Integrated Video (enable/disable)</li> <li>Integrated Graphics (Auto/Disable/Force)</li> <li>Internal Speaker (enable/disable)</li> <li>NIC PXE Option ROM Download (enable/disable)</li> <li>SATA RAID Option ROM Download (enable/disable)</li> <li>Multi-Processor (enable/disable)</li> <li>Hyper-threading (enable/disable)</li> <li>Turbo Mode (enable/disable)</li> </ul>
	VGA Configuration - Allows you to specify which VGA controller is the "boot"/primary. Displayed only if add-in video card installed.
	Option ROM Launch Policy - lets you set the launch policy for option ROMs.
	AMT Configuration - Allows you to set: <ul style="list-style-type: none"> <li>AMT (enable/disable)</li> <li>Unconfigure AMT/ME (enable/disable)</li> <li>Hide Unconfigure ME Confirmation Prompt (enable/disable)</li> <li>Watchdog Timer (enable/disable)</li> </ul>

## Password Security

Establishing a Setup or Power-On password:

- Turn on or restart the computer.
- As soon as the computer turns on, press the **Esc** key while "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.
- Press the **F10** key to enter Computer Setup.
- To establish Setup password, select **Security > Setup Password** and follow the instructions.
  - or -
  - To establish a Power-On password, select **Security > Power-On Password** and follow the instructions on the screen
- Before exiting, click **File > Save Changes and Exit**.

Changing a Setup or Power-On password:

- Turn on or restart the computer.
- To change the Setup password, go to step 2.  
To change the Power-on password, go to step 3.
- To change the Setup password, as soon as the computer turns on:
    - Press the **Esc** key while "Press the ESC key for Startup Menu" message is displayed.
    - Press the **F10** key to enter Computer Setup.
  - 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.
  - Press **Enter**.
- The new password will take effect the next time the computer is restarted.

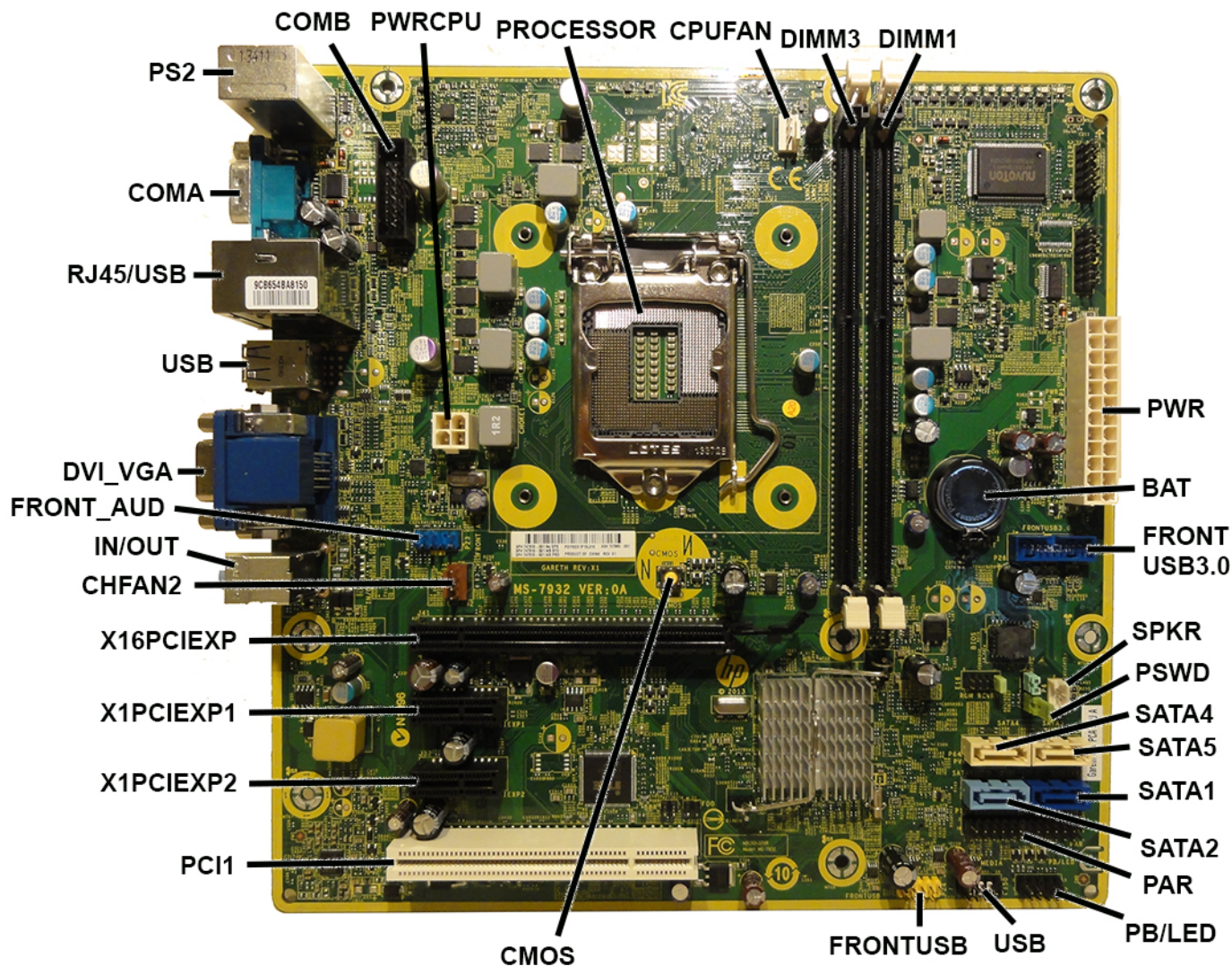
Deleting a Power-On or Setup password

- Turn on or restart the computer.
- To delete the Setup password, go to step 2.  
To delete the Power-On password, go to step 3.
- To change the Setup password, as soon as the computer turns on:
    - Press the **Esc** key while "Press the ESC key for Startup Menu" message is displayed.
    - Press the **F10** key to enter Computer Setup.
  - When the key icon appears, type your current password followed by a slash (/) or alternate delimiter character as shown. Example: *currentpassword/*
  - Press **Enter**.

Clearing CMOS

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

## System Board



**System Board Connectors and Jumpers (component location may vary)**

COMB	Serial port connector	PB/LED	Power switch connector
PWRCPU	CPU power connector	USB	Internal USB connector
PROCESSOR	Processor socket	FRONT_USB	1st USB connector
CPU FAN	Processor fan connector	CMOS	CMOS header
DIMM3	Memory socket - Channel A	PCI1	PCI slot
DIMM1	Memory socket - Channel B	X1PCIEXP2	PCI Express x1 slot
PWR	Main power connector	X1PCIEXP1	PCI Express x1 slot
BAT	RTC battery socket	X16PCIEXP	PCI Express x16 slot
FRONT USB 3.0	Front USB 3.0 port connector	CHFAN2	System fan connector
SPKR	Speaker connector	IN/OUT	Audio connectors
PSWD	Password header	FRONT_AUD	Front panel connector
SATA4	Optical drive	DVI_VGA	Display connector/DVI connector
SATA5	Optical drive	USB	USB connector
SATA1	Primary hard drive	RJ45/USB	Network/USB connectors
SATA2	Secondary hard drive	COMA	Serial port
PAR	Parallel port connector	PS2	PS/2 keyboard/mouse connectors