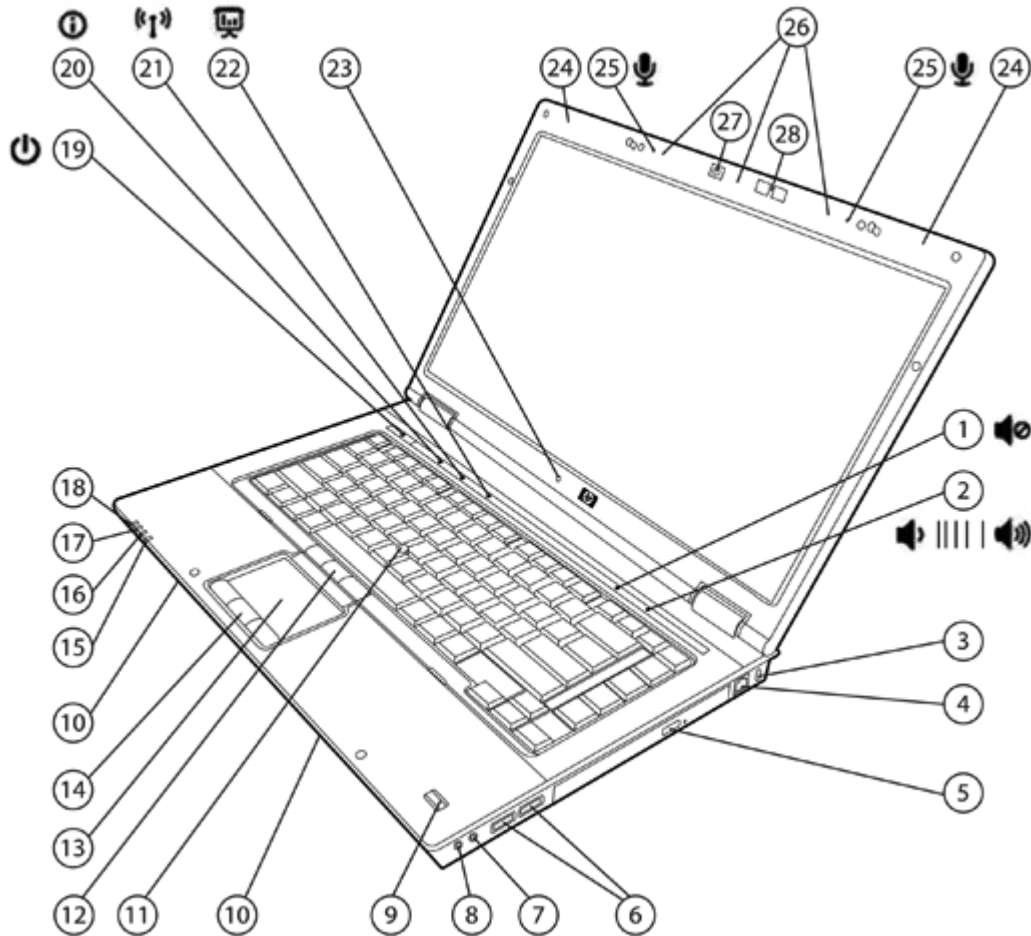


Overview

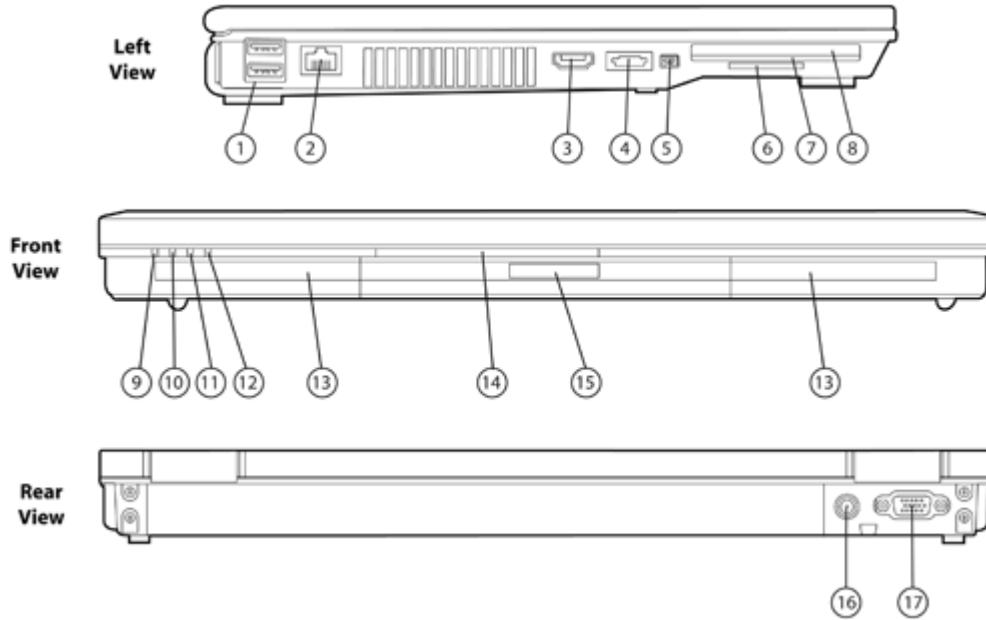
**HP recommends
Windows Vista® Business**



- | | |
|---|--|
| 1. Volume mute button with LED indicator | 15. Hard drive / optical drive activity / HP 3D DriveGuard LED |
| 2. Volume scroll zone with up/down LED indicators | 16. Battery charging LED |
| 3. Kensington Lock slot | 17. Power/standby LED |
| 4. RJ-11/modem port | 18. Wireless on/off LED |
| 5. Upgrade Bay (optical drive or second hard drive) | 19. Power button with LED |
| 6. 2 USB 2.0 ports | 20. HP Info / HP QuickLook button with LED indicator |
| 7. Stereo microphone in | 21. Wireless on/off button with LED indicator |
| 8. Stereo headphone/line out | 22. HP Presentation button with LED indicator |
| 9. HP Fingerprint Sensor | 23. Ambient Light Sensor |
| 10. Integrated stereo speakers | 24. Two WWAN antennas (with WWAN option) |
| 11. Pointstick | 25. Dual-microphone array |
| 12. Pointstick buttons, three | 26. Three WLAN antennas (with WLAN option) |

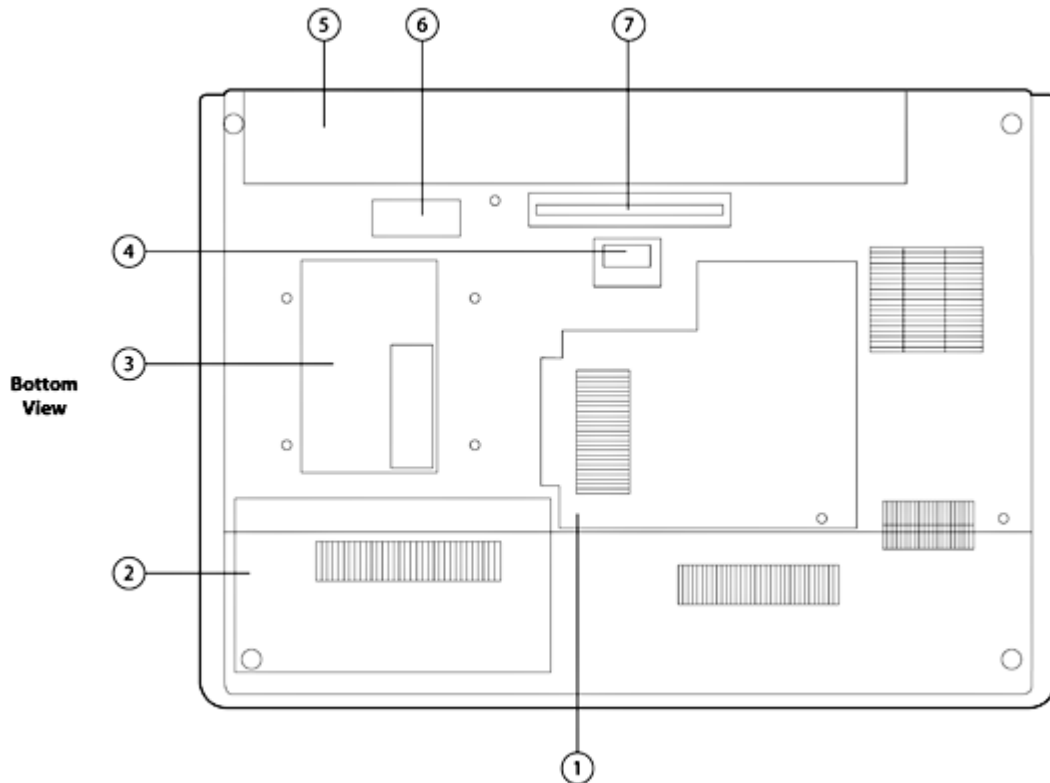
Overview

- 13. Touchpad with scroll zone
- 14. Touchpad buttons, three
- 27. Optional 2 MP Webcam with LED
- 28. HP NightLight and on/off button



- 1. (2) USB 2.0 ports
- 2. RJ-45/Ethernet port
- 3. HDMI port
- 4. eSATA port
- 5. 1394a port
- 6. Media Card Reader
- 7. Integrated Smart Card Reader
- 8. ExpressCard/54 slot
- 9. Wireless on/off LED
- 10. Power/standby LED
- 11. Battery charging LED
- 12. Hard drive / optical drive activity / HP 3D DriveGuard LED
- 13. Integrated stereo speakers
- 14. Business Card slot
- 15. Display release latch
- 16. Power connector
- 17. VGA/external monitor connector

Overview



- | | |
|---------------------------------------|--------------------------|
| 1. Memory module and WLAN compartment | 5. Battery bay |
| 2. Hard drive bay | 6. Battery release latch |
| 3. Business card holder | 7. Docking connector |
| 4. Secondary battery connector | |

NOTE: WWAN module compartment is accessible under the keyboard.

At A Glance

- Genuine Windows Vista Business 32, Genuine Windows Vista Business 64, Genuine Windows Vista Home Basic, Genuine Windows Vista Business with downgrade to Windows XP Professional custom installed, or FreeDOS
- NVIDIA Quadro FX 770M graphics with up to 512 MB dedicated memory, or ATI Mobility FireGL V5700 graphics with up to 256 MB dedicated memory
- DirectX 10 support and Dual Link DVI (available through optional docking) provides faster rendering capabilities and support for ultra-high resolution monitors
- Intel® Centrino® 2 with vPro™ technology capable, with Intel Core™2 Extreme or Intel Core™2 Duo processors
- Designed to travel, with weight starting at 2.86 kg and 28.2 mm thin at front
- Business Rugged – designed to meet the military standard Mil-Std-810F for shock, vibration, sand and dust, humidity, altitude, and high temperature operation*
- HP Performance Tuning Framework for optimal configuration, compatibility and performance
- Flexible wireless connectivity options:
 - Integrated HP un2400 EV-DO/HSDPA Mobile Broadband Module provides worldwide Gobi mobile Internet technology
 - Integrated 802.11 a/b/g/draft-n, or a/b/g wireless LAN module
 - Bluetooth®

Overview

- HDMI high definition video/audio port
- eSATA connector for external optical drive, hard drive, or RAID array
- Upgrade Bay for easy optical drive upgrade or optional second hard drive for RAID 1 Mirroring or RAID 0 Striping
- Optional Blu-Ray DVD+/-RW SuperMulti DL Drive
- Widescreen 15.4-inch diagonal display with wide-viewing angle (select models), Ambient Light Sensor and HP Privacy Filter support
- Integrated Media Card Reader
- Enhanced security features including integrated Smart Card Reader, HP ProtectTools, HP SpareKey, HP Fingerprint Sensor, TPM 1.2 Embedded Security Chip**
- Optional 2 MP Webcam with Business Card Reader Software
- HP QuickLook 2 for instant access to email, calendar, and contact information
- Enhanced reliability with HP DuraCase, HP DuraKeys and HP DuraFinish
- Up to 8 GB of 800 MHz DDR2 SDRAM supported, dual channel memory support
- Up to 320 GB 7200 rpm or 250 GB 5400 rpm SMART SATA II user-removable hard drive with HP 3D DriveGuard protection, or 80-GB Solid State Drive
- Integrated Intel Gigabit Network Connection (10/100/1000 NIC)
- Enhanced dual pointing devices (touchpad with scroll zone and pointstick)

* Testing was not intended to demonstrate fitness for DOD contracts requirements or for military use. Test results are not a guarantee of future performance under these test conditions.

** TPM module disabled where not permitted by law (for example, Russia and China).

Standard Features

Processors

Intel Core 2 Duo Processor T9600 (2.80 GHz, 6 MB L2 cache, 1066 MHz FSB)*

Intel Core 2 Duo Processor T9400 (2.53 GHz, 6 MB L2 cache, 1066 MHz FSB)*

Intel Core 2 Duo Processor P8600 (2.40 GHz, 3 MB L2 cache, 1066 MHz FSB)*

* Intel's numbering is not a measurement of higher performance.

NOTE: Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.

Operating System

Preinstalled

Genuine Windows Vista Business 32*

Genuine Windows Vista Business 64*

Genuine Windows Vista Home Basic

Genuine Windows Vista Business with downgrade to Windows XP Professional custom installed*†

FreeDOS

Supported

Genuine Windows XP Professional 32

Genuine Windows XP Professional 64

Certified

SuSE Linux Enterprise Desktop 10

* Certain Windows Vista product features require advanced or additional hardware. See:

<http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx> and

<http://www.microsoft.com/windowsvista/getready/capable.mspx> for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit: <http://www.windowsvista.com/upgradedadvisor>.

† Windows Vista Business disk also included for future upgrade if desired. To qualify for this downgrade an end user must be a business (including governmental or educational institutions) and is expected to order at least 25 customer systems with the same custom image.

Chipset

Mobile Intel PM45 Express Chipset ICH9M-Enhanced

Intel Centrino 2 with vPro technology capable

Intel Centrino 2 with vPro technology is a selectable feature that is available on units configured with an Intel WiFi Link 5300 or 5100. It provides advances in remote manageability, security, energy efficient performance, and wireless connectivity. Intel Active Management Technology (AMT) offers built-in manageability and proactive security for networked notebook PCs, even when they are powered off* or when the operating system is inoperable. It can help identify threats before they reach the operating system, isolate infected systems, and update PCs regardless of their power state.

*Requires a Windows operating system, network hardware and software, connection with a power source, and a direct (non-VPN) corporate network connection which is either cable or wireless LAN.

NOTE: Some functionality of Intel Centrino 2 and vPro technology, such as Intel Active Management technology and Intel Virtualization technology, requires additional 3rd party software in order to run. Availability of future "virtual appliances" applications for Centrino 2 and vPro technology is dependant on 3rd party software providers. Compatibility with future "virtual appliances" and Microsoft Windows Vista operating system is yet to be determined.

Standard Features

Business Rugged

Meets the military standard Mil-Std-810F* for:

- Shock: Method 516.5 Proc. I
- Vibration: Method 514.5, Proc I
- High Temperature: Method 501.4, Proc I & II (140°F/60°C operational)
- Sand and Dust: Method 510.4, Proc. I (Blowing Dust)
- Humidity: Method 507.4 (95% relative humidity)
- Altitude: Method 500.4 Low Pressure, Proc. I & II (15,000 feet operational)

* Testing was not intended to demonstrate fitness for DOD contracts requirements or for military use. Test results are not a guarantee of future performance under these test conditions.

Graphics

Models with NVIDIA graphics:

NVIDIA Quadro FX 770M with 512 MB of dedicated video memory
Microsoft DirectX 10 (Shader 4.0) and OpenGL 2.1 capable

Models with ATI graphics:

ATI Mobility FireGL V5700 with 256 MB of dedicated video memory
Microsoft DirectX 10.1 (Shader 4.1) and OpenGL 2.1 capable

Display

Internal

15.4-inch diagonal WXGA anti-glare (1280 x 800 resolution)
15.4-inch diagonal WSXGA+ anti-glare (1680 x 1050 resolution)
Ambient light sensor
Integrated lid switch
HP Privacy Filter support

External

Up to 32-bit per pixel color depth
VGA port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz
HDMI 1.3 port supports direct connection to high-definition displays with up to 1920 x 1080 resolution and 7-channel audio with one convenient cable (not included).
DVI port in optional HP Docking Station (sold separately) supports resolutions up to 1920 x 1200 for single-link DVI monitors and up to 2560 x 1600 for dual-link DVI monitors.
NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

Standard Features

Memory	Standard	800 MHz DDR2 SDRAM; two slots supporting dual channel memory 2048 MB, 4096 MB, or 8192 MB
	Maximum	Upgradeable to 8192 MB with 4096 MB SODIMMs in slots 1 and 2
	Dual-channel	Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. Availability of 4 GB or more of memory requires Windows Vista Business 64-bit or Linux. With Windows 32-bit operating systems, memory above 3 GB may not all be available due to system resource requirements.

Communications

Integrated Intel Gigabit Network Connection (10/100/1000 NIC)*
56K V.92 modem**

* The term "10/100/1000" or "Gigabit" Ethernet indicates compliance with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

** Designed for downloads from 56K modem compliant sources. Maximum achievable download transmission rates currently do not reach 56 KB/s, and will vary with line conditions. Modem availability is subject to country regulatory approval.

Wireless Devices

Support for a broad range of secure, integrated wireless LAN and wireless WAN options featuring support for the latest industry standards. Wireless LAN is factory configurable or available as an option to be added later. Broadband Wireless (WWAN) requires Windows Vista Business or Windows XP Professional and is available in select countries as a standard, factory configurable feature or as an option to be added later. Integrated Bluetooth is also available (factory configurable only) and can be combined with any of the supported wireless LAN and wireless WAN options.

HP un2400 EV-DO/HSPA Mobile Broadband Module Integrated WWAN module with Gobi global mobile Internet technology that provides worldwide connection to both CDMA (EVDO) and UMTS (HSPA) wireless networks.

NOTE: Separately purchased mobile network operator service is required.

Two 850/900/1800/1900/2100 MHz antennas integrated in the top of the display panel support current and future WWAN technologies.

All 802.11 integrated wireless LAN options

Wi-Fi CERTIFIED*

Cisco Compatible Extensions support

Wired Equivalent Privacy (WEP) support up to 128-bit keys

Wi-Fi Protected Access (WPA) and WPA2 support

802.1x authentication support, including EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, and LEAP

Advanced Encryption Standard (AES) support

Three antennas integrated in the display enclosure

Intel WiFi Link 5300

Integrated support for 802.11a, b, g, and n draft 2.0*

Up to 450 mbps data rate

Intel WiFi Link 5100

Integrated support for 802.11 a, b g, and n draft 2.0*

Up to 300 mbps data rate

Standard Features

HP Integrated Module with Bluetooth Wireless Technology Bluetooth Specification v2.0 compliant
Works with a wide range of Bluetooth devices

* The specifications for 802.11n draft 2.0 are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11n WLAN devices. In countries where n draft 2.0 is not allowed, this capability is not enabled (Intel 802.11a/b/g only).

Keyboard

The 101/102-key compatible keyboard features an industry standard, full-pitch key layout with desktop keyboard features, such as the isolated inverted-T cursor control keys, editing keys, both left and right control and alt keys, and 12 function keys. US and International key layouts are available. Other features include an integrated numeric keypad, hotkeys for instant access to power conservation, brightness, and other features, 19-mm x 19-mm key pitch (center-to-center spacing), 2.5-mm stroke, and comfort-dished keycaps.

HP DuraKeys is a clear coating applied over the notebook keyboard that helps protect the finish and the printed characters on the keys. HP DuraFinish helps protect the finish on the keyboard deck, graphics, and icons from normal wear and tear.

Touch-sensitive controls Touch-sensitive controls provide easy access to the following features: HP Info Center, HP QuickLook, wireless on/off, HP Presentation button, external volume up, volume down, and mute

Pointing device

Enhanced dual pointing devices:
Touchpad with scroll zone, three pick buttons
and
Pointstick, three pick buttons

Expansion card slots

ExpressCard/54 slot Supports ExpressCard/54 and ExpressCard/34
Integrated Smart Card Reader Compatible with ISO 7816 compliant Smart Cards
PC/SC interface support

Media Card Reader Supports SD (Secure Digital), MultiMedia Card, Memory Stick, Memory Stick Pro, Memory Stick Duo*, Picture card

Standard Features

Storage

Internal Storage Device 250 GB 5400 rpm SMART SATA II Hard Drive
250/320 GB 7200 rpm SMART SATA II Hard Drive
80 GB Solid State Drive

NOTE: Hard drives are customer removable and will withstand multiple insertion/removal cycles. Up to 10 GB is reserved for the system recovery software.

HP 3D DriveGuard The hard drive is mounted directly to the notebook frame, reducing the transmission of shock away from the hard drive. Uses three-axis digital motion detection with intelligent sensitivity to help protect the hard drive during normal use from shock and vibration. The digital accelerometer temporarily halts all data transfer and parks the hard drive when abrupt motion is detected.

Upgrade Bay Fixed 12.7 mm SATA optical drive Blu-ray R/RE DVD+/-RW SuperMulti DL Drive
DVD+/-RW SuperMulti DL LightScribe Drive
DVD-ROM Drive

or

Second hard drive* 250 GB 5400 rpm SMART SATA II Hard Drive
250/320 GB 7200 rpm SMART SATA II Hard Drive

* For RAID configurations, both hard drive capacities must be equal.

Interfaces

ExpressCard/54 slot One
Smart Card Reader One
Media Card Reader One
External Monitor One – VGA
1394a One – 4-pin connector
Stereo microphone in One
Stereo headphone/line out One
Power connector One
RJ-11/modem One
RJ-45/Ethernet One
HDMI One – 1.3 compatible
eSATA One
USB 2.0 Four
Docking connector One
Secondary battery connector One
LED status indicators Fifteen

Standard Features

Audio/Visual

High Definition Audio support w/24-bit DAC
Integrated stereo speakers
Integrated dual-microphone array
Touch-sensitive controls for volume up, volume down, and mute
Stereo headphone/line out
Stereo microphone in
Optional 2 MP Webcam with Business Card Reader Software

Software

Preinstalled software with Windows Vista or Windows XP

HP Recovery Manager (Vista only)
HP Help and Support Center
HP QuickLook 2
HP Universal Print Driver
HP ProtectTools Security Manager:
BIOS Configuration for HP ProtectTools
Credential Manager for HP ProtectTools
Device Access Manager for HP ProtectTools
Drive Encryption for HP ProtectTools
Embedded Security for HP ProtectTools
File Sanitizer for HP ProtectTools
Privacy Manager for HP ProtectTools
HP Quick Launch Buttons
HP Wireless Assistant
Microsoft Office Ready with 60-day Office Professional 2007 Trial Edition (select models)
PDF Complete Special Edition
Intervideo WinDVD - DVD Player
Roxio Creator Business (for optional DVD+/-RW and DVD/CD-RW drives)
McAfee Total Protection*
Synaptics Touchpad Driver
Microsoft Windows Live Messenger (select models)
HP Webcam Software

Additional software available from the web

HP SoftPaq Download Manager
HP Client Manager Software
HP Client Management Solutions
Java Card Security for HP ProtectTools

* 60 day trial period for McAfee Total Protection for Small Business software. Internet access required to receive updates. First update included. Subscription required for updates thereafter.

Standard Features

Workstation ISV Certifications

MCAD

(Mechanical
CAD/Architectural
Engineering and
Construction)

AutoDesk AutoCAD
AutoDesk Inventor
AutoDesk Revit
AutoDesk AliasStudio
AutoDesk Map 3D
AutoDesk Civil 3D
Bentley InRoads XM
Bentley Microstation
Bentley Navigator
CEI
CoCreate OneSpace
Dassault Systemes CATIA V5
ICEM Surf
Intelligent Light
MSC Software MSC.Patran
MSC Software SimXpert
PTC Pro/ENGINEER Wildfire
SensAble
Siemens PLMS NX
Siemens PLMS NX I-deas
Siemens PLMS Solid Edge
Siemens PLMS TeamCenter Visualization
Solidworks

DCC

(Digital Content Creation)

Adobe Premiere
Adobe After effects
Adobe Encore
Adobe Photoshop
AutoDesk 3DS MAX/Combustion
AutoDesk Maya
Avid Xpress Pro
Avid Media Composer
SoftImage XSI

GIS

(Geographic Information
Systems)

ESRI ArcGIS

Oil and Gas

Landmark R5000
Paradigm EPOS, GoCAD
Schlumberger / GeoFrame
Schlumberger Petrel
SeismicMicro Technology

HP Performance Tuning Framework

HP Performance Tuning Framework (PTF) enables optimal configuration of HP Mobile Workstations delivering stability and best performance. HP PTF will guide your system setup allowing a "custom" configuration that best matches the workstation to user requirements.

Standard Features

HP Recovery Manager (Vista only) Each unit is shipped with HP Recovery Manager. HP Recovery Manager enables fast recovery of the factory preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 10 GB of the hard drive is reserved for the system recovery software.

SMBIOS Version 2.4 System Management BIOS, previously known as DMI BIOS, is used to store system management information.

HP ProtectTools Security Manager HP ProtectTools Security Manager is the security platform for business notebooks and desktops. The HP ProtectTools Security Manager is an extensible client security console that delivers enhanced security capabilities through add-on software modules. Modules currently available are:

- BIOS Configuration for HP ProtectTools
- Credential Manager for HP ProtectTools
- Device Access Manager for HP ProtectTools
- Drive Encryption for HP ProtectTools
- File Sanitizer for HP ProtectTools
- Set-up Wizard for HP ProtectTools
- Privacy Manager for HP ProtectTools (Chat & Sign)
- Embedded Security for HP ProtectTools
- Java Card Security for HP ProtectTools

Security

Standard Features

HP ProtectTools Security Manager
Enhanced Pre-Boot Security
HP SpareKey
One-Step Logon
HP Fingerprint Sensor
Integrated Smart Card Reader
Configuration Control Hardware
Memory Change Alert
Ownership Tag
Setup Password
Power-On Password
TPM 1.2 Embedded Security Chip*
TPM Enhanced DriveLock*
HP Disk Sanitizer
HP 3D DriveGuard
Kensington Lock Slot
Support for Computrace / LoJack for Laptops (must be purchased separately)

Optional Features

HP Privacy Filter

Narrows viewing area so that screen data is visible only to persons directly in front of the monitor

* TPM module disabled where use is restricted by law; for example, Russia and China.
For more information on HP security solutions refer to: <http://www.hp.com/go/security>.

Standard Features

Power Supply

External 120 watt* Smart AC adapter, 6-foot (1.8-meter) power cord included.
Total length including external AC adapter is 12 feet (3.66 meter).
HP Fast Charge*

*HP Fast Charge recharges your battery up to 90% within 90 minutes when the system is off. HP Fast Charge does not apply to 12-cell Ultra-Capacity batteries.

Battery

Primary battery	8-cell (73 WHr) Lithium-Ion battery
Optional HP Extended Life Battery	8-cell (52 WHr) high capacity Lithium-Ion battery
Optional HP Ultra-Capacity Battery	12-cell (95 WHr) high capacity Lithium-Ion battery

Battery Life

Primary battery	Up to 4 hours and 45 minutes
Primary battery and optional HP Extended Life Battery	Up to 8 hours and 30 minutes
Primary battery and optional HP Ultra-Capacity Battery	Up to 10 hours and 45 minutes

NOTE: The listed battery life measurements were taken on models running Microsoft Windows XP Professional. Battery life will vary depending on the product configuration, product model, applications loaded on the product, power management settings of the product, and the product features used by the customer. As with all batteries, the maximum capacity of this battery will decrease with time and usage.

System Standby Time

Up to 2 weeks

Power Conservation

NVIDIA PowerMizer 7.0 technology (models with NVIDIA graphics)
ATI PowerPlay technology (models with ATI graphics)
Hibernation
Standby
ACPI compliance

Standard Features

Docking and Stands

HP Advanced Docking Station
HP Docking Station
HP Standard Monitor Stand
HP Adjustable Notebook Stand
HP External MultiBay II

HP's shared docking solutions provide simple and convenient port replication and cable management. Features include Gigabit NIC pass through, modem pass through, legacy parallel and serial ports, Dual Link DVI-D, USB 2.0 ports, integrated security mechanism*, integrated MultiBay II and ExpressCard** slots. These docking solutions are compatible across multiple Business Notebook platforms enabling a lower total cost of ownership.

* HP/Kensington Cable Lock required (purchased separately)

** HP Advanced Docking Station only

Service and Support

HP Services offers limited 3-year, 1-year and 90-day warranty options depending on country; 1-year limited warranty on primary battery. On-site service and warranty upgrades are also available. HP Care Pack Services extend service contracts beyond the standard warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at:

<http://www.hp.com/go/lookuptool>. Additional HP Care Pack Services information by product is available at: <http://www.hp.com/hps/carepack>.

NOTE: Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details.

<http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp>

Options

Memory	HP 2 GB (DDR2 800 MHz) SODIMM	KT293AA
	HP 4 GB (DDR2 800 MHz) SODIMM	KT294AA
Storage	HP Notebooks USB Diskette Drive	DC361B
	HP 250GB Pocket Media Drive	FE477AA
	HP Primary SATA 250 GB 5400 rpm Hard Drive	AK072AA
	HP Upgrade Bay SATA 250 GB 5400 rpm Hard Drive	AK868AA
	HP Upgrade Bay SATA DVD+/-RW SuperMulti DL LightScribe Drive	AK869AA
MultiBay II Storage (9.5-mm) NOTE: Requires HP Advanced Docking Station or HP External MultiBay II	HP MultiBay II DVD-ROM Drive	PA849A
	HP MultiBay II DVD+/-RW SuperMulti DL Drive	PA851A
Expansion Solutions	HP 2008 150W Docking Station	KQ751AA#xxx
	HP 2008 180W Advanced Docking Station	KQ752AA#xxx
	HP External MultiBay II	PA509A#xxx
	HP Standard Monitor Stand	PA507A
	HP Adjustable Notebook Stand	PA508A
	HP Mobile Port Replicator	AK155AA
Communications	HP un2400 EVDO/HSUPA Mobile Broadband Module	FN556AA
Power	HP 180W Smart AC Adapter	AK875AA#XXX
	HP 90W Smart Combo Adapter	AJ652AA#xxx
	HP Primary 8-cell Battery pack	KU533AA
	HP Extended Life Battery	AJ359AA
	HP 12-cell Ultra-Capacity Battery	EJ092AA
Carrying Cases	HP Basic Carrying Case	AJ078AA
	HP Value Nylon Case	RR314AA
	HP Universal Nylon Case	RR315AA
	HP Executive Leather Case	RR316AA
	HP Deluxe Nylon Backpack	RR317AA
	HP Deluxe Roller Case	GD405AA

Options

Security	HP ExpressCard Smart Card Reader with Java Card	AJ451AA
	HP/Kensington MicroSaver Security Lock	PC766A
	HP Privacy Filter	AJ358AA

Input/Output Devices	HP USB/PS2 Optical 2-Button Scroll Mouse	DC369A
	HP USB Optical Travel Mouse	RH304AA

* Requires HP Docking Station, HP Advanced Docking Station, HP 2008 Docking Station or HP 2008 Advanced Docking Station. Availability may vary by region.

Memory

800-MHz DDR2 SDRAM
Two DIMM slots supporting dual channel memory
DIMM sizes supported: 1024 MB, 2048 MB, and 4096 MB

- Standard Memory**
- 2048 MB (2048 MB x 1)
 - 4096 MB (4096 MB x 1 or 2048 MB x 2)
 - 8192 MB (4096 MB x 2)

Optional Memory Upgrades Support for up to 8192 MB of memory with the installation of optional DDR2 SDRAM memory kits. Both memory slots are user accessible. Please refer to the Hardware and Software Guide for installation procedures. Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

Up to	Slot 1	Slot 2
4096 MB	2048 MB	2048 MB
8192 MB	4096 MB	4096 MB

NOTE: This chart does not represent all possible memory configurations. Due to the non-industry standard nature of some third-party memory modules, we strongly recommend using only HP branded memory modules to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. Availability of 4 GB or more of memory requires Windows Vista Business 64-bit or Linux. With Windows 32-bit operating systems, memory above 3 GB may not all be available due to system resource requirements.

Memory Upgrades	HP 2 GB (DDR2 800 MHz) SODIMM	KT293AA
	HP 4 GB (DDR2 800 MHz) SODIMM	KT294AA

Storage

Upgrade Bay Drive Support

	Quantity Supported	Drive Bay
Blu-ray R/RE DVD+/-RW SuperMulti DL Drive	One	Upgrade Bay
DVD+/-RW SuperMulti DL LightScribe Drive	One	Upgrade Bay
DVD-ROM Drive	One	Upgrade Bay
250 GB 5400 rpm SMART SATA II Hard Drive	One	Upgrade Bay
320 GB 7200 rpm SMART SATA II Hard Drive	One	Upgrade Bay
250 GB 7200 rpm SMART SATA II Hard Drive	One	Upgrade Bay

Internal Storage Device

	Quantity Supported	Drive Bay
Hard Drives		
250 GB 5400 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
320 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
250 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
Solid State Drive		
80 GB Solid State Drive	One	Dedicated hard drive bay

Technical Specifications

System Unit	Dimensions (HxWxD)	1.1 in (at front) x 14.0 in x 10.4 in 28.2 mm (at front) x 355 mm x 263.5 mm
	Weight	Starting from 6.3 lb (2.86 kg)
	NOTE: Height varies depending upon where on the notebook the measurement is made. Starting weight includes 8-cell battery, hard drive, 1 GB memory, 802.11 wireless communications module, Bluetooth, and optical drive. Weight varies by configuration and components.	
Stand-Alone Power Requirements	Normal Operating Voltage	18.5 V
	Average Operating Power	26.0 W
	Max Operating Power	< 120 W
Temperature	Operating	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	Non-operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	Operating	125 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
Random Vibration	Operating	0.75 grms
	Non-operating	1.50 grms
Altitude (unpressurized)	Operating	-50 to 10,000 ft (-15.24 to 3,048 m)
	Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)
Industry Standard Certifications	UL	Yes
	CSA	Yes
	FCC Compliance	Yes
	ENERGY STAR®	Yes*
	EPEAT	Gold**
	ICES	Yes
	GS	Yes
	Australia / NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	MIC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	BNCI or BELUS	Yes
	CIT	Yes
	GOST	Yes
	Saudi Arabian Compliance (ICCP)	Yes
	SABS	Yes

Technical Specifications

UKRSERTCOMPUTER Yes

* Configurations of the HP EliteBook 8530w that are ENERGY STAR qualified are identified as HP EliteBook 8530w ENERGY STAR on HP websites and on www.energystar.gov.

** EPEAT registration varies by country. See www.epeat.net for registration status by country. EPEAT status listed above applies to U.S.

NOTE: For accessibility information on HP products, please visit: <http://www.hp.com/accessibility>.

HP 120W Smart AC Adapter

Weight	1.52 lb (0.69 kg) (adapter) 0.29 lb (0.13 kg) (power cord)
Dimensions	6.65 x 2.56 x 1.50 in (16.9 x 6.5 x 3.8 cm)
Input	Operating Input Voltage 100 to 240 VAC Operating Input Current PFC Version: 2.20 A at 90 VAC 1.10 A at 180 VAC Non-PFC Version: 2.5 A at 110 VAC 1.25 A at 180 VAC
	Operating Frequency Range 47 to 63 Hz AC
	Efficiency 83% minimum at 115 VAC
Output	Output power 120 W DC Output Voltage 18.5 V
Environmental Design	Operating Temperature 32° to 104° F (0° to 35° C) Non-operating (storage) Temperature -4° to 149° F (-20° to 65° C) Altitude 0 to 10,000 ft (0 to 3,048 m) Humidity 20% to 80% Storage Humidity 10% to 90%
EMI and Safety Certifications	CE Mark: full compliance with LVD and EMC directives Worldwide safety standards: IEC60950, EN60950, UL60950, Class2, SELV Agency approvals: C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE, S-Mark, Australian Electric Permit, PSB, eK, BSMI, BNCI, KONCAR, GS, GOST, SASO, SABS, UKRSERTCOMPUTER; MTBF-over 200,000 hours at 25°C ambient condition.

Technical Specifications

Optional HP Ultra-Capacity Battery	Dimensions (H x W x L)	1.3 x 6.0 x 10.6 in (3.33 x 15.25 x 26.88 cm)		
	Weight	1.77 lb (0.803 kg)		
	Cells/Type	12-cell Lithium-Ion		
	Energy	Watt-hour Capacity	95 WHr	
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)	
		Operating (Discharging)	14° to 140° F (-10° to 60° C)	
		Non-operating	-4° to 140° F (-20° to 60° C)	
	Battery Re-Charge Time	Smart Adapter	3 to 4 hours	
		System ON	4 to 5 hours (depending on system power consumption)	
	Fuel Gauge	When pressed, LEDs light indicating level of charge remaining on battery		

Optional HP Extended Life Battery	Dimensions (H x W x L)	1.0 x 3.9 x 8.7 in (2.5 x 10.0 x 22.0 cm)		
	Weight	1.00 lb (0.455 kg)		
	Cells/Type	8-cell Lithium-Ion		
	Energy	Watt-hour Capacity	52 WHr	
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)	
		Operating (Discharging)	14° to 140° F (-10° to 60° C)	
		Non-operating	-4° to 140° F (-20° to 60° C)	
	Battery Re-Charge Time	System in OFF mode or Standby	3 hours	
		System ON	3 to 5 hours (depending on system power consumption)	
		HP Fast Charge Technology	Charges the battery up to 90% within 90 minutes when system is OFF	
Fuel Gauge	When pressed, LEDs light indicating level of charge remaining on battery			

8-Cell (73 WHr) Lithium-Ion battery	Dimensions (H x W x L)	0.8 x 1.9 x 10.6 in (2.0 x 4.8 x 27.0 cm)		
	Weight	0.980 lb (0.445 kg)		
	Cells/Type	8-cell Lithium-Ion		
	Energy	Watt-hour Capacity	73 WHr	
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)	
		Operating (Discharging)	14° to 140° F (-10° to 60° C)	
		Non-operating	-4° to 140° F (-20° to 60° C)	
	Battery Re-Charge Time	System in OFF mode or Standby	2.5 hours	
		System ON	3 to 5 hours (depending on system power consumption)	
		HP Fast Charge Technology	Charges the battery up to 90% within 1.5 hours when system is OFF	

Technical Specifications

Displays

15.4-inch WSXGA+ anti-glare	Dimensions (W x H)	13.0 x 8.1 in (33.1 x 20.7 cm)	
	Diagonal Size	15.4 in (39.1 cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	300:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	200 nit (typical)	
	Pixel Resolution	Pitch	0.197 mm
		Format	1680 x 1050
		Configuration	RGB stripe
		Backlight	CCFL
	PPI	129	
	Viewing Angle	±60° Horizontal, ± 50° Vertical (minimum) or ±70° Horizontal, ±60° Vertical (typical)	

15.4-inch WXGA anti-glare	Active Area (W x H)	13.0 x 8.1 in (33.1 x 20.7 cm)	
	Diagonal Size	15.4 in (39.1 cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	300:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	200 nit (typical)	
	Pixel Resolution	Pitch	0.259 mm
		Format	1280 x 800
		Configuration	RGB stripe
		Backlight	CCFL
	PPI	98	
	Viewing Angle	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)	

Internal Storage

Technical Specifications

320 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115 g)	
	Capacity	320 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	Synchronous (maximum) 100 MB/s (Drive Capability)	
	Seek Time (typical reads, including settling)	Single Track	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	625,142,448	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

250 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115 g)	
	Capacity	250 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	Synchronous (maximum) 100 MB/s (Drive Capability)	
	Seek Time (typical reads, including settling)	Single Track	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	488397168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

Technical Specifications

250 GB 5400 rpm SATA Hard Drive	Drive Weight	0.22 lb (101 g)	
	Capacity	250 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	488,397,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
Features	ATA Security		

80 GB 2.5-inch SATA Solid State Drive	Weight	0.19 lbs (86 g)			
	Capacity	80 GB			
	Height	0.37 in (9.5 mm)			
	Width	2.75 in (70 mm)			
	Interface	ATA-7 / SATA 2.6			
	Performance	Maximum Sequential Read	250 MB/s	Maximum Sequential Write	70 MB/s
		Logical Blocks	156,301,488		
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]			
	Features	ATA Security			

Optical Drives

Technical Specifications

DVD-ROM Drive	Access Times	Random	<116 ms CD (typical) <125 ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM	Up to 3,600 KB/s
		8X-DVD	Up to 10,800 KB/s
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	None	
	Max Media Capacity (read)	4.7 GB	
	Transport	Tray Loading	

DVD+/-RW SuperMulti DL LightScribe Drive	Access Times	Random	<175 ms CD (typical) <230 ms DVD (typical)
		Max Data Transfer Rate	24X CD-ROM
	8X DVD		Up to 10,800 KB/s
	24X CD-R		Up to 3,600 KB/s
	16X CD-RW		Up to 2,400 KB/s
	8X DVD+R		Up to 10,800 KB/s
	4X DVD+RW		Up to 5,400 KB/s
	8X DVD-R		Up to 10,800 KB/s
	4X DVD-RW		Up to 5,400 KB/s
	2.4X DVD+R(9)		Up to 2,700 KB/s
	5X DVD-RAM	Up to 6,750 KB/s	
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, LightScribe	
Max Media Capacity (read)	8.5 GB		
Max Media Capacity (write)	8.5 GB		
Transport	Tray Loading		

Technical Specifications

Blu-ray R/RE DVD+/-RW SuperMulti DL Drive	Access Times	Random	<140 ms CD-ROM (typical) <160 ms DVD-ROM (typical) <300 ms BD-ROM (typical)
	Max Data Transfer Rate	24X CD-ROM	Up to 3,600 KB/s
		8X DVD-ROM	Up to 10,800 KB/s
		8X CD-R	Up to 1,200 KB/s
		8X CD-RW	Up to 1,200 KB/s
		8X DVD+R	Up to 10,800 KB/s
		4X DVD+RW	Up to 5,400 KB/s
		8X DVD-R	Up to 10,800 KB/s
		4X DVD-RW	Up to 5,400 KB/s
		2.4X DVD+R(9)	Up to 2,700 KB/s
		5X DVD-RAM	Up to 6,750 KB/s
		1X BD-ROM	Up to 4,500 KB/s
		1X BD-R	Up to 4,500 KB/s
1X BD-RE	Up to 4,500 KB/s		
Transfer Mode	UDMA Mode 5		
Interface	Gen 1 SATA		
Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM, BD-ROM, BD-R, BD-RE		
Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9), DVD-RW, DVD-RAM, BD-R, BD-RE		
Max Media Capacity (read)	50.0 GB		
Max Media Capacity (write)	50.0 GB		
Transport	Tray Loading		

Security

Technical Specifications

HP Fingerprint Sensor	Mobile Voltage Operation	3.0V–3.6V Single Supply
	Operating Temperature	32° – 158°F (0° – 70°C)
	Current Consumption @ 3.3V	Less than 70 mA peak imaging and scrolling Less than 25 mA hardware finger detection Advanced Power Management
	High-Rate Image Capture	Up to 240 image frames /sec
	ESD Resistance	IEC 61000-4-2 Level 4 (±15KV)
	Detection Matrix	192 x 16 Pixels 9.7 mm x 0.81 mm 500 ppi High-Resolution Images

Audio

Hardware	Implementation	ADI1984A High Definition CODEC
	Volume Controls	Volume up, volume down, and mute
	Full Duplex	Yes
	Sound Blaster Pro compatible	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes

Audio Output Quality	Frequency Response	20 Hz – 20 kHz
	Signal to Noise Ratio	>85 dB
	Total Harmonic Distortion	0.01%
	Noise Floor	–110 dB
	Play/Record Sampling Rate(s)	8 kHz – 48kHz
	DAC	16, 20 or 24-bit
	ADC	16, 20 or 24-bit

Integrated Stereo Speakers	Power Rating	2 Watts
	Impedance	4 Ohms

Communications

Technical Specifications

<p>Integrated Intel Gigabit Network Connection (10/100/1000 NIC)</p> <p>82567LM</p>	<p>Ethernet Features</p> <p>10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3z and 802.3ab; IEEE 802.3 clauses 34-42) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s IEEE 802.1p QoS (Quality of Service) Support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)</p> <p>Power Management</p> <p>ACPI compliant -- multiple power modes Situation-sensitive features reduce power consumption</p> <p>Performance Features</p> <p>TCP/IP/UDP Checksum Offload (configurable)</p> <p>Manageability</p> <p>Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Intel Advanced Management Technology (iAMT)</p> <p>Interface</p> <p>PCI Express x1</p> <p>NIC Device Driver Name</p> <p>Intel 82567 Gigabit Network Connection</p>
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<p>V.92 56K Data/Fax Modem Form Factor</p> <p>Power Management Support</p> <p>Approvals/Certifications</p> <p>Data Mode Capabilities</p>	<p>MDC 1.5 Daughtercard</p> <p>APM Revision 1.2, ACPI</p> <p>UL, CSA, NEMKO, CCIB, Industry Canada, FCC Part 68, CTR21, FCC Part 15 Class B, Canadian ICES-003 Class B, C.I.S.P.R.22, Australian ACA, CE Mark, Other Countries</p> <p>V.92 data V.8bis V.80 V44, V.42bis, MNP5 (Compression) V.42 (LAPM, MNP2-4) (Error Correction)</p> <p>Optional symbol rates: 2800, 3429 Asymmetric Symbol rates</p> <p>Synchronous primary channel data signaling rates: 3600, 31200 Automatic rate re-negotiation V.34 V.32bis V.32 V.23 V.22bis V.22 V.21</p>
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Technical Specifications

	Bell 212A Bell 103J
Fax Mode Capabilities	TIA/EIA-578-B (Class 1) T.30, T.4 (Group 3) V.17 V.29 V.27ter V.21 Channel 2
Command Set	V.250 (Partial) TIA-602 Identification: +GMI, +GMM, +GMR Port control: +IPR, +ICF, +IFC, +ILRR Modulation: +MS, +MR, +MA Error control: +ES, +ER, +EB, +ESR, +ETBM Data compression: +DS, +DR V.251

HP un2400 EV-DO/HSPA Mobile Broadband Module

Technology/Operating Bands	GSM/GPRS/EDGE: 850MHz(Cell), 900MHz(EGSM), 1800MHz(DCS), 1900MHz (PCS) UMTS/WCDMA with receive diversity: 2100MHz (UTRA FDD Band I), 1900MHz (UTRA FDD Band II), 850MHz (UTRA FDD Band V) 1xEVDO/1xRTT with receive diversity: 850MHz (Band Class0-Cell), 1900MHz (Band Class1-PCS)
Wireless Protocol Standards	GSM/GPRS/EDGE: Class B, Multi-slot operation, coding schemes CS1 – CS4 and MSC1 – MSC9. UMTS/WCDMA: Release 99 and Release 5 CDMA: 1xEVDO Release 0 and Release A, IS-95A, IS-95B, IS-2000
Wireless Parametric Standards	Meets or exceeds TIA/EIA IS-98-D
Maximum Data Rates	UMTS (HSPA) – 7.2 Mbps (Download), 2.0Mbps (Upload) CDMA (EVDO Release A) – 3.1 Mbps (Download), 1.8Mbps (Upload)
Maximum Output Power	GSM/GPRS/EDGE: 32dBm (+/-1) WCDMA: 24dBm (+/-1) CDMA: 24dBm (+/-1)
Maximum Power Consumption	2500mA (peak); 1000mA (average)
Power Consumption, Sleep Mode	5 mA
Power Management	USB selective suspend Integrated notebook wireless button
Antenna Type	Dual high efficiency 5 band antennae with spatial diversity, mounted in the display enclosure
Form Factor	PCI-Express MiniCard
Weight	11.5 g
Dimensions (Length x Width x Thickness)	2.01 x 1.18 x 0.18 in (51 x 30 x 4.5 mm)

Technical Specifications

Voltage, Operating	3.3v +/- 10%
Temperature, Operating (from TIA/EIA/IS-98-D)	-22° to 140° F (-30° to 60° C) (full RF performance) -22° to 167° F (-30° to 75° C) (reduced RF performance)
Temperature, Non-operating, 96 hours (from MIL-STD 202 Method 108)	-40° to 185° F (-40° to 85° C)
Humidity, Non-operating	85% relative humidity for 48 hours @ 185° F (85° C) (non-condensing)
Configuration Utilities	HP Connection Manager
LED Activity	LED Off – Radio Off; Solid LED On – Radio On

Intel WiFi Link 5300

Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n (draft 2.0)* * The specifications for 802.11n draft 2.0 are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11n WLAN devices. In countries where n draft 2.0 is not allowed, this capability is not enabled.
Interoperability	Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN) Tested with wireless access points from several major manufacturers (details at: http://www.hp.com/go/notebooks/WLAN/draft-n)
Frequency Band	2.4 GHz and 5 GHz
Antenna Structure	3 transmit; 3 receive (3x3)
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n (draft): 66 possible data rates, ranging from 6 Mbps to 450 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard Interval used, as defined in IEEE 802.11n (draft) specification
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
Security¹	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES (support for key sizes of 128, 192, and 256 bits), 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK

Technical Specifications

- Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
- WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

Intel WiFi Link 5100	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n (draft 2.0)* * The specifications for 802.11n draft 2.0 are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11n WLAN devices. In countries where n draft 2.0 is not allowed, this capability is not enabled.
	Interoperability	Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN) Tested with wireless access points from several major manufacturers (details at: http://www.hp.com/go/notebooks/WLAN/draft-n)
	Frequency Band	2.4 GHz and 5 GHz
	Antenna Structure	1 transmit; 2 receive (1x2)
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n (draft): 66 possible data rates, ranging from 6 Mbps to 300 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard Interval used, as defined in IEEE 802.11n (draft) specification
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
	Security¹	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES (support for key sizes of 128, 192, and 256 bits), 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
	Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
	Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power (for CCK)²	15 dBm

Technical Specifications

Vista.

HP Integrated Module with Bluetooth Wireless Technology	Bluetooth Specification	2.0 Compliant
	Dimensions	1.02 x 0.55 x 0.22 in (26 x 14 x 5.7 mm)
	Frequency Band	2402 to 2480 MHz
	Number of Available Channels	79 (1 MHz) available channels
	Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
	Transmit Power	-6 dBm to 4 dBm (Bluetooth Class II)
	Receiver Sensitivity	Better than -80 dBm at 0.1 % raw bit error rate
	Power Consumption	Peak (Tx) 264 mW Peak (Rx) 231 mW Sleep <1 mW
	Antenna	Internally integrated within module
	Range	Up 33 ft (10 m)
	Electrical Interface	USB 2.0 compliant Microsoft Windows Plug and Play compliant
	OS Support	Microsoft Windows XP Professional and Home Microsoft Windows 2000
	Bluetooth Software Supported	Broadcom Bluetooth for Windows Microsoft Windows XP Bluetooth Software
	Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves
	Security	Full support of Bluetooth Security Provisions
	Power Management	Microsoft Windows ACPI, and USB Bus Support Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
	Certifications	All necessary regulatory approvals for supported countries, including: FCC (47 CFR) Part 15C, Section 15.247 & 15.249 ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
	Temperature	Operating -4° to 158° F (-20° to 70° C) Non-operating -40° to 176° F (-40° to 80° C)
	Humidity	Operating 10% to 90% Non-operating 5% to 95%
	Altitude	Operating 15,000 ft (4,572 m) Non-operating 40,000 ft (12,192 m)
	Bluetooth Profiles	(with Bluetooth for Windows 4.0 software)

Technical Specifications

Supported

Serial Port Profile (SPP)*
 Dial-Up Networking (DUN)*
 Generic Object Exchange Profile (GOEP)
 Object Push Profile (OPP)*
 File Transfer Profile (FTP)
 Synchronization Profile (SYNC)
 Hard Copy Cable Replacement (HCRP)*
 Personal Area Networking Profile (PAN)*
 Human Interface Device Profile (HID)*
 FAX Profile (FAX)
 Basic Imaging Profile (BIP)
 Headset Profile (HSP)
 Hands Free Profile (HFP)
 Advanced Audio Distribution Profile (A2DP)

* indicates the profile is also supported by Microsoft Windows XP SP2

Eco Data

Eco-Label Certifications

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- US Energy Star
- Taiwan Green Mark
- China Energy Conservation Program
- IT ECO declaration
- EPEAT – Gold
- Korea ECO label

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Convertible Mini tower Desktop model is based on a "Typically Configured Notebook"

Energy Consumption

	115 VAC	230 VAC	100 VAC
Normal Operation	15.22 W	17.02 W	15.12 W
Sleep (Energy Star low power mode)	1.278 W	1.335 W	1.271 W
Off	0.647 W	0.636 W	0.724 W

Heat Dissipation*

	115 VAC	230 VAC	100 VAC
Normal Operation	52 BTU/hr	58 BTU/hr	52 BTU/hr
Sleep	4 BTU/hr	5 BTU/hr	4 BTU/hr
Off	2 BTU/hr	2 BTU/hr	3 BTU/hr

* Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

This product is in compliance with US executive order 13221, WOL (wake on LAN) disabled.

Technical Specifications

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)

	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.4	26
Operation	3.4	26

Batteries

This product complies with ISO standards:

- EU Directive 91/ 157/ EEC
- EU Directive 93/ 86/ EEC
- EU Directive 98/ 101/ EEC

Batteries used in the product do not contain:

- Mercury greater than 5ppm by weight
- Cadmium greater than 10ppm by weight
- Lead greater than 4000 ppm by weight.

The battery type and chemistry used in the product is:

CR2032 (coin cell), Lithium

This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive – 2002/95/EC.

Additional information:

This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.

This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).

This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see: www.epeat.net

Keyboard complies with ISO standard: ISO 9995, EN 29241-4, and ISO/IEC 15412

Input devices of this product comply with ISO 9241, part 9.

Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.

This product contains 0% recycled materials (by wt.)

This product is greater than 95.0% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - Polyethylene low density 13 g
 - Corrugated carton 236 g

Technical Specifications

- Internal:
 - Corrugated 280 g
- The EPE foam packaging material is made from 100% recycled content.
- The corrugated paper packaging materials contains at least 80% recycled content.

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (for reference of these limits please refer to the HP General Specification of the Environment (http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances

Technical Specifications

End-of-life Management and Recycling

- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <http://www.hp.com/go/reuse-recycle> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/recyclers>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

Hewlett-Packard Corporate Environmental Information

For more information about HP's commitment to the environment: Global Citizenship Report

<http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html>
Environment website

<http://www.hp.com/environment>

Eco-label certifications

<http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html>

ISO 14001 certificates:

<http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html>

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