Technical Specifications - Audio

	USB Cord:	5.91 ft 1800mm

Technical Specifications - Communications

Broadcom NetXtreme BCM 5761 GbE integrated network interface		
Connector	RJ-45	
Controller	Broadcom 5761 PCI-Express LAN Controller	
Memory	8 MB NVRAM serial Flash	
Data rates supported	10/100/1000 Mbps	
Compliance	IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3AB, 802.3u, and 802.3x	
Bus architecture	PCI-Express	
Data path width	Single Channel PCI-Express	
Data transfer mode	Bus Master DMA	
Hardware certifications	FCC class B, Canada and US NRTL Mark, C-Tick for Australia, BSMI for Taiwan, VCCI for Japan, MIC for Korea, GOST for Russia, UL listed (E212044), European Union Notice (CE 0682)	
Power requirement	1.8W @ 3.3V	
Boot ROM support	Yes	
Network Transfer Mode	Full-duplex	
	Half-duplex (not available for the 1000BASE-T transceiver)	
Network Transfer Rate	10BASE-T (half-duplex) 10 Mbps	
	10BASE-T (full-duplex) 20 Mbps	
	100BASE-TX (half-duplex) 100 Mbps	
	100BASE-TX (full-duplex) 200 Mbps	
	1000BASE-T (full-duplex) 2000 Mbps	
Environmental	Operating Temperature:	32° to 131°F (0° to 55° C)
	Operating Humidity:	131° F (55° C) with 5% to 95% non-condensing humidity
Dimensions	2.75 in x 4.13 in (7 cm x 10.5 cm), low profile compatible	
OS driver support	Windows Vista 32-bit SP1, Windows Vista x64 SP1, Windows XP 32 bit professional	
Management	ACPI, WOL and DMI 2.0, PXE 2.0, WfM 2.0, Broadcom mgmt utility, ASF2.0, DASH 1.0 and DASH 1.1 profiles	

Con formato: Español (México)

Broadcom NetXtreme GbE Ethernet Plus Network Interface Controller	
Connector	RJ-45
Controller	Broadcom 5761 PCI-Express LAN Controller
Memory	8 MB NVRAM serial Flash
Data rates supported	10/100/1000 Mbps
Compliance	IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3AB, 802.3u, and 802.3x
Bus architecture	PCI-Express
Data path width	Single Channel PCI-Express
Data transfer mode	Bus Master DMA
Hardware certifications	FCC class B, Canada and US NRTL Mark, C-Tick for Australia, BSMI for Taiwan, VCCI for Japan, MIC for Korea, GOST for Russia, UL listed (E212044), European Union Notice (CE 0682)
Power requirement	1.8W @ 3.3V
Boot ROM support	Yes
Network Transfer Mode	Full-duplex
	Half-duplex (not available for the 1000BASE-T transceiver)
Network Transfer Rate	10BASE-T (half-duplex) 10 Mbps

Con formato: Español (México)

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Technical Specifications - Communications

	10BASE-T (full-duplex) 20 Mbps	
	100BASE-TX (half-duplex) 100 Mbps	
	100BASE-TX (full-duplex) 200 Mbps	
	1000BASE-T (full-duplex) 2000 Mbps	
Environmental	Operating Temperature:	32° to 131°F (0° to 55° C)
	Operating Humidity:	131° F (55° C) with 5% to 95% non-condensing humidity
Dimensions	2.75 in x 4.13 in (7 cm x 10.5 cm), low profile compatible	
OS driver support	Windows Vista 32-bit SP1, Windows Vista x64 SP1, Windows XP 32 bit professional	
Management	ACPI, WOL and DMI 2.0, PXE 2.0, WfM 2.0, Broadcom mgmt utility, ASF2.0, DASH 1.0 and DASH 1.1 profiles	

HP Wireless Network Connection 802.11 b/g/n

Dimensions (L x H)	3.3 x 4.7 in 8.5 x 12 cm	
Weight	0.08 lbs 40 g)	
Controller	Ralink RT2790	
System interface	PCIe x1	
Network standard	802.11 b/g/n	
Frequency band	2.400 - 2.497 GHz	
Operating temperature	14° to 149°F, operating (-10° to 65°C, operating)	
Storage temperature	-40° to 176°F, non-operating (-40° to 80°C, non-operating)	
Humidity	10-90% operating 5-95% non-operating	
Operating voltage	3.3V +/- 9% 12V +/- 8%	
Power Consumption	Platform/WLAN Mode	Power Consumption
	Maximum Power Consumption:	10 Watts
	Transmit Only	4 Watts maximum averaged power over 1 second
	Transmit Packet or Active Scanning	1000 mA peak current for 100 microseconds or longer
	Receive Only Mode or Idle without IEEE PSP mode enabled	3 Watts maximum averaged over 1 second
	Idle, with IEEE PSP mode enabled	1.0 Watts maximum averaged over 1 second
	Transmit Disabled (turned off in software)	50 mW maximum, averaged over 1 second
	Platform in S3 or S4 (power removed from Low Profile PCI Express Card)	5 mW maximum, averaged over 1 second
Output Power (approximate)	802.11b mode	+19 dBm +/- 1.0 dB maximum
	802.11g mode	+17 dBm +/- 1.0 dB maximum
	EWC mode	+17 dBm +/- 1.0 dB maximum (total power in all transmit chains)
Receive Sensitivity	Mode	Data Rate / Sensitivity
	802.11b	1 Mbps / -94 dBm

Technical Specifications - Communications

	802.11b	11 Mbps	-85 dBm
	802.11g	6 Mbps	-91 dBm
	802.11g	18 Mbps	-85 dBm
	802.11g	48 Mbps	-75 dBm
	802.11g	54 Mbps	-72 dBm
	EWC (2.4 GHz)	6.5 Mbps	-87 dBm
	EWC (2.4 GHz)	54 Mbps	-82 dBm
	EWC (2.4 GHz)	81 Mbps	-78 dBm
	EWC (2.4 GHz)	162 Mbps	-74 dBm
	EWC (2.4 GHz)	270 Mbps	-68 dBm
	EWC (2.4 GHz)	300 Mbps	-64 dBm

	Data Rate (MCS)	Minimum Throughput
Data Transfer Rate	1 Mbps (802.11 b)	700 kbps
	2 Mbps (802.11 b)	1.4 Mbps
	5.5 Mbps (802.11 b)	3.5 Mbps
	11 Mbps (802.11 b)	5.9 Mbps
	12 Mbps (802.11 g)	6 Mbps
	18 Mbps (802.11 g)	9 Mbps
	24 Mbps (802.11 g)	12 Mbps
	36 Mbps (802.11 g)	18 Mbps
	48 Mbps (802.11 g)	21 Mbps
	54 Mbps (802.11 g)	22.5 Mbps
	6.5 Mbps (20 MHz EWC)	4.5 Mbps
	13 Mbps (20 MHz EWC)	9 Mbps
	19.5 Mbps (20 MHz EWC)	13.5 Mbps
	26 Mbps (20 MHz EWC)	18 Mbps
	39 Mbps (20 MHz EWC)	27 Mbps
	52 Mbps (20 MHz EWC)	36 Mbps
	58.5 Mbps (20 MHz EWC)	40 Mbps
	65 Mbps (20 MHz EWC)	45 Mbps
	78 Mbps (20 MHz EWC)	54 Mbps
	104 Mbps (20 MHz EWC)	72 Mbps
	117 Mbps (20 MHz EWC)	81 Mbps
	130 Mbps (20 MHz EWC)	91 Mbps
	13.5 Mbps (40 MHz EWC)	8 Mbps
	27 Mbps (40 MHz EWC)	16 Mbps
	40.5 Mbps (40 MHz EWC)	24 Mbps
	54 Mbps (40 MHz EWC)	32 Mbps
	81 Mbps (40 MHz EWC)	48 Mbps
	108 Mbps (40 MHz EWC)	64 Mbps
	121.5 Mbps (40 MHz EWC)	72 Mbps
	135 Mbps (40 MHz EWC)	81 Mbps

Security	IEEE and WiFi compliant 64 / 128 bit WEP encryption
	AES: CCM
	802.1x authentication
	WPA: 802.1x. WPA-PSK and TKIP

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Technical Specifications - Communications

	WPA2 certification
	IEEE 802.11i
	Cisco Certified Extensions, all versions through V5
Antenna	HP part number 497792-001
Certifications	Wi-Fi certified
Certifications for use by country	United States, Canada, Peru, Taiwan

LSI 56K International SoftModem

Data Transmission	Technology speeds: 56,000 Kbps maximum downstream data, controllerless
	Note: 56 Kbps technology refers to download speeds only and requires compatible modems at server sites. Other conditions may limit modem speed. FCC limitations allow a maximum of 53 Kbps during download transmissions.
Data Speeds	(Upload only) 33,600/31,200/28,800/26,400/21,600/19,200/ 16,800/14,400/12,000/9,600/7,200/4,800/2,400/1,200/300
Data Standards	ITU-T V.90, ITU-T, ITU-T V.34, V.44, V.42, V.42bis21, V.32bis, Bell 212A, and Bell 103
Fax Speeds	14,400/12,000/9,600/7,200/4,800/2,400/1,200/300 b/s
Fax Mode Capabilities	ITU-T T.31 class 1 FAX, V. 17, V.29, V.27ter, and V.21 Channel 2
Error Correction and Data Compression	V.44, 42bis, V.42 and MNP2-5
Power Management	PCI Bus Power Management Interface Specification (PCI-PM) Revision 1.2, Appendix A. D0, D3hot, and D3cold. Wake on Ring state when in D3cold. If the power management event (PME) feature is enabled in D3cold, a modem can wake the system via WAKE# (WAKEN) or beacon. Meets PCI Express 1.1 standard.
Upgradeability	Driver upgradeable for future enhancements
Video	ITU-T V.80 video ready interface
Other	TIA/EIA 602 standard AT command set
	Integrated DTE interface with speeds of up to 115.2 Kbps, parallel 16550a UART-compatible interface
	Optional ring wakeup signal
Operating Temperature	32° to 158° F (0° to 70° C)
Operating Humidity	20% to 90%, non-condensing
Power	Requires a 3.3-V auxiliary power rail on PCI express bus
	Uses only one PCI express load (i.e., one grant/request pair), one shared IRQ, one electrical load
Chipset	LSI SV92EX - Integrated PCI interface with 3.3-V tolerant buffers and CardBus support
Dimensions (L x H)	Complies with PCI express low profile specifications-6.7 x 2.3 in (17.0 x 5.8 cm) and supports high- and low-profile brackets
Connection	Single RJ-11 connector
Other Features	Digital line protection, call progress monitoring via on-board piezo device, support for high profile and low profile brackets, PnP ID support
Safety	UL recognized to UL 1950, 3rd edition (U.S. and Canada); IEC 950 (TUV, NEMKO, DEMKO, SEMKO); CE Mark, EC 950 (TUV, NEMKO, DEMKO, SEMKO, CE mark
EMC	FCC Part 15, IC ES003, EN 55022, 3rd edition, EN 55024, annex A, EN 61000-4-6, EN 61000-4-8

Con formato: Español (México)

Technical Specifications - Communications

Telecom	FCC Part 68, IC-CS-03 (Canada); Worldwide PTT approvals Not available in Korea or the Republic of South Africa.
Other	The SV92EX device is packaged in a 32-pin micro leadless chip carrier (MLCC). The SV92EX is fully compliant with the PCI Express revision 1.1 specification. WHQL approved; ASPM compliant.

Technical Specifications - Graphics

ATI HD 4200 Integrated Graphics

Memory	Variable and user selectable in BIOS
Controller Clock Speed	500-MHz
Maximum Color Depth	32-bpp
Multi-display Support	Yes
Graphics/Video API Support	DX10, OpenGL 2.0
Output Connectors	(1) VGA; (1) DisplayPort
VGA DAC Frequency	400-MHz

Resolutions Supported

Resolution	Maximum Refresh Rate: Analog Connection	Maximum Refresh Rate: Digital Connection
640x480	85	60
800x600	85	60
1024x768	85	60
1280x720	85	60
1280x1024	85	60
1440x900	75	60
1600x1200	85	60
1680x1050	75	60
1920x1080	85	60
1920x1200	85	60
1920x1440	85	60
2048x1536	75	60
2560x1600	N/A	60

Note:
Other resolutions may be available but are not recommended as the may not have been tested and qualified by HP

Note:
60-R denotes reduced blanking timings are used on single-link DVI connections and may be used with other digital connections

NVIDIA Quadro NVS 290 Graphics Card

Bus Type	PCI Express x16; low profile	PCI Express x1, low profile
Graphics Controller	Integrated Quadro 290 2D GPU	
Memory	256 MB 400MHz DDR2 SDRAM unified frame buffer, Z-buffer and Texture storage	
Connector	Single high-density DMS-59 Flex Connector	
Dimensions	Low-profile, 2.586 x 6.6 in (6.57 x 16.76 cm)	
Multi-Monitor support	Dual monitor support	
RAMDAC	Integrated dual 400MHz	
Maximum Pixel Clock	350-MHz	
Overlay planes	One 16-bit video overlay plane	One 1-bit video overlay plan
High Definition Video Processor (HDVP)	Full screen, full frame video playback of HDTV and DVD content	
	DVD ready motion compensation for MPEG-2	
	Independent hardware color controls for video overlay	
	Hardware color space conversion (YUV 4:2:2 and 4:2:0)	
	IDCT motion compensation	
	5-tap horizontal by 3-tap vertical filtering	
	8:1 up/down scaling	

Technical Specifications - Graphics

	Specification	Description
Board Configuration	Description	G86-825
	Core Clock	460-MHz
	Memory Clock	400-MHz
	Frame Buffer	256-MB DDR2, 64-bit wide
Display resolution support	Dual integrated analog display controllers supporting up to two analog displays at 2048x1536 @ 85Hz on both displays or dual digital displays at 1920x1200 (single-link). NVIEW advanced multi-display desktop and application management seamlessly integrated into Microsoft Windows	
Color planes	32-bit color buffer	
DVI support	DMS-59 (to dual DVI-SL)	
Supported graphics APIs	OGL 2.1 & DX10 Support; Shader Model 4.0	

Resolutions Supported		Maximum Refresh Rate	
	Resolution	Analog Connection	Digital Connection
	640x480	85	60
	800x600	85	60
	1024x768	85	60
	1280x720	85	60
	1280x1024	85	60
	1440x900	75	60
	1600x1200	85	60
	1680x1050	75	60
	1920x1080	85	60-R
	1920x1200	85	60-R
	1920x1440	85	N/A
	2048x1536	75	N/A
	2560x1600	N/A	N/A
	Note: Other resolutions may be available but are not recommended as the may not have been tested and qualified by HP		
	Note: 60-R denotes reduced blanking timings are used on single-link DVI connections and may be used with other digital connections		

NVIDIA GeForce 310 Graphics Card

Bus type	PCI Express (x16 lanes)	
Board display options	Supports two displays via the DisplayPort and DVI connectors	
Board Configuration	Specification	Description
	Graphics Chip	RV620
	Core clock	750 MHz
	Memory clock	500 MHz
	Frame buffer	512 MB DDR3, 64 bit wide
Audio Support (through HDMI only)	Integrated HD Audio codec supports linear PCM and Dolby® Digital (7.1) audio formats for HDMI output	
Core power	22 W (max)	

QuickSpecs

Technical Specifications - Graphics

Dimensions (H x D)	2.71 in x 6.60 in 68.90 mm x 167.65 mm
Weight	0.30 lb (134.3 g)
Maximum vertical refresh rate	85 Hz
Display support	Integrated 400 MHz RAMDAC
Display max resolution	2560 x 1600 digital, 2048 x 1536 analog

Supported Resolutions

	Maximum Refresh Rate	
Resolution	Analog Connection	Digital Connection
640 x 480	85	60
800 x 600	85	60
1024 x 768	85	60
1280 x 720	85	60
1280 x 1024	85	60
1440 x 900	75	60
1600 x 1200	85	60
1680 x 1050	75	60
1920 x 1080	85	60-R
1920 x 1200	85	60-R
1920 x 1440	85	N/A
2048 x 1536	75	N/A
2560 x 1600	N/A	60*

* Only supported when using a dual-link DVI or DP connection

Note:
Other resolutions may be available but are not recommended as the may not have been tested and qualified by HP

Note:
60-R denotes reduced blanking timings are used on single-link DVI connections and may be used with other digital connections

Option Kit Contents

- NVIDIA GeForce 310 DP PCIe x16 Graphics Cardwith full height bracket attached
- DVI to VGA Adapter
- Software CD with graphics drivers
- Low profile bracket to convert the card for use in a low profile chassis
- Warranty documentation

Compliance Standards

EMC Emissions	EMC Immunity
FCC Part 15, Subpart B – Unintentional Radiators, Class B Computing Devices for Home & Office Use	CISPR 24:1997/EN 55024:1998 – Information Technology Equipment – Immunity Characteristics – Limits and Methods of Measurement
CISPR22: 1997/EN 55022:1998 – Class B – Limits and methods of measurement of radio disturbance characteristics of Information Technology Equipment	
Canadian Standard ICES-003 is equivalent to CISPR22	
Taiwanese Standard BSMI	
Japanese VCCI	
Australian C-Tick	
Korean (MIC)	

Technical Specifications - Graphics

ATI Radeon HD 4550 Graphics Card

Bus type	PCI Express (x16 lanes)	
Maximum vertical refresh rate	85 Hz	
Display support	Integrated 400 MHz RAMDAC	
Display max resolution	1900 x 1200 digital, 2048 x 1536 analog	
Board display options	Supports two displays via included DMS-59 to dual VGA cable or 2 DVI monitors via optional DMS-59 to dual DVI cable kit part number: DL139A. 4-pin mini-DIN S-video connector for TV output	
Board Configuration	**Specification**	**Description**
	Graphics Chip:	RV710
	Core clock:	600MHz
	Memory clock:	800 MHz
	Frame buffer:	512 MB DDR3, 64 bit wide
Languages supported	24 languages: English, Arabic, Chinese Simplified, Chinese Traditional, Czechoslovakian, Danish, Dutch, Finnish, French, German, Greek, Hebrew, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, Thai, Turkish	
Compliance Standards	**EMC Emissions**	**EMC Immunity**
	FCC Part 15, Subpart B – Unintentional Radiators, Class B Computing Devices for Home & Office Use	CISPR 24:1997/EN 55024:1998 – Information Technology Equipment - Immunity Characteristics – Limits and Methods of Measurement
	CISPR22: 1997/EN 55022:1998 – Class B – Limits and methods of measurement of radio disturbance characteristics of Information Technology Equipment	
	Canadian Standard ICES-003 is equivalent to CISPR22	
	Taiwanese Standard BSMI	
	Japanese VCCI	
	Australian C-Tick	
	Korean (MIC)	

Supported Resolutions		Maximum Refresh Rate	
	Resolution	**Analog Connection**	**Digital Connection**
	640x480	85	60
	800x600	85	60
	1024x768	85	60
	1280x720	85	60
	1280x1024	85	60
	1440x900	75	60
	1600x1200	85	60
	1680x1050	75	60
	1920x1080	85	60-R
	1920x1200	85	60-R
	1920x1440	85	N/A
	2048x1536	75	N/A
	2560x1600	N/A	N/A

QuickSpecs

Technical Specifications - Graphics

	Note: Other resolutions may be available but are not recommended as the may not have been tested and qualified by HP
	Note: 60-R denotes reduced blanking timings are used on single-link DVI connections and may be used with other digital connections

ATI Radeon HD 4650 Graphics Card

Bus type	PCI Express x16
Maximum vertical refresh rate	85 Hz
Display support	Integrated 400 MHz RAMDAC
Display max resolution	2560 x 1600 digital, 2048 x 1536 analog

Resolutions Supported

Resolution	Maximum Refresh Rate (Hz) Analog Connection	Maximum Refresh Rate (Hz) Digital Connection
640x480	85	60
800x600	85	60
1024x768	85	60
1280x720	85	60
1280x1024	85	60
1440x900	75	60
1600x1200	85	60
1680x1050	75	60
1920x1080	85	60-R
1920x1200	85	60-R
1920x1440	85	N/A
2048x1536	75	N/A
2560x1600	N/A	60*

* Only supported when using a dual-link DVI or DP connection

Note:
Other resolutions may be available but are not recommended as the may not have been tested and qualified by HP

Note:
60-R denotes reduced blanking timings are used on single-link DVI connections and may be used with other digital connections

Board display options	Supports two displays via included two DisplayPort and one Dual Link DVI-I connectors.

Board Configuration

Specification	Description
Graphics Chip:	RV635
Core clock:	725 MHz
Memory clock:	500 MHz
Frame buffer:	1 GB DDR3, 128 bit wide

Core power	56 W

Compliance Standards

EMC Emissions	EMC Immunity
FCC Part 15, Subpart B - Unintentional Radiators, Class B Computing Devices for Home & Office Use	CISPR 24:1997/EN 55024:1998 - Information Technology Equipment - Immunity Characteristics - Limits and

	CISPR22: 1997/EN 55022:1998 - Class B - Limits and methods of measurement of radio disturbance characteristics of Information Technology Equipment	Methods of Measurement
	Canadian Standard ICES-003 is equivalent to CISPR22	
	Taiwanese Standard BSMI	
	Japanese VCCI	
	Australian C-Tick	
	Korean (MIC)	

HP DisplayPort to DVI-D Adapter

Connectors	DisplayPort and DVI-D single link connector
Adapter length	7.5 in (19.0 cm)
Adapter weight	.10 lbs (.05 kg)

HP DisplayPort to VGA Adapter

Connectors	DisplayPort and VGA connector
Adapter length	8 in (20 cm)
Adapter weight	.1 lbs (.06 kg)
Maximum vertical refresh rate	85 Hz
Display support	162 MHz RAMDAC
Display max resolution	1600x1200

Resolutions Supported

Resolution	Max refresh rate
640x480	85
800x600	85
1024x768	85
1280x720	85
1280x1024	85
1440x900	75
1600x1200	60
1680x1050	60
1920x1080	60-R
1920x1200	60-R

Note:
Other resolutions may be available but are not recommended as they may not have been tested and qualified by HP. Using the HP DisplayPort to VGA Adapter may require an update to the graphics driver installed on your system. To install the most up-to-date graphics driver go to: www.hp.com.

Note:
60-R denotes reduced blanking timings are used. Not all monitors support reduced blanking timing.

Technical Specifications - Hard Drives

160-GB 3.5"Hard Disk Drive		
Capacity	160,041,885,696 bytes	
Rotational Speed	7,200 rpm	
Interface	Serial ATA (SATA)	
Synchronous Transfer Rate (maximum)	Up to 3 GB/s	
Buffer Size	8 MB	
Logical Blocks	312,581,808	
Seek Time (typical reads, includes controller overhead, including settling)	Single Track:	0.9 ms
	Average:	9.3 ms
	Full-Stroke:	18 ms
Height (nominal)	1 in/2.54 cm	
Width (nominal)	Media diameter: 3.5 in/8.89 cm	
	Physical size: 4 in/10.2 cm	
Operating Temperature	41° to 131° F 5° to 55° C	

250-GB 3.5" Hard Disk Drive		
Capacity	250,059,350,016 bytes	
Rotational Speed	7,200 rpm	
Interface	Serial ATA (SATA)	
Synchronous Transfer Rate (maximum)	Up to 3 GB/s	
Buffer Size	8 MB	
Logical Blocks	488,397,168	
Seek Time (typical reads, includes controller overhead, including settling)	Single Track:	1.0 ms
	Average:	8.5 ms
	Full-Stroke:	18 ms
Height (nominal)	1 in/2.54 cm	
Width (nominal)	Media diameter: 3.5 in/8.89 cm	
	Physical size: 4 in/10.2 cm	
Operating Temperature	41° to 131° F (5° to 55° C)	

320-GB 3.5" Hard Disk Drive		
Capacity	320,069,031,690 bytes	
Rotational Speed	7,200 rpm	
Interface	Serial ATA (SATA)	
Synchronous Transfer Rate (maximum)	Up to 3 GB/s	
Buffer Size	8 MB	
Logical Blocks	625,142,448	
Seek Time (typical reads, includes controller overhead, including settling)	Single Track:	1.0 ms
	Average:	8.5 ms
	Full-Stroke:	18 ms
Height (nominal)	1 in/2.54 cm	

Technical Specifications - Hard Drives

Width (nominal)	Media diameter: 3.5 in/8.89 cm	
	Physical size: 4 in/10.2 cm	
Operating Temperature	41° to 131° F (5° to 55° C)	

500-GB 3.5" Hard Disk Drive

Capacity	500,107,862,016 bytes	
Rotational Speed	7,200 rpm	
Interface	Serial ATA (SATA)	
Synchronous Transfer Rate (maximum)	Up to 3 GB/s	
Buffer Size	16 MB	
Logical Blocks	976,773,168	
Seek Time (typical reads, includes controller overhead, including settling)	Single Track:	2.0 ms
	Average:	11 ms
	Full-Stroke:	21 ms
Height (nominal)	1 in/2.54 cm	
Width (nominal)	Media diameter: 3.5 in/8.89 cm	
	Physical size: 4 in/10.2 cm	
Operating Temperature	41° to 131° F (5° to 55° C)	

160-GB 10,000 rpm Hard Disk Drive

Capacity	160,041,885,696 bytes	
Rotational Speed	10,000 rpm	
Interface	Serial ATA (SATA)	
Synchronous Transfer Rate (maximum)	Up to 3 GB/s	
Buffer Size	16 MB	
Logical Blocks	312,581,808	
Seek Time (typical reads, includes controller overhead, including settling)	Single Track:	0.3 ms
	Average:	4.6 ms
	Full-Stroke:	10.2 ms
Height (nominal)	1 in/2.54 cm	
Width (nominal)	Media diameter: 3.5 in/8.89 cm	
	Physical size: 4 in/10.2 cm	
Operating Temperature	41° to 131° F 5° to 55° C	

64-GB 2.5" Solid State Drive

Capacity	64-GB	
Interface	Serial ATA (SATA)	
Architecture	Multi Level Cell (MLC) NAND Flash with wear leveling 10 channel controller	
Internal transfer rate	Write speed:	Up to 220 MB/s
	Read speed:	Up to 120 MB/s
Host transfer rate	Ultra DMA mode:	Up to 150 MB/s
Power	DC power requirement:	5 VDC 5%-100 mV ripple p-p

QuickSpecs

Technical Specifications - Hard Drives

	Total power consumption:	<1.12Watt
Dimensions (W x H x D)	2.74 x 0.37 x 4 in/6.98 x 0.95 x 10.2 cm	
Weight	0.14 lb/65 g	
Environmental (all conditions, non-condensing)	Operating Temperature:	32° to 158° F (0° to 70° C)
	Relative Humidity:	5% to 95%
	Maximum Wet Bulb Temperature (operating):	84° F (29° C)

Note:
For solid state disk drives, GB means 1 billion bytes. 16GB is the unformatted capacity of this drive before a portion of the drive is reserved for flash management features. Actual capacity varies by content and will be less than 15.8GB.

80-GB 2.5" Solid State Drive

Unformatted Capacity	80-GB	
Architecture	Multi Level Cell (MLC) NAND Flash with wear leveling 10 channel controller	
Interface	Serial ATA (SATA)	
Dimensions (W x H x D)	2.74 x 0.37 x 4 in/6.98 x 0.95 x 10.2 cm	
Weight	0.18 lb/80 g	
Bandwidth Performance	Sustained Sequential Read:	Up to 250 MB/s
	Sustained Sequential Write:	Up to 70 MB/s
	Random Read:	Up to 35K IOPs
	Random Write:	Up to 6.6K IOPs
Latency	Read:	65-ms
	Write:	85-ms
Power	DC power requirement:	5 VDC 5%-100 mV ripple p-p
	Total power consumption:	0.15W (active); 0.075W (idle)
Useful Drive Life	35TB written, up to 20GB/day for 5 years	
Environmental (all conditions, non-condensing)	Operating Temperature:	32° to 158° F (0° to 70° C)
	Relative Humidity:	5% to 95%
	Maximum Wet Bulb Temperature (operating):	84° F (29° C)
	Shock:	1,500 G/0.5-ms

Note:
For solid state disk drives, GB means 1 billion bytes. 16GB is the unformatted capacity of this drive before a portion of the drive is reserved for flash management features. Actual capacity varies by content and will be less than 15.8GB.

Technical Specifications - Input/Output Devices

HP USB Standard Keyboard

Physical characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country)
	Dimensions (L x W x H)	18.0 x 6.4 x 0.98 in 45.8 x 16.3 x 2.5 cm
	Weight	2 lb 0.9 kg
Electrical	Operating voltage	+ 5VDC ± 5%
	Power consumption	50-mA maximum (with three LEDs ON)
	System interface	USB Type A plug connector
	ESD	CE level 4, 15-kV air discharge
	EMI - RFI	Conforms to FCC rules for a Class B computing device
	Microsoft® PC 99 - 2001	Functionally compliant
Mechanical	Languages	38 available
	Keycaps	Low-profile design
	Switch actuation	55-g nominal peak force with tactile feedback
	Switch life	20 million keystrokes (using Hasco modified tester)
	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	6 ft (1.8 m)
	Microsoft PC 99 - 2001	Mechanically compliant
Environmental	Acoustics	43-dBA maximum sound pressure level
	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	-22° to 140° F (-30° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	20% to 80% (non-condensing at ambient)
	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration
	Non-operating vibration	4-g peak acceleration
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence
Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC	
Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	
Kit contents	Keyboard	Installation Guide
	Warranty Card	Safety and Comfort Guide

HP PS/2 Standard Keyboard

Physical Characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country)

QuickSpecs

Technical Specifications - Input/Output Devices

	Dimensions (L x W x H)	18.0 x 6.4 x 0.98 in (45.8 x 16.3 x 2.5 cm)
	Weight	2 lb (0.9 kg) minimum
Electrical	Operating voltage	+ 5VDC ± 5%
	Power consumption	50-mA maximum (with three LEDs ON)
	System interface	PS/2 6-pin mini din connector
	ESD	CE level 4, 15-kV air discharge
	EMI - RFI	Conforms to FCC rules for a Class B computing device
	Microsoft PC 99 - 2001	Functionally compliant
Mechanical	Languages	38 available
	Keycaps	Low-profile design
	Switch actuation	55-g nominal peak force with tactile feedback
	Switch life	20 million keystrokes (using Hasco modified tester)
	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	6 ft 1.8 m
	Microsoft PC 99 - 2001	Mechanically compliant
Environmental	Acoustics	43-dBA maximum sound pressure level
	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	-22° to 140° F (-30° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	20% to 80% (non-condensing at ambient)
	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration
	Non-operating vibration	4-g peak acceleration
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence
Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC	
Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	

HP USB SmartCard Keyboard

Physical Characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country)
	Form factor	USB basic Smart Card keyboard
	Colors	Carbonite/Silver
	Dimensions (H x W x D)	18.2 x 6.3 x 1.3 in 46.3 x 16.1 x 3.3 cm
	Weight	2 lb (0.9 kg) minimum
Electrical	Operating voltage	+ 5VDC ± 5%

Technical Specifications - Input/Output Devices

	Power consumption	100-mA maximum (with four LEDs ON)
	System interface	USB Type A plug connector
	ESD	CE level 4, 15-kV air discharge
	EMI - RFI	Conforms to FCC rules for a Class B computing device
	Microsoft PC 99 - 2001	Functionally compliant
Mechanical	Languages	30+ available
	Keycaps	Low-profile design
	Switch actuation	55 g nominal peak force with tactile feedback
	Switch life	20 million keystrokes (using Hasco modified tester)
	Switch type	Contamination-resistant membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	6 ft (1.8 m)
	Microsoft PC 99 - 2001	Mechanically compliant
Environmental	Acoustics	43-dBA maximum sound pressure level
	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	–22° to 140° F (–30° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	20% to 80% (non-condensing at ambient)
	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration
	Non-operating vibration	4-g peak acceleration
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence
SmartCard Function	Support	All ISO 7816 smart cards
	Interface	Reads from and writes to all ISO7816-1, 2, 3, 4 memory and microprocessor smart cards (T=0, T=1)
	Chipset	SCM STCII
	Standard APIs supported	PC/SC, EMV2000, SET
	Power	USB Port
		Short circuit detection (protects smart card and reader)
		Power supply compliant with ISO7816 and EMV (5V, 60 mA)
		Supports 3-V and 5-V cards
	Power consumption	250-mA maximum draw (50 mA for the keyboard with three LEDs ON and 200-mA maximum startup current using a high-current, 60-mA smart card)

Technical Specifications - Input/Output Devices

	Communication	From card	Programmable from 9,600 baud to 115,200 baud
		From computer	Up to 38,400 baud
	Landing mechanism	Contact device	Friction contact
		Card insertions rating	Up to 100,000 insertion cycles
	Interface modes	USB communications through USB port SCM protocol Automatic card insertion/removal detection	
	Reader performance interface	USB connection	
	Electro-magnetic standards	Europe	89/336/CEE guideline
		USA	USAFCC part 15

HP PS/2 Optical Mouse

Dimensions (H x L x W)	1.56 x 2.44 x 4.61 in 3.95 x 6.21 x 11.7 cm	
Weight	4.44 oz 126 g	
Environmental	Operating temperature	-32° to 104°F 0° to 40° C
	Non-operating temperature	-4° to 140°F -20° to 60° C
	Operating humidity	10% to 90% (non condensing at ambient)
	Non-operating humidity	10% to 90% (non condensing at ambient)
	Operating shock	40 g, 6 surfaces
	Non-operating shock	80 g, 6 surfaces
	Operating vibration	2 g peak acceleration
	Non-operating vibration	4 g peak acceleration
	Drop (out of box)	80 cm height onto asphalt tile over concrete or equivalent, 5-drop in 5 direction except the cable face
Electrical	Operating voltage	5 VDC ± 10%
	Power consumption	100mA
	System consumption	PS/2 mini-din connector
	ESD	CE level 4, 15 kV air discharge
	EMI-RFI	Conforms to FCC rules for a Class B computing device
	Microsoft PC99 - 2001	Functionally compliant
Mechanical	Resolution	400 ± 20% DPI
	Tracking speed	10 in/s (25.4 cm/s) maximum
	Acceleration	100 in/s/s (2.54 m/s/s)
	Switch actuation	61 g nominal peak force

Technical Specifications - Input/Output Devices

	Switch life	3,000,000 operations (using Hasco modified tester)
	Switch type	Low force micro-switches
	Tracking mechanism life	155 mi (250 km) at average speed of 10 in/s
	Cable length	6 ft (1.8 m)
	Microsoft PC99 - 2001	Mechanically compliant
Scroll wheel	Width	8 mm
	Diameter	1.01 in (25.6 mm)
	Maximum rotation speed	48 rats/sec
	Switch type	Light force micro-switch
	Switch life	1 million operations
	Mechanical life	Minimum 200,000 revolutions
Regulatory Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC	

HP USB Optical Mouse

Dimensions (H x L x W)	1.5 x 4.5 x 2.5 in 3.8 x 11.6 x 6.3 cm
Weight	0.27 lb 0.12 kg
Cable length	72.8 in 185 cm
System requirements	Microsoft Windows 95, 98, 2000, Me, XP and Vista Available USB port

HP USB Laser Mouse

Scroll Wheel	24	
Maximum Rotation Speed	48 rats/sec	
Switch Type	Wheel	
Switch Life	Button - 3,000,000	
	Wheel - 1,000,000 times	
	Tilt switch - 500,000 times	
Environmental	Operating Temperature	32° to 104° F 0° to 40° C
	Non-operating Temperature	-4° to 140° F -20° to 60° C
	Operating Humidity	10% to 90% (non-condensing at ambient)
	Non-operating Humidity	20% to 80% (non-condensing at ambient)
	Operating Shock	40 g, six surfaces
	Non-operating Shock	80 g, six surfaces
	Operating Vibration	2-g peak acceleration
	Non-operating Vibration	4-g peak acceleration
Electrical	Operating Voltage	+ 5VDC ± 5%
	Power Consumption	

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Technical Specifications - Input/Output Devices

	MTBF	> 150,000 hrs
	ESD	IEC-61000-4-2 criteria B, Contact discharge: +/- 4kV, Air discharge: +/- 8kV
	EMI-RFI	FCC Class B
	PC98	PC 99 Compliant
Mechanical	Resolution	800dpi
	Tracking Speed	25 cm/sec
	Acceleration	0.5mm
	Switch Actuation	0.6N (60gf)
	Switch Life	Button - 3,000,000 Wheel - 1,000,000 times Tilt switch - 500,000 times
	Cable Length	1850mm
	PC98-99	PC99 compliant
Regulatory Approvals	UL60950-1, UL 94, UL 746 (A-E), UL 796 TUV/GS: EN 60950-1, EN 60825-1 FCC Class B, UL 1950, cUL, TUV GS, CE, C-tick, VCCI, BSMI, RRL	

Con formato: Español (México)

Con formato: Español (México)

HP Blu-ray Writer Drive			
Height	5.25-inch, half-height, tray-load		
Orientation	Either horizontal or vertical		
Interface type	SATA/ATAPI		
Disc capacity	50 GB DL or 25 GB standard		
Dimensions (W x H x D)	5.9 x 1.7 x 7.5 in 15.0 x 4.4 x 19.0 cm		
Weight (max)	2.0 lb 907g		
Write Speeds		Single-layer	Double-layer
	BD-R	2x, 4x CLV, 6x CAV	2x, 4x CLV
	BD-RE	2.3x	2x CLV
	DVD-R	2x, 4x CLV, 8x ZCLV, 8x, 12x PCAV, 16x CAV	2x, 4x CLV
	DVD-RW	1x, 2x, 4x, 6x CLV	Not supported
	DVD+R	2.4x, 4x CLV, 8x ZCLV, 8x, 12x PCAV, 16x CAV	2.4x, 4x CLV
	DVD+RW	2.4x, 4x, 6x CLV, 8x ZCLV	Not supported
	DVD-RAM	2x, 3x CLV, 3-5x PCAV	
	CD-R	8x,16x CLV, 24x, 32x PCAV, 40x CAV	
	CD-RW	4x, 10x, 16x CLV, 24x ZCLV	
Read Speeds		Single-layer	Double-layer
	BD-ROM	6x CAV	4.8x CAV
	BD-R	6x CAV	4.8x CAV
	BD-RE (SL/DL)	4.8x CAV	4.8x CAV
	DVD-ROM	16x CAV	8x CAV
	DVD-R	12x CAV	8x CAV
	DVD-RW	10x CAV	Not support
	DVD+R	12x CAV	8x CAV
	DVD+RW	10x CAV	Not support
	BDMV (AACS Compliant Disc)	4.8x CAV	
	DVD-RAM	2x, 3x CLV, 3x-5x PCAV	
	DVD-Video (CSS Compliant Disc)	8x CAV	
	CD-R/RW/ROM	40x / 40x / 40x CAV	
	CD-DA (DAE)	32x CAV	
	80 mm CD	16x CAV	
Sustained Transfer rate	BD-ROM	26.97 MB/s (6x) max.	
	DVD-ROM	16.62 MB/s (16x) max.	
	CD-ROM	6,000 KB/s (40x) max.	
Buffer Transfer Rates	1.5Gbps bits/s (10b side)		
	1.2Gbps bits/s (8b side)		
Multimedia MPC-3 compliant	Yes		

Con formato: Español (México)

Con formato: Español (México)

Technical Specifications - Optical Storage

Access times (typical reads, including setting)	Random	DVD: < 140 ms (typical), CD: < 125 ms (typical)
	Full Stroke	DVD: < 250 ms (seek), CD: < 210 ms (seek)
Power	Source	SATA DC power receptacle
	DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p 12 VDC ± 5%-200 mV ripple p-p
	DC Current	5 VDC -1000 mA typical, 1600 mA maximum 12 VDC -600 mA typical, 1400 mA maximum
Environmental (all conditions non-condensing)	Temperature (operating)	41° to 122° F (5° to 50° C)
	Relative Humidity (operating)	10% to 90%
	Maximum Wet Bulb Temperature (operating)	86° F (30° C)

HP SuperMulti LightScribe DVD Writer Drive

Height	5.25-inch, half-height, tray-load	
Orientation	Either horizontal or vertical	
Interface type	SATA/ATAPI	
Disc capacity	8.5 GB DL or 4.7 GB standard	
Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)	
Weight (max)	2.6 lb (1.2 kg)	
Write speeds	DVD-RAM	Up to 12X
	DVD+R	Up to 16X
	DVD+RW	Up to 8X
	DVD+R DL	Up to 8X
	DVD-R DL	Up to 8X
	DVD-R	Up to 16X
	DVD-RW	Up to 6X
	CD-R	Up to 48X
	CD-RW	Up to 32X
Read speeds	DVD-RAM	Up to 12X
	DVD+RW, DVD-RW, DVD+R DL, DVD-R DL	Up to 8X
	DVD-ROM DL	Up to 8X
	DVD-ROM, DVD+R, DVD-R	Up to 16X
	CD-ROM, CD-R	Up to 48X
	CD-RW	Up to 32X
Access time (typical reads, including settling)	Random	DVD: < 140 ms (typical), CD: < 125 ms (typical)
	Full Stroke	DVD: < 250 ms (seek), CD: < 210 ms (seek)
Power	Source	SATA DC power receptacle
	DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p

Technical Specifications - Optical Storage

	DC Current	12 VDC ± 5%-200 mV ripple p-p
		5 VDC (< 1000 mA typical, 1600 mA maximum)
		12 VDC (< 600 mA typical, 1400 mA maximum)
Environmental conditions (operating - non-condensing)	Temperature	41° to 122° F (5° to 50° C)
	Relative Humidity	10% to 90%
	Maximum Wet Bulb Temperature	86° F (30° C)

HP DVD-ROM Drive

Height	5.25-inch, half-height, tray-load		
Orientation	Either horizontal or vertical		
Interface type	SATA/ATAPI		
Disc capacity	Single layer: Up to 4.7 GB (6 times capacity of CD-ROM) Double layer: Up to 8.5 GB (12 times capacity of CD-ROM)		
Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)		
Weight (max)	2.6 lb (1.2 kg)		
Read speeds	DVD+R/-R/+RW/-RW/+R DL /-R DL	Up to 8X	
	DVD-ROM	Up to 16X	
	DVD-RAM	Up to 4X	
	CD-ROM, CD-R	Up to 40X	
	CD-RW	Up to 32X	
Removable Storage - Media Compatibility - DVD-ROM	Media	Read	Write
	CD-ROM	Yes	No
	CD-R	Yes	No
	CD-RW	Yes	No
	DVD-ROM	Yes	No
	DVD-ROM DL	Yes	No
	DVD-RAM	Yes	No
	DVD+R	Yes	No
	DVD+R DL	Yes	No
	DVD+RW	Yes	No
	DVD-R	Yes	No
	DVD-RW	Yes	No
	DVD-R DL	Yes	No
Access times (typical reads, including setting)	Random	DVD: < 140 ms (typical), CD: < 125 ms (typical)	
	Full Stroke	DVD: < 250 ms (seek), CD: < 210 ms (seek)	
	Cache Buffer	2 MB (minimum)	
	Data Transfer Modes	ATA PIO mode 4 (16.7 MB/s); ATA Multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA Mode 3 (44.4 MB/s -default)	
Power	Source	SATA DC power receptacle	

Technical Specifications - Optical Storage

	DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p 12 VDC ± 5%-200 mV ripple p-p
	DC Current	5 VDC - <1000 mA typical, < 1600 mA maximum 12 VDC -< 600 mA typical, < 1400 mA maximum
Environmental (all conditions non-condensing)	Temperature	41° to 122° F (5° to 50° C)
	Relative Humidity	10% to 90%
	Maximum Wet Bulb Temperature	86° F (30° C)

Technical Specifications - Removable Storage

HP 22-n-1 plus 1394 Media Card Reader	
USB Interface	USB 2.0 High-speed interface Note: Requires the USB cable to be connected to the internal USB 2.0 port or a USB 2.0 PCI card.
1394 Interface	Two IEEE-1394a external ports; 1 IEEE-1394a internal port (connects to the pass through cable on the media card reader)
Advance protocol support	Supports hardware ECC (Error Correction Code) function
	Supports hardware CRC (Cyclic Redundancy Check) function
	Supports MS 4-bit parallel transfer mode
	Supports MS-PRO 4-bit parallel transfer mode
	Supports MS PRO-HG Duo 4-bit parallel transfer mode
	Supports SD 4-bit parallel transfer mode
	Supports high-speed 50Mhz SD 4-bit card (version 2.0)
	Supports high-speed 52Mhz MMC 8-bit card (version 4.2)
	Supports CF v4.0 with PIO mode 6 and Ultra DMA mode
Supported media type	CompactFlash Type I
	CompactFlash Type II
	Microdrive
	MultiMediaCard (MMC)
	Reduced Size MultiMediaCard (RS MMC)
	MultiMediaCard 4.2 (MMC Plus, including MMC Plus HC)
	Reduced Size MultiMediaCard 4.2 (MMC Mobile, including MMC Mobile HC)
	Secure Digital Card (SD)
	Secure Digital High Capacity (SDHC)
	miniSD
	miniSD High Capacity
	Micro SD (T-Flash)
	Micro SD HC
	Memory Stick
	Memory Stick Select
	Memory Stick Duo (MS Duo)
	Memory Stick PRO (MS PRO)
	Memory Stick PRO Duo (MS PRO Duo)
	Memory Stick PRO-HG Duo
	MagicGate Memory Stick (MG)
	MagicGate Memory Stick Duo
	xD-Picture Card
Supported media type with card adapter	Memory Stick Micro (M2)
	MMC Micro

Technical Specifications - Removable Storage

Environmental	Operational Environmental Extremes	Test Parameters/Conditions - Power applied, unit operating on system ±5% nominal supply voltage. 10°C 10% R.H. ≥ 24 hours 10°C 90% R.H. ≥ 24 hours 20°C 90% R.H. ≥ 24 hours 30°C 90% R.H. ≥ 24 hours 40°C 90% R.H. ≥ 24 hours 50°C 90% R.H. ≥ 24 hours 50°C 10% R.H. ≥ 24 hours
	Storage Environmental Extremes	Test Parameters/Conditions 140°F (60°C) @ 80% R.H. for 96 hours -22°F (-30°C) @ 20% R.H. for 48 hours No power applied Delta °C < 1.0°C/min Delta % R.H. < 1.5% R.H./min
Approvals	USB-IF, WHQL, Compliant with USB Mass Storage Class Bulk only Transport Specification Rev. 1.0	
	Compliant Intel Front Panel I/O Connectivity Design Guide V. 1.3	
	FCC, CE, BSMI, C-Tick, VCCI, MIC, cUL, TUV-T	

Technical Specifications - Eco Data

Eco-Label Certifications & declarations	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 ® • IT ECO declaration • EPEAT Gold where HP registers commercial desktop products. See http://www.epeat.net for registration status in your country

Ultra Slim Desktop

Energy Consumption (typically configured)	115 VAC	230 VAC	100 VAC
Normal Operation	22.01 W	22.56 W	23.13 W
Sleep State (Energy Star low power mode)	3.03 W	3.07 W	3.04 W
Off	0.92 W	0.96 W	0.91 W

Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	75 BTU/hr	77 BTU/hr	79 BTU/hr
Sleep State (Energy Star low power mode)	10 BTU/hr	10 BTU/hr	10 BTU/hr
Off	3 BTU/hr	3 BTU/hr	3 BTU/hr

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

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

	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.9	29
Fixed Disk (random writes)	3.9	29

Battery	The battery(s) in this product complies with EU Directive 2006/66/EC, and does not contain: • Mercury greater the 5ppm by weight • Cadmium greater than 10ppm by weight
Battery Size	CR2032 (coin cell)
Battery Type	Lithium
Additional Information	This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.
	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).

QuickSpecs

Technical Specifications - Eco Data

	This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see: www.epeat.net	
	Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.	
	This product contains 0% post consumer recycled plastic (by wt.)	
	This product is 91.5% recyclable when properly disposed of at end of life.	
Packaging Materials	External	Corrugated 1958g
		Contains at least 30% recycled content
	Internal	EPE low density foam: 30g
		Molded Pulp: 250g
		Contains 100% recycled content

Small Form Factor

Energy Consumption (typically configured)	115 VAC	230 VAC	100 VAC
Normal Operation	27.4159W	27.1680W	27.7080W
Sleep State (Energy Star low power mode)	2.5527W	2.7644W	2.5316W
Off	0.7149W	0.8667W	0.7003W

Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	94 BTU/hr	93 BTU/hr	95 BTU/hr
Sleep State (Energy Star low power mode)	9 BTU/hr	9 BTU/hr	9 BTU/hr
Off	2 BTU/hr	3 BTU/hr	2 BTU/hr

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

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

	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.8	27
Fixed Disk (random writes)	3.9	28

Battery	The battery(s) in this product complies with EU Directive 2006/66/EC, and does not contain: • Mercury greater the 5ppm by weight • Cadmium greater than 10ppm by weight
Battery Size	CR2032 (coin cell)
Battery Type	Lithium
Additional Information	This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.
	This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.

Technical Specifications - Eco Data

	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	
	Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.	
	This product contains 0% post consumer recycled plastic (by wt.)	
	This product is 91.5% recyclable when properly disposed of at end of life.	
Packaging Materials	External	Corrugated 1705g
		Contains at least 30% recycled content
	Internal	EPE low density solid: 198g
		EPE low density foam: 39g
		Contains 100% recycled EPE content

Microtower

Energy Consumption (typically configured)	115 VAC	230 VAC	100 VAC
Normal Operation	31.3720W	32.1179W	31.8169W
Sleep State (Energy Star low power mode)	2.4746W	2.6361W	2.4347W
Off	0.7153W	0.8560W	0.6980W

Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	107 BTU/hr	110 BTU/hr	109 BTU/hr
Sleep State (Energy Star low power mode)	8 BTU/hr	9 BTU/hr	8 BTU/hr
Off	2 BTU/hr	3 BTU/hr	2 BTU/hr

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

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

	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.8	28
Fixed Disk (random writes)	3.8	29

Battery	The battery(s) in this product complies with EU Directive 2006/66/EC, and does not contain: • Mercury greater the 5ppm by weight • Cadmium greater than 10ppm by weight
Battery Size	CR2032 (coin cell)
Battery Type	Lithium
Additional Information	This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.

QuickSpecs

Technical Specifications - Eco Data

	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	
	Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.	
	This product contains 0% post consumer recycled plastic (by wt.)	
	This product is 91.4% recyclable when properly disposed of at end of life.	
Packaging Materials	External	Corrugated 1835g
		Contains at least 30% recycled content
	Internal	EPE low density solid: 150g
		EPE low density foam: 20g
		Contains 100% recycled content

All Models

Reduction in Hazardous Substances (RoHS) Compliance	Hewlett-Packard is committed to compliance with all applicable environmental laws and regulations, including the European Union Restriction of Hazardous Substances (RoHS) Directive. HP's goal is to exceed compliance obligations by meeting the requirements of the RoHS Directive on a worldwide basis. By July 1, 2006, RoHS substances will be virtually eliminated (virtually = to levels below legal limits) for all HP electronic products subject to the RoHS Directive, except where it is widely recognized that there is no technically feasible alternative (as indicated by an exemption under the EU RoHS Directive).

Technical Specifications - Eco Data

Material Usage	This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at: 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 • 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 • Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO) Nickel finishes that release greater than 0.5 micro-grams/cm^2/week, measured according to EN 1811:1998, are not used on any product surface designed to be frequently handled or touched by users.
Packaging	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.

QuickSpecs

Technical Specifications - Eco Data

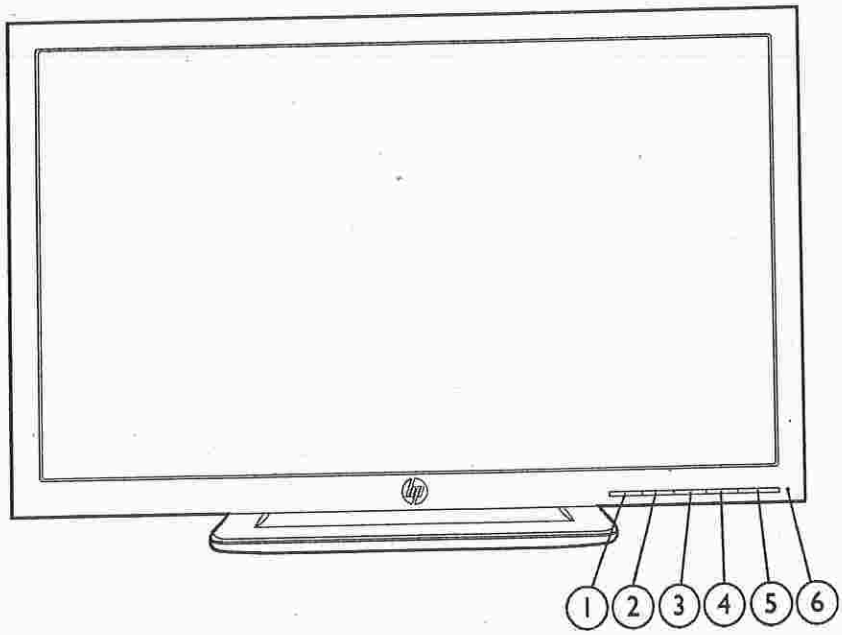
End of Life Management and Recycling	Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered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

QuickSpecs

HP Compaq LA2006x 20-inch LED Backlit LCD Monitor

Overview

053



1. Menu	Opens, selects or exits the OSD menu.	4. OK/auto	If the OSD menu is on, press to select the highlighted menu item. If the OSD menu is inactive, press to activate the auto adjustment feature to optimize the screen image.
2. Minus	If the OSD menu is on, press to navigate backward through the OSD menu and decrease adjustment levels.	5. Power	Turns the monitor on or off.
3. Plus/source	If the OSD menu is on, press to navigate forward through the OSD menu and increase adjustment levels. If the OSD menu is inactive, press to activate the source button that chooses the video signal input (VGA, DVI, or DisplayPort).	6. Power LED	Blue = Fully powered. Amber = Sleep mode. Flashing Amber = Sleep Timer mode.

Model
XN374A*

Technical Specifications

Panel	Type	TN (Twisted Nematic) LED Backlit LCD
	Viewable Image Area (diagonal)	50,8 cm. (20.0 in.) widescreen; diagonally measured
	Screen Opening (W x H)	44,28 x 24,91 cm. (17.43 x 9.81 in.)
	Aspect Ratio	16:9
	Viewing Angle (typical)	Up to 170° horizontal/160° vertical (10:1 minimum contrast ratio)
	Brightness (typical)*	250 nits (cd/m^2)
	Contrast Ratio (typical)*	1000:1
	Dynamic Contrast Ratio (typical)*	1,000,000:1
	Response Time (typical)*	5 ms (on/off)
	Pixel Pitch	0.277 mm
	Backlight Lamp Life (to half brightness)	30,000 hours minimum
	Color Support	Over 16 million colors (through FRM)
	Color Gamut (typical)	68%
	*All performance specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.	
On Screen Display (OSD) Controls	Buttons or Switches	"Menu" "-" "+" "OK" "Power"
	Languages	English, French, German, Italian, Dutch, Spanish, Japanese, Portuguese, Traditional Chinese, and Simplified Chinese
	User Controls	Brightness, contrast, positioning, color temperature (warm, standard, cool, custom), image control (clock, clock phase, scaling, sharpness, DCR), monitor management, source control, information and factory reset
Signal Interface/ Performance	Horizontal Frequency	24 to 83 kHz
	Vertical Frequency	50 to 76 Hz
	Native Resolution	1600 x 900 @ 60 Hz
	Preset VESA Graphic Modes (non-interlaced)	1600 x 900 @ 60 Hz 1440 x 900 @ 60 Hz 1280 x 1024 @ 60 Hz 1280 x 720 @ 60 Hz 1024 x 768 @ 60 Hz 800 x 600 @ 60 Hz 720 x 400 @ 70 Hz 640 x 480 @ 60 Hz
	Text Mode	720 x 400 @ 70 Hz
	Maximum Pixel Clock Speed	170 MHz (VGA/DVI); 110 MHz (DisplayPort)
	User Programmable Modes	Yes (10)
	Anti-Glare	Yes

Technical Specifications

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	Default Color Temperature	Warm (6500K)	
Video/Other Inputs	Plug and Play	Yes	
	Input Connectors	VGA (analog), DVI-D and DisplayPort w/ HDCP, USB	
	Input Impedance	75 Ohms (VGA)	
	Sync Input	TTL separate synch	
	Video/Other Cables	(1) (1) DVI-D cable, (1) VGA cable, (1) USB cable	
	Cable Lengths	1,8 m. (5.9 ft.)	
Power	Input Power	100 - 240 VAC, 50/60 Hz	
	Typical Power Consumption	26 W	
	Maximum	34 W	
	Power Saving	< 0.5 W standby; < 0.5 W off	
	Power Cable Length	1,9 m. (6.2 ft.)	
Mechanical	Dimensions (W x D x H)	Unpacked w/stand	48,36 x 21,13 x 31,63 to 41,80 cm. (19.04 x 8.32 x 12.45 to 16.46 in.)
		Unpacked w/o stand (head only)	48,36 x 4,75 x 29,57 cm. (19.04 x 1.87 x 11.64 in.)
		Packaged	55,20 x 44,50 x 16,90 cm. (21.73 x 17.52 x 6.65 in.)
	Weight	Head Only	3,38 kg. (7.45 lb.)
		Unpacked	5,48 kg. (12.1 lb.)
		Packaged	7,58 kg. (16.7 lb.)
	Tilt Range	-5° to +30°	
	Swivel Range	Yes 360°	
	Height Adjustable	Yes - from 0 to 13,0 cm. (0 to 5.1 in.)	
	Pivot Rotation	Yes	
	Base	Detachable, ships attached	
Environmental	Temperature - Operating	5° to 35° C (41° to 95° F)	
	Temperature - Non-operating	-20° to 60° C (-4° to 140° F)	
	Humidity - Operating	20% to 80% non-condensing	
	Humidity - Non-operating	5% to 95%, 38.7° C max wet-bulb	
	Altitude - Operating	0 to 5000 m. (16,400 ft.)	
	Altitude - Non-operating	0 to 12192 m. (40,000 ft.)	
	White LED Backlights	Yes	
	CCFL Panel	No	
	Arsenic-Free Glass[4]	Yes	
	BFR/PVC Free	Plastics and Finishes or Paint	
	Mercury Free	Yes	
Environmental Data	Eco-Label Certifications & Declarations	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®
- IT ECO declaration
- EPEAT® Gold where HP registers commercial display products. See http://www.epeat.net for registration status in your country.

Energy Consumption (in accordance with US Energy Star test method)	115VAC, 60Hz	230VAC, 50Hz	100VAC, 60Hz
Normal Operation	21.65 W	21.5 W	21.56 W
Sleep	0.41 W	0.41 W	0.43 W
Off	0.34 W	0.34 W	0.38 W

Heat Dissipation*	115VAC, 60 Hz	230VAC, 50 Hz	100VAC, 60 Hz
Normal Operation	74 BTU/hr	73 BTU/hr	74 BTU/hr
Sleep	1.4 BTU/hr	1.4 BTU/hr	1.4 BTU/hr
Off	1.1 BTU/hr	1.1 BTU/hr	1.2 BTU/hr

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

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.
- 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
- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.
- This product contains 0.14% post-consumer recycled plastic (by wt.)
- This product is 98.0% recycle-able when properly disposed of at end of life.

Packaging Materials			
	External:	Corrugated carton	1300g
	Internal:	Polyethylene low density	32g

RoHS Compliance

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- Asbestos
- Certain Azo Colorants

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

Packaging

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End-of-life Management and Recycling

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Hewlett-Packard

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

Technical Specifications

	Corporate Environmental Information	Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html 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
Options (sold separately)	HP Single Monitor Arm Part number BT861AA	The flexible design of the HP Single Monitor Arm provides a seemingly endless range of display adjustments with an amazing 13 inches of lift, 50 degrees of tilt, and 360 degrees of pan and rotation - all at your fingertips -- helping you stay comfortable and productive throughout the day.
	HP Adjustable Dual Display Stand Part Number AW664AA	Premium space-saving dual screen solution provides access to more monitor real estate and makes it possible to manage multiple applications simultaneously. Weight adjustable for dual monitors from 17-24". Rotate displays into portrait/landscape positions.
	HP LCD Speaker Bar Part number NQ576AA	Powered directly by the connected PC, the Speaker Bar seamlessly attaches to the monitor's lower bezel to bring full audio support to select HP flat panel monitors. Features include dual speakers with full sound range and dual external headphone jacks.
	HP LCD Monitor Quick Release Part number EM870AA[1]	An easy-to-use, VESA-compliant, LCD monitor mounting solution that allows you to quickly and securely attach an LCD monitor to a variety of stands, brackets, arms or wall mounts.
	HP Integrated Work Center Stand—Part number LH526AA	Allows mounting of a 17 - 24 inch (43.18- to 60.96 cm) diagonal HP LCD monitor and an HP Compaq 8000 series Ultra-slim Desktop PC as well as select HP Thin Clients on a single stand for the convenience of an "all-in-one" form factor. For more information, refer to this product's QuickSpecs document.
	HP Integrated Work Center for Small Form Factor—Part number QK549AT	Allows mounting of a 17- to 24-inch (43.18 to 60.96 cm) diagonal HP LCD monitor with an HP Compaq Small Form Factor Desktop PC. This compact system configuration saves you valuable desktop room to make the most of a space-constrained office environment.
	HP USB Graphics Adapter Part number NL571AA	Enables connection of up to six simultaneous displays to help you boost productivity and multi-task across several open applications. Use one Adapter to bridge between a notebook or desktop PC and second monitor or use multiple Adapters to connect several displays to each other.
	HP Business PC Security Lock Kit Part number PV606AA	Attaches to the rear of the PC with a six-foot steel cable that can be used to secure a PC or peripherals such as mice, keyboards, monitors or USB security devices to protect them against unauthorized removal by physically connecting the system to an anchor point.
	HP DisplayPort Cable Kit Part number VN567AA	Connects a DisplayPort connector on an HP Business Desktop computer to a DisplayPort connector on a monitor.
Other	Accessories Included	AC Power cable, VGA cable, DVI-D cable, USB cable
	Software	Yes - HP Display Asst, Auto Adjustment Pattern Utility, Monitor Driver, PDF Complete (v35109 rc4)

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Technical Specifications

	User Guide Languages	English, Danish, Dutch, Finnish, French, German, Italian, Norwegian, Spanish (International), Swedish, Czech, Greek, Hungarian, Polish, Russian, Slovenian, Turkish, Arabic, Portuguese (Brazilian), Bahasa Indonesia, T. Chinese, S. Chinese, Japanese
	Warranty Languages	English, German, French, Italian, Turkish, Greek, Arabic, Hungarian, Czech, Russian, Polish, Japanese, Dutch, Danish, Finnish, Portuguese, Norwegian, Swedish, T. Chinese, Korean, Slovenian, Bahasa, Spanish
	Color	Black
	VESA External Mounting	Yes (one set of standard 4-hole pattern, 100 mm).
	Security Lock-Ready	Yes
Certification and Compliance	TCO 5.0, VCCI, KC, CECP, FCC, CE, BSMI, ISC, C-Tick, Gost, E-Standy, RoHS, WEEE, ETL, CCC, Energy Star® 5.0, NOM, KCC, BSMI, TUV, Microsoft WHQL, China Energy Label Grade 1, EPEAT® Gold[3]	
Compatibility	Recommended for use with HP products.	
Service and Warranty	Protected by HP, including a 3 years parts, 3 years labor, and 3 years onsite service (3/3/3) standard limited warranty. Certain restrictions and exclusions apply.[2]	

ENERGY STAR® is a US registered mark of the United States Environmental Protection Agency.

1 The HP Quick Release has been designed to support a maximum of up to 24 lbs (10.9 kg) for all devices mounted. Because mounting surfaces vary widely and the final mounting method and configuration may vary, mounting fasteners are not supplied (other than the VESA-compliant screws). HP recommends that you consult with a qualified engineering, architectural or construction professional to determine the appropriate type and quantity of mounting fasteners required for your application and to ensure that your mounting solution is properly installed to support applied loads.
2 HP Care Pack Services extend service contracts beyond the standard warranties. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts from date of hardware purchase. 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.
3 EPEAT Gold where HP registers commercial display products. See www.epeat.net for registration status in your country.
4 Arsenic and its compounds were not detected using US EPA Test Methods 3052 & 3052/6010b by ICP or ICP-AES.

All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Overview

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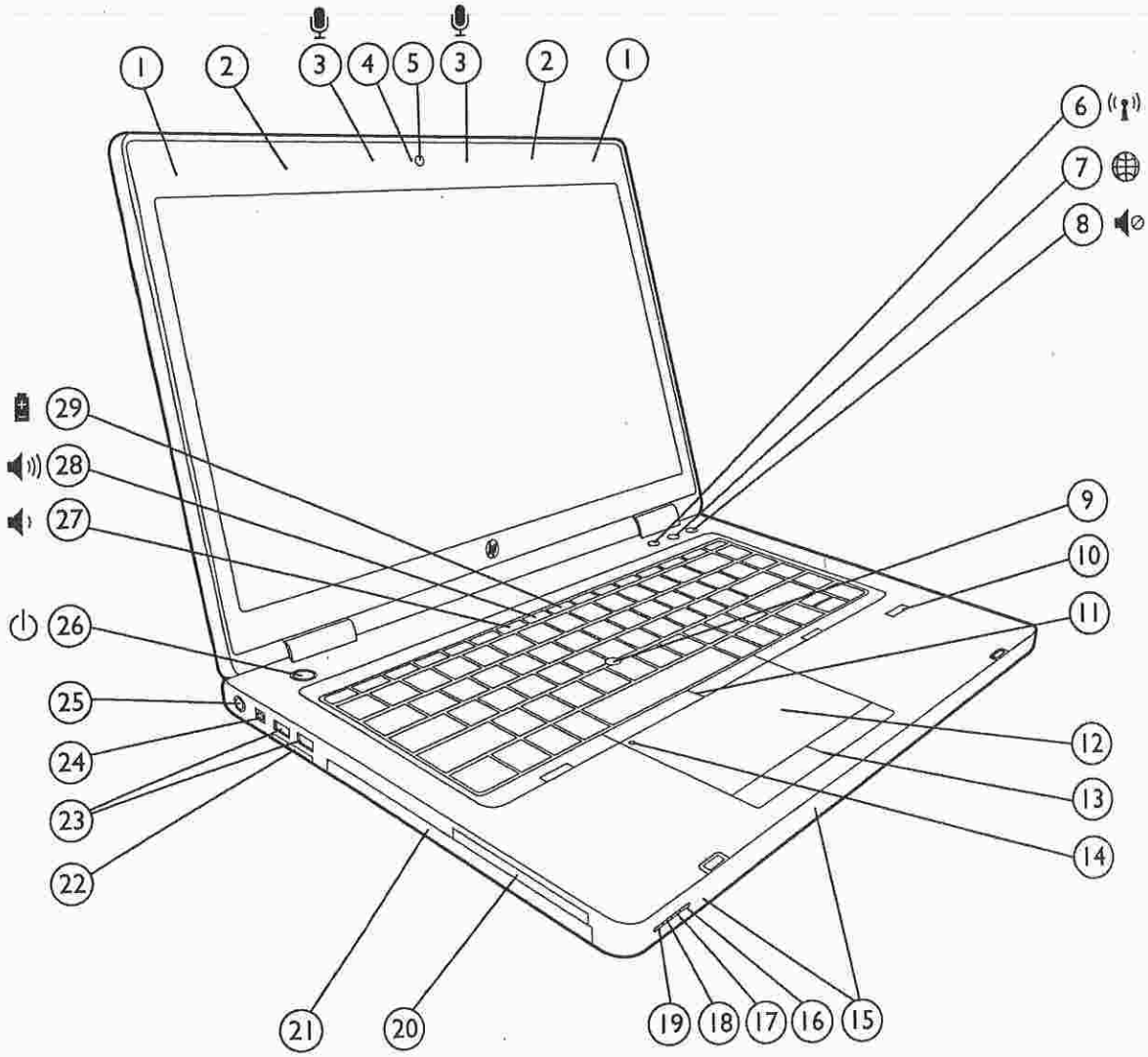
HP ProBook 6465b Notebook PC



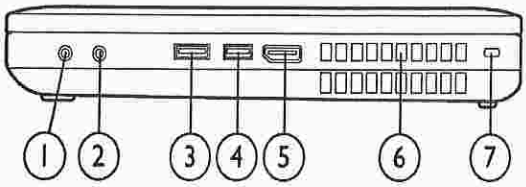
1. WLAN antennas
2. WWAN antennas (select models)
3. Dual-microphone array*
4. Webcam LED indicator (with optional webcam)
5. Optional 720p HD webcam
6. Wireless on/off button with LED indicator
7. HP QuickWeb button with LED indicator
8. Volume mute button with LED indicator
9. Optional pointstick
10. Optional HP Fingerprint Sensor
11. Pointstick pick buttons (with optional pointstick)
16. Hard drive activity / HP 3D DriveGuard LED indicator
17. Battery charging LED indicator
18. Power/standby LED indicator
19. Wireless on/off LED indicator
20. ExpressCard/54 slot or optional Smart Card Reader
21. Upgrade Bay (optical drive, second hard drive or weight saver)
22. Secure Digital/MMC slot
23. (2) USB 2.0 ports
24. 1394a port
25. Power connector
26. Power button with LED indicator

Overview

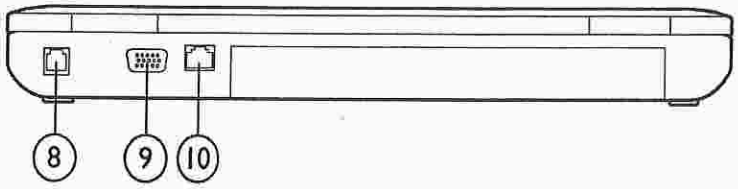
12. Touchpad
13. Touchpad pick buttons
14. Touchpad on/off button with LED indicator
15. Stereo speakers
27. Volume down function key <F6>
28. Volume up function key <F7>
29. HP Power Assistant function key <F8>

* Models without optional webcam have single integrated microphone on left side of display panel.

Right View

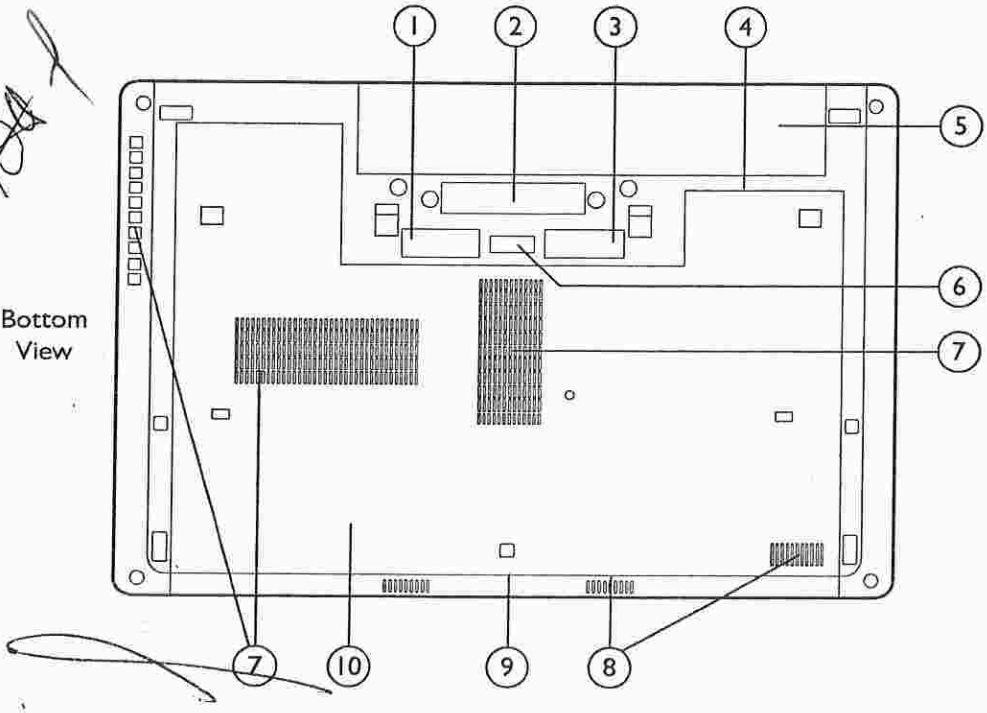


Rear View



1. Stereo headphone/line out
2. Stereo microphone/line in
3. eSATA/USB 2.0 combo port
4. (1) USB 2.0 port
5. DisplayPort
6. Vents
7. Security lock slot
8. RJ-11/modem port
9. VGA/external monitor connector
10. RJ-45/Ethernet port

Bottom View



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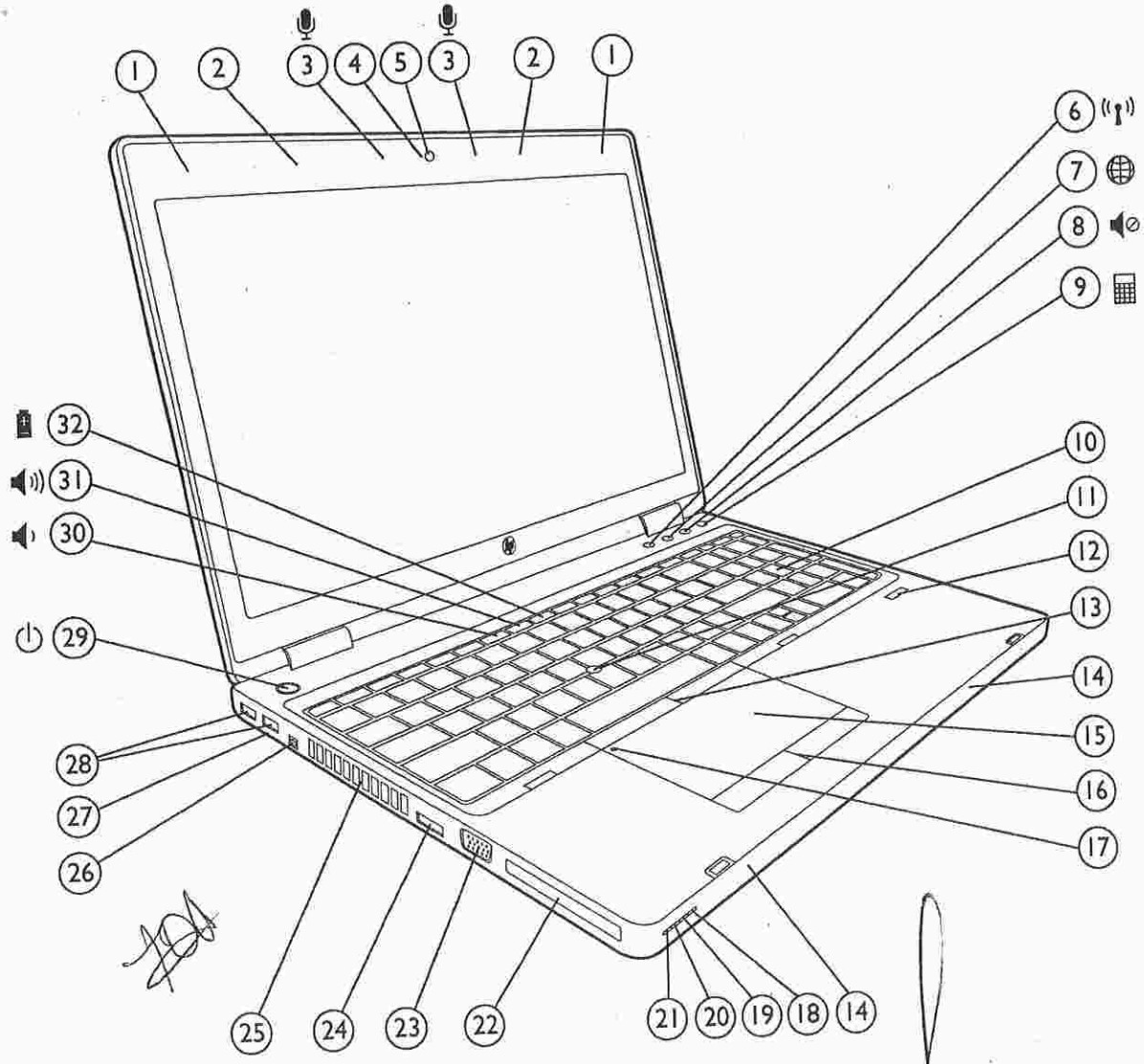
Overview

1. Battery release latch
2. Docking connector
3. Bottom cover release latch
4. SIM slot for WWAN (select models)
5. Battery bay
6. Secondary battery connector
7. Vents
8. Speakers
9. Bluetooth module compartment
10. Hard drive, memory, and wireless compartments under bottom cover

HP ProBook 6565b Notebook PC



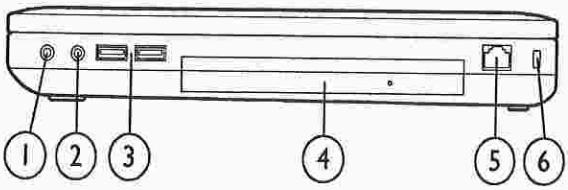
1. WLAN antennas
2. WWAN antennas (select models)
3. Dual-microphone array*
4. Webcam LED indicator (with optional webcam)
5. Optional 720p HD webcam
6. Wireless on/off button with LED indicator
17. TouchPad on/off light
18. Hard drive activity / HP 3D DriveGuard LED indicator
19. Battery charging LED indicator
20. Power/standby LED indicator
21. Wireless on/off LED indicator
22. ExpressCard/54 slot or optional Smart Card Reader

Overview

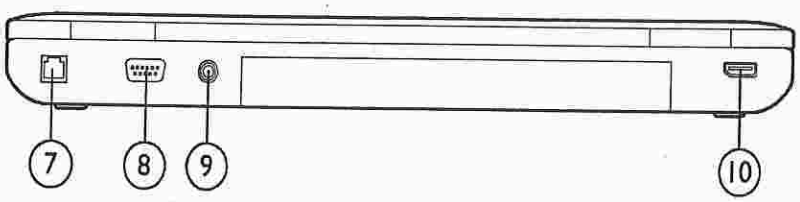
7. HP QuickWeb button with LED indicator
8. Volume mute button with LED indicator
9. Calculator button with LED indicator
10. Numeric keypad
11. Optional pointstick
12. Optional HP Fingerprint Sensor
13. Pointstick pick buttons (with optional pointstick)
14. Stereo speakers
15. Touchpad
16. Touchpad pick buttons
23. VGA/external monitor connector
24. eSATA/USB 2.0 combo port
25. Vent
26. 1394a port
27. Secure Digital/MMC slot
28. (2) USB 2.0 ports
29. Power button with LED indicator
30. Volume down function key <FN 6>
31. Volume up function key <FN 7>
32. HP Power Assistant function key <FN 8>

* Models without optional webcam have single integrated microphone on left side of display panel.

Right View



Rear View



1. Stereo headphone/line out
2. Stereo microphone/line in
3. (2) USB 2.0 ports
4. Upgrade Bay (optical drive or second hard drive or weight saver)
5. RJ-45/Ethernet port
6. Security lock slot
7. RJ-11/modem port
8. Serial port
9. Power connector
10. DisplayPort

Overview

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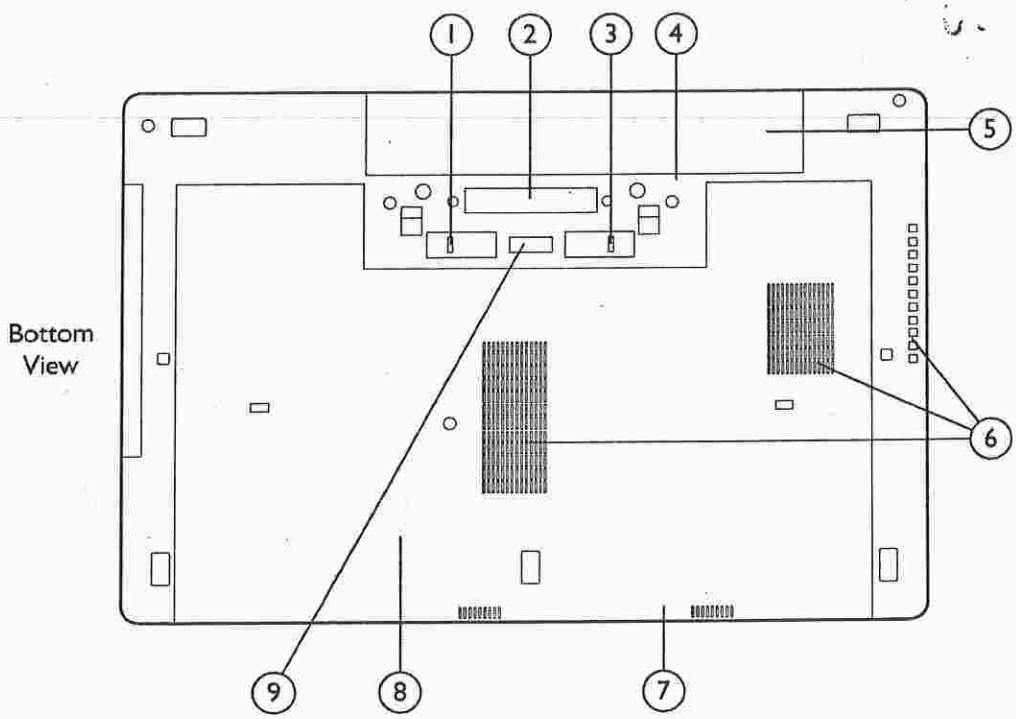

1. Battery release latch
2. Docking connector
3. Bottom cover release latch
4. SIM slot for WWAN (select models)
5. Battery bay
6. Vents
7. Bluetooth module compartment
8. Hard drive, memory, and wireless compartments under bottom cover
9. Secondary battery connector

At A Glance

- Genuine Windows 7 versions, SuSE Linux Enterprise Desktop 11, or FreeDOS
- All new design with bead-blast aluminum display enclosure, magnesium support structure, wear-resistant tungsten-colored HP DuraFinish, HP DisplaySafe frame, precision latches, and brushed aluminum palm rest
- Widescreen LED-backlit display
  HP ProBook 6465b: 14.0-inch diagonal HD or HD+
  HP ProBook 6565b: 15.6-inch diagonal HD or HD+ WVA
- Touchpad and optional pointstick
- Choice of standard ExpressCard slot or optional integrated Smart Card Reader for strong security authentication
- Optional HP Fingerprint Sensor for the additional security and convenience of single sign-on for Windows and websites
- Optional HD webcam comes with dual-microphone array
- Choice of primary battery to optimize run-time or weight: 9-cell (100 WHr), 6-cell (55 WHr), 6-cell HP Long Life 3-year (55 Whr), 6-cell HP Long Life 1-year (51 Whr) (for 6465b only), or 3-cell (31 WHr)
- Combine primary battery with optional secondary battery options
- Easily hot dock with one of the optional HP docking stations
- DisplayPort for external high resolution graphics support
- Accelerated Processing Unit and graphics powered by VISION Technology from AMD
- SRS Premium Sound optimized for high fidelity audio
- Security features including HP ProtectTools, with central management across HP and non-HP client PCs
- HP Power Assistant allows you to conserve power, stretch battery run-time, accurately monitor your reported power

need, and report workforce power consumption.

- HP QuickWeb for convenient online access without the standard boot-up time
- HP DayStarter for calendar display during startup
- Flexible wireless connectivity options:
  - Optional integrated HP hs2340 HSPA+ Mobile Broadband Module connects to both HSPA and HSPA+ (UMTS) networks
  - Optional integrated HP un2430 EV-DO/HSPA Mobile Broadband Module (Gobi 3000)
  - Integrated Broadcom 802.11 a/b/g/n or b/g/n wireless LAN module
  - Bluetooth® v2.1+EDR
- Upgrade Bay for optical drive, optional second hard drive, or weight saver
- Choice of 7200 rpm user-removable hard drive up to 750 GB with HP 3D DriveGuard protection, or 128 GB Solid State Drive
- BFR/PVC-free*, ENERGY STAR qualified models, EPEAT Gold registered in the U.S. (EPEAT status varies by country—please see epeat.net.)

* This notebook is brominated flame retardant and polyvinyl chloride-free (BFR/PVC-free) on notebooks that are non-WWAN; meeting the evolving definition of 'BFR/PVC-free' as set forth in the "iNEMI Position Statement on the 'Definition of Low-Halogen' Electronics (BFR/CFR/PVC-Free)'". Plastic parts contain < 1000 ppm (0.1%) of bromine [if the Br source is from BFRs] and < 1000 ppm (0.1%) of chlorine [if the Cl source is from CFRs or PVC or PVC copolymers]. Power supply and power cords are not BFR/PVC-free. Service parts after purchase may not be BFR/PVC-free.

Standard Features (availability may vary by country)

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Accelerated Processing Unit (APU)	VISION Technology from AMD AMD Quad-Core A8-3510MX with AMD Radeon HD 6620G Graphics (2.5 GHz/1.8 GHz, 4 MB L2 cache, 45W) AMD Quad-Core A6-3410MX with AMD Radeon HD 6520G Graphics (2.3 GHz/1.6 GHz, 4 MB L2 cache, 45W) AMD Dual-Core A4-3310MX with AMD Radeon HD 6480G Graphics (2.5 GHz/2.1 GHz, 2 MB L2 cache, 45W) AMD Dual-Core E2-3000M with AMD Radeon HD 6380G Graphics (2.4 GHz/1.8 GHz, 1 MB L2 cache, 35W) NOTE: APU speed denotes maximum performance mode; APUs will run at lower speeds in battery optimization mode.	
Operating System	Preinstalled	Genuine Windows 7 Professional 32* Genuine Windows 7 Professional 64* Genuine Windows 7 Home Premium 32* Genuine Windows 7 Home Premium 64* Genuine Windows 7 Home Basic 32* (select countries) SuSE Linux Enterprise Desktop 11 FreeDOS
	Supported	Genuine Windows 7 Enterprise 32* Genuine Windows 7 Enterprise 64* Genuine Windows 7 Ultimate 32* Genuine Windows 7 Ultimate 64* Genuine Windows Vista Enterprise 32** Genuine Windows Vista Enterprise 64** Genuine Windows Vista Business 32** Genuine Windows Vista Business 64** Genuine Windows XP Professional 32
	Certified	SuSE Linux Enterprise Desktop 11
	* System may require upgraded and/or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See http://www.microsoft.com/windows/windows-7/ for details. ** 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/upgradeadvisor.	
Fusion Controller Hub (Chipset)	AMD A60M FCH NOTE: EMEA can not use Fusion.	

Standard Features (availability may vary by country)

Graphics included with Accelerated Processing Unit (APU)	AMD Radeon HD 6620G Graphics (with AMD Quad-Core A8-3510MX APU) AMD Radeon HD 6520G Graphics (with AMD Quad-Core A6-3410MX APU) AMD Radeon HD 6480G Graphics (with AMD Dual-Core A4-3310MX APU) AMD Radeon HD 6380G Graphics (with AMD Dual-Core E2-3000M APU)

Display	Internal	HP ProBook 6465b: 14.0-inch diagonal LED-backlit HD anti-glare (1366 x 768 resolution) 14.0-inch diagonal LED-backlit HD+ anti-glare (1600 x 900 resolution) HP ProBook 6565b: 15.6-inch diagonal LED-backlit HD anti-glare (1366 x 768 resolution) 15.6-inch diagonal LED-backlit HD+ WVA anti-glare (1600 x 900 resolution) HP Privacy Filter support
	External	Up to 32-bit per pixel color depth DisplayPort supports resolutions up to 2560 x 1600, 30-bit color depth at 60 Hz, and full HD (1920 x 1080) monitors, 24-bit color depth at 120 Hz VGA port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz DVI-D (single link) video signal available through DVI port in optional HP Docking Station (sold separately) supports resolutions up to 1600 x 1200 at both full and reduced blanking, and 1920 x 1200 at reduced blanking NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

Memory	Standard	DDR3 PC3-10600 SDRAM (1333 MHz) Two SODIMM slots supporting dual-channel memory 2 GB, 4 GB, and 8 GB SODIMMs
	Maximum	Upgradeable to 16 GB with 8 GB 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. Full availability of 4 GB or more of memory requires a Windows 64-bit operating system or Linux. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

Standard Features (availability may vary by country)

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Communications	Integrated Realtek 10/100/1000 NIC 56K V.92 modem** * The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility 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. Broadband Wireless (WWAN) requires a Windows operating system and is available in select countries as a standard, factory configurable feature only. Integrated Bluetooth is also available (factory configurable only) and can be combined with any of the supported wireless LAN and wireless WAN options.	
	Mobile Broadband options	Two 850/900/1575/1700/1800/1900/2100 MHz antennas integrated in the top of the display panel support current and future WWAN technologies. NOTE: Separately purchased mobile network operator service is required.
	HP hs2340 HSPA+ Mobile Broadband Module	Integrated mobile broadband module that provides connectivity to both HSPA and HSPA+ (UMTS) networks. It also provides standalone, Internet and network assisted GPS functionality for various mapping applications and security applications such as Computrace Pro for HP ProtectTools.
	HP un2430 EV-DO/HSPA Mobile Broadband Module	Integrated mobile broadband module with Gobi global mobile Internet technology that provides connectivity to both CDMA (EVDO) and UMTS (HSPA) networks. It also provides GPS functionality for various mapping applications and security applications such as Computrace LoJack Pro Premium for HP ProtectTools.
	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 Dual antennas integrated in the display enclosure
	Broadcom 43224AGN 802.11a/b/g/n WiFi Adapter	Integrated support for 802.11 a, b, g, and n Up to 300 mbps data rate
	Broadcom 4313GN 802.11b/g/n WiFi Adapter	Integrated support for 802.11 b, g, and n Up to 72 mbps data rate

Standard Features (availability may vary by country)

	HP Integrated Module with Bluetooth 2.1+EDR Wireless Technology	Bluetooth Specification v2.1+EDR compliant Works with a wide range of Bluetooth devices
Keyboard	The keyboard with bottom-case drain is designed using a thin layer of Mylar film under the keyboard and a drain system that funnels fluid through a hole in the bottom of the notebook. This minimizes the risk of damage to sensitive components underneath. The 101/102-key compatible keyboard features a 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, 12 function keys, and 19.05 x 19.05 mm key pitch (center-to-center spacing). U.S. and International key layouts are available. Other features include hot keys for instant access to power conservation and brightness. The HP ProBook 6565b includes a separate numeric keypad.	
Launch Buttons and Function Keys	Separate launch buttons provide easy access to the following features: wireless on/off, HP QuickWeb, and volume mute. The HP ProBook 6565b also features a calculator launch button. Function keys provide control of the following features: standby mode, external display, volume down, volume up, HP Power Assistant, display brightness down, and display brightness up.	
Pointing device	Touchpad with on/off button, two-way scroll, gestures, two pick buttons Optional pointstick comes with two additional pointstick buttons	
Internal Storage	Hard drives	250/320/500/750 GB 7200 rpm SMART SATA II 320 GB 7200 rpm SMART SATA II Self Encrypting Drive
	NOTE: These 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 (Windows only)	The hard drive is mounted directly to the notebook frame, reducing the transmission of shock to 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.
	Solid State Drive	128 GB
Upgrade Bay	Fixed 12.7 mm SATA optical drive	Blu-ray ROM DVD+/-RW SuperMulti DL Drive DVD+/-RW SuperMulti DL Drive DVD-ROM Drive
	Second hard drive	500 GB 7200 rpm SMART SATA II Hard Drive
	Weight saver	

Standard Features (availability may vary by country)

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Expansion card slots	ExpressCard/54 slot	Supports ExpressCard/54
	or	
	Optional Integrated Smart Card Reader (replaces ExpressCard/54 slot)	Compatible with ISO 7816 compliant Smart Cards PC/SC interface support
	Secure Digital/MMC slot	Supports SD (Secure Digital), SDHC, SDXC, MMC (MultiMedia Card), and MMC+

Interfaces	External monitor	Two - (1) DisplayPort, (1) VGA
	1394a	One
	Stereo microphone in	One
	Stereo headphone/line out	One
	Power connector	One
	RJ-11/modem	One
	RJ-45/Ethernet	One
	USB 2.0	Three on HP 6465b; four on HP 6565b
	eSATA/USB 2.0 combo	One
	Serial port	One (HP ProBook 6565b only)
	Docking connector	One
	Secondary battery connector	One

Audio/Visual

SRS Premium Sound™
Integrated stereo speakers
Integrated microphone (dual-microphone array when equipped with optional webcam)
Button for volume mute; function keys for volume up and down
Stereo headphone/line out
Stereo microphone/line in

Optional 720p HD webcam

- HD format (widescreen)
- Supports videoconferencing and still image capture
- High quality fixed focus lens
- Video capture at various resolutions up to 1280x720 resolution (720p) and up to 30fps
- M-JPEG compression supports higher frame rates for video capture and videoconferencing
- Improved low light sensitivity
- Improved dynamic range

Standard Features (availability may vary by country)

Software	Preinstalled software with Windows operating system	HP Recovery Manager HP Support Assistant HP ProtectTools Security Manager HP ProtectTools for Central Management HP Hotkey Support HP QuickWeb HP Power Assistant HP Connection Manager HP DayStarter Microsoft Office 2010 preloaded (purchase of a Product Key required to activate a full Office 2010 suite)* Norton Internet Security 2011** PDF Complete Special Edition*** Intervideo WinDVD – DVD Player (select models) Roxio Secure Burn (select models) Roxio MyDVD Business 2010 (select models) HP Webcam Software (select models) Skype
	Additional software available from the web	HP SoftPaq Download Manager

* Microsoft Office 2010 Preloaded includes reduced functionality versions of Word and Excel. Purchase of Product Key required to activate full Office 2010 suite available at participating resellers/retailers and http://www.office.com.
** Norton Internet Security 2011 includes 60 days of complimentary live updates; subscription required for live updates thereafter. Internet access required to receive updates.
*** PDF Complete Special Edition 60 day trial; purchase license afterwards for full functionality.

HP Recovery Manager	Models shipped with Windows 7 include 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 20 GB of the hard drive is reserved for the system recovery software.	
Security	Standard Features	HP ProtectTools Security Manager (standard modules include) • Credential Manager • Computrace* Pro • Device Access Manager • Drive Encryption • Face Recognition (webcam configurations only) • File Sanitizer • Privacy Manager • Embedded Security Enhanced Pre-Boot Security (Multiuser / Multifactor) HP SpareKey One-Step Logon TPM 1.2 Embedded Security Chip** HP Disk Sanitizer Security lock slot
	Optional Features	Smart Card Reader — Compatible with ISO 7816 compliant Smart

Standard Features (availability may vary by country)

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(replaces ExpressCard/54 slot)	Cards PC/SC interface support
HP Fingerprint Sensor	Enhanced sensor scans the fingerprint to uniquely identify and authenticate a person.
HP Privacy Filter	Narrows viewing area so that screen data is visible only to persons directly in front of the monitor.
Computrace* Pro for HP ProtectTools with GPS Tracking	Subscription based security solution providing the ability to track, initiate physical recovery, conduct asset management, and perform remote data delete by utilizing GPS technology. GPS functionality requires HP Mobile Broadband Module.

* The Computrace agent is shipped turned off, and must be activated by customers when they purchase a subscription with terms ranging from one to five years.
** TPM module disabled where use is restricted by law, i.e., Russia and China.
For more information on HP security solutions refer to: http://www.hp.com/products/security.

HP ProtectTools Security Manager with Central Management

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. The following modules are available on the hard drive (also downloadable from the web) and can be configured in Software Setup:

- Credential Manager for HP ProtectTools
- Device Access Manager for HP ProtectTools
- Drive Encryption for HP ProtectTools
- Face Recognition with Bluetooth Verification
- File Sanitizer for HP ProtectTools
- Privacy Manager for HP ProtectTools (Chat & Sign)
- Embedded Security for HP ProtectTools
- Computrace Pro for HP ProtectTools

HP ProtectTools is now capable of being centrally managed from a single control point. HP ProtectTools is management ready out of the box, in partnership with Digital Persona, and provides features that customers expect from a centrally managed security solution, such as user provisioning, credential reset, and system and network revocation . Central Management is available in two feature levels:

- Digital Persona Pro Enterprise: Designed for environments with Active Directory. For large businesses, as well as smaller businesses utilizing an active directory based infrastructure. Gives IT Managers the ability to create role based security policies, provision users, and create login policies based on passwords, biometrics or smart cards. Management features also include remote credential recovery in case the user forgets the password, loses the smart card, or cannot use the fingerprint reader for any reason. In addition, advanced auditing capabilities are also built in.
- Digital Persona Workgroup Manager: Designed for environments without Active Directory. This option can be used by smaller businesses as well as workgroups within large organizations. Workgroup Manager offers features similar to Digital Persona Pro Enterprise, but without active directory integration. Workgroup activation is built into HP ProtectTools, and activation of up to 5 seats is completely free.

Standard Features (availability may vary by country)

Power Supply	External 90-watt Smart AC adapter Power cord included is 6-foot (1.8 meter). 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 the 9-cell primary battery, HP ST09 Extended Life Notebook Battery, or HP BB09 Ultra Extended Life Notebook Battery.	
Battery	Primary battery	HP 9-cell (100 WHr) Li-Ion battery HP 6-cell (55 WHr) Li-Ion battery HP 3-cell (31 WHr) Li-Ion battery HP Long Life 6-cell (55 WHr) Battery(3-year warranty) HP Long Life 6-cell (51 WHr) Battery (1-year warranty) – HP 6465b only
	Optional HP ST09 Extended Life Notebook Battery	9-cell (73 WHr) Li-Ion battery
	Optional HP BB09 Ultra Extended Life Notebook Battery	9-cell (100 WHr) Li-Ion battery
Battery Life	HP ProBook 6465b	
	6-cell (55 WHr)	Up to 7 hours and 15 minutes
	with optional HP ST09 Extended Life Notebook Battery	Up to 16 hours and 45 minutes
	with optional HP BB09 Ultra Extended Life Notebook Battery	Up to 20 hours
	9-cell (100 WHr)	Up to 12 hours and 30 minutes
	3-cell (31 WHr)	Up to 3 hours and 30 minutes
	HP ProBook 6565b	
	6-cell (55 WHr)	Up to 6 hours and 30 minutes
	with optional HP ST09 Extended Life Notebook Battery	Up to 16 hours and 30 minutes
	with optional HP BB09 Ultra Extended Life Notebook Battery	Up to 19 hours and 45 minutes
	9-cell (100 WHr)	Up to 16 hours and 30 minutes
	3-cell (31 WHr)	Up to 19 hours and 45 minutes

Standard Features (availability may vary by country)

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	NOTE: Battery life will vary depending on the product model, configuration, loaded applications, features, use, wireless functionality and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See MobileMark07 battery benchmark www.bapco.com/products/mobilemark2007 for additional details.
System Standby Time	Up to 1 week
Power Conservation	AMD PowerPlay technology Hibernation Standby ACPI compliance
Docking and Stands	HP 90W Docking Station HP 120W Advanced Docking Station HP USB 2.0 Docking Station HP Essential USB 2.0 Port Replicator HP LAN and USB Travel Hub NOTE: Some HP Docking stations may not support every feature of some HP Notebook models. Please refer to the individual docking station documentation for specific information about supported features.
Service and Support	HP Services offers limited 3-year, 1-year and 90-day warranty options depending on country. 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 (availability may vary by country)

NOTE: Options/capabilities listed in the QuickSpecs represent those capabilities available through Base Units or Build to Order configurations. The various product features and capabilities will vary in terms of configurable vs. aftermarket options (AMOs). There may be options and capabilities available through CTO that are not available as AMOs.

Memory	HP 1 GB (DDR3 1333 MHz) SODIMM	AT911AA#xxx
	HP 2 GB (DDR3 1333 MHz) SODIMM	AT912AA#xxx
	HP 4 GB (DDR3 1333 MHz) SODIMM	AT913AA#xxx
	HP 8 GB (DDR3 1333 MHz) SODIMM	QP013AA#xxx
Storage	HP 250 GB Pocket Media Drive	FE477AA
	HP Mobile USB DVD	XQ543AA
	HP Mobile USB DVDRW	BU516AA
	HP Upgrade Bay SATA 500 GB 7200 rpm Hard Drive	LX733AA#xxx
	HP Primary SATA 500 GB 7200 rpm Hard Drive	AU098AA#xxx
	HP Upgrade Bay DL DVD+/-RW	LZ835AA
Expansion Solutions	HP 90W Docking Station	VB041AA#xxx
	HP 120W Advanced Docking Station	NZ222AA#xxx
	HP USB 2.0 Docking Station	AY052AA#xxx
	HP Essential USB 2.0 Port Replicator	AQ731AA#xxx
	HP LAN and USB Travel Hub	BM868AA#xxx
	HP Display & Notebook Stand	AW662AA#xxx
	HP Adjustable Display Stand	AW663AA#xxx
	HP Adjustable Dual Display Stand	AW664AA#xxx
Power	HP ST09 Extended Life Notebook Battery	QK639AA
	HP BB09 Ultra Extended Life Notebook Battery	QK640AA
	HP CC06XL Long Life Notebook Battery	QK642AA
	HP CC09 Notebook Battery	QK643AA
	HP 90W Smart AC Adapter	ED495AA#xxx
	HP 90W Smart AC/Auto/Air Combo Adapter	AJ652AA#xxx
	HP 90W Smart Auto/Truck Adapter	ED493AA
	HP 65W Slim Adapter	AX727AA#xxx
	HP 90W Slim Adapter	BT796AA#xxx
Carrying Cases	HP Basic Carrying Case	AJ078AA
	HP Business Nylon Case	BP848AA
	HP Professional Slim Top Load Case	AY530AA

Options (availability may vary by country)

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Security	HP Notebook Combo Lock	AY475AA#xxx
	HP Keyed Cable Lock	BV411AA
	HP 14.0-inch Display Privacy Filter	AU100AA#xxx
	HP 15.6-inch Display Privacy Filter	AU103AA#xxx
Input/Output Devices	HP USB Optical Travel Mouse	RH304AA
	HP USB/PS2 Optical 2-Button Scroll Mouse	DC369A
	HP USB Keyboard & Mouse Bundle	RC465AA#xxx

Technical Specifications

System Unit	Dimensions (HxWxD)	HP ProBook 6465b: 1.34 in (at front) x 13.31 in x 9.11 in 34.0 mm (at front) x 338 mm x 231.3 mm	
		HP ProBook 6565b: 1.35 in (at front) x 14.72 in x 9.86 in 34.3 mm (at front) x 374 mm x 250.5 mm	
	Weight	HP ProBook 6465b: Starting at 4.46 lb (2.02 kg) with SSD, weight saver (no optical drive), and 3-cell battery Starting at 4.85 lb (2.20 kg) with hard drive, optical drive, and 3-cell battery	
		HP ProBook 6565b: Starting at 5.50 lb (2.50 kg) with hard drive, weight saver (no optical drive), and 3-cell battery Starting at 5.76 lb (2.62 kg) with hard drive, optical drive, and 3-cell battery	
	NOTE: Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes WLAN.		
	Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	18.5 V
		Average Operating Power	TBD W
		Max Operating Power	< 90 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)
	Planned Industry Standard Certifications	UL	Yes
		CSA	Yes
		FCC Compliance	Yes
		ENERGY STAR®	Select models*
		EPEAT	Gold target**
		ICES	Yes
		Australia / NZ A-Tick Compliance	Yes

CCC	Yes
Japan VCCI Compliance	Yes
KCC	Yes
BSMI	Yes
CE Marking Compliance	Yes

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* Configurations of the HP ProBook 6465b and HP ProBook 6565b with a Microsoft OS that are ENERGY STAR qualified and are identified as HP ProBook 6465b ENERGY STAR and HP ProBook 6565b ENERGY STAR on HP websites and on www.energystar.gov.

** EPEAT Registered Gold in U.S. EPEAT registration varies by country. See www.epeat.net for registration status by country.

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

Audio	SRS Premium Sound	
Hardware	Implementation	IDT 92HD87 High Definition CODEC
	Touch-Sensitive Volume Controls	Volume up, volume down, and mute
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes, dual digital microphone array when equipped with optional webcam
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 or 20-bit
Integrated Stereo Speakers	Power Rating	2 Watts
	Impedance	4 Ohms
Power		

Technical Specifications

HP 90W Smart AC Adapter	Dimensions	5.00 x 1.97 x 1.1 in (12.7 x 5.0 x 2.9 cm)	
	Weight	0.82 lb (370 g)	
	Input	100 to 240 VAC	
		Input Efficiency	87% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.5 A at 90 VAC, 0.75 A at 180 VAC PFC Version
			2.4 A at 90 VAC, 1.2 A at 180 VAC NON PFC Version
	Output	Output power	90W
		DC output	19.0V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11A, Over voltage protection- 29V max automatic shutdown
	Connector	3 pin/grounded, mates with interchangeable cords	
	Environmental Design	Operating temperature	32° to 104° F (0° to 40° 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, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF- over 200,000 hours at 25°C ambient condition.	

Optional HP BB09 Ultra Extended Life Notebook Battery	Dimensions (H x W x L)	1.2 x 5.9 x 11.4 in (3x15x29cm)	
	Weight (max)	1.5lb, (.682kg)	
	Cells/Type	Lithium-Ion	
	Energy	Voltage	11.25V
		Amp-hour capacity	8.85Ah
		Watt-hour capacity	100Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 122° F(-10° to 50° C)
		Non-operating	-4° to 122° F (-20° to 50° C)
	Battery Re-Charge Time	System in OFF or Standby Mode	3.5 to 5 hours
		System ON	4 to 7 hours
	Fuel Gauge LED	Yes	
	Warranty	1 year	
	~~Optional Travel Battery Available~~	NA	

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Optional HP ST09 Extended Life Notebook Battery	Dimensions (H x W x L)	1.2 x 6.1 x 12 in (3x15.5x30.5cm)	
	Weight (max)	1.2lb, (.550kg)	
	Cells/Type	Lithium-Ion Polymer	
	Energy	Voltage	11.1V
		Amp-hour capacity	6.6Ah
		Watt-hour capacity	73Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 122° F(-10° to 50° C)
		Non-operating	-4° to 122° F (-20° to 50° C)
	Battery Re-Charge Time	System in OFF or Standby Mode	3.5 to 5 hours
		System ON	4 to 7 hours
	Fuel Gauge LED	Yes	
	Warranty	1 year	
	Optional Travel Battery Available	NA	

Optional HP 6-cell (55 WHr) Long Life Battery	Dimensions (H x W x L)	0.8 x 1.8 x 8.0in (2.0 x 4.7 x 20.5cm)	
	Weight (max)	.72lb, (.323kg)	
	Cells/Type	Lithium-Ion	
	Energy	Voltage	10.8V
		Amp-hour capacity	5.1Ah
		Watt-hour capacity	55Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 122° F(-10° to 50° C)
		Non-operating	-4° to 122° F (-20° to 50° C)
	Battery Re-Charge Time	System in OFF or Standby Mode	2.5 hours
		System ON	3 to 5 hours
	Fuel Gauge LED	No	
	Warranty	3 years	
	Optional Travel Battery Available	Yes	

Technical Specifications

HP Long Life 6-cell 51 WHr Lithium-Ion Primary battery	Dimensions (H x W x L)	0.8 x 2.1 x 8.0 in (2.0 x 5.3 x 20.3 cm)	
	Weight	0.73 lb (0.331 kg)	
	Cells/Type	6-cell Lithium-Ion	
	Energy	Watt-hour Capacity	51 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 9-cell (100 WHr) Lithium-Ion Primary battery	Dimensions (H x W x L)	0.8 x 2.4 x 8.1in (2 x 6.6 x 20.5cm)	
	Weight (max)	1.1lb, (.488kg)	
	Cells/Type	Lithium-Ion	
	Energy	Voltage	11.25V
		Amp-hour capacity	8.85Ah
		Watt-hour capacity	100Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 122° F(-10° to 50° C)
		Non-operating	-4° to 122° F (-20° to 50° C)
	Battery Re-Charge Time	System in OFF or Standby Mode	3.5 to 5 hours
		System ON	4 to 7 hours
	Fuel Gauge LED	No	
	Warranty	1 year	
	Optional Travel Battery Available	Yes	

Technical Specifications

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HP 6-cell (55 WHr) Lithium-Ion Primary battery	Dimensions (H x W x L)	0.8 x 1.8 x 8.0in (2.0 x 4.7 x 20.5cm)	
	Weight (max)	.70lb, (.313kg)	
	Cells/Type	Lithium-Ion	
	Energy	Voltage	10.8V
		Amp-hour capacity	5.1Ah
		Watt-hour capacity	55Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 122° F(-10° to 50° C)
		Non-operating	-4° to 122° F (-20° to 50° C)
	Battery Re-Charge Time	System in OFF or Standby Mode	2.5 hours
		System ON	3 to 5 hours
	Fuel Gauge LED	No	
	Warranty	1 year	
	Optional Travel Battery Available	Yes	

HP 3-cell (31 WHr) Lithium-Ion Primary battery	Dimensions (H x W x L)	0.8 x 1.8 x 8.0in (2.0 x 4.7 x 20.5cm)	
	Weight (max)	0.47lb, (.210kg)	
	Cells/Type	Lithium-Ion	
	Energy	Voltage	11.1V
		Amp-hour capacity	2.8Ah
		Watt-hour capacity	31Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 122° F(-10° to 50° C)
		Non-operating	-4° to 122° F (-20° to 50° C)
	Battery Re-Charge Time	System in OFF or Standby Mode	2.5 hours
		System ON	3 to 5 hours
	Fuel Gauge LED	No	
	Warranty	1 year	
	Optional Travel Battery Available	Yes	

Displays

Technical Specifications

14.0-inch LED HD (1366 x 768) anti-glare	Active Area (W x H)	12.74 x 7.56 in (32.4 x 19.2 cm)	
	Diagonal Size	14.0 in (35.6cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	300:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	200 nit (typical)	
	Pixel Resolution	Pitch	0.227 mm
		Format	1366 x 768
		Configuration	RGB Stripe
	Backlight	LED	
	PPI	112 ppi	
	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)	
14.0-inch LED HD+ (1600 x 900) anti-glare	Dimensions (W x H)	323.5 mm x 192.0 mm (typ)	
	Diagonal Size	14.0 in (35.6cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	300 (min)	
	Refresh Rate	60 Hz	
	Brightness	200 nits (typ)	
	Pixel Resolution	Pitch	0.1935mm
		Format	1600 x 900
		Configuration	RGB Strip
	Backlight	LED	
	PPI	131 ppi	
	Viewing Angle	30/30/20/10 (Left/Right/Down/Up) (minimum)	

Technical Specifications

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15.6-inch LED HD (1366 x 768) anti-glare	Active Area (W x H)	13.54 x 7.59 in (34.4 x 19.4 cm)	
	Diagonal Size	15.6 in (39.6cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	300:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	200 nit (typical)	
	Pixel Resolution	Pitch	0.252 mm
		Format	1366 x 768
		Configuration	RGB Stripe
	Backlight	LED	
	PPI	100 ppi	
	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)	

15.6-inch LED HD+ WVA (1600 x 900) anti-glare	Active Area (W x H)	13.54 x 7.59 in (34.4 x 19.4 cm)	
	Diagonal Size	15.6 in (39.6 cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	300:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	200 nit (typical)	
	Pixel Resolution	Pitch	0.215 mm
		Format	1600 x 900
		Configuration	RGB Stripe
	Backlight	LED	
	PPI	118 ppi	
	Viewing Angle	±60° Horizontal, ± 50° Vertical (minimum) or ±70° Horizontal, ±60° Vertical (typical)	

Internal Storage

Technical Specifications

750 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115g)	
	Capacity	750 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)	300 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	1,465,149,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

500 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115g)	
	Capacity	500 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)	300 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	976,773,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	