



State of West Virginia  
Department of Administration  
Purchasing Division  
2019 Washington Street East  
Post Office Box 50130  
Charleston, WV 25305-0130

# Request for Quotation

RFQ NUMBER
PEI70003

PAGE
1

ADDRESS CORRESPONDENCE TO ATTENTION OF
KRISTA FERRELL 304-558-2596

RFQ COPY  
TYPE NAME/ADDRESS HERE

HP Public Sector Sales  
10810 Farnam Drive  
Omaha, NE 68154  
(800) 888-3224

PUBLIC EMPLOYEES INSURANCE  
AGENCY  
BUILDING 5  
1900 KANAWHA BOULEVARD, EAST  
CHARLESTON, WV  
25305-0710 558-7850

DATE PRINTED	TERMS OF SALE	SHIP VIA	FOB	FREIGHT TERMS
08/23/2006				

BID OPENING DATE: 09/12/2006 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	20	EA		939-21	\$600.03	\$12,000.60
COMPUTER MAINTENANCE AND REPAIR						
REQUEST FOR QUOTATION						
THE WEST VIRGINIA PURCHASING DIVISION FOR THE AGENCY, THE WEST VIRGINIA PUBLIC EMPLOYEES INSURANCE AGENCY, IS SOLICITING BIDS TO PROVIDE THE AGENCY WITH (20) GARTNER LEADERS TIER SMALL FORM FACTOR INTEL PENTIUM 4 PROCESSOR 640 WITH HT TECHNOLOGY PER THE ATTACHED SPECIFICATIONS.						
BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THIS CONTRACT IS AUTOMATICALLY NULL AND VOID, AND IS TERMINATED WITHOUT FURTHER ORDER.						
THE MODEL/BRAND/SPECIFICATIONS NAMED HEREIN ESTABLISH THE ACCEPTABLE LEVEL OF QUALITY ONLY AND ARE NOT INTENDED TO REFLECT A PREFERENCE OR FAVOR ANY PARTICULAR BRAND OR VENDOR. VENDORS WHO ARE BIDDING ALTERNATES SHOULD SO STATE AND INCLUDE PERTINENT LITERATURE AND SPECIFICATIONS. FAILURE TO PROVIDE INFORMATION FOR ANY ALTERNATES MAY BE GROUNDS FOR REJECTION OF THE BID. THE STATE RESERVES THE RIGHT TO WAIVE MINOR IRREGULARITIES IN BIDS OR SPECIFICATIONS IN ACCORDANCE WITH SECTION 148-1-4(F) OF THE WEST VIRGINIA LEGISLATIVE RULES AND REGULATIONS.						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
<i>Jim S. Justice</i>	(854) 543-0633	9/11/06
TITLE	FAX	ADDRESS CHANGES TO BE NOTED ABOVE
Account Manager	94-1081436	

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

**GENERAL TERMS & CONDITIONS  
REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)**

1. Awards will be made in the best interest of the State of West Virginia.
2. The State may accept or reject in part, or in whole, any bid.
3. All quotations are governed by the *West Virginia Code* and the *Legislative Rules* of the Purchasing Division.
4. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required \$125.00 registration fee.
5. All services performed or goods delivered under State Purchase Orders/Contracts are to be continued for the term of the Purchase Order/Contract, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods, this Purchase Order/Contract becomes void and of no effect after June 30.
6. Payment may only be made after the delivery and acceptance of goods or services.
7. Interest may be paid for late payment in accordance with the *West Virginia Code*.
8. Vendor preference will be granted upon written request in accordance with the *West Virginia Code*.
9. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.
10. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.
11. The laws of the State of West Virginia and the *Legislative Rules* of the Purchasing Division shall govern all rights and duties under the Contract, including without limitation the validity of this Purchase Order/Contract.
12. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.
13. **BANKRUPTCY:** In the event the vendor/contractor files for bankruptcy protection, this contract is automatically null and void, and is terminated without further order.
14. **HIPAA Business Associate Addendum** - The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, and available online at the Purchasing Division's web site (<http://www.state.wv.us/admin/purchase/vrc/hipaa.htm>) is hereby made part of the agreement. Provided that, the Agency meets the definition of a Covered Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.

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**INSTRUCTIONS TO BIDDERS**

1. Use the quotation forms provided by the Purchasing Division.
2. **SPECIFICATIONS:** Items offered must be in compliance with the specifications. Any deviation from the specifications must be clearly indicated by the bidder. Alternates offered by the bidder as **EQUAL** to the specifications must be clearly defined. A bidder offering an alternate should attach complete specifications and literature to the bid. The Purchasing Division may waive minor deviations to specifications.
3. Complete all sections of the quotation form.
4. Unit prices shall prevail in cases of discrepancy.
5. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.
6. **BID SUBMISSION:** All quotations must be delivered by the bidder to the office listed below prior to the date and time of the bid opening. Failure of the bidder to deliver the quotations on time will result in bid disqualifications.

**SIGNED BID TO:**

Department of Administration  
Purchasing Division  
2019 Washington Street East  
Post Office Box 50130  
Charleston, WV 25305-0130



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(800)888-3724

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AGENCY  
BUILDING 5  
1900 KANAWHA BOULEVARD, EAST  
CHARLESTON, WV  
25305-0710 558-7850

DATE PRINTED	TERMS OF SALE	SHIP VIA	FOB	FREIGHT TERMS
08/23/2006				

BID OPENING DATE:

09/12/2006

BID OPENING TIME

01:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
<p align="center"><b>VENDOR PREFERENCE CERTIFICATE</b></p> <p>CERTIFICATION AND APPLICATION* IS HEREBY MADE FOR PREFERENCE IN ACCORDANCE WITH WEST VIRGINIA CODE, 5A-3-37 (DOES NOT APPLY TO CONSTRUCTION CONTRACTS).</p> <p>A. APPLICATION IS MADE FOR 2.5% PREFERENCE FOR THE REASON CHECKED:</p> <p>( ) BIDDER IS AN INDIVIDUAL RESIDENT VENDOR AND HAS RESIDED CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR</p> <p>( ) BIDDER IS A PARTNERSHIP, ASSOCIATION OR CORPORATION RESIDENT VENDOR AND HAS MAINTAINED ITS HEAD-QUARTERS OR PRINCIPAL PLACE OF BUSINESS CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR 80% OF THE OWNERSHIP INTEREST OF BIDDER IS HELD BY ANOTHER INDIVIDUAL, PARTNERSHIP, ASSOCIATION OR CORPORATION RESIDENT VENDOR WHO HAS MAINTAINED ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR</p> <p>( ) BIDDER IS A CORPORATION NONRESIDENT VENDOR WHICH HAS AN AFFILIATE OR SUBSIDIARY WHICH EMPLOYS A MINIMUM OF ONE HUNDRED STATE RESIDENTS AND WHICH HAS MAINTAINED ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS WITHIN WEST VIRGINIA CONTINUOUSLY FOR THE FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION.</p> <p>B. APPLICATION IS MADE FOR 2.5% PREFERENCE FOR THE REASON CHECKED:</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
<i>[Signature]</i>	(859) 543-0633	9/11/06
TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE
Account Manager	94-1081436	

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08/23/2006						
BID OPENING DATE: 09/12/2006		BID OPENING TIME 01:30PM				
LINE	QUANTITY	UOF	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
<p>( ) BIDDER IS A RESIDENT VENDOR WHO CERTIFIES THAT, DURING THE LIFE OF THE CONTRACT, ON AVERAGE AT LEAST 75% OF THE EMPLOYEES WORKING ON THE PROJECT BEING BID ARE RESIDENTS OF WEST VIRGINIA WHO HAVE RESIDED IN THE STATE CONTINUOUSLY FOR THE TWO YEARS IMMEDIATELY PRECEDING SUBMISSION OF THIS BID;</p> <p>OR</p> <p>( ) BIDDER IS A NONRESIDENT VENDOR EMPLOYING A MINIMUM OF ONE HUNDRED STATE RESIDENTS OR IS A NONRESIDENT VENDOR WITH AN AFFILIATE OR SUBSIDIARY WHICH MAINTAINS ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS WITHIN WEST VIRGINIA EMPLOYING A MINIMUM OF ONE HUNDRED STATE RESIDENTS WHO CERTIFIES THAT, DURING THE LIFE OF THE CONTRACT, ON AVERAGE AT LEAST 75% OF THE EMPLOYEES OR BIDDERS' AFFILIATE'S OR SUBSIDIARY'S EMPLOYEES ARE RESIDENTS OF WEST VIRGINIA WHO HAVE RESIDED IN THE STATE CONTINUOUSLY FOR THE TWO YEARS IMMEDIATELY PRECEDING SUBMISSION OF THIS BID.</p> <p>BIDDER UNDERSTANDS IF THE SECRETARY OF TAX &amp; REVENUE DETERMINES THAT A BIDDER RECEIVING PREFERENCE HAS FAILED TO CONTINUE TO MEET THE REQUIREMENTS FOR SUCH PREFERENCE, THE SECRETARY MAY ORDER THE DIRECTOR OF PURCHASING TO: (A) RESCIND THE CONTRACT OR PURCHASE ORDER ISSUED; OR (B) ASSESS A PENALTY AGAINST SUCH BIDDER IN AN AMOUNT NOT TO EXCEED 5% OF THE BID AMOUNT AND THAT SUCH PENALTY WILL BE PAID TO THE CONTRACTING AGENCY OR DEDUCTED FROM ANY UNPAID BALANCE ON THE CONTRACT OR PURCHASE ORDER.</p> <p>BY SUBMISSION OF THIS CERTIFICATE, BIDDER AGREES TO DISCLOSE ANY REASONABLY REQUESTED INFORMATION TO THE PURCHASING DIVISION AND AUTHORIZES THE DEPARTMENT OF TAX AND REVENUE TO DISCLOSE TO THE DIRECTOR OF PURCHASING APPROPRIATE INFORMATION VERIFYING THAT</p>						
SEE REVERSE SIDE FOR TERMS AND CONDITIONS						
SIGNATURE <i>Ji Song Justice</i>		TELEPHONE (859) 543-0633		DATE 9/16/06		
TITLE Account Manager		FERN 94-1081436		ADDRESS CHANGES TO BE NOTED ABOVE		

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<p>BIDDER HAS PAID THE REQUIRED BUSINESS TAXES, PROVIDED THAT SUCH INFORMATION DOES NOT CONTAIN THE AMOUNTS OF TAXES PAID NOR ANY OTHER INFORMATION DEEMED BY THE TAX COMMISSIONER TO BE CONFIDENTIAL.</p> <p>UNDER PENALTY OF LAW FOR FALSE SWEARING (WEST VIRGINIA CODE 61-5-3), BIDDER HEREBY CERTIFIES THAT THIS CERTIFICATE IS TRUE AND ACCURATE IN ALL RESPECTS; AND THAT IF A CONTRACT IS ISSUED TO BIDDER AND IF ANYTHING CONTAINED WITHIN THIS CERTIFICATE CHANGES DURING THE TERM OF THE CONTRACT, BIDDER WILL NOTIFY THE PURCHASING DIVISION IN WRITING IMMEDIATELY.</p> <p>BIDDER: Hewlett Packard</p> <p>DATE: 9/11/06</p> <p>SIGNED: Jim S. Justice</p> <p>TITLE: Account Manager</p> <p>* CHECK ANY COMBINATION OF PREFERENCE CONSIDERATION(S) IN EITHER "A" OR "B", OR BOTH "A" AND "B" WHICH YOU ARE ENTITLED TO RECEIVE. YOU MAY REQUEST UP TO THE MAXIMUM 5% PREFERENCE FOR BOTH "A" AND "B". (REV. 12/00)</p> <p>NOTICE</p> <p>A SIGNED BID MUST BE SUBMITTED TO:</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
Jim S. Justice	(859) 5430633	9/11/06
TITLE	ADDRESS CHANGES TO BE NOTED ABOVE	
Account Manager	99-1081436	

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Department of Administration  
Purchasing Division  
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BUILDING 5  
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25305-0710 558-7850

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
08/23/2006				
BID OPENING DATE: 09/12/2006		BID OPENING TIME 01:30PM		

LINE	QUANTITY	UOF	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
DEPARTMENT OF ADMINISTRATION PURCHASING DIVISION BUILDING 15 2019 WASHINGTON STREET, EAST CHARLESTON, WV 25305-0130						
THE BID SHOULD CONTAIN THIS INFORMATION ON THE FACE OF THE ENVELOPE OR THE BID MAY NOT BE CONSIDERED:						
SEALED BID						
BUYER:				21		
RFQ. NO.:				PEI70003		
BID OPENING DATE:				09/12/2006		
BID OPENING TIME:				1:30 PM		
PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR BID:						
				(859) 543-2582		
CONTACT PERSON (PLEASE PRINT CLEARLY):						
Tina Segneri				Justice		

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
Ji Segneri Justice	(859) 543-0633	9/11/06
TITLE	FAX	ADDRESS CHANGES TO BE NOTED ABOVE
Account Manager	94-1081436	

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Department of Administration  
WVPEIA

QTY	Model	Description
	Manufacture	Gartner Leaders Tier
	Base Unit	Small Form Factor Intel Pentium 4 Processor 640 with HT Technology (3.0GHz, 800MHz FSB)
	Memory	512MB PC4200 DDR2 SDRAM
	Hard Drive	40GB 7200RPM Serial-ATA
	Cache	2MB L2
	Network Card Integrated or Non-Integrated	Integrated Gigabit Ethernet
	Video Memory Integrated or Non-Integrated	Intel Graphics Accelerator 950
	Floppy Drive	None
	CD-ROM or Burner	48X32X48X16X DVD-ROM/CD-RW Combo
	Operating System	Microsoft Windows XP Professional (US)
	Keyboard	Enhanced Performance USB
	Mouse	ScrollPoint Optical, 800DPI
	Speakers	Integrated
	Sound Card Integrated or Non-Integrated	Integrated SoundMax with SPX
	Modem	None
	Miscellaneous	USB Ports: 6 USB 2.0 (2Front, 4 Back)
	Miscellaneous	Local technical support

**\*\* Shipping Company must take equipment inside of the building and to the room requested by the agency. It is not the agency's responsibility to unload equipment.**

Cost Each: \$600.<sup>03</sup> x 20: Total Cost: \$12,000.<sup>60</sup>

007

**Delivery Address (if multiple, give each location):** Bldg. 5 Room 1001, State Capitol Complex,  
1900 Kanawha Blvd. E.,  
Charleston WV 25305

**Contact Name and Phone Number:** Philip Skeen  
304-558-6244 x245

**Warranty (example: 3Yrs, NBD, Onsite):** 4 Yrs, NBD, Onsite

**Level of Support - Choose Option:** ☐ A ☒ B ☐ C  
A=Dropped shipped straight from Manufacture, B=Shipped to Vendor, they pre-configure the equipment then drop ship it to the agency, C=Vendor will come in and set the equipment up after delivery.

**Delivery Requirement:** 30 Days ARO (Standard delivery time)

Jim Searcy  
VENDOR SIGNATURE REQUIRED

FEIN: 94-1081436

PHONE NUMBER: (859) 543-0633



# AFFIDAVIT

**West Virginia Code §5A-3-10a states:**

No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owned is an amount greater than one thousand dollars in the aggregate.

**DEFINITIONS:**

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Debtor" means any individual, corporation, partnership, association, limited liability company or any other form or business association owing a debt to the state or any of its political subdivisions.

"Political subdivision" means any county commission; municipality; county board of education; any instrumentality established by a county or municipality; any separate corporation or instrumentality established by one or more counties or municipalities, as permitted by law; or any public body charged by law with the performance of a government function or whose jurisdiction is coextensive with one or more counties or municipalities.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

**EXCEPTION:**

The prohibition of this section does not apply where a vendor has contested any tax administered pursuant to chapter eleven of this code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

**LICENSING:**

The vendor must be licensed in accordance with any and all state requirements to do business with the state of West Virginia.

**CONFIDENTIALITY:**

The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendors should visit [www.state.wv.us/admin/purchase/privacy](http://www.state.wv.us/admin/purchase/privacy) for the Notice of Agency Confidentiality Policies.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), it is hereby certified that the vendor acknowledges the information in this said affidavit and are in compliance with the requirements as stated.

Vendor's Name: Hewlett Packard  
Authorized Signature: Ji Song Justice Date: 9/11/06



**Public Sector Sales**

September 11, 2006

STATE OF WEST VIRGINIA  
4101 MACCORKLE AVE. SE  
CHARLESTON WV 25304-0000

Dear buddy cobbs,

Thank you for your recent interest in Hewlett-Packard Public Sector Sales. Award-winning Hewlett-Packard products are designed to deliver high-performance technology, powerful networking and legendary Hewlett-Packard quality - all at a value that your budget demands. From handheld PCs to AlphaServer Supercomputers, Hewlett-Packard provides a single resource for complete solutions that meet all your computing needs. You can rely on Hewlett-Packard for the performance, uptime, and efficiency you need to keep your agency running smoothly and hassle-free. Every Hewlett-Packard product is designed and tested to provide industry-standard compatibility and investment protection. And, with special maintenance services, easy ordering and flexible financing, Hewlett-Packard makes buying the right solution for your organization easier and more convenient than ever.

Attached is the price quotation you requested. When submitting a purchase order directly to Hewlett-Packard, please be certain to include the requested information on the Ordering Information page attached to this quotation. Including the necessary information will ensure the accurate and timely processing of your order through Hewlett-Packard Public Sector. You may order online at [http://welcome.hp.com/country/us/eng/solutions/pub\\_sector.html](http://welcome.hp.com/country/us/eng/solutions/pub_sector.html) or fax in your purchase order at 800-825-2329.

-Please reference this contract: STATE AND LOCAL PRICELIST Contract (S&LWEB) terms and conditions.

-The terms and conditions of the STATE AND LOCAL PRICELIST Contract (S&LWEB) will apply to any order placed as a result of this inquiry; no other terms or conditions shall apply.

If you should have questions regarding this quotation or need any other assistance, please contact your Public Sector sales representative.

Sincerely,

**Buddy Cobbs**

Inside Sales Representative



## Public Sector Sales

### **Ordering Information**

It's never been easier to place your direct orders with Hewlett-Packard. Now you can have fast, accurate service with special options designed to personalize, process and expedite your shipments with higher levels of accuracy. Ordering Hewlett-Packard products is as simple as picking up the phone, using the fax machine, or logging onto the Hewlett-Packard Public Sector website at [http://welcome.hp.com/country/us/eng/solutions/pub\\_sector.html](http://welcome.hp.com/country/us/eng/solutions/pub_sector.html)

#### **Online ordering**

With the Hewlett-Packard Online Store, you can create quotes with real-time pricing; place an order using a credit card or purchase order, keep up-to-date on the latest product promotions and pricing available on your contract, inquire about order status and view product/price information - all from your desktop PC. Visit [http://welcome.hp.com/country/us/eng/solutions/pub\\_sector.html](http://welcome.hp.com/country/us/eng/solutions/pub_sector.html)

#### **Faxing Option**

Faxing your order is convenient, too. Simply fill out your request on the customer purchase order and send to 1-800-825-2329. Your order will be promptly handled, and you can call a Customer Service Representative to confirm your order.

#### **Personalized Telesales**

To provide more personal service to you, our telephone sales and order administration representatives are assigned by territory. This means you can reach a dedicated government, education, or medical sales team every time you call - giving you added value by letting you grow personal relationships with representatives who know your product as well as your special terms and delivery requirements. To request a quote, check product availability, and other related questions, call your Telesales Representative.

### **Order Accuracy**

To ensure the accurate and timely processing of your order, please verify that your purchase order includes the following information:

- o Bill-to address,
- o Ship-to address,
- o Purchase order number,
- o Part number, description, and price,
- o Contract # and name
- o Reseller of choice
- o Contact name , phone number, and email address,
- o Special delivery requirements
- o Requested delivery date
- o Signature of authorized purchaser
- o Please note the Hewlett Packard must be listed as the vendor.

### **Tax-Exempt Certificate Requirements**

All tax-exempt accounts should have a tax-exempt certificate on file with Hewlett-Packard to avoid having sales tax added to their invoice. This certificate needs to be provided only once. If you are ordering for the first time, please include with your order or account application.

### **Free Configuration Services (excludes non-configure to order IPG product)**

When you purchase Hewlett-Packard products through Public Sector, you become eligible for configuration of Hewlett-Packard hardware options and upgrades at NO extra cost. To request this free service, clearly state on your purchase order which options and upgrades you would like installed and list each configuration separately. Once an order is placed, in-stock items require 2-4 business days for installation.

### **HP Credit**

Hewlett-Packard's financing programs can help your agency purchase or lease HP solutions. To inquire more about a customized financial solution proposal call your Telesales Representative.

### **Order Tracking and Status**

All orders are entered within 24 hours of receipt and are scheduled to ship on a first in first out basis. Orders are shipped within seven days of receipt provided all items are in stock and all necessary information has been properly included on your purchase order. (Remember that ship complete orders can be delayed if a particular item is not currently in stock.) To inquire about the status of your order, you can either log on to [http://welcome.hp.com/country/us/eng/solutions/pub\\_sector.html](http://welcome.hp.com/country/us/eng/solutions/pub_sector.html) or call your corresponding Customer Service Representative.

### **Returned Merchandise**

A return material authorization number (RMA) is required for all returns to be processed. Returns may be requested within 30 days of shipment. Please call your Public Sector Customer Service Representative in order to have an RMA assigned. Please have a copy of the packing slip available when you call.

### **Customer Relationship and Sales For Public Sector Sales**

Fax: 800-825-2329

Education: 800-888-3224

Higher Ed: 877-480-4433

STL: 888-202-4682

Returns: 800-888-3224 x1060



# PRICE QUOTATION

Quote Number: 1047402-3

September 11, 2006

Provided by: Buddy Cobbs

Page 1 of 2

buddy cobbs

STATE OF WEST VIRGINIA

Contract: STATE AND LOCAL PRICELIST (S&LWEB)

Product availability and product discontinuation is subject to change without notice. The prices in this quotation are valid for 30 days from quote date above. Please include the quote number and contract from this quote on the corresponding purchase order.

Item	Part No.	Description	Qty.	Unit Price	Extended
Group:					
1.	PM215AV	PM215AV - HP Compaq dc5100 Small Form Factor	20	\$522.03	\$10,440.60
	PM215AV	Product - HP Compaq dc5100 Small Form Factor-			
	PM908AV#ABA	Operating system - Genuine Windows® XP Professional-			
	PM891AV	Thermal kit - Thermal Kit - SFF-			
	PM904AV#ABA	Country kit - Country Kit dc5100-			
	AF895AV	Processor - Intel® Pentium® 4 531 (3.0GHz, 1MB, 800MHz)			
	PM848AV	Memory - 512MB PC2-3200 DDR2-400 -			
	PM797AV	Video/graphics - Integrated Intel® Media Accelerator 90			
	PM803AV	Removable storage - No Floppy Drive SFF-			
	PM822AV	Hard drives - 40GB Serial ATA 7200RPM HD 1st-			
	PM814AV	Optical drive - 48x DVD/CDRW Combo Drive -			
	PM855AV#ABA	Network card - Integrated Broadcom NIC			
	PM911AV	Mouse - HP PS/2 scroll mouse (carbonite)-			
		Keyboard - Standard keyboard PS/2-			
		Restore CD - dc5100 Restore CD-			
		Warranty - Warranty - 3 years - parts, labor, onsite - next business day			
2.	U4863E	9x5, 4-Hour Response On-Site Coverage, desktop only - 3 Years (electronic)	20	\$78.00	\$1,560.00
SUB TOTAL :					\$12,000.60

TOTAL PRICE :

\$12,000.60

## GET MORE FOR YOUR MONEY

Make the most of your budget and protect against technology obsolescence. Lease these HP products with a purchase price of \$12,000.60 for 36 months for as little as \$388.70 per month. At the end of the lease, send the equipment back to HP Financial Services and upgrade to new technology or purchase the equipment at its fair market value.\*

## GET MORE WITH HP FINANCIAL SERVICES

Note: For detailed warranty information, please link to "URL" for more information [www.hp.com/go/specificwarrantyinfo](http://www.hp.com/go/specificwarrantyinfo). Sales taxes added where applicable. Freight is FOB Destination.



# PRICE QUOTATION

Quote Number: 1047402-3

September 11, 2006

Provided by: Buddy Cobbs

Page 2 of 2

buddy cobbs

STATE OF WEST VIRGINIA

Contract: STATE AND LOCAL PRICELIST (S&LWEB)

Product availability and product discontinuation is subject to change without notice. The prices in this quotation are valid for 30 days from quote date above. Please include the quote number and contract from this quote on the corresponding purchase order.

Item	Part No.	Description	Qty.	Unit Price	Extended
------	----------	-------------	------	------------	----------

For more information, call Hewlett-Packard Financial Services Company at 1-888-277-5942 and talk to a financial services representative who specializes in supporting government and education entities.

\* The monthly payment amount is for a lease commencing on or before 10/11/2006 with a term of 36 months and a fair market value purchase option at the end of the lease term. This and other leasing and financing options are available through Hewlett-Packard Financial Service Company (HPFSC) or one of its affiliates to qualified education and state and local customers in the U.S. and subject to credit approval and execution of standard HPFSC documentation. Fees and other restrictions may apply. This is not a commitment to lease. Rates and payments are subject to change at any time without notice. Leasing and financing options for Federal governmental agencies (subject to a \$50,000 minimum) are available from Hewlett-Packard Company.

Comments:

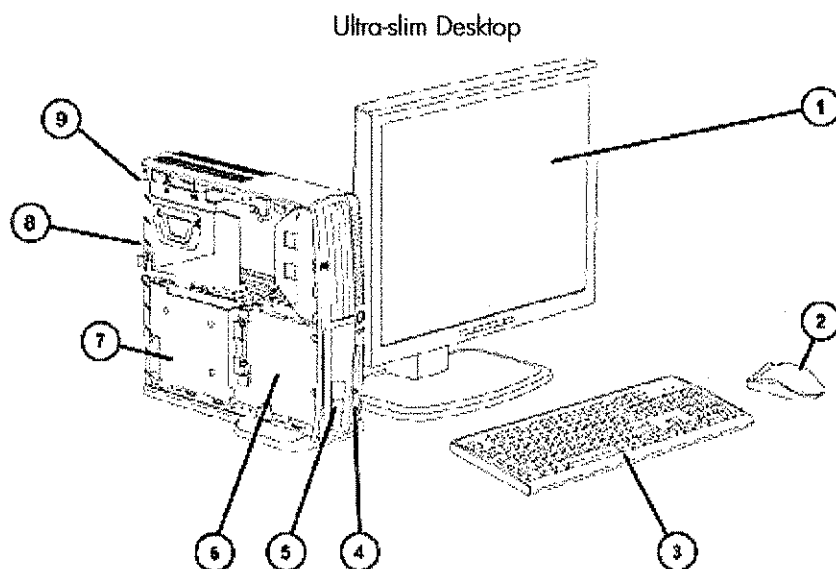
Note: For detailed warranty information, please link to "URL" for more information [www.hp.com/go/specificwarrantyinfo](http://www.hp.com/go/specificwarrantyinfo).  
Sales taxes added where applicable. Freight is FOB Destination.

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## Overview

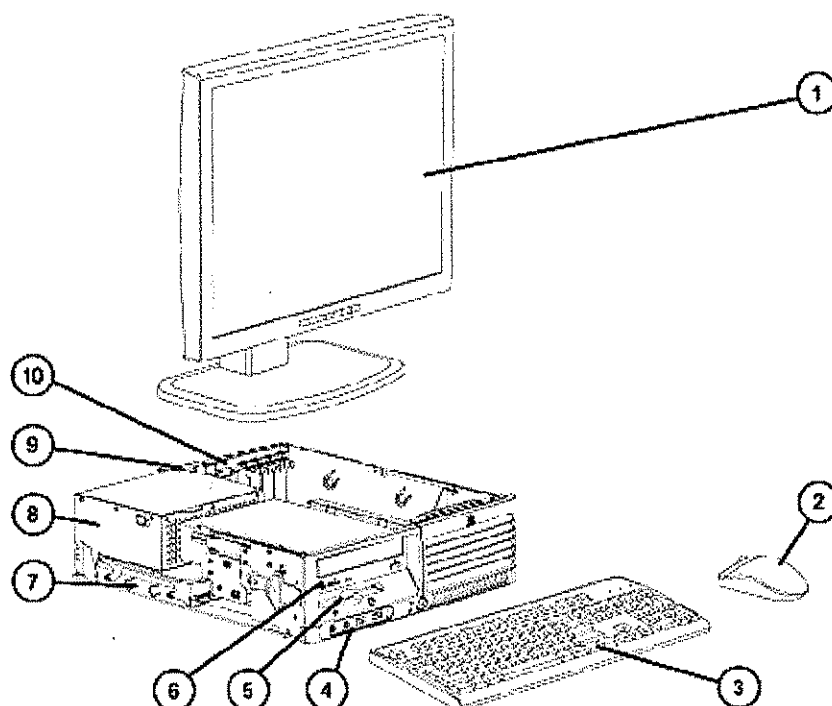
### HP Compaq dc7600 Business PC

HP recommends Windows® XP Professional



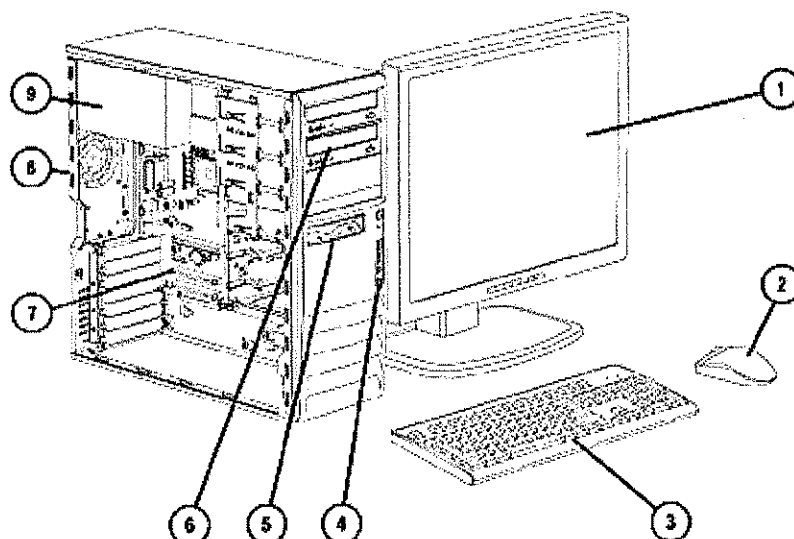
- |   |   |
|---|---|
| 1. Monitor (sold separately)                      | 7. 200-watt power supply with power harness cable incorporating 1 SATA device power connector   |
| 2. 2-Button Scroll Mouse (PS/2 or USB)            | 8. 1 full-height PCI slot (optional)  |
| 3. HP Standard Keyboard (PS/2 or USB)             | 9. Rear I/O: 6 USB 2.0, 1 optional serial port (available via adapter), 1 optional parallel port (available via adapter), 1 optional DVI graphics port (available via DVI ADD2 adapter), 2 PS/2, 1 RJ-45, 1 VGA, audio in/out |
| 4. Front I/O: 2 USB 2.0, headphone and microphone |   |
| 5. 1 MultiBay Drive Bay                           |   |
| 6. 1 3.5" internal bay                            |   |

### Small Form Factor



1. Monitor (sold separately)
  2. 2-Button Scroll Mouse (PS/2 or USB)
  3. HP Standard Keyboard (PS/2 or USB)
  4. Front I/O: 2 USB 2.0, headphone and microphone
  5. 1 3.5" external bay for optional diskette drive, HP 16-in-1 Media Card Reader, or other 3.5" device
  6. 1 5.25" external bay for optional optical drive, or other 5.25" device (bay tilts up for device removal and insertion)
  7. 1 3.5" internal bay
  8. 240-watt power supply with power harness cable incorporating 2 SATA, 1 PATA and 1 FDD device power connectors
  9. Rear I/O: 6 USB 2.0, 1 standard serial port, 1 optional serial port, 1 parallel port, 2 PS/2, 1 RJ-45, 1 VGA, audio in/out
  10. 2 low profile PCI slots, 1 low profile PCI Express x1 slot, 1 low profile PCI Express x16 slot standard\*; 2 full-height PCI slots optional
- \*NOTE: With riser card option, express x1 and x16 slots are inaccessible.

### Convertible Minitower



1. Monitor (sold separately)
2. 2-Button Scroll Mouse (PS/2 or USB)
3. HP Standard Keyboard (PS/2 or USB)
4. Front I/O: 2 USB 2.0, headphone and microphone
5. 1 3.5" external bay for optional diskette drive, HP 16-in-1
6. 1 5.25" external bay for optional optical drive, or other 5.25" device (bay tilts up for device removal and insertion)
7. 2 full-height PCI slots, 1 full-height PCI Express x1 slot, 1 full-height PCI Express x16 slot, 2 additional full-height PCI slots optional
8. Rear I/O: 6 USB 2.0, 1 standard serial port, 1 optional serial port, 1 parallel port, 2 PS/2, 1 RJ-45, 1 VGA, audio in/out,

Media Card Reader, or other 3.5" device

6. 3 5.25" external bays and 2 3.5" internal bays

mic in

9. 365-watt power supply with power harness cable incorporating 4 SATA, 3 PATA and 1 FDD device power connectors

\* NOTE: HP supplied configuration with 5.25" PATA optical device provides 1 additional spare PATA device data-connector on ribbon cable.

## At A Glance

- Designed for long-term, networked deployment within medium and large organizations in commercial business, finance and public sector industries
- Choice of operating systems
- Value-added software available pre-installed:
  - HP ProtectTools Embedded Security (purchased separately)
  - HP Client Manager (<http://h18000.www1.hp.com/im/index.html>)
  - Altiris Local Recovery
  - Norton AntiVirus with 60 day Live Update Subscription
- Fully compatible software OS image across all three models (Ultra-slim Desktop, Small Form Factor, and Convertible Minitower)
- HP BIOS for security, manageability and software image stability
- Standard 3-years parts, 3-years labor and 3-years on-site warranty services (terms and conditions vary by country; certain restrictions and exclusions apply)
- Tool-less serviceability, HP Insight Diagnostics software, and HP Restore Plus ! CD for fast repair
- Selected configurations with global availability easily set up and ordered through HP.com Business to Business portals (<http://h10019.www1.hp.com/business-site/index.html>)
- Tailored HP Factory Express deployment and lifecycle services available (<http://h71028.www7.hp.com/enterprise/cache/97688-0-0-225-121.aspx>)
- Intel technologies introduced in 2005: 945G Express chipset, Pentium 4, Pentium D and Celeron processors
- Embedded TPM1.2 compliant security module (requires HP ProtectTools Embedded Security software)
- Support for SMART III 1.5Gb/s and 3.0Gb/s Serial ATA hard drives
- In compliance with the IEEE 1680 (EPEAT) standard at the SILVER level, see <http://www.epeat.net/>

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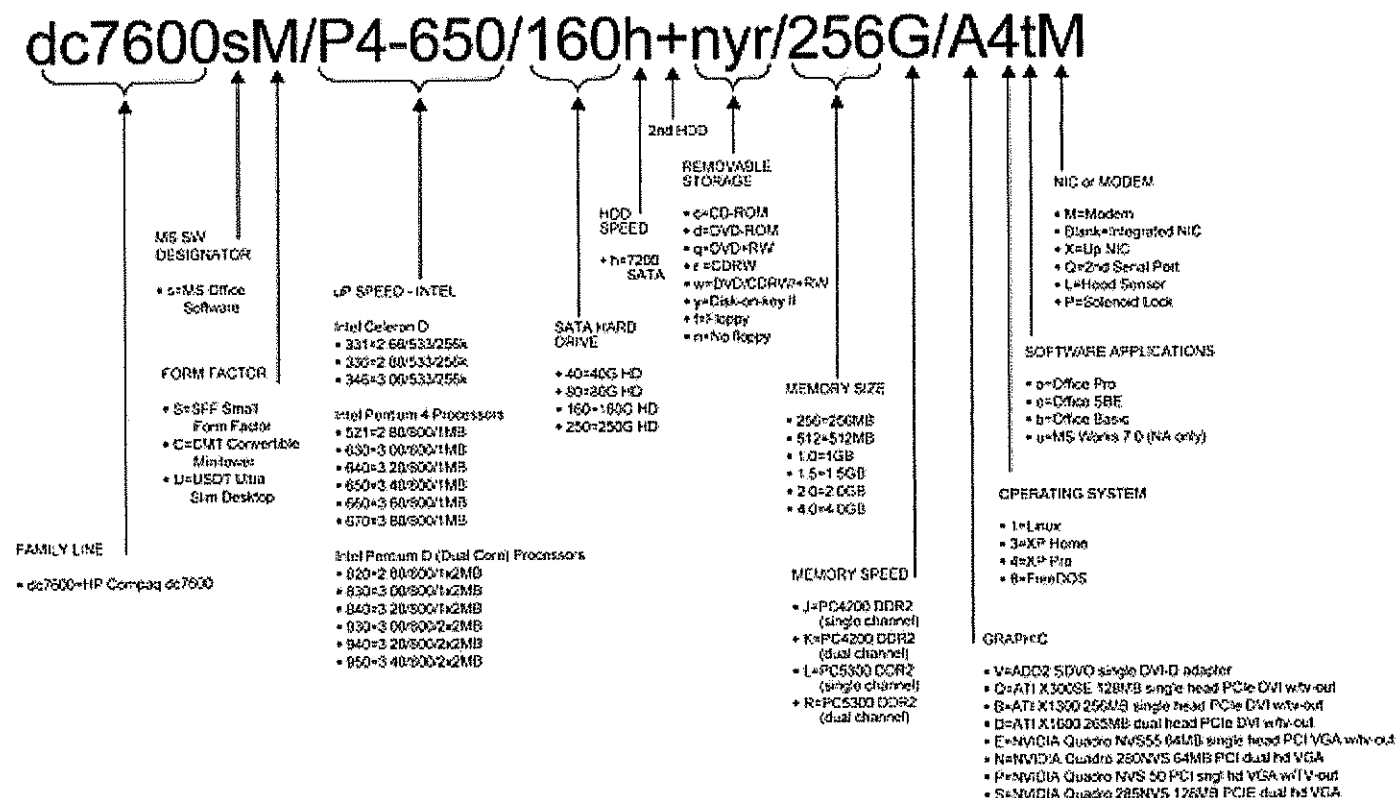
## Configurable Components - Select Models (localized by Regions)

### Model Key and Example

NOTE: This diagram is an example that illustrates how to read the model number.

It is not intended to give every available configuration choice specified in the body of this document and may include references to modules that are out of date and no longer available.





## Smart Buy Promotion Models

### Ultra-slim Desktop

EN257UT#ABA	PROMO dc7600U/P4-820/80hnc/512Kv4 US
EN262UT#ABA	PROMO dc7600U/P4-820/80hnc/512K US (NVS55)
EN264UT#ABA	PROMO dc7600U/PD-945/80hnc/1.0K4 US

### Small Form Factor

EN256UT#ABA	PROMO dc7600S/PD-820/80hnd/512K4P US
EN258UT#ABA	PROMO dc7600S/P4-945/80hnc/512K4 US
EN265UT#ABA	PROMO dc7600S/P4-945/80hnc/1.0Kv4 US (ADD2)

### Convertible Minitower

EN261UT#ABA	PROMO dc7600C/PD-820/80hnd/512K4P US
EN259UT#ABA	PROMO dc7600C/P4-945/80hnc/512K4 US
EN268UT#ABA	PROMO dc7600C/P4-945/80hnc/1.0Kv4 US (ADD2)
EN290UT#ABA	PROMO dc7600C/PD-820/160hnc/1.0R US (x1300)
EN263UT#ABA	PROMO dc7600C/P4-945/160hnc/1.0K US (x1300)
EN260UT#ABA	PROMO dc7600CPD-945/250hnc/1.0KS4 US

(NVS285)  
 EN266UT#ABA PROMO dc7600CPD-945/250hmq/1.0K/D4  
 US (x1600)

Standard Models**Small Form Factor**

WW-AF854AW#ABA	dc7600S/C336/40hnc/256J/4 US
AG156AW#ABA	dc7600S/P4-630/40hnc/512K/4 US
AF878AA#ABA	dc7600S/P4-521/40hnc/512J/4 US
AF879AA#ABA	dc7600S/P4-521/40hnd/512J/4 US
WW-AF850AW#ABA	dc7600S/P4-630/80hnc/512J/4 US
WW-AF851AW#ABA	dc7600S/P4-630/80hnd/512J/4 US
WW-AF852AW#ABA	dc7600S/P4-630/80hnr/512J/4 US
AF877AA#ABA	dc7600S/P4-640/80hnr/512K/4 US
WW-AF853AW#ABA	dc7600S/P4-640/80hnr/1.0K/4 US
EN130UA#ABA	dc7600S/P4-630/80hnc/1.0K/4 US
EN312UA#ABA	dc7600S/P4-541/80hnd/1.0k/4 US
EN313UA#ABA	dc7600S/P4-820/80hnd/1.0k/4 US
EN314UA#ABA	dc7600S/P4-820/80hnr/1.0k/4 US
EN315UA#ABA	dc7600S/P4-945/80hnr/1.0K/4 US

**Convertible Minitower**

AF873AA#ABA	dc7600C/P4-521/40hnc/512J/4 US
AF874AA#ABA	dc7600C/P4-521/40hnr/512J/4 US
AG155AW#ABA	dc7600C/P4-630/40hnc/512K/4 US
WW-AF842AW#ABA	dc7600C/P4-630/80hnd/512J/4 US
WW-AF843AW#ABA	dc7600C/P4-630/80hnc/512J/4 US
WW-AF845AW#ABA	dc7600C/P4-630/80hnr/512J/4 US
WW-AF844AW#ABA	dc7600C/P4-640/80hnd/512J/4 US
AF872AA#ABA	dc7600C/P4-640/80hnr/512K/4 US
WW-AF846AW#ABA	dc7600C/P4-640/80hnr/1.0K/4 US
EN132UA#ABA	dc7600C/P4-630/80hnc/1.0K/4 US
EN316UA#ABA	dc7600C/P4-541/80hnd/1.0k/4 US
EN317UA#ABA	dc7600C/P4-820/80hnd/1.0k/4 US
EN318UA#ABA	dc7600C/P4-820/80hnr/1.0k/4 US
EN319UA#ABA	dc7600C/P4-945/80hnd/1.0k/4 US
EN320UA#ABA	dc7600C/P4-945/80hnr/1.0k/4 US

**Ultra-slim Desktop**

WW-AF918AW#ABA	dc7600U/C336/40hnc/256J/4 US
AF880AA#ABA	dc7600U/P4-521/40hn/256J/4 US
AF881AA#ABA	dc7600U/P4-521/40hnc/512J/4 US
AG157AW#ABA	dc7600U/P4-630/40hn/256J/4 US
AG158AW#ABA	dc7600U/P4-630/40hnc/512K/4 US
WW-AF857AW#ABA	dc7600U/P4-630/80hnd/512J/4 US
EN131UA#ABA	dc7600U/P4-630/80hnc/1.0K/4 US
EB307UA#ABA	dc7600U/P4-541/80hn/1.0k/4 US

EB309UA#ABA	dc7600U/P4-820/80hn/1.0k/4 US
EB308UA#ABA	dc7600U/P4-541/80hnc/1.0k/4 US
EB310UA#ABA	dc7600U/P4-820/80hnc/1.0k/4 US
EB311UA#ABA	dc7600U/P4-820/80hnd/1.0k/4 US

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## Configurable Components

**Operating System -**   Genuine Windows XP Professional SP2  
**One of the following**   Genuine Windows XP Home SP2  
                                      SuSE Linux Personal 9.3 OEM (delivered on CDs with system, not pre-installed)- WW except Asia  
                                      FreeDOS  
 NOTE: Microsoft Windows NT 4.0 and Microsoft Windows 2000 are not available on these systems. Some drivers for Windows 2000 are available for download from hp.com.

<b>Value-added Software (not included with FreeDOS)</b>	HP ProtectTools Embedded Security software	Microsoft Office 2003 Professional
	HP Client Management Solutions (visit <a href="http://www.hp.com/go/easydeploy">http://www.hp.com/go/easydeploy</a> )	Microsoft Office 2003 Small Business
	HP Restore CD	Microsoft Works 7.0
	HP Insight Diagnostics	Microsoft Internet Explorer
	Computer Setup Utility	Dantz Retrospect and Roxio DigitalMedia Plus (supplied with CD-RW drive, Combo drive or DVD+/-RW drive)
	Altiris Local Recovery	Roxio Cineplayer (supplied with DVD-ROM drive)
	Norton AntiVirus 2005 with 60 day Live Update Subscription	QuickBooks Simple Start
	Microsoft Office 2003 Basic	
Microsoft Office 2003 Personal		

<b>Value-added Services and Features</b>	HP Stable Platform Program	Factory Express Deployment and Lifecycle Services
	Business-to-Business Portals	TPM 1.2 Security
	HP Global Series Services	Tool-less Serviceability

**Service and Support**   On-site Warranty and Service <sup>Note 1</sup>: This three-year (3-3-3), limited warranty and service offering delivers three years of parts, labor and on-site repair. Response time is next business-day <sup>Note 2</sup> and includes free telephone support <sup>Note 3</sup> 24 x 7. Global coverage <sup>Note 2</sup> ensures that any product purchased in one country and transferred to another non-restricted country will remain fully covered under the original warranty and service offering. Some countries/regions do not offer one year onsite and labor.  
 NOTE 1: Terms and conditions may vary by country. Certain restrictions and exclusions apply.  
 NOTE 2: On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider, and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country.  
 NOTE 3: Technical telephone support applies only to HP-configured, HP and HP-qualified, third-party hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries.

	Ultra-slim Desktop	Small Form Factor	Convertible Minitower
<b>Dimensions</b>			
Chassis Dimensions (H x W x D)	2.95 x 12.4 x 13.18 in (7.49 x 31.50 x 33.48 cm)	3.95 x 13.3 x 14.9 in (10.03 x 33.78 x 37.85 cm)	17.65 x 6.6 x 17.8 in (44.83 x 16.76 x 45.21 cm)
System weight	13.2 lb (5.99 kg)	19.5 lb (8.85 kg)	32.5 lb (14.74 kg)
System volume	7.9 liters	12.8 liters	33.8 liters
Shipping weight	19 lb (8.62 kg)	30 lb (13.61 kg)	43 lb (19.50 kg)
Maximum supported weight (desktop orientation)	77.1 lb (35 kg)	77.1 lb (35 kg)	77.1 lb (35 kg)
Shipping box dimensions (H x W x D)	12.63 x 18.75 x 20 in (32.08 x 47.63 x 50.8 cm)	12.63 x 18.75 x 20 in (32.08 x 47.63 x 50.8 cm)	23.38 x 13.06 x 22.88 in (59.39 x 33.17 x 58.12 cm)
Power Supply	190W power supply – Active PFC	240W power supply – Active PFC	365W power supply - Active PFC
<b>Ports</b>			
USB 2.0	8 (2 front, 6 rear)	8 (2 front, 6 rear)	8 (2 front, 6 rear)
Serial	1 optional via Serial & parallel I/O adapter	1 standard with 2nd optional	1 standard with 2nd optional
Parallel	1 optional via Serial & parallel I/O adapter	1	1
PS/2	1 keyboard, 1 mouse	1 keyboard, 1 mouse	1 keyboard, 1 mouse
Video	analog for integrated graphics	analog for integrated graphics	analog for integrated graphics
DVI output	available via ADD2 card or PCI card	available via ADD2 card, PCI-E x16 card, or PCI card	available via ADD2 card, PCI-E x16 card, and PCI card
Support for Multi-Monitor	available via ADD2 card or PCI card	available via ADD2 card, PCI-E x16 card, or PCI card	available via ADD2 card, PCI-E x16 card, and PCI card
Audio	Front - mic and headphone Rear - line in, line out	Front - mic and headphone Rear - line in, line out	Front - mic and headphone Rear - line in, line out, mic in
NIC (RJ-45)	Integrated Broadcom NetXtreme Gigabit Ethernet for HP	Integrated Broadcom NetXtreme Gigabit Ethernet for HP	Integrated Broadcom NetXtreme Gigabit Ethernet for HP

**Processor and Speed\***  
One of the following

**Intel Celeron D Processors:**

Intel Celeron D 331 Processor (2.66-GHz, 256K L2 cache, 533-MHz FSB)	X	X	X
Intel Celeron D 336 Processor (2.80-GHz, 256K L2 cache, 533-MHz FSB)	X	X	X
Intel Celeron D 336 Processor (3.0-GHz, 256K L2 cache, 533-MHz FSB)	X	X	X
Intel Celeron D 346 Processor (3.06-GHz, 256K L2 cache, 533-MHz FSB)	X	X	X

**Intel Pentium 4 Processors with HT Technology:**

Intel Pentium 4 521 Processor (2.8-GHz, 1-MB L2 cache, 800-MHz FSB)	X	X	X
Intel Pentium 4 524 Processor (3.06-GHz, 1-MB L2 cache, 533-MHz FSB)	X	X	X
Intel Pentium 4 541 Processor (3.2-GHz, 1-MB L2 cache, 800-MHz FSB)	X	X	X
Intel Pentium 4 620 Processor (2.8-GHz, 2-MB L2 cache, 800-MHz FSB)	X	X	X
Intel Pentium 4 630 Processor (3.0-GHz, 2-MB L2 cache, 800-MHz FSB)	X	X	X
Intel Pentium 4 631 Processor (3.0-GHz, 2-MB L2 cache, 800-MHz FSB)	X	X	X
Intel Pentium 4 640 Processor (3.2-GHz, 2-MB L2 cache, 800-MHz FSB)	X	X	X
Intel Pentium 4 641 Processor (3.2-GHz, 2-MB L2 cache, 800-MHz FSB)	X	X	X
Intel Pentium 4 650 Processor (3.4-GHz, 2-MB L2 cache, 800-MHz FSB)	X	X	X
Intel Pentium 4 651 Processor (3.4-GHz, 2-MB L2 cache, 800-MHz FSB)	X	X	X
Intel Pentium 4 660 Processor (3.6-GHz, 2-MB L2 cache, 800-MHz FSB)			X
Intel Pentium 4 661 Processor (3.6-GHz, 2-MB L2 cache, 800-MHz FSB)	X	X	X
Intel Pentium 4 670 Processor (3.8-GHz, 2-MB L2 cache, 800-MHz FSB)			X

USDT    SFF    CMT

**Intel Pentium D Dual Core Processors:**

Intel Pentium D 805 Dual Core Processor (2.66-GHz, 2x1MB L2 cache, 533-MHz FSB)	X	X	X
Intel Pentium D 820 Dual Core Processor (2.8-GHz, 2x1MB L2 cache, 800-MHz FSB)	X	X	X
Intel Pentium D 830 Dual Core Processor (3.0-GHz, 2x1MB L2 cache, 800-MHz FSB)			X
Intel Pentium D 840 Dual Core Processor (3.2-GHz, 2x1MB L2 cache, 800-MHz FSB)			X
Intel Pentium D 915 Dual Core Processor (2.8-GHz, 2x2MB L2 cache, 800-MHz FSB)	X	X	X
Intel Pentium D 925 Dual Core Processor (3.0-GHz, 2x2MB L2 cache, 800-MHz FSB)	X	X	X
Intel Pentium D 930 Dual Core Processor (3.0-GHz, 2x2MB L2 cache, 800-MHz FSB)	X	X	X
Intel Pentium D 940 Dual Core Processor (3.2-GHz, 2x2MB L2 cache, 800-MHz FSB)	X	X	X
Intel Pentium D 945 Dual Core Processor (3.4-GHz, 2x2MB L2 cache, 800-MHz FSB)	X	X	X
Intel Pentium D 950 Dual Core Processor (3.4-GHz, 2x2MB L2 cache, 800 MHz FSB)	X	X	X

\*NOTE: Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families.

Memory	945G Express chipset
	DDR2 SYNCH DRAM NONECC MEMORY
	Memory upgrades are accomplished by adding single or multiple DIMMs of the same or varied sizes. This chart does not represent all possible memory configurations. The Intel 945G Express chipsets support non-ECC DDR2 PC2-4200 (533-MHz) and PC2-5300 (667-MHz) memory.
	HP recommends dual-channel symmetric configurations for maximum performance. For best performance, add the same amount of total memory to each channel and do not mix speeds. For dual-channel symmetric performance, the total amount of memory in each channel must be equal. If speeds are mixed, speed will default to the slowest DIMM.

*Ultra-Slim Desktop*

Maximum Memory	Supports up to 3-GB of DDR2 SYNCH DRAM. <i>Not all memory configurations possible are represented below.</i>
----------------	--

DIMM Size	Slot		
	Channel A	Channel B	
	1	2	3
256-MB	256-MB		
512-MB	512-MB		
512-MB (dual-channel symmetric)	256-MB		256-MB
1-GB	1-GB		
1-GB (dual channel symmetric)	512-MB		512-MB
1-GB (dual channel symmetric)	512-MB	256-MB	256-MB
2-GB (dual channel symmetric)	1-GB	512-MB	512-MB
3-GB maximum	1-GB	1-GB	1-GB

*Small Form Factor and Convertible Minitower***Maximum Memory**

Supports up to 4-GB of DDR2 SYNCH DRAM. *Not all memory configurations possible are represented below.*

NOTE: Above 3-GB, all memory may not be available due to system resource requirements.

DIMM Size	Slot			
	Channel A		Channel B	
	1	2	3	4
256-MB	256-MB			
512-MB	512-MB			
512-MB (dual-channel symmetric)	256-MB		256-MB	
1-GB	1-GB			
1-GB (dual-channel symmetric)	512-MB		512-MB	
1-GB (dual-channel symmetric)	256-MB	256-MB	512-MB	
2-GB (dual-channel symmetric)	1-GB		512-MB	512-MB
2-GB (dual-channel symmetric)	512-MB	512-MB	512-MB	512-MB
4-GB maximum (dual-channel symmetric)	1-GB	1-GB	1-GB	1-GB

**Memory Configurations –**

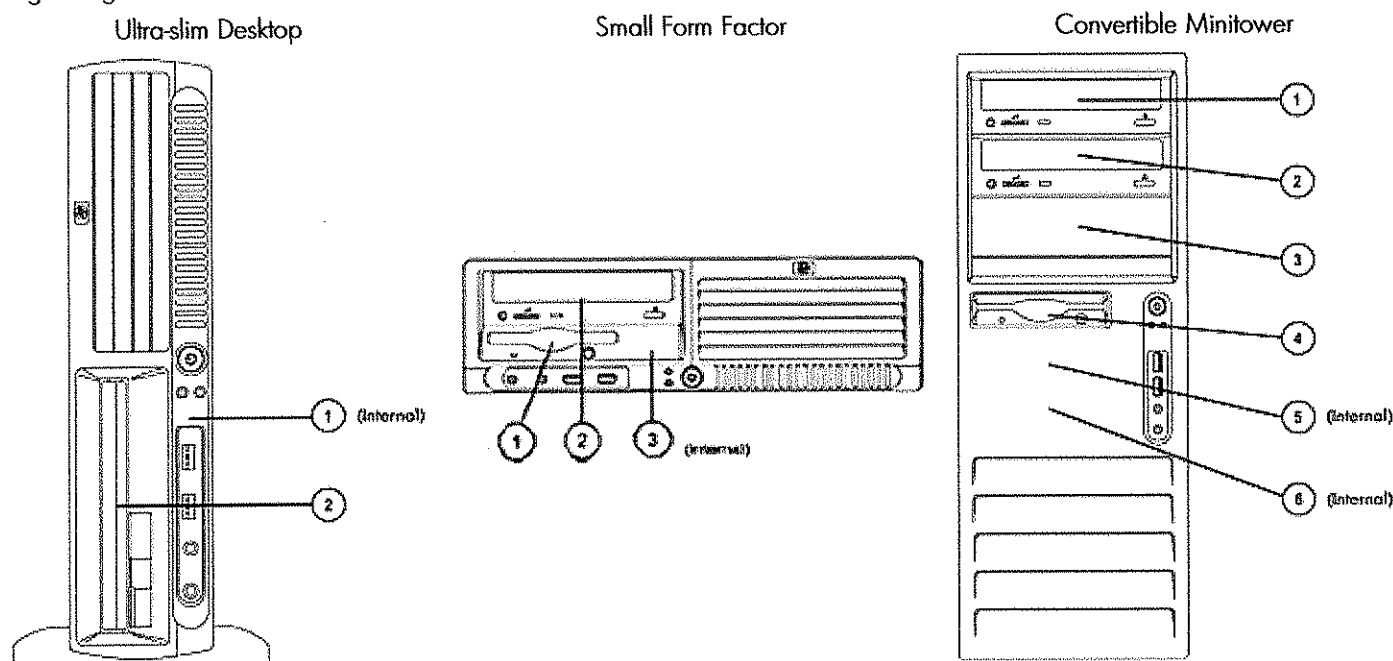
One of the following

	USDT	SFF	CMT
256-MB DDR2 Synch Dram PC2-4200 (533-MHz) Non ECC (1 x 256)	X	X	X
512-MB DDR2 Synch Dram PC2-4200 (533-MHz) Non ECC (1 x 512)	X	X	X
512-MB DDR2 Synch Dram PC2-4200 (533-MHz) Non ECC (2 x 256)	X	X	X
1-GB DDR2 Synch Dram PC2-4200 (533-MHz) Non ECC (1 x 1GB)	X	X	X
1-GB DDR2 Synch Dram PC2-4200 (533-MHz) Non ECC (2 x 512)	X	X	X
2-GB DDR2 Synch Dram PC2-4200 (533-MHz) Non ECC (4 x 512)		X	X
3-GB DDR2 Synch Dram PC2-4200 (533-MHz) Non ECC (3 x 1GB)	X		
4-GB DDR2 Synch Dram PC2-4200 (533-MHz) Non ECC (4 x 1GB)		X	X
256-MB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (1 x 256)	X	X	X
512-MB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (1 x 512)	X	X	X
512-MB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (2 x 256)	X	X	X
1-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (2 x 512)	X	X	X
2-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (4 x 512)		X	X

Expandability	USDT	SFF	CMT
PCI slots	Optional with riser card: 1 full-height (4.2"), length (6.6")	2 low-profile (2.5"), length (6.6") standard; 2 full-height (4.2"), length (6.875") via optional riser card. NOTE: With riser card option, express x1 and x16 slots are not accessible.	2 full-height (4.2"), length (13.4") standard; (2 additional full-height slots available via optional extender card)
Max power per slot	25W	25W	75W
PCI Express x16 slot	–	1 low-profile (2.5"), length (6.6")	1 full-height (4.2"), length (10.5")

Max power per slot	N/A	25W	75W
PCI Express x1 slot	-	1 low profile (2.5"), length (6.6")	1 full-height (4.2"), length (13.4")
Max power per slot	N/A	10W	10W
External Bays	0 (use MultiBay)	2	4
3.5"	N/A	1	1
5.25"	N/A	1 (length 8.189")	3 (2 - length 8.189", 1 - length 5.71")
MultiBay	1 standard	none	none
IDE	1 IDE for MultiBay I (12 mm)	1 IDE connector for opticals	1 IDE connectors for opticals
Internal 3.5" HDD Bays	1	1	2
Hard Drive Controller (PCI) Supported	Serial ATA (support for SATA 1.5-Gb/s and 3.0-Gb/s hard drives)		
Hard Drive Interfaces Supported	1 Serial ATA interface	2 Serial ATA interfaces	2 Serial ATA interfaces

## Storage Diagrams



## Storage – Drive Support

	USDT			SFF			CMT	
	MultiBay Drive Bay	3.5" Serial ATA Hard Drive	Diskette Drive or Media Card Reader (optional)	Storage Drive Bay	3.5" Serial ATA Hard Drives	Diskette Drive or Media Card Reader	Storage Drive Bay	3.5" Serial ATA Hard Drives
Quantity Supported	1	1	1	1	2	1	2	2
Position Supported	2	1	1	2	1, 3	4	1, 2, 3	4, 5, 6
Controller	IDE	SATA	Diskette	IDE	SATA	Diskette	IDE	SATA

		USDT	SFF	CMT
Hard Drive	40-GB SATA 1.5-Gb/s Hard Drive (7200 rpm)	X	X	X
One or two of the following	80-GB SATA 3.0-Gb/s Hard Drive (7200 rpm)	X	X	X
	160-GB SATA 3.0-Gb/s Hard Drive (7200 rpm)	X	X	X

160-GB SATA 3.0-Gb/s Hard Drive (7200 rpm)	X	X	X
250-GB SATA 3.0-Gb/s Hard Drive (7200 rpm)	X	X	X
2nd hard drive, 80-GB SATA 3.0-Gb/s Hard Drive (7200 rpm)		X	X
2nd hard drive, 160-GB SATA 3.0-Gb/s Hard Drive (7200 rpm)		X	X
2nd hard drive, 250-GB SATA 3.0-Gb/s Hard Drive (7200 rpm)		X	X

**Removable Storage –**  
One or more of the  
following depending on  
form factor (see Storage  
section below)

**Diskette Drives**

1.44-MB Diskette Drive		X	X
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**Media Reader**

HP 16-in-1 Media Reader (PCI card supplies internal USB connection)		X	X
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**Optical Drives**

48X CD-ROM Drive		X	X
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48X/32X/48X CD-RW Drive		X	X
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48X/32X Combo CD-RW/DVD-ROM Drive		X	X
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16X/48X DVD-ROM Drive		X	X
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16X DVD+/-RW LightScribe Drive (Double Layer/Dual Format)		X	X
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**MultiBay**

MultiBay 24X CD-ROM Drive	X		
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MultiBay 24X/24X/24X/8X DVD-CDRW Combo Drive	X		
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MultiBay 8X/24X DVD-ROM Drive	X		
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**Security**

1.2 TPM Embedded Security Chip integrated with Broadcom NIC	X	X	X
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HP ProtectTools Embedded Security Software	X	X	X
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Serial, Parallel, USB Enable/Disable (via BIOS)	X	X	X
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Removable Media Write/Boot Control	X	X	X
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Power-On Password (via BIOS)	X	X	X
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Setup Password (via BIOS)	X	X	X
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Solenoid Lock (electronic hood lock)		X	X
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Hood Removal Sensor	X	X	X
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HP Desktop Security lock kit (lock and cable)	X	X	X
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Security cable with Kensington lock	X	X	X
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**NIC**

Broadcom NetXtreme Gigabit Ethernet integrated on system board	X	X	X
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Intel PRO/1000 GT Gigabit PCI Adapter (full height bracket)			X
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Intel PRO/1000 GT Gigabit PCI Adapter (low profile bracket)	X	X	
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Intel Pro 1000GTGb NIC PCI	X	X	X
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**Wireless**

Wireless A+G PCI Card (full height bracket)	X*		X
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Wireless A+G PCI Card (low profile bracket)		X	
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NOTE: \*Requires optional PCI riser card.

**Modem**

2006 Agere PCI 56K International SoftModem (full height)	X*	X*	X
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2006 Agere PCI 56K International SoftModem (low profile)		X	
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NOTE: \*Requires optional PCI riser card.

**Graphics**

Integrated Intel Graphics Media Accelerator 950	X	X	X
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DVI ADD2 SDVO single head Graphics Adapter for USDT	X		
DVI ADD2 SDVO single head Graphics Adapter (PCI-E x16)		X	X
ATI RADEON X300 SE PCI Express 128-MB DDR single head DVI with TV out		X	X
ATI RADEON X1300 256MB PCIe DVI w/TV		X	X
ATI RADEON X1600XT 256MB, full-height PCIe, dual DVI w/TV-out			X
NVIDIA Quadro NVS 280 64-MB PCI dual head VGA	X*	X	X
NVIDIA Quadro NVS 285 128-MB PCIe x16 dual head VGA		X	X
NVIDIA Quadro 55 NVS 64MB PCI low profile DVI w/TV-Out	X*		

## NOTES:

\*Requires optional PCI riser card.

\*\* NVS 280 PCI can be selected as a second graphics card when the NVIDIA Quadro NVS 285 is also installed, to provide support for four monitors

Audio	Integrated High Definition audio with Realtek 2 channel ALC260 codec (all ports are stereo)	X	X	X
	Microphone and Headphone front ports	X	X	X
	Microphone rear port*	X	X	X
	Line-out and Line-In rear ports*	X	X	X
	Aux Input connection on system board	X	X	X
	Analog CD IN Support	X**		
	Internal Speaker	X	X	X
NOTE: *Rear audio ports are re-taskable as Line-in, Line-out, or Microphone-in, with optional driver, available only through download from HP support website. External speakers must be powered externally.				
** Available on USDT through MultiBay				

Keyboard – One of the following	HP PS/2 Standard Keyboard	X	X	X
	HP USB Standard Keyboard	X	X	X
	HP USB Smartcard Keyboard	X	X	X

Mouse – One of the following	PS/2 2-Button Scroll Mouse	X	X	X
	PS/2 2-Button Optical Scroll Mouse	X	X	X
	USB 2-Button Optical Scroll Mouse	X	X	X
	USB 2-Button Scroll Mouse	X	X	X

Miscellaneous	HP FireWire / IEEE 1394 PCI Card (full height)	X*	X	X
	HP FireWire / IEEE 1394 PCI Card (low profile)		X	
	PCI riser card – adds 1 full-height PCI slot	X		
	PCI riser card – adds 2 full-height PCI slots		X	
	NOTE: Low profile slots are unusable with riser card installed.			
	PCI extender card for CMT (adds 2 PCI)			X
	PCI Serial & parallel I/O adapter	X*		
	2nd serial port adapter (full height)			X
	2nd serial port adapter (low profile)		X	
	Tower stand	X	X	
	Configure dc7600 CMT in desktop orientation			X
	HP 16-In-1 3.5 Media Card Reader with PCI		X	X

NOTE: \*Requires optional PCI riser card.

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## After-Market Options (availability may vary by region)

		USDT	SFF	CMT	Part Number
Communications	Wireless LAN				
	HP Wireless A+G PCI Card (North America only)		X	X	EA118AA
	HP b1450 USB Bluetooth Wireless Printer and PC Adapter (IPG)				Q6398A#ABA
	NICs				
	Broadcom NetXtreme Gigabit Ethernet PCI Express x1 Card		X	X	EA833AA
	Intel PRO/1000 GT Gigabit PCI (full height only)			X	AG393AA
	Modem				
	2006 Agere PCI 56K International Modem		X	X	EK694AA
Graphics	Single head solutions				
	DVI ADD2 Graphics Card (PCI-E x16)		X	X	DY674A
	ATI RADEON X300 SE PCI Express 128-MB DDR DVI with TV out		X	X	DY596A
	ATI RADEON X1300 256MB DDR PCIE DVI w/TV		X	X	AG392AA
	NVIDIA Quadro 55 NVS 64MB PCI DVI w/TV Out	X*	X	X	EK561AA
	Multi head solutions				
	NVIDIA Quadro NVS 280 64-MB PCI dual head (DMS59 connector with dual VGA Y-cable)		X	X	DY599A
	NVIDIA Quadro NVS 285 128-MB PCIE x 16 dual head VGA		X	X	EE061AA
	Dual DVI Y-cable for DY599A or DY650A		X	X	DL139A
	NOTE: *Requires optional PCI riser card.				
Hard Drives	Serial ATA Hard Drives				
	80-GB SATA 3.0-Gb/s Hard Drive	X	X	X	PY276AA
	160-GB SATA 3.0-Gb/s Hard Drive	X	X	X	PY277AA
	250-GB SATA 3.0-Gb/s Hard Drive	X	X	X	PY278AA
Input/Output Devices	Keyboards				
	HP PS/2 Standard Keyboard	X	X	X	DT527A#ABA
	HP USB Standard Keyboard	X	X	X	DT528A#ABA
	HP USB BG1650 Standard Keyboard	X	X	X	DT529A#ABA
	HP USB Smartcard Keyboard	X	X	X	ED707AA#ABA
	Pointing Devices				
	HP PS/2 2-Button Scroll Mouse (Carbonite)	X	X	X	DD440B

HP PS/2 2-Button Optical Scroll Mouse	X	X	X	EY703AA
HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	X	X	X	DC172B

Memory (DIMMs)	PC2-5300 (DDR2, 667 MHz) DIMMs Non-ECC				
	1 GB PC2-5300 (DDR2-667) DIMM	X	X	X	PX976AA
	512 MB PC2-5300 (DDR2-667) DIMM	X	X	X	PX975AA
	256 MB PC2-5300 (DDR2-667) DIMM	X	X	X	PX974AA
	PC2-4200 (DDR2, 533 MHz) DIMMs Non-ECC				
	1 GB PC2-4200 (DDR2-533) DIMM	X	X	X	PV557AA
	512 MB PC2-4200 (DDR2-533) DIMM	X	X	X	PV560AA
	256 MB PC2-4200 (DDR2-533) DIMM	X	X	X	PV558AA

Monitors	CRTs				
	HP s7540 17" (16.0" vis) CRT Monitor				PF997AA#ABA
	HP v7650 17" (16.0" vis) Flat-face CRT Monitor				PF996AA#ABA
	TFTs				
	HP L1506 15" TFT Flat Panel Monitor – Analog only				PX848AA#ABA
	HP L1706 17" TFT Flat Panel Monitor – Analog only				PX849AA#ABA
	HP L1740 17" TFT Flat Panel Display – Analog/Digital				PL766AA#ABA
	HP L1755 17" TFT Flat Panel Display – Analog/Digital				PL777AA#ABA
	HP L1906 19" TFT Flat Panel Display – Analog only				PX850AA#ABA
	HP L1940T 19" TFT Flat Panel Display – Analog/Digital				EM869AA#ABA
	HP L1955 19" TFT Flat Panel Display – Analog/Digital				PD974AA#ABA
	HP L2065 20" TFT Flat Panel Display – Analog/Digital				EF227A4#ABA
	HP LP2465 24" TFT Widescreen Flat Panel Display – Analog/Digital				EF224A4#ABA
	HP L5006tm 15" Touch Screen Flat Panel Display				RB146AA#ABA
	GSA Monitors				
	HP L717g 17" GSA Flat Panel Monitor				EE191AA#ABA
	HP L919g 19" GSA Flat Panel Monitor				EE192AA#ABA
	Options				
	HP Flat Panel Speaker Bar				EE418AA
	HP CRT Monitor Multimedia Base				PM552AA
	USDT Integrated Work Center stand (no display)				DL641B

Multimedia	HP Satellite Speakers – Silver	X	X	X	ZD929AA#ABA
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Optical Drives	DVD-ROM Drive				
	16X/48X DVD-ROM Drive		X	X	PR596A
	CD-ROM Drive				
	48X Max CD-ROM Drive		X	X	DC143B
	CD-RW Drive				
	48X/32X/48X CD-RW Drive		X	X	DL975B
	Combo Drive				
	48X/32X Combo CD-RW/DVD-ROM Drive		X	X	DL976B
	DVD+/-RW Drive				
	16X DVD+/-RW LightScribe Drive (Double Layer/Dual Format)		X	X	PR595A

Removable Storage	Drive Key Options				
	512-MB HP Drive Key II (USB 2.0)	X	X	X	ED516AA
	1-GB HP Drive Key II (USB 2.0)	X	X	X	AG382AA
	Diskette and Digital Drives				
	1.44-MB USB Diskette Drive – External (Carbonite)	X	X	X	DC141B
	1.44 MB Internal Floppy Drive for CMT/MT			X	AG295AA
	1.44 MB Internal Floppy Drive for SFF/ST		X		AG296AA
	Multimedia				
	HP 16-in-1 Media Card Reader with PCI Card		X	X	EM718AA
	Removable StorCase				
MultiBay Drive Storage	StorCase Removable Hard Drive Enclosure			X	EA332AA
	Spare Carrier for StorCase Removable Hard Drive Enclosure (EA332AA)			X	RA697AA
	Multibay 1.44-MB Diskette Drive	X			DE612B
	MultiBay 24X CD-ROM Drive	X			DC513B
	MultiBay 24X/24X/24X/8X Combo DVD-ROM/CD-RW Drive	X			DL974B
	MultiBay 8X DVD-ROM Drive	X			DC515B
Security	HP MultiBay 8X DVD+/-RW (DL/DF) Drive	X			AG284AA
	Kensington lock	X	X	X	PC766A
	HP Business PC Security Lock	X	X	X	EV265AA
	Wall mount/security sleeve (USDT)	X			PA719A
	Wall mount/security sleeve (SFF)		X		PA717A
	HP USB Smartcard Keyboard	X	X	X	ED707AA
	USB Biometric Finger Reader	X	X	X	EM717AA
	Solonoid Lock		X		PT839AA
Software	Solonoid Lock			X	DE618A
	HP Credential Manager for ProtectTools (includes Embedded Security for ProtectTools TPM enabling software)	X	X	X	EM530AA (use EM531AA for 25-user license, EM532AA for 50-user license)
	HP Client Foundation Suite Includes: HP Client Manager HP Systems Insight Manager Connector Altiris Local Recovery Pro Altiris Migration Suite	X	X	X	EF117AA (use EF118AA for 1000+ licenses)
	HP Client Premium Suite Includes: HP Client Manager HP Systems Insight Manager Connector Altiris Local Recovery Pro Altiris Migration Suite Altiris Connector Solution	X	X	X	EF119AA (use EF120AA for 1000+ licenses)

Altiris Client Management Suite Level 1  
HP OpenView Connector

Brackets/Stand	HP Compaq 7000 Series Ultra-slim Desktop Integrated Work Center Stand (no display)	X			DL641B
	Tower Stand-Carbonite		X		PS797A
	5.25" Blank Bezel Kit (Carbonite 50/Bulk Pack)		X	X	DC177B
Miscellaneous Accessories	Serial and parallel I/O adapter (USDT)	X			PD825A
	2 <sup>nd</sup> serial port adapter		X	X	PA716A
	USB to serial adapter cable	X	X	X	EM449AA
	PCI riser card (USDT)	X			ED247AA
	PCI riser card (SFF)		X		PD824A
	PCI extender card (CMT)			X	DC179B
	HP FireWire / IEEE 1394 PCI Card	X	X	X	PA997A
	USB Gold Series A/B Device Cable	X	X	X	AH121AA
	Cat5e Patch Cable	X	X	X	AH122AA
	Firewire (1394) Cable	X	X	X	AH123AA
	7-outlet Surge Protector	X	X	X	AG290AA#ABA
HP Care Pack Services	9x5 Next-Business-Day On-Site Coverage - 4 Years				U7897E
	9x5 Next-Business-Day On-Site Coverage - 5 Years				U7899E
	9x5, 4-Hour Response On-Site Coverage - 3 Years				U4863E
	9x5, 4-Hour Response On-Site Coverage - 4 Years				U7902E
	9x5, 4-Hour Response On-Site Coverage - 5 Years				U7904E
	24x7, 4-Hour Response On-Site Coverage - 3 Years				H4493E
	24x7, 4-Hour Response On-Site Coverage - 4 Years				U7906E
	24x7, 4-Hour Response On-Site Coverage - 5 Years				U7908E
	9x5 Next-Business-Day On-Site Coverage - 4 Years + Monitor				U7896E
	9x5 Next-Business-Day On-Site Coverage - 5 + Monitor				U7898E
	9x5, 4-Hour Response On-Site Coverage - 3 Years + Monitor				U4864E
	9x5, 4-Hour Response On-Site Coverage - 4 Years + Monitor				U7901E
	9x5, 4-Hour Response On-Site Coverage - 5 Years + Monitor				U7903E
	24x7, 4-Hour Response On-Site Coverage - 3 Years + Monitor				H4483E
	24x7, 4-Hour Response On-Site Coverage - 4 Years + Monitor				U7905E
	24x7, 4-Hour Response On-Site Coverage - 5 Years + Monitor				U7907E
	Hardware Installation				U5869E
	Hardware Installation - (2 or more)				U5870E
	Post Warranty 9x5 Next-Business-Day On-Site Coverage - 1 Year				U5864PE
	Post Warranty 9x5 Next-Business-Day On-Site Coverage - 1 Year + Monitor				U5865PE

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# Technical Specifications

Unit Environment and Operating Conditions	Ultra-Slim Desktop	Small Form Factor	Convertible Minitower
General Unit Operating Guidelines			
<ul style="list-style-type: none"><li>• Keep the computer away from excessive moisture, direct moisture and the extremes of heat and cold, to ensure that unit is operated within the specified operating range.</li><li>• Leave a 10.2 cm (4 in) clearance on all vented sides of the computer to permit the required airflow.</li><li>• Never restrict airflow into the computer by blocking any vents or air intakes.</li><li>• Do not stack computers on top of each other or place computers so near each other that they are subject to each other's re-circulated or preheated air.</li><li>• Occasionally clean the air vents on the front, back, and any other vented side of the computer. Lint, dust and other foreign matter can block the vents and limit the airflow.</li><li>• If the computer is to be operated within a separate enclosure, intake and exhaust ventilation must be provided on the enclosure, and the same operating guidelines listed above will still apply.</li></ul>			
Temperature Range	Operating: 50° to 95° F (10° to 35° C)* Non-operating: -22° to 140° F (-30° to 60° C)		
Relative Humidity	Operating: 10% to 90% (non-condensing at ambient) Non-operating: 5% to 95% (non-condensing at ambient)		
Maximum Altitude (unpressurized)	Operating: 10,000 ft (3048 m) Non-operating: 30,000 ft (9144 m)		
*NOTE: Operating temperature is de-rated 1.0 deg C per 300 m (1000 ft) to 3000 m (10,000 ft) above sea level, no direct sustained sunlight. Maximum rate of change is 10 deg C/Hr. The upper limit may be limited by the type and number of options installed.			

Power Supply	Ultra-Slim Desktop	Small Form Factor	Convertible Minitower
Power Supply	200 watt custom power supply – Active PFC)	240 watt custom power supply – Active PFC	365 watt custom power supply – Active PFC)
Operating Voltage Range	90 – 264 VAC	90 – 264 VAC	90 – 264 VAC
Rated Voltage Range	100 – 240 VAC	100 – 240 VAC	100 – 240 VAC
Rated Line Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Operating Line Frequency Range	47 – 63 Hz	47 – 63 Hz	47 – 63 Hz
Rated Input Current	4A	5A	6A
Heat Dissipation	Typical 340 btu/hr (86 kg-cal/hr) Maximum 1050 btu/hr (265 kg-cal/hr)	Typical 340 btu/hr (86 kg-cal/hr) Maximum 1260 btu/hr (318 kg-cal/hr)	Typical 375 btu/hr (95 kg-cal/hr) Maximum 1916 btu/hr (483 kg-cal/hr)
Power Supply Fan	70mm variable speed	80mm variable speed	92mm variable speed
Energy Star Compliant	X	X	X
Blue Angel Compliant (<5w in S5 – Power Off)	X	X	X
FEMP Standby Power Compliant (<2W in S5 – Power Off)**	X	X	X
Power Consumption in ES Mode – Suspend to RAM (S3) (Instantly Available PC)	< 3W	< 3W	< 3W
Environmental and Mechanical Engineering Support Center (EMESC) – Intranet Web Site only	<a href="http://env-webserver.ccm.hp.com/EMESC/default.htm">http://env-webserver.ccm.hp.com/EMESC/default.htm</a>		

\*\*NOTE: Power consumption in the Off/Apparent Off mode is measured and reported with the network interface controller "Wake

on LAN" feature disabled in F10 Setup (default is "enabled").

## ROM BIOS Information

Key features of the HP BIOS in the dc7600 include:

- Deployment and manageability – HP BIOS provides several technologies that help integrate the HP Business desktop computer into the enterprise, such as PXE, remote configuration, remote control, and F10 Setup support for 12 languages.
- Stability – HP BIOS supports the HP stable product roadmap by releasing only critical BIOS changes to the factory and advanced change notification.
- Security – HP BIOS offers a robust and flexible set of security features to help the system administrator secure their systems from removal of sensitive data, and help prevent access by unauthorized users, subversion of OS security policies, removal of hardware, flash of rogue BIOS images, master boot record viruses, and attacks on BIOS settings.
- Thermal and power management – The HP BIOS provides and enables thermal and power management technologies to assist in operating the HP Business Desktop computer in any enterprise environment.
- Serviceability – HP BIOS provides diagnostic and detailed service information.
- Upgrades and recovery – HP BIOS provides numerous ways to upgrade HP Business Desktop computers, including BIOS updates from within DOS (ROMPAQ, Flashlite), BIOS updates from within Windows (CPQFlash, SSM), and fail-safe recovery.

## Additional HP BIOS Features

- Power-On password – Helps prevent an unauthorized user from powering on the system. After a power-on password is established, the user is required to type the password during the power-on process.
- Administrator password – Also known as the setup password, this helps prevent unauthorized changes to the system configuration. If the administrator password is not known, the BIOS version cannot be changed and changes cannot be made to BIOS settings using F10 setup or under the OS.
- Advanced Configuration and Power Interface (ACPI) – Represents a significant innovation in power and configuration management, allowing operating systems and applications to manage power based on activity and usage. HP Compaq dc7600 models use ACPI to provide power conservation features under Windows XP.

Other Features	Description
ACPI-Ready Hardware	Advanced Configuration and Power Management Interface (ACPI). <ul style="list-style-type: none"> <li>• Allows the system to wake from a low power mode.</li> <li>• Controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system.</li> </ul>
SMBIOS Ver. 2.4	System Management BIOS, previously known as DMI BIOS, for system management information
Wired for Management Support	Intel-driven, industry-wide initiative to make Intel architecture-based PCs, servers and mobile computers more inherently manageable right out of the box and over the network
Dual-State Power Button	Power button acts as both an on/off button and suspend-to-sleep button

## Serviceability Features of System

Dual Color Power LED on Front of Computer (Indicates Normal Operations and Fault Conditions)

Diagnostic LED Explanation Table	Number of 1-second red LED blinks followed by 2-second pause, then repeats:
	2-processor thermal protection activated
	3-processor not installed
	4-power supply failure
	5-memory error
	6-video error
	7-PCA failure (ROM detected failure prior to video)
	8-invalid ROM, bootblock recover mode

- System/Emergency ROM

- Flash ROM

- CMOS Battery Holder for easy Replacement

• Flash Recovery with Video Configuration Record SW	• 5 Aux Power LED on System PCA	• Processor ZIP Socket for easy Upgrade
• Over-Temp Warning on Screen (Requires IM Agents)	• Clear Password Jumper	• DIMM Connectors for easy Upgrade
• OS CD (Restore OS CD)	• Clear CMOS Button	• NIC LEDs (integrated) (Green & Amber)
• Restore CD		

Serviceability Features of Chassis		
• Dual Color Power and HD LED – To Indicate Normal Operations and Fault Conditions	• Color coordinated cables and connectors	• Tool-less Hood Removal
• Front power switch	• System memory can be upgraded without removing the system board or any internal components	• Tool-less Hard Drive, CD & Diskette Removal
• Green Pull Tabs, and Quick Release Latches for easy Identification		• Tool-less System Board Removal
NOTE: Thumb screw release mechanism is used with the Ultra-slim Desktop chassis cover.		
Feature	Description	
ASF 2.0 support (Alert Standard Format)	Industry-standard specification for network alerting in operating system-absent environments	
Towerable	Product can be oriented as a tower (in addition to desktop orientation)	
Drive Self Tests (DPS)	<ul style="list-style-type: none"> <li>• Drive Protection System</li> <li>• A diagnostic hard drive self test. It scans critical physical components and every sector of the hard drive for physical faults and then reports any faults to the user.</li> <li>• Running independently of the operating system, it can be accessed through a Windows-based diagnostics utility or through the computer's setup procedure. It produces an evaluation on whether the hard drive is the source of the problem and needs to be replaced.</li> <li>• The system expands on the Self-Monitoring, Analysis, and Reporting Technology (SMART), a continuously running systems diagnostic that alerts the user to certain types of failures</li> </ul>	
DPS Access through F10 Setup during Boot		
SMART Technology (Self-Monitoring, Analysis and Reporting Technology)	Allows hard drives to monitor their own health and to raise flags if imminent failures were predicted <ul style="list-style-type: none"> <li>• Predicts failures before they occur. Tracks fault prediction and failure indication parameters such as re-allocated sector count, spin retry count, calibration retry count</li> <li>• By avoiding actual hard drive failures, SMART hard drives act as "insurance" against unplanned user downtime and potential data loss from hard drive failure</li> </ul>	
SMART I – Drive Failure Prediction		
SMART II – Off-Line Data Collection		
SMART III – Off-Line Read Scanning with Defect Reallocation		

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## Technical Specifications - Audio

High Definition Audio	Type	Integrated
	High Definition Stereo Codec	Yes – Realtek ALC 260



Audio Jacks	Microphone-In (64-K ohm Input Impedance); front and rear stereo analog microphone ports available except for USDT, which has front stereo microphone only
	Line-In (64-K ohm Input Impedance)
	Line-Out * (200 ohms Output Impedance, expects at least a 10-K ohm load)
	Headphone-Out (1 Ohm Output Impedance, expects at least a 32 ohm load)

NOTE: \*Internal Speaker Amplifier is for Internal Speaker only. External Speakers need to be powered externally.

Sampling	8 kHz – 192 kHz
Wavetable Syntheses (software)	Yes – Uses OS soft wavetable
Analog Audio	Yes
Number of Channels on Line-Out (mono/stereo)	Stereo (Left & Right channels)
Internal Audio Speaker Power Rating	1.5 W
Internal Speaker	Yes
External Speaker Jack (Line-Out)	Yes

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## Technical Specifications - Communications

Integrated Broadcom NetXtreme Gigabit Ethernet	Connector	RJ-45
	Controller	Broadcom 5752 PCI-Express LAN Controller
	Memory	Integrated 96Kb frame buffer memory
	Data rates supported	10/100/1000 Mbps
	Compliance	IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control
	Bus architecture	PCI-E
	Data path width	Single channel, PCI-E
	Data transfer mode	Bus-master DMA
	Hardware certifications	FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union
	Power requirement	3.1 watts @ +3.3V AUX supply with 5V tolerance
	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

Environmental	100BASE-TX (full-duplex) 200 Mbps
	1000BASE-T (full-duplex) 2000 Mbps
Operating temperature	32° to 131°F (0° to 55° C)
	Operating humidity 85% at 131° F (55° C)
Operating system driver support	Microsoft Windows NT 4.0, Microsoft Windows 98, Microsoft 2000, Microsoft XP
Management capabilities	ACPI, WOL and DMI 2.0, PXE 2.0, WfM 2.0, Broadcom mgmt utility
Alerting	N/A

Intel PRO/1000 GT Gigabit PCI NIC	Connector	RJ-45
	Controller	Intel 82541PI Gigabit Controller
	Memory	Integrated 64KB configurable transmit receive buffer memory
	Data rates supported	10/100/1000 Mbps
	Compliance	IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control
	Bus architecture	PCI 2.3
	Data path width	32-bit, 33/66 MHz bus interface
	Data transfer mode	Bus-master DMA
	Hardware certifications	FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union
	Power requirement	(800mA) 4watts @ +5VDC
	Boot ROM support	Yes
	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 (actual rate limited by PCI Bus)
Environmental	Operating temperature	32° to 131°F (0° to 55° C)
	Operating humidity	85% at 131° F (55° C)
Dimensions	6.4 x 4.8 x 0.8 in (16.3 x 12.1 x 1.9 cm)	
Operating system driver support	Microsoft Windows NT 4.0, Microsoft Windows 98, SE, Me, Microsoft 2000, Microsoft XP, Linux 2.2, Linux 2.4	
Management capabilities	ACPIWOL and DMI 2.0, S5 WOL, WMI, PXE 2.0, RPL	

HP Wireless A+G PCI	Dimensions	4.99 x 2.54 x 0.71 in (126.8 x 64.4 x 18.0 mm)
	Weight	0.268 lb (65 g)
	Controller	Atheros AR5414X chipset
	system interface	PCI Spec 2.2
	Network standard	IEEE 802.11a/b/g
	Frequency band	5.1500 to 5.8500 GHz
		2.4000 to 2.4835 GHz
		2.4465 to 2.4835 GHz (Europe, Middle East, Asia and Asia Pacific - excluding Japan)
		2.4000 to 2.4697 GHz (Japan)
	Operating temperature	32° to 140° F (0° to 60° C), operating
Storage temperature	-4° to 176° F (-20° to 80° C), non-operating	
	Humidity	10% to 85% non-condensing
	Operating voltage	5V ± 5%

Power consumption	Tx/Rx peak 560/250mA @ 3.3V (max.)	
Output power (approximately)	15 dBm $\pm$ 2dB	
Receive sensitivity	-90dBm at 11 Mbps (typical)	
Data transfer rate	Standard rates of 1, 2, 5.5, 11, 6, 9, 12, 18, 24, 48, 54 and Super AG Mode 108-Mbps	
Spreading	DSSS (Direct Sequence Spread Spectrum)	
Security	64(40h) bit, 128(104h) bit, WPA, IEEE802.1X, AES-OCB, AES-CCM, Microsoft PEAP, TKIP, WEP.	
Antenna	External 5dBi antenna	
Throughput	108 Mbps (only with Belkin 54G or 200 ft (60.96 m) – Indoor above router that supports 108 Mbps speed)	
	54 Mbps	200 ft (60.96 m) – Indoor
	11 Mbps	200 ft (60.96 m) – Indoor
Certifications	Wi-Fi certified	
Certifications for use by country	North America: United States, Canada  Europe: Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom Australia  New Zealand	
OS support	Microsoft Windows XP Professional and Home Microsoft Windows 2000	

#### 2006 Agere PCI 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	ITU-T T.31 class 1 FAX, V. 17, V.29, V.27ter, and V.21 Channel 2	
Capabilities		
Error Correction and Data Compression	V.44, 42bis, V.42 and MNP2-5	
Power Management	ACPI; PPM1 1.1 and wake support with PME and Vaux; meets PCI 2.3 requirements and PC 2001 requirements	
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	

Operating System Support	Microsoft® Windows® 2000 and Microsoft Windows XP
OS Driver Support	Microsoft Windows 2000 and Microsoft Windows XP
Power	Requires a 3.3-V auxiliary power rail on PCI bus Uses only one PCI load (i.e., one grant/request pair), one shared IRQ, one electrical load
Chipset	Agere Systems SV92PL – Integrated PCI interface with 5-V tolerant buffers and CardBus support
Dimensions (L X H)	Complies with PCI 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
Telecom	FCC Part 68, IC-CS-03 (Canada); Worldwide PTT approvals Not available in Korea or the Republic of South Africa.
Health	Bare PCB material compliant to 94V-0 or better (marked as such)
Other	PC 2001 compliant, PCI version 2.3, WHQL approved; ACPI compliant

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## Technical Specifications - Graphics

### Integrated Graphics Media 3D/2D Controller Accelerator 950

Microsoft DirectX® 9 based with support for Pixel Shader 2.0, 4:1 anisotropic filtering, Gaussian texture filtering, shadow maps, volumetric textures, double-sided stencil buffers, and 4 pixel pipes.

#### VGA Controller

Integrated

#### Bus Type

PCI Express™ x16 (Internal graphics is automatically disabled if an external PCIE or PCI graphics card is installed. If the external graphics card is installed in a PCI slot, the internal graphics can be re-enabled using the system's BIOS setup utility. If the external graphics card is installed in the PCI Express™ slot, the internal graphics cannot be enabled).

#### RAMDAC

Integrated, 400 MHz

#### Memory

Graphics memory is shared with system memory. Graphics memory usage can vary from 8-128 MB depending on the amount of system memory installed and system load. 8 MB is pre-allocated for graphics use at system boot time. Additional memory is allocated for graphics using Intel's Dynamic Video Memory Technology (DVMT) to balance the optimum amount of memory between graphics and other system use.  
Memory < 256 MB: 8 MB pre-allocated (for DOS) + 24 MB DVMT : max frame buffer of 32 MB  
256 MB <= Memory: 8 MB pre-allocated + 120 MB DVMT : max frame buffer of 128 MB

Controller Clock Speed	400 MHz
Overlay Planes	Single overlay support with 5x3 filtering
Maximum Color Depth	32 bits/pixel
Maximum Vertical Refresh Rate	85 Hz at up to 1920x1440, 85Hz at 2048x1536. Varies with mode and configuration. See table below.
Multi-display Support	Support for one CRT via the motherboard's VGA connector. Support for an additional DVI-D display via the optional DVI ADD2 card. Dual independent displays and dual synchronous (Twin or Clone mode) displays are supported.
Operating Systems	Microsoft Windows XP and Windows 2000
Graphics/Video API Support	Microsoft DirectX®9, DirectXVA®, VMR9, GDI/GDI+; OpenGL® 1.4.

Resolutions Supported <sup>1</sup>	Resolution	Maximum Refresh Rate (Hz)	
		Analog Monitor	Digital Monitor
	640 x 480	85	60
	800 x 600	85	60
	1024 x 768	85	60
	1280 x 1024	85	60
	1600 x 1200	85	60
	1920 x 1080	85	60
	1920 x 1200	85	60
	1920 x 1440	85	60
	2048 x 1536	85	60

<sup>1</sup> Modes listed are supported with a single active display. The supported mode list for multiple active displays is a subset of this list. Not all modes will support video playback and some supported modes may use software MC (motion compensation) rather than hardware MC. Not all modes will support 3D acceleration depending on the system configuration (e.g., resolution selected, size of frame buffer, number of installed memory modules, etc.).

NOTE: Other resolutions and refresh rates may be selectable but are not recommended.

DVI ADD2 Graphics	Models	DY674A Intel DVI ADD2 adapter for Convertible Minitower and Small Form Factor
	Form Factor	Low-profile card
	DVI-D Connector	Compliant with DDWG (Digital Display Working Group) and VESA specifications for a single-link digital DVI (DVI-D) connector.
	Dual Head Support	Yes, when used with the integrated VGA connector
	Display Devices Supported	HP L1530 HP L1740 HP L1755 HP L1940 HP L1955 HP L2035 HP L2335
	NOTE: The DVI ADD2 card offers optimal performance with any display that meets applicable VESA standards.	
	Color Depth	All modes support 8-bpp, 16-bpp, and 24-bpp color depths (up to 16.7 million colors)
	Host Interface Connector	Mechanically compliant with PCIe standard Complies with the Intel ADD2 and Intel Serial Digital Video Output (SDVO) specifications
	Dot Clock	165 MHz maximum
	Display Modes	Supports display modes that require up to 165-MHz bandwidth on the link, as shown in the following table.

Resolution		60-Hz LCD	60-Hz	75-Hz	85-Hz
Blanking		5% reduced	GTF	GTF	GTF
640 x 480	VGA	Yes	Yes	Yes	Yes
800 x 600	SVGA	Yes	Yes	Yes	Yes
1024 x 768	XGA	Yes	Yes	Yes	Yes
1280 x 1024	SXGA	Yes	Yes	No	No
1600 x 1200	UXGA	Yes	Yes	No	No

#### ATI RADEON X300 SE PCI Express (PCIe x16) Graphics

Models	ATI RADEON X300 SE PCI Express 128-MB DDR single head DVI with TV out	
Bus Type	PCI Express (x16 lanes)	
Maximum Vertical Refresh Rate	85 Hz	
Display Support	Integrated 400MHz RAMDAC	
Display Max Resolution	2048 x 1536	
Board Display Options	128 MB Card Display Option DVH + TV DVH supports analog CRT or flat panel or digital flat panel (using DVI-A, DVI-D or DVH connector) DVH supports analog CRT or flat panel (with VGA connector and DVH to VGA dongle) TV Connector is a 7-pin mini-DIN (also allowing 4-pin S-Video without adaptor)	
Board Configuration	Specification	Description
128 MB Frame Buffer	Graphics Chip	RADEON X300 SE PCI Express
	Core clock	200 MHz
	Memory clock	200 MHz
	Frame buffer	128 MB DDR
	Memory I/O	64 bit
	Memory Configuration	4 pcs 16M x 16 DDR
Memory Type	DDR1	
Maximum Memory	128MB	
Operating Systems Support	Windows 2000, Windows XP	
Core Power	10 W (Max ASIC power) 18 W (Max Board power)	
Option Kit Contents	ATI RADEON X300 SE PCI Express graphics card with full height bracket attached Low profile bracket Software CD with graphics drivers Warranty documentation	

#### ATI RADEON X1300 PCIe Graphics Card (256 MB)

Bus Type	PCI Express (x16 lanes)
Maximum Vertical Refresh Rate	85 Hz
Display Support	Integrated 400MHz RAMDAC
Display Max Resolution	2048 x 1536
Board Display Options	DVH + TV DVH supports analog CRT or flat panel or digital flat panel (using DVI-A, DVI-D or DVH connector)

	DVI-I supports analog CRT or flat panel (with VGA connector and DVI-I to VGA dongle) TV connector is a 4-pin mini-DIN S-video connector	
Board Configuration	Specification	Description
	128 MB Frame Buffer	Graphics Chip
		RV515
		Core clock
		450 MHz
Languages supported		Memory clock
		250 MHz
		Frame buffer
		256 MB DDR2
		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
Operating Systems Support	Windows 2000, Windows XP, Linux x86 and x86_64 distributions using XFree86 or X.Org*.	
	*Linux drivers are available from ATI's website and may be available in a Linux distribution. Refer to the Open Source and Linux from HP website ( <a href="http://www.hp.com/wwwsolutions/linux/products/clients/">http://www.hp.com/wwwsolutions/linux/products/clients/</a> ) for support information.	
Core Power	25 W (Max board power)	
Option kit contents	<ul style="list-style-type: none"> <li>• ATI RADEON X1300 PCIe graphics card with full height bracket attached</li> <li>• Low profile bracket</li> <li>• DVI-to-VGA Adapter</li> <li>• Software CD with graphics drivers</li> <li>• Warranty documentation</li> </ul>	
Compliance standards	<p>EMC Emissions:</p> <p>a) FCC Part 15, Subpart B – Unintentional Radiators, Class B Computing Devices for Home &amp; Office Use</p> <p>b) CISPR22: 1997/EN 55022:1998 – Class B – Limits and methods of measurement of radio disturbance characteristics of Information Technology Equipment</p> <p>c) Canadian Standard ICES-003 is equivalent to CISPR22</p> <p>d) Taiwanese Standard BSMI</p> <p>e) Japanese VCCI</p> <p>f) Australian C-Tick</p> <p>EMC Immunity:</p> <p>CISPR 24:1997/EN 55024:1998 – Information Technology Equipment - Immunity Characteristics – Limits and Methods of Measurement.</p> <p>Safety:</p> <p>UL 60950 (USA) &amp; EN 60950 (EU): Safety of Information Technology Equipment, Including Electrical Business Equipment. All boards meet UL PCB flammability requirements.</p>	

ATI RADEON X1600XT (256 MB DH) FH PCIe Graphics Card	Bus Type	PCI Express (x16 lanes)
	Maximum Vertical Refresh Rate	85 Hz
	Display Support	Integrated 400 MHz RAMDAC
	Display Max Resolution	2560 x 1600 digital, 2048 x 1536 analog
	Board Display Options	2 DVI-I ports (one port supports dual link DVI). DVI-I supports an analog CRT or flat panel with a VGA connector via the provided DVI-I to VGA adapter 4-pin mini-DIN S-video connector for TV output

Board Configuration	Specification	Description
	Graphics chip	RV530
	Core clock	590 MHz
	Memory clock	690 MHz
	Frame buffer	256 MB GDDR3, 128 bit wide
Operating Systems Support	Windows 2000, Windows XP	
Core Power	56 W (Max board power)	

NVIDIA Quadro NVS 285 128-MB PCIe Dual Head	Form Factor	Low profile, both ATX and low profile brackets included
	Graphics Controller	Integrated Quadro 285 2D graphics processor unit (GPU)
	Bus Type	PCI-Express
	Memory	128 MB DDR (64 MB local frame buffer plus 64 MB of system memory via TurboCache)
	Connector	DMS-59 to dual-DVI Y-cable or dual-VGA Y-cable
	Dimensions	Low-profile, 2.586 x 6.6 in (6.57 x 16.76 cm)
	Multi-monitor Support	Dual analog or digital monitors
	RAMDAC	Dual 350 MHz (integrated)
	Maximum Pixel Clock	350 MHz
	Overlay Planes	One 16-bit Video overlay plane
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)	
Available Graphics Drivers	IDCT motion compensation	
	5-tap horizontal by 3-tap vertical filtering	
	8:1 up/down scaling	
Microsoft Windows 2000 and Microsoft Windows XP (Provides full native Dual View mode, Span or Big Desktop mode, and Clone mode)		
HP qualified drivers may be preloaded or available from the HP support Web site:		
<a href="http://www.hp.com/country/us/en/support.html?pageDisplay=drivers">http://www.hp.com/country/us/en/support.html?pageDisplay=drivers</a>		

Analog Resolution	Maximum Colors Supported	Maximum Refresh Rate
640 x 480	16.7 M	240 Hz
800 x 600	16.7 M	240 Hz
1024 x 768	16.7 M	240 Hz
1152 x 864	16.7 M	170 Hz
1280 x 1024	16.7 M	150 Hz
1600 x 1200	16.7 M	100 Hz
1920 x 1080	16.7 M	85 Hz
1920 x 1200	16.7 M	85 Hz
1920 x 1440	16.7 M	75 Hz
2048 x 1536	16.7 M	60 Hz
Digital Resolution	Maximum Colors Supported	Maximum Refresh Rate
640 x 480	16.7 M	75 Hz
800 x 600	16.7 M	75 Hz
1024 x 768	16.7 M	75 Hz
1152 x 864	16.7 M	60 Hz
1280 x 1024	16.7 M	60 Hz
1600 x 1200	16.7 M	60 Hz
1900 x 1200	16.7 M	60 Hz



NVIDIA Quadro NVS 280	Form Factor	Low profile (both ATX and low profile brackets included)
64MB PCI Dual Head	Graphic Controller	Integrated Quadro 280 2-D graphics processor unit (GPU)
	Bus type	PCI
	RAMDAC	Dual 350 MHz integrated
	Memory	64 MB DDR with frame buffer and Texture storage
	Connector	Single High-density DMS-59 Connector
	Dimensions	Low-profile, 2.586 x 6.6 in (6.57 x 16.76 cm)
	Controller clock speed	250 MHz
	Color depth	32-bits/pixel max
	Overlay planes	One 16-bit Video overlay plane
	Maximum vertical refresh rate	85 Hz
	Multi-monitor support	Dual analog or digital monitors
	Dual DVI Support	Yes (with kit DL139A)
	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
	Available graphics drivers	Microsoft Windows 2000 and Microsoft Windows XP (Provides full native Dual View mode, Span or Big Desktop mode, and Clone mode)

NOTE: HP qualified drivers may be preloaded or available from the HP support Web site:

[http://welcome.hp.com/country/us/eng/software\\_drivers.html](http://welcome.hp.com/country/us/eng/software_drivers.html).

Analog Resolution	Maximum Colors Supported	Maximum Refresh Rate
640 x 480	16.7 M	240 Hz
800 x 600	16.7 M	240 Hz
1024 x 768	16.7 M	200 Hz
1600 x 1200	16.7 M	170 Hz
1600 x 1200	16.7 M	150 Hz
1600 x 1200	16.7 M	100 Hz
1920 x 1200	16.7 M	85 Hz
1920 x 1200	16.7 M	85 Hz
1920 x 1440	16.7 M	75 Hz
2048 x 1536	16.7 M	60 Hz
Digital Resolution	Maximum Colors Supported	Maximum Refresh Rate
640 x 480	16.7 M	75 Hz
800 x 600	16.7 M	75 Hz
1024 x 768	16.7 M	75 Hz
1152 x 864	16.7 M	60 Hz
1280 x 1024	16.7 M	60 Hz
1600 x 1200	16.7 M	60 Hz (primary only)

NVIDIA Quadro NVS 55	Form Factor	Low profile, both ATX and low profile brackets included
64MB PCI DVI with TV-Out	Graphic Controller	Integrated Quadro NVS 55 Graphics Processor Unit (GPU)
	Bus type	PCI 2.1, 32-bit, 5V
	Memory	64 MB DDR
	Connectors	Single DVI connector Single S-Video connector
	Dimensions	Low profile, 2.586 x 6.6 in (6.57 x 16.76 cm)
	Controller clock speed	250 MHz
	Memory speed	200 MHz

Color depth	32-bits/pixel max
Overlay planes	One 16 bit video overlay plane
Maximum vertical refresh rate	85 Hz
Maximum pixel clock	Analog output: 350 MHz Digital output: 162 MHz
Single DVI Support	Yes
TV out support	Yes (S-Video 4 pin mini-Din)
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 colorspace conversion (YUV 4:2:2 and 4:2:0) IDCT motion compensation Up to 5-tap horizontal by 3-tap vertical filtering
Agency Approvals	ACA C-tick, BSMI, CE Mark, FCC, ICES/C.I.S.P.R, MIC, UL, VCCI
Available graphics drivers	Microsoft Windows 2000 and Microsoft Windows XP HP qualified drivers may be preloaded or available from the HP support Web site: <a href="http://www.hp.com/country/us/en/support.html?pageDisplay=drivers">http://www.hp.com/country/us/en/support.html?pageDisplay=drivers</a>

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## Technical Specifications - Hard Drives

7200 rpm Serial ATA Hard Drives	250-GB	Capacity	250,059,350,016 bytes	
		Height	1 in (2.54 cm)	
		Width	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
		Interface	Serial ATA (3.0 Gb/s)	
		Synchronous Transfer Rate (Maximum)	Up to 3 Gb/s	
		Buffer	8 MB	
		Seek Time (typical reads, includes controller overhead, including settling)	Single Track	1.0 ms
			Average	8.5 ms
			Full-Stroke	18 ms
		Rotational Speed	7,200 rpm	
		Logical Blocks	488,397,168	
		Operating Temperature	41° to 131° F (5° to 55° C)	
	160-GB	Capacity	163,928,604,672 bytes	
		Height	1 in (2.54 cm)	
		Width	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
		Interface	Serial ATA (3.0 Gb/s)	

	Synchronous Transfer Rate (Maximum)	Up to 3 Gb/s	
	Buffer	8 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	0.9 ms
		Average	9.3 ms
		Full-Stroke	18 ms
	Rotational Speed	7,200 rpm	
	Logical Blocks	320,173,056	
	Operating Temperature	41° to 131° F (5° to 55° C)	
<b>80-GB</b>			
	Capacity	80,026,361,856 bytes	
	Height	1 in (2.54 cm)	
	Width	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
	Interface	Serial ATA (3.0 Gb/s)	
	Synchronous Transfer Rate (Maximum)	Up to 3 Gb/s	
	Buffer	8 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	2.0 ms
		Average	9.3 ms
		Full-Stroke	21 ms
	Rotational Speed	7,200 rpm	
	Logical Blocks	156,301,488	
	Operating Temperature	41° to 131° F (5° to 55° C)	
<b>40-GB</b>			
	Capacity	40,020,000,000 bytes	
	Height	1 inch (2.54 mm)	
	Width	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
	Interface	Serial ATA	
	Synchronous Transfer Rate (Maximum)	Up to 1.5 Gb/s	
	Buffer	2 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	1.0 ms
		Average	8.5 ms
		Full-Stroke	18.0 ms
	Rotational Speed	7,200 rpm	
	Logical Blocks	78,165,360	
	Operating Temperature	41° to 131° F (5° to 55° C)	

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## Technical Specifications - Input/Output Devices

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) minimum
	Electrical	Operating voltage	+ 5VDC $\pm$ 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
		Languages	38 available
	Mechanical	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
	Operating system support	Windows 2000 and Windows XP	
	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	

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PS/2 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) minimum
	Electrical	Operating voltage	+ 5VDC $\pm$ 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	
Mechanical		Microsoft PC 99 - 2001	Functionally compliant
		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)
Environmental		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
		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
Operating system support		Microsoft Windows 2000 and Windows XP	
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, keyboard software media, installation guide, warranty card, safety and comfort guide	

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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 $\pm$ 5%
		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
	Mechanical	Microsoft PC 99 – 2001	Functionally compliant
		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

Environmental	Key-leveling mechanisms	For all double-wide and greater-length keys	
	Cable length	6 ft (1.8 m)	
	Microsoft PC 99 - 2001	Mechanically compliant	
	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)	
	Power consumption	Supports 3-V and 5-V cards	
		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)	
		From card	Programmable from 9,600 baud to 115,200 baud
	Landing mechanism	From computer	Up to 38,400 baud
		Contact device	Friction contact
		Card insertions rating	Up to 100,000 insertion cycles
	Interface modes	USB communications through USB port	
		SCM protocol	
	Reader performance interface	Automatic card insertion/removal detection	
		USB connection	
	Electro-magnetic standards	Europe	89/336/CEE guideline
		USA	USAFCC part 15

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HP PS/2 Scroll Mouse	Dimensions	3.8 x 6.3 x 11.6 cm (1.5 x 2.5 x 4.6 in)	
	Weight	4.44 oz (126 g)	
	Environmental	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)

Electrical	Non-operating humidity	20% to 80% (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)	26 in (66 cm) on carpet, 6-drop sequence
	Drop (out of box)	1 m on asphalt tile over concrete, 6-drop sequence
	Operating voltage	5 VDC $\pm$ 10%
	Power consumption	15 mA
	System consumption	PS/2 mini-din connector
Mechanical	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
	Resolution	400 $\pm$ 20% DPI
	Tracking speed	10 in/s (25.4 cm/s) maximum
	Acceleration	100 in/s/s (2.54 m/s/s)
	Switch actuation	65 g nominal peak force
	Switch life	1,000,000 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
Scroll wheel	Cable length	6 ft (1.8 m)
	Microsoft PC99 - 2001	Mechanically compliant
	Width	8 mm
	Diameter	.99 in (25.2 mm)
	Maximum rotation speed	30 mm/s
	Switch type	Light force micro-switch
	Switch life	1 million operations
	Mechanical life	Minimum 200,000 revolutions
	Compliant	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC
	Regulatory approvals	
Compatibility	Operating system support	Microsoft® Windows® Me, Windows 2000 and Windows XP

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HP PS/2 Optical Scroll Mouse	Dimensions (H x L x W)	3.95 x 6.21 x 11.7 cm (1.56 x 2.44 x 4.61 in)
	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
	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

Electrical	Operating voltage	equivalent, 5-drop in 5 direction except the cable face
	Power consumption	5 VDC $\pm$ 10%
	System consumption	100mA
	ESD	PS/2 mini-din connector
	EMI-RFI	CE level 4, 15 kV air discharge
Mechanical	Microsoft PC99 – 2001	Conforms to FCC rules for a Class B computing device
	Resolution	Functionally compliant
	Tracking speed	400 $\pm$ 20% DPI
	Acceleration	10 in/s (25.4 cm/s) maximum
	Switch actuation	100 in/s/s (2.54 m/s/s)
Scroll wheel	Switch life	61 g nominal peak force
	Switch type	3,000,000 operations (using Hasco modified tester)
	Tracking mechanism life	Low force micro-switches
	Cable length	155 mi (250 km) at average speed of 10 in/s
	Microsoft PC99 – 2001	6 ft (1.8 m)
Regulatory approvals	Width	Mechanically compliant
	Diameter	8 mm
	Maximum rotation speed	1.01 in (25.6 mm)
	Switch type	48 rats/sec
	Switch life	Light force micro-switch
Compatibility	Mechanical life	1 million operations
	Compliant	Minimum 200,000 revolutions
Compatibility	Operating system support	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC
	Operating system support	Microsoft Windows Me, Windows 2000 and Windows XP

HP USB Scroll Mouse	Environmental	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, 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)	26 in (66 cm) on carpet, 6-drop sequence
		Drop (out of box)	1 m on asphalt tile over concrete, 6-drop sequence
Electrical	Electrical	Operating voltage	5 VDC ± 10%
		Power consumption	15 mA
		System consumption	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®	Functionally compliant



PC99 - 2001		
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	65 g nominal peak force
	Switch life	1,000,000 operations (using Hasco modified tester)
Scroll wheel	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
	Width	8 mm
Regulatory approvals	Maximum rotation speed	30 mm/s
	Switch type	Light force micro-switch
	Switch life	1 million operations
	Mechanical life	Minimum 200,000 revolutions
	Compliant	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC
Compatibility	Operating system support	Microsoft® Windows® 9X, Me, Windows 2000 and Windows XP

HP USB Optical Scroll 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, and XP Available USB port

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## Technical Specifications - Optical Storage

16X DVD+/-RW LightScribe Drive (Double Layer / Dual Format)	Height	5.25-inch, half-height, tray-load
	Orientation	Either horizontal or vertical
	Interface type	ATAPI/EIDE
	Disc recording 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 speed	DVD+R      Up to 16X
		DVD+RW      Up to 4X
		DVD+R DL      Up to 2.4X
		DVD-R      Up to 8X
		DVD-RW      Up to 4X
		CD-R      Up to 40X

Read speed	CD-RW	Up to 24X
	DVD+R/-R/+RW/-RW/+R DL	Up to 8X
	DVD-ROM	Up to 16X
	CD-ROM, CD-R	Up to 40X
	CD-RW	Up to 32X
Access time (typical reads, including settling)	Random	DVD: < 130 ms (typical), CD: < 120 ms (typical)
	Full Stroke	DVD: < 240 ms (seek), CD: < 200 ms (seek)
	Startup Time	Single-session: < 15 seconds (typical), Multi-session: < 30 seconds (typical)
	Stop Time	< 4 seconds
	Cache Buffer	2 MB (minimum)
Power	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)
	Source	Four-pin, DC power receptacle
	DC Power Requirement	5 VDC $\pm$ 5%-100 mV ripple p-p 12 VDC $\pm$ 5%-200 mV ripple p-p
	DC Current	5 VDC (< 1000 mA typical, 1600 mA maximum) 12 VDC (< 600 mA typical, 1400 mA maximum)
	Total Drive Power (standby mode)	< 2.5 Watt
Audio output	Line-Out	0.7 VRMS
	Signal-to-Noise Ratio	74 dB
	Channel Separation	65 dB
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)
System configuration	Intel Pentium III Processor or later with 128 MB of memory (required); 256 MB recommended 2-D or 3-D graphics cards on primary disk drive for operating system and application software; second disk drive for audio and video data	
Operating systems support	Microsoft Windows 2000, Windows XP Professional, Windows XP Home	
Regulatory approvals	MPC-3 compliant, multi-read requirements, ATA Spec X3T9.2, ATAPI Spec T13.1153D, ANSI C63.4-1992, UL 1950, ACA AS/NZS 3548, CB Bulletin No. 96A, CSA C22.2 No. 950-1995, CFR 47 C.I.S.P.R. Pub 22 Class B, DHHS/FDA, EMKO-TSE 07/94, TUV EN60950, EN60825-1, MIC, BSMI-CNS 13438, CE, Microsoft PC2001 certification, Microsoft Logo for Windows XP and 2000.	

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16X/48X DVD-ROM Drive Height	5.25-in, half-height
Interface Type	ATAPI
Dimensions— External, Excluding Bezel (W x H)	5.88 x 1.71 in (149.5 x 43.5 mm)
Disc Diameter	12 cm, 8 cm
Disc Thickness	1.2 mm

Track Pitch	1.6 $\mu$ m (CD), 0.74 $\mu$ m (DVD)	
Disc Center Hole Diameter	15 mm	
Disc Formats	DVD-ROM (single and dual layer); DVD-video; DVD-R version 1.0 and 2.0; DVD-RW version 1.0 and 1.1; DVD-R multi-border; DVD+RW; DVD+R, DVD+R DL; CD-ROM Mode 1 and 2; CD-DA; CD-ROM XA Mode 2, Form 1 and 2; CD-extra; CD-text; CD-I Mode 2, Form 1 and 2; CD-I ready; video CD, CD-bridge; PhotoCD (single and multi-session); CD-R; CD-RW	
Disc Capacity	DVD-ROM	4.7 GB (DVD-5), 8.54 GB (DVD-9), 9.4 GB (DVD-10), 3.95 GB (DVD-R version 1.0), 4.7 GB (DVD-R version 2.0), 4.7 GB (DVD-RW version 1.0 and 1.1), 4.7 GB (DVD+RW), 4.7 GB (DVD+R), 8.5 GB (DVD+R DL)
	CD-ROM	540 MB (Mode 1, 12 cm), 640 MB (Mode 2, 12 cm), 700 MB (80 minimum CD-R and CD-RW), 180 MB (8 cm)
Block Size (bytes)	DVD-ROM - 2048; CD-ROM Mode 0 - 2352; CD-ROM Mode 1 - 2352, 2340, 2336, 2048; CD-ROM Mode 2 - 2352, 2340, 2336, 2048	
Access Times (typical reads, including settling)	DVD-ROM Single Layer	120 ms (typical)
	CD-ROM Mode 1	90 ms (typical)
	Full Stroke DVD	240 ms (seek) (typical)
	Full Stroke CD	160 ms (seek) (typical)
Maximum Data Transfer Rates	CD-ROM Read	7200 KB/s (up to 48X)
	DVD-ROM Read	21,600 KB/s (16X) Max
Data Transfer Modes	PIO Mode 4 (16.6 MB/s); Multi-word DMA mode 2 (16.6 MB/s); UltraDMA Mode 3 (44.4 MB/s)	
Power	Source	Four-pin, DC power receptacle
	DC Power Requirement	5 VDC $\pm$ 5% – 100 mV ripple p-p
		12 VDC $\pm$ 5% – 200 mV ripple p-p
	DC Current	5 VDC – <800 mA typical, < 1000 mA maximum 12 VDC – < 870 mA typical
Audio Output Level	0.7 Vrms (typical)	
Configuration Jumper Block	Master, slave, and cable select modes	
Data Interface Connector	40-pin, shrouded and keyed, flat ribbon	
Environmental (all conditions non-condensing)	Temperature (operating)	41° to 122° F (5° to 50° C)
	Relative Humidity (operating)	10% to 85%
	Maximum Wet Bulb Temperature (operating)	86° F (30° C)
Certifications, Approvals	MMC II support, multi-read certification, Microsoft WHQL certification, ACA AS/NZS 3548 class B, CNS 13438, C.I.S.P.R. Pub 22, TUV or VDE EN60950, EN 55022, EN55024, SEMKO, NEMKO, DEMKO, FIMKO, EN 60825-1, UL 60950, and CSA C22.2 60950-2000.	
Operating systems supported	Microsoft Windows 2000, Windows XP	

## 48X/32X Combo CD-RW/DVD-ROM Drive

Orientation	Either horizontal or vertical
Disc Loading Mechanism	Half-height, tray load
Interface Type	ATAPI
Dimensions—external	5.77 x 1.71 x 7.36 in (14.66 x 4.34 x 18.69 cm) (external, excluding

(W x H x D)	bezel)	
Disc Diameter	12 cm, 8 cm	
Disc Thickness	0.05 in (1.2 mm)	
Track Pitch	1.6 $\mu$ m (CD), 0.74 $\mu$ m (DVD)	
Disc Center Hole Diameter	0.6 in (15 mm)	
Reference Scanning Velocity	1.2 m/s (CD); 3.49 m/s (DVD SL); 3.84 m/s (DVD DL)	
Read Only Disc Parameters	Formats and Modes Supported	CD-ROM-Mode 1; CD-ROM XA-Mode 2; CD-Bridge; CD digital audio; CD Extra; Photo CD (single and multi-session); video CD; DVD (single and double-layer); DVD-R; DVD-RW; DVD-RW Multi-Border; DVD+R; DVD+R Multi-Session, and DVD+RW
	Capacity	180 MB (8 cm); 540 MB (12 cm); 650 MB (12 cm); 700 MB (12 cm); 4.7 GB (DVD-5); 8.54 GB (DVD-9); 9.4 GB (DVD-10)
	Block Size	Mode 1-2,048 and 2,352 bytes; mode 2, form 1-2,048; 2,328; 2,336; 2,340 and 2,352 bytes; mode 2, form 2-2,328; 2,336; 2,340 and 2,352 bytes; CD-DA-2,352 bytes; DVD-2,048 bytes
Writeable Disc Parameters	Disc Type	CD-R and CD-RW
	Write Methods	Disc at Once, Track at Once, Session at Once, Variable Packet, Fixed Packet
	Format and Modes Supported	CD-ROM; CD-ROM XA; CD digital audio, video CD; CD-Bridge
	Capacity	180 MB (8 cm); 540 MB (12 cm); 650 MB (12 cm); 700 MB (12 cm)
	Block Size	CD-DA-2,352 bytes; mode 0- 2,336 and 2,352 bytes; mode 1-2,048 and 2,352 bytes; mode 2-2,336 and 2,352; mode 2, form 1-2,048 and 2,352 bytes; mode 2, form 2-2,324 and 2,352 bytes
Access Times (typical)	Random DVD	< 140 ms (typical)
	Random CD	< 125 ms (typical)
	Full Stroke DVD	< 250 ms (seek)
	Full Stroke CD	< 210 ms
Data Transfer Rates	CD-R write	7200 KB/s (48X) Max
	CD-RW write	4800 KB/s (32X) Max
	CD-ROM, CD-R, CD-RW read	7200 KB/s (32X) Max
	DVD ROM read	21,632 KB/s (16X) Max
Data Transfer Modes	ATA PIO mode 4); ATA Multi-word DMA mode 2; ATA UltraDMA mode 0; ATA UltraDMA mode 1, mode 2; ATA UltraDMA Mode 3 (default)	
Cache Buffer	2 MB (minimum)	
Start-up Time (single)	< 7 seconds typical	
Start-up Time (multi-session)	< 30 seconds typical	
Stop Time	< 4 seconds	
Power	Source	Four-pin, DC power receptacle
	DC power requirement	5 VDC $\pm$ 5%—100 mV ripple p-p

		12 VDC $\pm$ 5%—200 mV ripple p-p		
	DC current	5 VCD	< 1 A (typical) < 1600 mA (maximum)	
		12 VCD	< 600 mA (typical) < 1.4A (maximum)	
		Total Drive Power (Standby mode)	< 2.5 watt	
Audio Output Level	0.7 Vrms			
Configuration Jumper Block	Cable select (default), master and slave modes			
Data Interface Connector	40-pin, shrouded and keyed, flat ribbon			
Environmental	Temperature (operating)	41° to 122° F (5° to 50° C)		
(all conditions, non-condensing)	Relative Humidity (operating)	10% to 90%		
	Maximum Wet Bulb Temperature (operating)	86° F (30° C)		
Certifications, Requirements	MPC-3 compliant, multi-read requirements, ACA AS/NZS 3548, ANSI C63.4-1992, ATAPI Spec SFF-8020, ATA Spec X3T9.2, CB Bulletin No. 92A, CSA C22.2 No. 950-1995, C.I.S.P.R. Pub 22, EMKO-TSE 207/94, TUV or VDE EN60 950, EN60825-1, Microsoft ®PC2001 certification, Microsoft Logo for Windows XP, 2000			
Operating Systems Supported	Microsoft Windows 2000, Windows XP Professional, Windows XP Home			
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48X/32X/48X CD-RW Drive	Orientation	Either horizontal or vertical		
	Disc loading mechanism	Half-height, tray load		
	Interface type	ATAPI IDE		
	Dimensions-external (W x H x D)	7.99 x 5.88 x 1.71 in (20.3 x 14.93 x 4.34 cm)		
	Weight	2.6 lb (1.2 kg)		
	Disc diameter	12 cm, 8 cm		
	Disc thickness	1.2 mm		
	Track pitch	1.6 $\mu$ m		
	Disc center hole diameter	15 mm		
	Reference scanning velocity	1.2 m/s		
	Recording/playing time	80 minutes with CD-R media		
	Read only disc parameters	Formats and modes supported	CD-ROM-Mode 1; CD-ROM XA-Mode 2 (forms 1 and 2); CD digital audio; CD Extra; CD-I-Mode 2 (forms 1 and 2) and CD-I-Ready; Photo CD (single and multi-session); video CD	
		Capacity	185 MB (Mode 2, 8cm); 540 MB (Mode 1, 12 cm); 650 MB (Mode 2, 12 cm); 700 MB (Mode 2, 12 cm)	
		Block size	Mode 1-2,048 and 2,352 bytes; mode 2, form 1-2,048; 2,328; 2,336; 2,340 and 2,352 bytes; mode 2, form 2-2,328; 2,336; 2,340 and 2,352 bytes; CD-DA-2,352 and 2,368 bytes	
	Writeable disc parameters	Disc type	CD-R and CD-RW	
		Write methods	Disc at Once, Track at Once, Session at Once, Variable Packet, Fixed Packet	

	Format and modes supported	CD-ROM (mode 1); CD-ROM XA (mode 2, forms 1 and 2); CD digital audio, CD-I (mode 2, forms 1 and 2); video CD	
	Capacity	185 MB (Mode 2, 8cm); 540 MB (Mode 1, 12 cm); 650 MB (Mode 2, 12 cm); 700 MB (Mode 2, 12 cm)	
	Block size	Mode 1-2,048 bytes; mode 2, form 1-2,048 and 2,352 bytes; mode 2, form 2-2,352 bytes; CD-DA –2,352 bytes	
Access times (typical)	Random	< 120 ms	
	Full stroke	< 200 ms	
Data transfer rates	CD-RW write	4800 KB/s (up to 32X)	
	CD-ROM, CD-R read	7200 KB/s (up to 48X)	
	CD-RW read	7200 KB/s (up to 32X)	
	CD-R write	7200 KB/s (up to 48X)	
Data transfer modes	ATA PIO mode 4 (16.7MB/s); ATA multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA mode 0 (16.7 MB/s) ;ATA UltraDMA mode 1 (24 MB/s) ; ATA UltraDMA mode 2 (33 MB/s) - default.		
Cache buffer	2 MB (minimum)		
Start-up time (single)	< 7 seconds typical		
Start-up time (multi-session)	< 30 seconds typical		
Stop time	< 4 seconds		
Power	Source	Four-pin, 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 VCD	< 1 A (typical)
			< 1600 mA (maximum)
		12 VCD	< 600 mA (typical)
			< 1.4A (maximum)
		Total Drive Power (Standby mode)	< 2.5 watt
Audio output level	0.7 Vrms		
Configuration jumper block	Master, slave and cable select modes		
Data interface connector	50-pin IDE interface		
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)	84° F (29° C)	
	Certifications, requirements	ACA AS/NZS 3548, ANSI C63.4-1992, CB Test Certificate for IEC 950, CE Mark, CFR 47 part 15, CNS 13438, CSA C22.2 No. 60950, DHHS/FDA - 1040, EN60825, EN55022:1998, EN55024, EN60 950:2000, ICES-003 class B, IEC 61000 4-2 - 4-11, Nordic EN60 950, TUV or VDE EN60 950, UL 60950, C.I.S.P.R. Publication 22 Class B, BSMI, Microsoft P2001, Microsoft Logo for Windows98, 2000 and XP	
Operating systems supported	Microsoft Windows 2000, Windows XP		

48X Max CD-ROM Drive	Interface	ATAPI	
	Data Transfer Rate	Variable (Audio CD) - 1,800 to 3,600 KB/s (24X) Max	Variable (CD-ROM, CD-R)-2,400 to 7,200 KB/s (48X) Max
	Access Time (ms)	Random: <125 ms	Full-stroke seek: <210 ms
	Data Buffer	2MB	
	Disk Formats Read	CD-ROM Mode 1, CD-ROM XA (Mode 2, Form 1 and 2), CD Digital Audio, CD-EXTRA, CD-I (Mode 2, Form 1 and 2) and CD-I Ready, CD-Text, CD-Bridge, Photo CD (Single and Multi Session), Video CD, CD-R and CD- RW Multi-Session	
	Disk Formats Written	None	
	Disk Capacity (CD)	180MB, 540MB, 650 MB, and 700MB	
	Block Size	Mode 1-2,048, 2,352 bytes Mode 2-1, 2,048, 2,328, 2,336, 2,340, 2,353 bytes Mode 2-2, 2,328, 2,336, 2,340, 2,352 bytes CD-DA-2,352, 2,368 bytes	
	Diameter	12 cm; 8 cm	
	Thickness	1.2 mm	
	Track Pitch	1.6 $\mu$ m	
	Audio Output Level	Line-out-0.7 V @ 47 Kohm	
	Startup Time	<7 seconds (typical); < 30 seconds with multi-session	
	Operating Conditions	Temperature	41° to 122° F (5° to 50° C)
		Relative Humidity	10% to 90%
	Dimensions (H x W x D, maximum)	1.7 x 5.9 x 8.0 in (4.3 x 15.0 x 20.3 cm)	
	Weight	2.6 lb (1200 g)	
	Operating Systems Supported	Microsoft Windows 2000, Windows XP Professional, Windows XP Home	

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[Removable Storage](#)   [Technical Specifications - Environmental Data](#)

## Technical Specifications - Removable Storage

HP 16-in-1 Media Card Reader	USB Interface	USB 2.0 High-speed device	
	Advance protocol support	Supports hardware ECC (Error Correction Code) function	
		<ul style="list-style-type: none"> <li>• Supports hardware CRC (Cyclic Redundancy Check) function</li> <li>• Supports MS 4-bit parallel transfer mode</li> <li>• Supports MS-PRO 4-bit parallel transfer mode</li> <li>• Supports SD 4-bit parallel transfer mode</li> <li>• Supports high-speed 50-MHz SD 4-bit card (version 1.1)</li> <li>• Support high-speed 52-MHz MMC 8-bit card</li> </ul>	
	Supported media type with card adapter	<ul style="list-style-type: none"> <li>• MicroSD (T-Flash)</li> <li>• Memory Stick Micro</li> </ul>	
	Mechanical		

Environmental	Operational Environmental Extremes	Test Parameters/Conditions – Power applied, unit operating on system $\pm 5\%$ nominal supply voltage. 10°C 10% R.H. $\geq 24$ hours 10°C 90% R.H. $\geq 24$ hours 20°C 90% R.H. $\geq 24$ hours 30°C 90% R.H. $\geq 24$ hours 40°C 90% R.H. $\geq 24$ hours 50°C 90% R.H. $\geq 24$ hours 50°C 10% R.H. $\geq 24$ hours
	Storage Environmental Extremes	Test Parameters/Conditions 60°C @ 80% R.H. for 96 hours -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
Operating system support	Microsoft Windows 2000 (Service Pack 3 or greater), Windows XP Home, Windows XP Professional	
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. 1.2 FCC, CE, BSMI, C-Tick, VCCI, MIC, cUL, TUV-T	

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## Technical Specifications - 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
- Blue Angel
- US Federal Energy Management Program (FEMP)
- Taiwan Green Mark
- China Energy Conservation Program
- IT ECO declaration
- Japan PC Green label\*
- EPEAT (Silver)

\*NOTE: This product conforms to the examination standards (2003 version) under JEITA's 'PC Green Label System.'

### Ultra-Slim Desktop

System Configuration	The Energy Consumption and Declared Noise Emissions data for the Ultra-Slim Desktop is based on a typically configured model:	
Processor	3.2 GHz	
Memory	512 MB	



Hard drive 40 GB

## Energy Consumption

	115 VAC	230 VAC	100 VAC
Normal Operation	72 W	66 W	73 W
Sleep*	3.9 W	4.2 W	2.5 W
Off	1.0 W	1.3 W	2.6 W

## Heat Dissipation\*\*

	115 VAC	230 VAC	100 VAC
Normal Operation	246 BTU/hr	226 BTU/hr	250 BTU/hr
Sleep*	13 BTU/hr	14 BTU/hr	9 BTU/hr
Off	3 BTU/hr	4 BTU/hr	9 BTU/hr

## NOTES:

\* Energy Star low energy mode

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

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

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

	Sound Power (LWad, bels)	Sound Pressure (LpAm, decibels)
Idle	3.6	25
Fixed Disk (random writes)	3.9	29
Optical Drive (sequential reads)	4.7	36

## Longevity and Upgrading

This product is designed to be upgraded, possibly extending its useful life by several years. Spare parts are available throughout the warranty period and for up to 5 years after the end of production. Upgradeability features contained in the product include:

- Intel LGA775 processor socket
- 8 USB ports
- 1 multi-bay port
- 1 empty PCI slot (w/ optional riser card)
- 1 internal drive slot
- 3 memory slots
- 1 Serial Port (optional)

## Batteries

This product complies with ISO standards:

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

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight
- Lead greater than 4000ppm 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 product is in compliance with the IEEE 1680 (EPEAT) standard at the SILVER level, see <http://www.epeat.net>.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).

- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.
- This product contains 0% recycled materials (by wt.)
- This product is 90% recyclable when properly disposed of at end of life.

Packaging Materials

External	Corrugated Paper	1600 g
Internal	LDPE Foam	260 g
	LDPE Bag	2 g

*Small Form Factor*

## System Configuration

The Energy Consumption and Declared Noise Emissions data for the Small Form Factor is based on a typically configured model:

Processor	2.8 GHz
Memory	512 MB
Hard drive	80 GB

## Energy Consumption

	115 VAC	230 VAC	100 VAC
Normal Operation	88.5 W	84.5 W	89.5 W
Sleep*	4.2 W	4.2 W	4.5 W
Off	1.0 W	1.0 W	1.3 W

## Heat Dissipation\*\*

	115 VAC	230 VAC	100 VAC
Normal Operation	302 BTU/hr	299 BTU/hr	307 BTU/hr
Sleep*	14 BTU/hr	14 BTU/hr	15 BTU/hr
Off	3 BTU/hr	3 BTU/hr	14 BTU/hr

## NOTES:

\* Energy Star low energy mode

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

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

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

	Sound Power (LWad, bels)	Sound Pressure (LpAm, decibels)
Idle	4.0	29
Fixed Disk (random writes)	4.0	30
Optical Drive (sequential reads)	5.4	45

## Longevity and Upgrading

This product is designed to be upgraded, possibly extending its useful life by several years. Spare parts are available throughout the warranty period and for up to 5 years after the end of production.

Upgradeability features contained in the product include:

- Intel LGA775 processor socket
- 8 USB ports
- 2 multi-bay ports (optional)
- 4 empty PCI slots (2 standard, 2 low profile))
- 1 internal drive slots
- 4 memory slots
- 1 Serial Port (optional)

## Batteries

This product complies with ISO standards:

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

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight
- Lead greater than 4000ppm 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 product is in compliance with the IEEE 1680 (EPEAT) standard at the SILVER level, see <http://www.epeat.net>.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.
- This product contains 0% recycled materials (by wt.)
- This product is 74% recyclable when properly disposed of at end of life.

#### Packaging Materials

External	Corrugated Paper	1600 g
Internal	LDPE Foam	260 g
	LDPE Bag	2 g

### Convertible Minitower

#### System Configuration

The Energy Consumption and Declared Noise Emissions data for the Convertible Minitower is based on a typically configured model:

Processor	2.8 GHz
Memory	256 MB
Hard drive	80 GB

#### Energy Consumption

	115 VAC	230 VAC	100 VAC
Normal Operation	80 W	76 W	80 W
Sleep	3.6 W	4.1 W	3.5 W
Off	1.4 W	1.9 W	1.4 W

#### Heat Dissipation\*\*

	115 VAC	230 VAC	100 VAC
Normal Operation	274 BTU/hr	260 BTU/hr	274 BTU/hr
Sleep	12 BTU/hr	14 BTU/hr	12 BTU/hr
Off	5 BTU/hr	6 BTU/hr	5 BTU/hr

#### NOTES:

\* Energy Star low energy mode

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

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

#### Declared Noise Emissions (in accordance with

	Sound Power (LWad, bels)	Deskside Sound Pressure
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ISO 7779 and ISO 9296)		(LpAm, decibels)
Idle	4.2	25
Fixed Disk (random writes)	4.4	27
Optical Drive (sequential reads)	4.8	31

**Longevity and Upgrading** This product is designed to be upgraded, possibly extending its useful life by several years. Spare parts are available throughout the warranty period and for up to 5 years after the end of production. Upgradeability features contained in the product include:

- Intel LGA775 processor socket
- 8 USB ports
- 4 multi-bay ports (optional)
- 4 empty PCI slots (2 standard, 2 low profile))
- 2 internal drive slots
- 4 memory slots
- 1 Serial Port (optional)

**Batteries** This product complies with ISO standards:

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

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight
- Lead greater than 4000ppm 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 product is in compliance with the IEEE 1680 (EPEAT) standard at the SILVER level, see <http://www.epeat.net/>.
  - This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
  - This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
  - Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.
  - This product contains 0% recycled materials (by wt.)
  - This product is 90% recyclable when properly disposed of at end of life.

#### Packaging Materials

External	Corrugated Paper	1612 g
Internal	LDPE Foam	296 g

### *Ultra-Slim Desktop, Small Form Factor, Convertible Minitower*

**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. From 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).

Prior to this date, customers interested in purchasing RoHS compliant product should contact their local HP sales or distribution office to determine specific configuration status.

#### 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](http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html)):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBEBs)
- 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

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.

#### 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/recycle> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

#### Hewlett-Packard Corporate Environmental Information

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

[link to new HP white paper now in progress]

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>

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