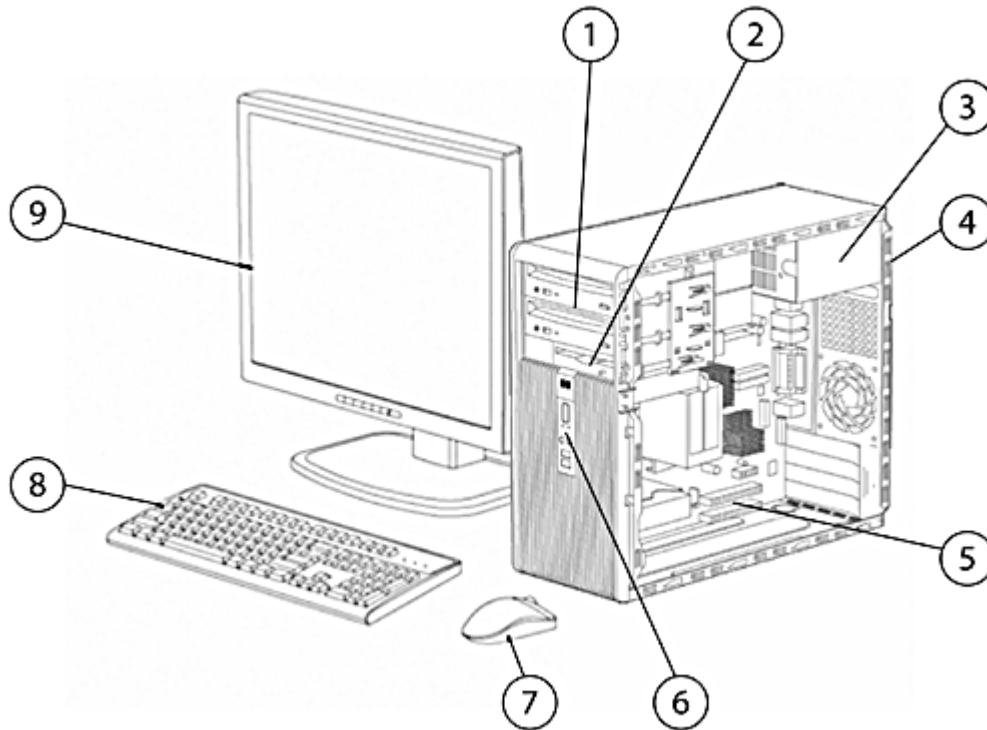# QuickSpecs

## Overview

**HP recommends
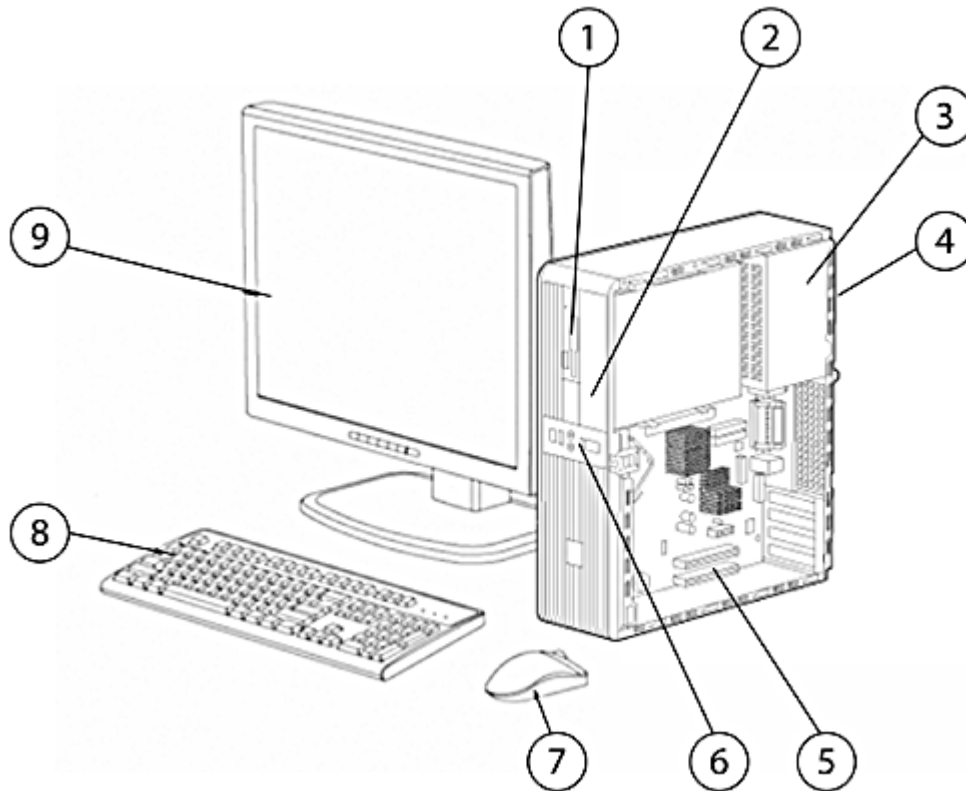Windows Vista® Business**

**Microtower**

1. (2) 5.25" external bays and (2) 3.5" internal bays

2. (1) 3.5" external bay for optional HP 16-in-1 Media Card Reader, diskette drive, or other 3.5" device

3. 300-watt or 300-watt high efficiency 80 PLUS® power supply

4. 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

5. (2) full-height PCI slots, (1) full-height PCIe x1 slot, (1) SDVO/ADD2 connector

6. Front I/O: (2) USB 2.0, headphone and microphone, Dual Color Diagnostic LEDs

7. 2-Button Scroll Mouse (PS/2) or Optical Scroll Mouse (PS/2 or USB)

8. HP Standard Keyboard (PS/2 or USB) or HP USB Smartcard Keyboard

9. Monitor (sold separately)

Overview

**Small Form Factor**



1. (1) 3.5" external bay for optional HP 16-in-1 Media Card Reader, diskette drive, or other 3.5" device; (1) 3.5" internal bay

2. (1) 5.25" external bay for optional optical drive, or other 5.25" device (bay tilts up for device removal and insertion)

3. 240-watt or 240-watt high efficiency 80 PLUS power supply

4. 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

5. (2) low profile PCI slots, (1) low profile PCIe x1 slot, (1) SDVO/ADD2 connector

6. Front I/O: (2) USB 2.0, headphone and microphone, Dual Color Diagnostic LEDs

7. 2-Button Scroll Mouse (PS/2) or Optical Scroll Mouse (PS/2 or USB)

8. HP Standard Keyboard (PS/2 or USB) or HP USB Smartcard Keyboard

9. Monitor (sold separately)

Overview

## At A Glance

- The HP Compaq dc5700 offers a stable solution with mainstream features and flexibility that exceed basic business requirements
- Intel® Q963 Express chipset, Intel Core™ 2 Duo processors, Intel Pentium® D dual core processors, and Intel Pentium 4 processors
- Embedded TPM1.2 compliant security module (Vista Bit-Locker ready)
- Support for SMART III 3.0Gb/s Serial ATA hard drives
- Value-added software available pre-loaded on select models:
  - HP ProtectTools Security Software Suite (purchased separately), including Credential Manager, Smart Card Manager, and BIOS Configuration
  - HP Software Agent
  - Altiris Deployment Solution Agent
  - Symantec Antivirus 10.0 with 60 day Live Update Subscription
  - HP Backup and Recovery Manager
- Value-added software available for free download from the Web (http://www.hp.com/go/easydeploy)
  - HP Client Configuration Manager, Basic Edition
  - HP Client Manager for Altiris
  - Altiris Out-of-Band Management Solution
  - HP SoftPaq Download Manager
  - HP System Software Manager
  - HP Client Catalog for Microsoft SMS
  - Verdiem Surveyor remote power management agent
- Fully compatible software OS image across all models (Microtower, Small Form Factor)
- HP BIOS for security, manageability and software image stability
- Standard 3-years parts, 3-years labor, and 3-years on-site warranty services
- HP Insight Diagnostics software
- 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)

## 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.

## dc7700pC8/E6300/250h+nyr/512H/S11tQk

**MS SW DESIGNATOR**
- s=MS Office Software
- p=with Vpro (dc7700)
- r=Office Ready
- x=Office Ready with Vpro

**FORM FACTOR**
- S=SFF
- C=CMT
- M=MT
- U=USDT
- T=ST

**ENHANCED POWER EFFICIENCY**
- Blank=not applicable
- 8=80PLUS power supply
- 9=E STAR 4.0 compliant config

**FAMILY LINE**
- dx2200=HP Compaq dx2200
- dx2250=HP Compaq dx2250
- dx2255=HP Compaq dx2255
- dx2300=HP Compaq dx2300
- dx2308=HP Compaq dx2308
- dx2700=HP Compaq dx2700
- dx2708=HP Compaq dx2708
- dx7300=HP Compaq dx7300
- dx7308=HP Compaq dx7308
- dx7380=HP Compaq dx7380
- dc7700=HP Compaq dc7700
- dc5700=HP Compaq dc5700
- dc5750=HP Compaq dc5750

| Desc | Clk Spd | FSB | L2 |
|------|---------|-----|-----|
| E6700 | 2.66 | 1066 | 4M |
| E6600 | 2.40 | 1066 | 4M |
| E6400 | 2.13 | 1066 | 2M |
| E6300 | 1.86 | 1066 | 2M |
| E4300 | 1.60 | 800 | 2M |
| PD945 | 3.40 | 800 | 4M |
| PD935 | 3.20 | 800 | 4M |
| PD925 | 3.00 | 800 | 4M |
| PD915 | 2.80 | 800 | 4M |
| P4661 | 3.60 | 800 | 2M |
| P4651 | 3.40 | 800 | 2M |
| P4641 | 3.20 | 800 | 2M |
| P4631 | 3.00 | 800 | 2M |
| P4541 | 3.20 | 800 | 1M |
| P4531 | 3.00 | 800 | 1M |
| C360 | 3.46 | 533 | 512K |
| C356 | 3.33 | 533 | 512K |
| C352 | 3.20 | 533 | 512K |
| C347 | 3.06 | 533 | 512k |
| C331 | 2.66 | 533 | 256k |

| Desc | Clk Spd | FSB | L2 |
|------|---------|-----|-----|
| AX2-60 | 3.00 | 2000 | 2M |
| AX2-58 | 3.00 | 2000 | 1M |
| AX2-56 | 2.80 | 2000 | 2M |
| AX2-54 | 2.80 | 2000 | 1M |
| AX2-52 | 2.60 | 2000 | 2M |
| AX2-50 | 2.60 | 2000 | 1M |
| AX2-48 | 2.50 | 2000 | 1M |
| AX2-46 | 2.40 | 2000 | 1M |
| AX2-44 | 2.30 | 2000 | 1M |
| AX2-42 | 2.20 | 2000 | 1M |
| AX2-40 | 2.10 | 2000 | 1M |
| AX2-38 | 2.00 | 2000 | 1M |
| A64-40 | 2.60 | 2000 | 512K |
| A64-38 | 2.40 | 2000 | 512K |
| A64-35 | 2.20 | 2000 | 512K |
| AS-38 | 2.20 | 1600 | 256K |
| AS-36 | 2.00 | 1600 | 256K |
| AS-35 | 2.00 | 1600 | 128K |
| AS-34 | 1.80 | 1600 | 256K |
| AS-33 | 2.00 | 1600 | 128K |
| AS-32 | 1.80 | 1600 | 128K |
| AS-30 | 1.60 | 600 | 256K |

**HARD DRIVE**
- 40=40G HD
- 80=80G HD
- 160=160G HD
- 250=250G HD

**HDD SPEED**
- h=7200 SATA
- K=10K SATA

- +=2nd HDD
- #=2nd HDD w/Raid

**REMOVABLE STORAGE**
- c=CD-ROM
- d=DVD-ROM
- q=DVD+RW
- r=CDRW
- w=DVD/CDRW/+RW
- y=Disk-on-Key II
- f=Floppy
- n=no floppy
- m=Multi-Card Reader
- s=Removable HDD

**MEMORY SIZE**
- 256=256MB
- 512=512MB
- 1.0=1GB
- 1.5=1.5GB
- 2.0=2.0GB
- 4.0=4.0GB

**MEMORY SPEED**
- H=PC2 3200 DDR2 400MHz single channel
- I=PC2 3200 DDR2 400MHz dual channel
- J=PC2 4200 DDR2 533MHz single
- K=PC2 4200 DDR2 533MHz dual
- L=PC2 5300 DDR2 667MHz single
- R=PC2 5300 DDR2 667MHz dual
- T=PC2 6400 DDR2 800MHz single
- U=PC2 6400 DDR2 800MHz dual

**VARIABLE WARRANTY**
- Blank=not applicable
- a=1-0-0
- d=1-1-0
- f=1-1-1
- g=2-0-0
- h=2-2-0
- i=3-1-1
- j=3-3-0
- k=3-3-3
- l=4-4-4
- m=5-5-5
- n=90-0-0

**OTHER**
- Blank=integrated NIC
- Q=2nd Serial Port
- P=Solenoid Lock
- H=Special Home Edition Sticker
- A=Wireless NIC
- M=Modem

**SOFTWARE APPLICATIONS**
- o=Office Pro
- t=Office Personal
- e=Office SBE
- b=Office Basic
- u=MS Works 7.0 (NA only)
- w=MS Word (EMEA only)

**OPERATING SYSTEM**
- 2=XP Pro x54
- 3=XP Home
- 4=XP Pro
- 5=XP Home S Chin
- 6=XP Pro S Chin
- 7=Vista Business 32
- 8=Freedos
- 9=WS Blade Embedded OS
- 10=Vista Business 64
- 11=Vista Basic
- 12=Vista Business 32 S China
- 13=Vista Businesss 64 S China
- 14=Vista Basic S China

**GRAPHIC**
- V=ADD2 SDVO single DVI-D adapter
- Q=ATI X300SE 128MB single head PCIe DVI w/tv-out
- B=ATI X1300 256MB single head PCIe DVI w/tv-out
- C=ATI X1300 256MB dual head PCIe DMS59 w/tv-out
- D=ATI X1600 256MB dual head PCIe DVI w/tv-out
- E=NVIDIA Quadro NVS55 64MB single head PCI VGA w/tv-out
- M=NVIDIA Quadro 280NVS 64MB dual head PCIe VGA
- N=NVIDIA Quadro 280NVS 64MB dual head PCI VGA
- S=NVIDIA Quadro 285NVS 128MB dual head PCIe VGA

## Standard Features and Configurable Components

**Operating System** – One of the following

**Preinstalled**

Genuine Windows Vista Business 32*

Genuine Windows Vista Business 64*

Genuine Windows XP Professional SP2

FreeDOS†

**Supported**

Genuine Windows 2000

* Certain Windows Vista product features require advanced or additional hardware. See http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx and http://www.microsoft.com/windowsvista/getready/capable.mspx for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit http://www.windowsvista.com/upgradeadvisor.

† The following features are not supported by Linux:

- 1.2 TPM Embedded Security Chip integrated with Broadcom NIC
- HP 16-in-1 Media Card Reader
- HP Wireless A+G PCI Card
- Intel PRO/1000 PT PCIe Gigabit NIC Card
- HP BT450 USB Bluetooth Wireless Printer and PC Adapter
- Broadcom NetXtreme Gigabit Ethernet PCIe NIC Card
- 2006 Agere PCI 56K International SoftModem
- DVI ADD2 SDVO single head Graphics Adapter (SDVO connector)
- NVIDIA Quadro NVS 280 64-MB PCI dual head VGA
- NVIDIA Quadro NVS 55 64MB PCI low profile DVI w/TV-Out
- NVIDIA GF 8400GS 256MB dual head graphics adapter (PCIe x1)
- HP USB Smartcard Keyboard
- Belken USB to Serial Adapter
- HP 2nd Serial Port adapter
- HP FireWire / IEEE 1394 PCI Card

**NOTE:** Drivers for Windows Vista are continually being made available for download from http://www.hp.com.

**Value-added Software** (on select models; not included with FreeDOS)

HP ProtectTools Security Software Suite*

HP Backup and Recovery Manager

HP Insight Diagnostics

Computer Setup Utility

Symantec AntiVirus with 60 day Live Update Subscription

Intervideo WinDVD (supplied with DVD drive)

Microsoft Office 2007 Basic

* optional purchase

Microsoft Office 2007 Personal

Microsoft Office 2007 Professional

Microsoft Office 2007 Small Business

Microsoft Works

Microsoft Internet Explorer

PDF Complete

HP Smart Desktop Management System (SDMS) Free Trial

HP Software Agent

Altiris Deployment Solution Agent

## Standard Features and Configurable Components

**Value-added Software**
(available for free download from the Web http://www.hp.com/ go/easydeploy)

HP Client Configuration Manager, Basic Edition

HP Client Manager for Altiris

Altiris Out-of_Band Management Solution

HP SoftPaq Download Manager

HP Systems Software Manager

HP Client Catalog for Microsoft SMS

Verdiem Surveyor agent

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**Value-added Services and Features**

HP Stable Platform Program with Product Change Notification

Business-to-Business Portals

HP Global Series Services

Factory Express Deployment and Lifecycle Services

TPM 1.2* Vista Bit-Locker Ready

Tool-less Serviceability

* TPM module disabled where use is restricted by law; for example, Russia.

---

**Service and Support**

On-site Warranty and Service [Note 1]: 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 [Note 2] and includes free telephone support [Note 3] 24 x 7. Global coverage [Note 2] 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.

---

|  | **Microtower** | **Small Form Factor** |
|---|---|---|
| **Chassis Dimensions** (H x W x D) | 14.85"H x 6.95"W x 16.85"D | 4.5"H x 15.5"W x 13.5"D |
| **System weight*** | 23.44 lb (10.63 kg) | 17.86 lb (8.10 kg) |
| **System volume** | 1739 cu in | 941.63 cu in |
| **Shipping weight*** | 32.12 lb (14.57 kg) | 26.70 lb (12.11 kg) |
| **Shipping box dimensions** (H x W x D) | 12.0 x 19.76 x 23.62 in | 9.72 x 19.68 x 22.67 in |

* Configured with 1 hard drive, 1 optical drive, no diskette drive, and no PCI card.

| | | |
|---|---|---|
| **Power Supply** | 300W power supply – passive PFC | 240W power supply – passive PFC |
| **80 PLUS Power Supply** | 300W 80 PLUS* power supply – active PFC | 240W 80 PLUS* power supply – active PFC |

* This alternate 80% efficient power supply is a requirement for ENERGY STAR compliance in conjunction with a select range of processors and modules.

**Ports**

| | | |
|---|---|---|
| USB 2.0 | 8 (2 front, 6 rear) | 8 (2 front, 6 rear) |
| Serial | 1 standard with 2nd optional | 1 standard with 2nd optional |
| Parallel | 1 | 1 |
| PS/2 | 1 keyboard, 1 mouse | 1 keyboard, 1 mouse |

## Standard Features and Configurable Components

| | | |
|---|---|---|
| Video | analog for integrated graphics | analog for integrated graphics |
| DVI output* | available via ADD2 card in SDVO connector | available via ADD2 card in SDVO connector |
| Support for Multi-Monitor* | available via ADD2 card in SDVO connector or by using NVIDIA Quadro NVS 280 64-MB PCI dual head VGA graphics adapter | available via ADD2 card in SDVO connector or by using NVIDIA Quadro NVS 280 64-MB PCI dual head VGA graphics adapter |
| Audio | Integrated High Definition audio with internal speaker<br>Front – mic and headphone<br>Rear** – line in, line out | Integrated High Definition audio with internal speaker<br>Front – mic and headphone<br>Rear** – line in, line out |
| NIC (RJ-45) | Integrated Broadcom 5755 Gigabit Ethernet | Integrated Broadcom 5755 Gigabit Ethernet |

**NOTES**:

* The dc5700 supports Normal (or Non-reversed) layout ADD2 (Advanced Digital Display 2) adapter cards inserted into the SDVO (Serial Digital Video Output) connector on the system board. This connector has the physical appearance of a PCIe x16 connector; however, conventional PCIe cards are not supported in this connector.

** Rear audio ports are re-taskable as Line-in, Line-out, or Microphone-in.

| | | MT | SFF |
|---|---|---|---|
| **Chipset** | Intel Q963 Express chipset | X | X |

| | | MT | SFF |
|---|---|---|---|
| **Processor and Speed***<br>One of the following | **Intel® Celeron® D Processors:** | | |
| | Intel® Celeron® D 331 Processor (2.66-GHz, 256K L2 cache, 533-MHz FSB) | X | X |
| | Intel Celeron D 347 Processor (3.06-GHz, 512K L2 cache, 533-MHz FSB) | X | X |
| | Intel Celeron D 352 Processor (3.20-GHz, 512K L2 cache, 533-MHz FSB) | X | X |
| | Intel Celeron D 356 Processor (3.33-GHz, 512K L2 cache, 533-MHz FSB) | X | X |
| | Intel Celeron D 360 Processor (3.46-GHz, 512K L2 cache, 533-MHz FSB) | X | X |
| | Intel Celeron M 420 Processor (1.60-GHz, 512K L2 cache, 800-MHz FSB) | X | X |
| | Intel Celeron M 430 Processor (1.80-GHz, 512K L2 cache, 800-MHz FSB) | X | X |
| | Intel Celeron M 440 Processor (2.00-GHz, 512K L2 cache, 800-MHz FSB) | X | X |
| | **Intel Celeron Dual-Core Processors** | | |
| | Intel Celeron E1200 Processor (1.6-GHz, 512K L2 cache, 800-MHz FSB) | X | X |
| | **Intel Pentium 4 Processors with HT Technology:** | | |
| | Intel Pentium 4 531 Processor (3.0-GHz, 1-MB L2 cache, 800-MHz FSB) | X | X |
| | Intel Pentium 4 541 Processor (3.20-GHz, 1-MB L2 cache, 800-MHz FSB) | X | X |
| | Intel Pentium 4 631 Processor (3.0-GHz, 2-MB L2 cache, 800-MHz FSB) | X | X |
| | Intel Pentium 4 641 Processor (3.20-GHz, 2-MB L2 cache, 800-MHz FSB) | X | X |
| | Intel Pentium 4 651 Processor (3.40-GHz, 2-MB L2 cache, 800-MHz FSB) | X | X |
| | Intel Pentium 4 661 Processor (3.60-GHz, 2-MB L2 cache, 800-MHz FSB) | X | X |
| | **Intel Pentium Dual-Core Processors:** | | |
| | Intel Pentium E2180 Processor (2.0-GHz, 1-MB L2 cache, 800-MHz FSB) | X | X |
| | Intel Pentium E2200 Processor (2.2-GHz, 1-MB L2 cache, 800-MHz FSB) | X | X |
| | **Intel Pentium D Processors:** | | |

## Standard Features and Configurable Components

| | | |
|---|:---:|:---:|
| Intel Pentium D 915 Processor (2.8-GHz, 2x2-MB L2 cache, 800-MHz FSB) | X | X |
| Intel Pentium D 925 Processor (3.0-GHz, 2x2-MB L2 cache, 800-MHz FSB) | X | X |
| Intel Pentium D 935 Processor (3.2-GHz, 2x2MB L2 cache, 800-MHz FSB) | X | X |
| Intel Pentium D 945 Processor (3.4-GHz, 2x2-MB L2 cache, 800-MHz FSB) | X | X |
| **Intel Dual Core Processors:** | | |
| Intel Dual Core E2140 Processor (1.60-GHz, 1 MB L2 cache, 800-MHz FSB) | X | X |
| Intel Dual Core E2160 Processor (1.80-GHz, 1 MB L2 cache, 800-MHz FSB) | X | X |
| **Intel Core 2 Duo Processors:** | | |
| Intel Core 2 Duo E4300 Processor (1.80-GHz, 2 MB L2 cache, 800-MHz FSB) | X | X |
| Intel Core 2 Duo E4400 Processor (2.00-GHz, 2 MB L2 cache, 800-MHz FSB) | X | X |
| Intel Core 2 Duo E4500 Processor (2.20-GHz, 2 MB L2 cache, 800-MHz FSB) | X | X |
| Intel Core 2 Duo E6300 Processor (1.86-GHz, 2 MB L2 cache, 1066-MHz FSB) | X | X |
| Intel Core 2 Duo E6320 Processor (1.86-GHz, 4 MB L2 cache, 1066-MHz FSB) | X | X |
| Intel Core 2 Duo E6400 Processor (2.13-GHz, 2 MB L2 cache, 1066-MHz FSB) | X | X |
| Intel Core 2 Duo E6420 Processor (2.13-GHz, 4 MB L2 cache, 1066-MHz FSB) | X | X |
| Intel Core 2 Duo E6600 Processor (2.40-GHz, 4 MB L2 cache, 1066-MHz FSB) | X | X |
| Intel Core 2 Duo E6700 Processor (2.66-GHz, 4 MB L2 cache, 1066-MHz FSB) | X | X |

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

| | |
|---|---|
| **Memory** | **DDR2 SYNCH DRAM NON-ECC MEMORY**<br>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 Q963 Express chipsets support non-ECC DDR2 PC2-5300 (667-MHz)<br><br>**HP recommends dual-channel symmetric configurations for maximum performance.**<br>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. |

### *Microtower and Small Form Factor*

| | |
|---|---|
| **Maximum Memory** | Supports up to 4-GB of DDR2 SYNCH DRAM. *Slot 1 is black and must always be populated. Not all memory configurations possible are represented below.*<br>**NOTE:** Above 3-GB, all memory may not be available due to system resource requirements. |

## Standard Features and Configurable Components

| DIMM Size | Slot | | | |
|---|---|---|---|---|
| | **Channel A** | | **Channel B** | |
| | **1** (black) | **2** (white) | **3** (black) | **4** (white) |
| **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 | 256-MB | 256-MB |
| **2-GB** (dual-channel symmetric) | 1-GB | | 1-GB | |
| **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 |

| | | **MT** | **SFF** |
|---|---|---|---|
| **Memory Configurations** One of the following | 256-MB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (1 x 256) | X | X |
| | 512-MB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (1 x 512) | X | X |
| | 512-MB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (2 x 256) | X | X |
| | 1-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (2 x 512) | X | X |
| | 1-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (1 x 1GB) | X | X |
| | 2-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (4 x 512) | X | X |
| | 2-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (2 x 1GB) | X | X |
| | 4-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (4 x 1GB) | X | X |

# QuickSpecs

## Standard Features and Configurable Components

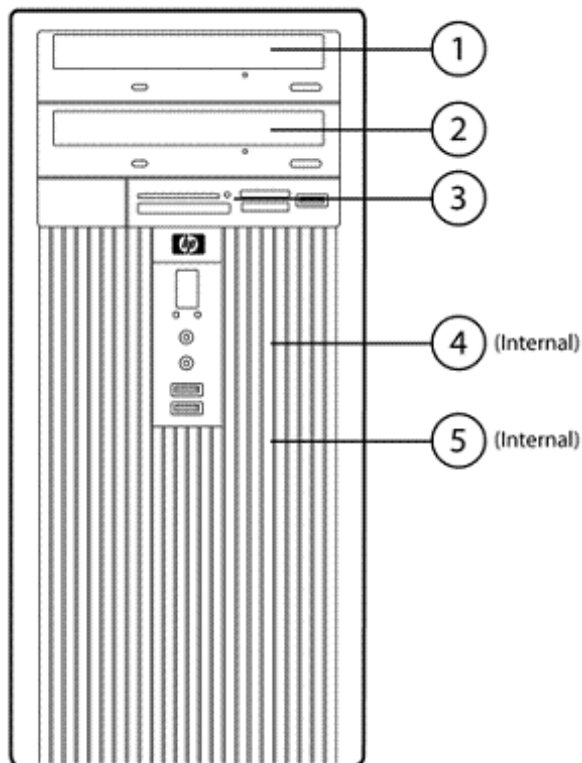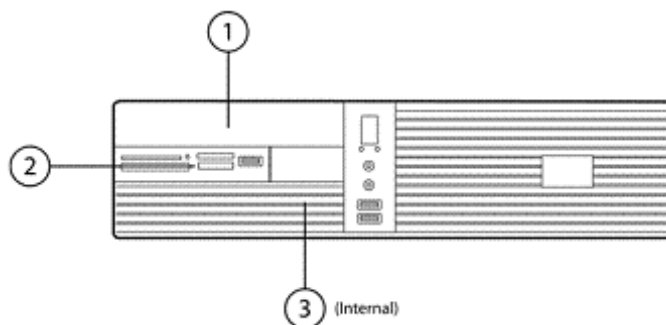| Expandability | Microtower | Small Form Factor |
|---|---|---|
| **PCI slots** | 2 Full Length 5V 32 bit PCI slots | 2 LP 5V 32 bit PCI slots |
| **Max power per slot** | 25W | 25W |
| **PCIe x1 slot** | 1 | 1 |
| **Max power per slot** | 10W | 10W |
| **SDVO/ADD2 slot** | 1 | 1 |
| **External Bays** | | |
| 3.5" | 1 | 1 |
| 5.25" | 2 | 1 |
| **IDE** | | |
| Internal 3.5" HDD Bays | 2 | 1 |
| **Hard Drive Controller** (SATA) **Supported** | SATA | SATA |
| **Hard Drive Interfaces Supported** | SATA 3.0Gb/s | SATA 3.0Gb/s |

**Microtower**            **Small Form Factor**

## Standard Features and Configurable Components

| Storage – Drive Support | | | | | | |
|---|---|---|---|---|---|---|
| | **Microtower** | | | **Small Form Factor** | | |
| | **Media Card Reader or Diskette Drive** (optional) | **5.25" Serial ATA Devices** | **3.5" Serial ATA Devices** | **Media Card Reader or Diskette Drive** (optional) | **5.25" Serial ATA Devices** | **3.5" Serial ATA Devices** |
| Quantity Supported | 1 | 2 | 2 | 1 | 1 | 2 |
| Position Supported | ③ | ①,② | ③,④,⑤ | ② | ① | ②,③ |
| Controller | USB/Diskette | SATA | SATA | USB/Diskette | SATA | SATA |

| | | MT | SFF |
|---|---|---|---|
| **Hard Drive** One or two of the following | 80-GB SATA 3.0-Gb/s Hard Drive (7200 rpm) | X | X |
| | 160-GB SATA 3.0-Gb/s Hard Drive (7200 rpm) | X | X |
| | 250-GB SATA 3.0-Gb/s Hard Drive (7200 rpm) | X | X |
| | 80-GB SATA 3.0-Gb/s Hard Drive (10,000 rpm) | X | X |
| | 160-GB SATA 3.0-Gb/s Hard Drive (10,000 rpm) | X | X |
| | Removable 3.5" 80GB SATA 3.0 Gb/s (7200 rpm) | X | X |
| | Removable 3.5" 160GB SATA 3.0 Gb/s (7200 rpm) | X | X |
| | Removable 3.5" 250GB SATA 3.0 Gb/s (7200 rpm) | 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 |

| | | MT | SFF |
|---|---|---|---|
| **Removable Storage** – One or more of the following depending on form factor (see Storage – Drive Support section above) | **Diskette Drives** | | |
| | 1.44-MB Diskette Drive | X | X |
| | **Media Reader** | | |
| | HP 16-in-1 Media Reader (USB connection on the system board) | X | X |
| | **Optical Drives** | | |
| | SATA DVD-ROM Drive | X | X |
| | SATA CD-RW/DVD-ROM Combo Drive | X | X |
| | SATA DVD+/-RW (DL/DF) LightScribe Drive | X | X |
| | SATA DVD+/-RW (DL/DF) SuperMulti LightScribe Drive | X | X |

## Standard Features and Configurable Components

| Category | Description | | |
|---|---|---|---|
| **Security** | 1.2 TPM Embedded Security Chip* integrated with Broadcom NIC | X | X |
| | HP ProtectTools Security Software Suite with BIOS Configuration (Serial, Parallel, USB Enable/Disable), Credential Manager, Smart Card Manager | X | X |
| | HP Desktop Security lock kit (lock and cable) | X | X |
| | Security cable with Kensington lock | X | X |
| | * TPM module disabled where use is restricted by law; for example, Russia. | | |
| **NIC** | Broadcom 5755 Gigabit Ethernet integrated on system board | X | X |
| | Intel PRO/1000 PT PCIe Gigabit NIC Card | X | X |
| **Wireless** | Wireless A+G PCI Card (full height bracket) | X | |
| | Wireless A+G PCI Card (low profile bracket) | | X |
| **Modem** | 2006 Agere PCI 56K International SoftModem (full height) | X | |
| | 2006 Agere PCI 56K International SoftModem (low profile) | | X |
| **Graphics** | Integrated Intel Graphics Media Accelerator 3000 | X | X |
| | DVI ADD2 SDVO single head Graphics Adapter (SDVO connector) * | X | X |
| | NVIDIA Quadro NVS 280 64-MB PCI dual head VGA** | X | X |
| | NVIDIA Quadro NVS 55 64MB PCI low profile DVI w/TV-Out | X | X |
| | NVIDIA GF 8400GS 256MB dual head graphics adapter (PCIe x1) | X | X |

**NOTES:**

* The dc5700 supports Normal (or Non-reversed) layout ADD2 (Advanced Digital Display 2) adapter cards inserted into the SDVO (Serial Digital Video Output) connector on the system board. This connector has the physical appearance of a PCIe x16 connector; however, conventional PCIe cards are not supported in this connector.

** Two NVIDIA Quadro NVS 280 PCI graphics cards can be installed to provide support for four monitors.

| Category | Description | | |
|---|---|---|---|
| **Audio** | Integrated High Definition audio with Realtek 2 channel ALC260 codec (all ports are stereo) | X | X |
| | Microphone and Headphone front ports | X | X |
| | Line-out and Line-In rear ports* | X | X |
| | Aux Input connection on system board | X | X |
| | Internal Speaker | X | X |

***NOTE:** Rear audio ports are re-taskable as Line-in, Line-out, or Microphone-in. External speakers must be powered externally.

## Standard Features and Configurable Components

| | | | |
|---|---|---|---|
| **Input Devices** | **Keyboard** – One of the following | | |
| | HP PS/2 Standard Keyboard | X | X |
| | HP USB Standard Keyboard | X | X |
| | HP USB Smartcard Keyboard | X | X |
| | **Mouse** – One of the following | | |
| | PS/2 2-Button Scroll Mouse | X | X |
| | PS/2 2-Button Optical Scroll Mouse | X | X |
| | USB 2-Button Optical Scroll Mouse | X | X |
| | | | |
| **Miscellaneous** | HP FireWire / IEEE 1394 PCI Card (full height) | X | |
| | HP FireWire / IEEE 1394 PCI Card (low profile) | | X |
| | 2nd serial port adapter | X | |
| | 2nd serial port adapter (low profile) | | X |
| | Tower stand | | X |
| | 1-GB Flash Module for ReadyBoost | X | X |

## After-Market Options

|  |  | MT | SFF | Part Number |
|---|---|:---:|:---:|---:|
| **Communications** | **Wireless LAN** | | | |
|  | HP Wireless A+G PCI Card (North America only) | X | X | EA118AA |
|  | bt450 Bluetooth Wireless Printer and PC Adapter (IPG) | X | X | Q6398A#ABA |
|  | **NICs** | | | |
|  | Intel PRO/1000 PT PCIe Gigabit NIC Card | X | X | EH352AA |
|  | Broadcom NetXtreme Gigabit Ethernet PCIe NIC Card | X | X | EA833AA |
|  | **Modem** | | | |
|  | Agere 2006 PCI 56K International Modem | X | X | EK694AA |
|  | **Connectivty** | | | |
|  | Bundle Connectivity Starter Kit – Surge Protector/LAN cable/Printer cable | X | X | RT174AA |
| **Office 2007 Media-less License Kits** (MLKs) | MS Office Basic Edition 2007 – Media-less License Kit | X | X | RZ361A#ABA |
|  | MS Office Small Business Edition 2007 – Media-less License Kit | X | X | RZ365A#ABA |
|  | MS Office Professional Edition 2007 – Media-less License Kit | X | X | RZ363A#ABA |
| **Graphics** | **Single head solutions** | | | |
|  | DVI ADD2 Graphics Card (SDVO connector)* | X | X | DY674A |
|  | ADD2 SDVO PCIe VGA Adapter* | X | X | |
|  | **Multi head solutions** | | | |
|  | NVIDIA Quadro NVS 290 Dual Head PCIe x1, low profile Graphics Card | X | X | KN586AA |
|  | NVIDIA Quadro NVS 280 Dual Head, low profile Graphics Card | X | X | DY599A |
|  | NVIDIA GeForce 8400 GS 256MB DH PCIe x1, low profile Graphics Card | X | X | GJ120AA |
|  | HP DMS59 DVI Dual-head Connector Cable | X | X | DL139A |

*\* The dc5700 supports Normal (or Non-reversed) layout ADD2 (Advanced Digital Display 2) adapter cards inserted into the SDVO (Serial Digital Video Output) connector on the system board. This connector has the physical appearance of a PCIe x16 connector; however, conventional PCIe cards are not supported in this connector.*

|  |  | MT | SFF | Part Number |
|---|---|:---:|:---:|---:|
| **Hard Drives** | HP 80-GB SATA 3.0-Gb/s Hard Drive | X | X | PY276AA |
|  | HP 160-GB SATA 3.0-Gb/s Hard Drive | X | X | PY277AA |
|  | HP 250-GB SATA 3.0-Gb/s Hard Drive | X | X | PY278AA |

## After-Market Options

| | | | | |
|---|---|---|---|---|
| **Input/Output Devices** | HP PS/2 Standard Keyboard | X | X | DT527A#ABA |
| | HP USB Standard Keyboard | X | X | DT528A#ABA |
| | HP USB Smartcard Keyboard | X | X | ED707AA#ABA |
| | HP PS/2 2-Button Optical Scroll Mouse | X | X | EY703AA |
| | HP USB 2-Button Optical Scroll Mouse | X | X | DC172B |

| | | | | |
|---|---|---|---|---|
| **Memory** (DIMMs) | **PC2-6400 (DDR2, 800 MHz) DIMMs Non-ECC** | | | |
| | HP 2 GB PC2-6400 (DDR2-800) DIMM | X | X | AH060AA |
| | HP 1 GB PC2-6400 (DDR2-800) DIMM | X | X | AH058AA |
| | HP 512 MB PC2-6400 (DDR2-800) DIMM | X | X | AH056AA |

| | | |
|---|---|---|
| **Monitors** | **CRTs** | 3PO Offering |
| | **Business LCD Monitors** | |
| | HP L1506 15-inch LCD Monitor | PX848AA#ABA |
| | HP w17e 17-inch LCD Monitor (offering 1/1/1 waranty) | GV537AA#ABA |
| | HP L1710 17-inch LCD Monitor | GS917AA#ABA |
| | HP L1750 17-inch LCD Monitor | GF904AA#ABA |
| | HP L1745 17-inch LCD Monitor | GE178AA#ABA |
| | HP L1910 19-inch LCD Monitor | GS918AA#ABA |
| | HP L1950 19-inch LCD Monitor (disco 8.31.08 - transition to L1950g) | GG458AA#ABA |
| | HP L1950g 19-inch LCD Monitor (launching 8.4.08) | KR145AA#ABA |
| | HP LP1965 19-inch LCD Monitor | RA373AA#ABA |
| | HP LP2065 20-inch LCD Monitor | EF227A4#ABA |
| | **Business Widescreen LCD Monitors** | GX007AA#ABA |
| | HP L1908w 19-inch Widescreen LCD Monitor | GP536AA#ABA |
| | HP L1945w 19-inch Widescreen LCD Monitor | KD286AA#ABA |
| | HP L2045w 20-inch Widescreen LCD Monitor | RD125AA#ABA |
| | HP L2208w 22-inch Widescreen LCD Monitor | GX007AA#ABA |
| | HP L2245w 22-inch Widescreen LCD Monitor (disco 8.31.08 - transition to L2245wg) | GX008AA#ABA |
| | HP L2245wg 22-inch Widescreen LCD Monitor (launching 8.4.08) | FL472AA#ABA |
| | HP LP2275w 22-inch Widescreen LCD Monitor (launching 8.4.08) | KE289A4#ABA |
| | HP L2445w 24-inch Widescreen LCD Monitor (launching 9.2.08) | KT931AA#ABA |
| | HP LP2465 24-inch Widescreen LCD Monitor (disco 10.31.08 - transition to LP2475w | EF224A4#ABA |
| | HP LP2465 24-inch Widescreen LCD Monitor (launching 9.2.08) | KD911A4#ABA |
| | HP LP3065 30-inch Widescreen LCD Monitor | EZ320A4#ABA |
| | **Business Widescreen LCD Monitor with Integrated Speakers** | |
| | HP L1908wm 19-inch Widescreen LCD Monitor with Built in Integrated Speakers | KA214AA#ABA |
| | **Business GSA Monitors** | |
| | HP L1750 17-inch TAA LCD Monitor | GF904A2#ABA |
| | HP L1950 19-inch TAA LCD Monitor (disco 8.31.08 - transition to L1950g) | GG458A2#ABA |

## After-Market Options

| | | | |
|---|---|---|---|
| HP L1950g 19-inch TAA LCD Monitor (launching 8.4.08) | | | KR145A2#ABA |
| **Business Touchscreen LCD Monitor** | | | |
| HP L5006tm 15-inch Touch Screen LCD Monitor | | | RB146AA#ABA |
| **Business LCD Monitor with Integrated Work Stand** | | | |
| HP L1908wi 19-inch Widescreen LCD Monitor plus Integrated Work Stand | | | GP537AA#ABA |
| HP L1910i 19-inch LCD Monitor plus Integrated Work Stand | | | GS581AA#ABA |
| **Options** | | | |
| HP Flat Panel Speaker Bar | | | EE418AA |
| HP Quick Release Kit | | | EM870AA |
| HP DreamColor Advanced Profiling Solution (aka Puck) | | | KZ300AA |
| HP LCD Hood Kit | | | KZ301AA |
| 3M 17-in Privacy Screen Filter | | | KM218AA |
| 3M 19-in Privacy Screen Filter | | | KZ310AA |

| | | | | |
|---|---|---|---|---|
| **Multimedia** | Thin USB Powered Speakers | X | X | KK912AA |
| | Flat Panel Speaker Bar | X | X | EE418AA |

| | | | | |
|---|---|---|---|---|
| **Optical Drives** | **DVD-ROM Drive** | | | |
| | HP SATA DVD-ROM Drive | X | X | AH047AA |
| | **Combo Drive** | | | |
| | HP SATA CD-RW/DVD-ROM Combo Drive | X | X | AH046AA |
| | **DVD+/-RW Drive** | | | |
| | HP SATA DVD+/-RW (DL/DF) SuperMulti LightScribe Drive | X | X | GF343AA |

| | | | | |
|---|---|---|---|---|
| **Removable Storage** | **Diskette and Digital Drives** | | | |
| | HP 1.44-MB Internal Diskette Drive | X | X | AH053AA |
| | HP 1.44-MB USB Floppy Drive – External | X | X | DC141B |
| | **Multimedia** | | | |
| | HP 16-in-1 Media Card Reader | X | X | EM718AA |
| | **Removable Hard Drive** | | | |
| | HP Removable SATA Hard Drive Enclosure (Frame & Carrier) | X | X | RY102AA |
| | HP Removable SATA Hard Drive Enclosure (Carrier Only) | X | X | RY103AA |

# QuickSpecs

## After-Market Options

| | | | | |
|---|---|---|---|---|
| **Security** | Kensington lock | X | X | PC766A |
| | HP Business PC Security Lock | X | X | PV606AA |
| | HP USB Smartcard Keyboard | X | X | ED707AA#ABA |
| | Protect Tools (version 3.0) | X | X | KN740AA |
| | HP Smart Data Protection Service | X | X | BB731UT |
| **Manageability** | HP Client Configuration Manager, Premium Edition | X | X | T3488AA (use T3489AA for 1000 licenses) |
| | Altiris Client Management Suite Level 1 Includes: Altiris Deployment Solution Altiris Inventory Solution Altiris Application Metering Solution Altiris Carbon Copy Solution Altiris Software Delivery Solution Altiris Application Management Solution Altiris Patch Management Solution | X | X | DR605A (use DR606A for 1000+ licenses) |
| **Miscellaneous Accessories** | HP 2nd Serial Port adapter | X | X | PA716A |
| | Belken USB to Serial Adapter | X | X | EM449AA |
| | HP FireWire / IEEE 1394 PCI Card | X | X | PA997A |
| | Tower Stand-Carbonite | | X | RG048AA |
| | 5.25" Blank Bezel Kit (Carbonite 50/Bulk Pack) | X | X | DC177B |
| | DVI to DVI Cable | X | X | DC198A |
| | Local Area Network (LAN) cable | X | X | AH122AA |
| | Firewire (1394) Cable | X | X | AH123AA |
| | 7-outlet Surge Protector | X | X | AG290AA#ABA |
| | HP 1TB Media Vault Pro MV5140 | X | X | GX667AA#ABA |
| | HP 1.5TB Media Vault Pro MV5150 | X | X | GX668AA#ABA |

## Technical Specifications

| Unit Environment and Operating Conditions | Microtower | Small Form Factor |
|---|---|---|
| General Unit Operating Guidelines<br><br>• 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.<br>• Leave a 10.2 cm (4 in) clearance on all vented sides of the computer to permit the required airflow.<br>• Never restrict airflow into the computer by blocking any vents or air intakes.<br>• 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.<br>• 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.<br>• 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. | | |
| **Temperature Range** | Operating: 50° to 95° F (10° to 35° C)*<br>Non-operating: -22° to 140° F(-30° to 60° C) | |
| **Relative Humidity** | Operating: 10% to 90% (non-condensing at ambient)<br>Non-operating: 5% to 95% (non-condensing at ambient) | |
| **Maximum Altitude** (unpressurized) | Operating: 10,000 ft (3048 m)<br>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. | | |

| | Microtower | | Small Form Factor | |
|---|---|---|---|---|
| **Power Supply** | 300-watt BTX power supply – Passive PFC 115v/230v line switch | 300-watt 80 PLUS* BTX power supply – Active PFC | 240-watt BTX power supply – Passive PFC 115v/230v line switch | 240-watt 80 PLUS* BTX power supply – Active PFC |
| Operating Voltage Range | 90 to 132VAC, or 180 to 264VAC | 90 to 264VAC | 90 to 132VAC, or 180 to 264VAC | 90 to 264VAC |
| Rated Voltage Range | 100 to 127VAC, or 200 to 240VAC | 100 to 240VAC | 100 to 127VAC, or 200 to 240VAC | 100 to 240VAC |
| Rated Line Frequency | 50/60 Hz | 50/60 Hz | 50/60 Hz | 50/60 Hz |
| Operating Line Frequency Range | 47–63 Hz | 47–63 Hz | 47–63 Hz | 47–63 Hz |
| Rated Input Current | 8A/4A | 5A/2.5A | 6A/3A | 3.5A/1.75 |
| Heat Dissipation | Typical 315 btu/hr (79 kg-cal/hr) Maximum 1575 btu/hr (397 kg-cal/hr) | Typical 270 btu/hr (68 kg-cal/hr) Maximum 1280 btu/hr (322 kg-cal/hr) | Typical 315 btu/hr (79 kg-cal/hr) Maximum 1260 btu/hr (317 kg-cal/hr) | Typical 270 btu/hr (68 kg-cal/hr) Maximum 1025 btu/hr (258 kg-cal/hr) |
| Power Supply Fan | Variable speed fan | Variable speed fan | Variable speed fan | Variable speed fan |
| ENERGY STAR Compliant | | X | | X |
| FEMP Standby Power Compliant (<2W in S5 – Power Off)** | X | X | X | X |

## Technical Specifications

| Power Consumption in ES Mode – Suspend to RAM (S3) (Instantly Available PC) | <4W | <3W | <4W | <3W |
|---|---|---|---|---|

| NOTES: |
|---|
| * This 80% efficient power supply is a requirement for ENERGY STAR compliance in conjunction with a select range of processors and modules. |
| ** 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 dc5700 include:<br><br>● 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.<br>● Stability – HP BIOS supports the HP stable product roadmap by releasing only critical BIOS changes to the factory and advanced change notification.<br>● 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, and attacks on BIOS settings.<br>● 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.<br>● Serviceability – HP BIOS provides diagnostic and detailed service information.<br>● Upgrades and recovery – HP BIOS provides numerous ways to upgrade HP Business Desktop computers, including BIOS updates from within DOS (Flashlite), BIOS updates from within Windows (HPQFlash, SSM), HP Client Manager, and fail-safe recovery. In addition, the HP Business Desktop BIOS Utilities tool enables replicated BIOS setup throughout the Enterprise; it is available from within the BIOS software and from the support website.<br><br>Additional HP BIOS Features<br><br>● 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.<br>● 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. Provides power conservation features under Windows XP.<br>● Ability to mute the internal speaker |

| Other Features | Description |
|---|---|
| ACPI-Ready Hardware | Advanced Configuration and Power Management Interface (ACPI).<br><br>● Allows the system to wake from a low power mode.<br>● 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. |
| 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 |

## Technical Specifications

| 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:<br>2-processor thermal protection activated<br>3-processor not installed<br>4-power supply failure<br>5-memory error<br>6-video error<br>7-PCA failure (ROM detected failure prior to video)<br>8-invalid ROM, bootblock recover mode | |
| ● System/Emergency ROM | ● Flash ROM | ● CMOS Battery Holder for easy Replacement |
| ● Flash Recovery with Video | ● 5 Aux Power LED on System PCA | ● Processor ZIF Socket for easy Upgrade |
| ● Over-Temp Warning on Screen (Requires IM Agents) | ● Clear Password Jumper | ● DIMM Connectors for easy Upgrade |
| ● Restore CD | ● Clear CMOS Button | ● NIC LEDs (integrated) (Green & Amber) |

| 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 upgraded on Microtower without removing any internal components | ● Tool-less Hard Drive, CD & Diskette Removal |

| Feature | Description |
|---|---|
| ASF 2.0 support (Alert Standard Format) | Industry-standard specification for network alerting and remote control in operating system-absent environments |
| Towerable | Product can be oriented as a tower (in addition to desktop orientation) |
| Drive Self Tests (DPS)<br><br>DPS Access through F10 Setup during Boot | ● Drive Protection System<br>● 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.<br>● 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.<br>● 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. |
| SMART Technology* (Self-Monitoring, Analysis and Reporting Technology)<br>SMART I – Drive Failure Prediction<br>SMART II – Off-Line Data Collection<br>SMART III – Off-Line Read Scanning with Defect Reallocation | Allows hard drives to monitor their own health and to raise flags if imminent failures were predicted<br><br>● Predicts failures before they occur. Tracks fault prediction and failure indication parameters such as re-allocated sector count, spin retry count, calibration retry count<br>● By avoiding actual hard drive failures, SMART hard drives act as "insurance" against unplanned user downtime and potential data loss from hard drive failure |

## Technical Specifications - Audio

| High Definition Audio | **Type** | Integrated |
|---|---|---|
| | **High Definition Stereo Codec** | Yes – Realtek ALC260 |
| | **Audio Jacks** | Microphone-In (64-K ohm Input Impedance) |
| | | 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; ability to mute internal speaker through F10 Setup |
| | **External Speaker Jack** (Line-Out) | Yes |

## Technical Specifications - Communications

| **Integrated Broadcom 5755 Gigabit Ethernet** | **Connector** | RJ-45 |
| --- | --- | --- |
| | **Controller** | Broadcom 5755 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** | 1.33 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 |
| | | 100BASE-TX (full-duplex) 200 Mbps |
| | | 1000BASE-T (full-duplex) 2000 Mbps |
| | **Environmental** | **Operating temperature**   32° to 131°F (0° to 55° C) |
| | | **Operating humidity**   85% at 131° F (55° C) |
| | **Management capabilities** | ASF 2.0, ACPI, WOL and DMI 2.0, PXE 2.0, WfM 2.0, Broadcom mgmt utility |
| | **Alerting** | ASF 2.0 |

| **Intel PRO/1000 PT PCIe Gigabit NIC** | **Connector** | RJ-45 |
| --- | --- | --- |
| | **Controller** | Intel 82572EI Gigabit Ethernet Controller |
| | **Memory** | Integrated Dual 48K configurable transmit receive FIFO Buffers |
| | **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 1.0a |
| | **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** | Aux 3.3V, 3.0 Watts in 1000base-T and 2.0 Watts in 100Base-T |
| | **Boot ROM support** | Yes |

## Technical Specifications - Communications

| | | |
|---|---|---|
| **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 2.6 x 0.8 in (16.3 x 6.6 x 1.9 cm) | |
| **Management capabilities** | ASF, WOL, PXE, DMI, WFM 2.0. | |

| | | |
|---|---|---|
| **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 system interface** | Atheros AR5414X chipset 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 ±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 Mode108-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 above router that supports 108 Mbps speed) | 200 ft (60.96 m) – Indoor |
| | | 54 Mbps | 200 ft (60.96 m) – Indoor |
| | | 11 Mbps | 200 ft (60.96 m) – Indoor |
| | **Certifications** | Wi-Fi certified | |

## Technical Specifications - Communications

| | | |
|---|---|---|
| **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<br>Australia |
| | | New Zealand |

| | | |
|---|---|---|
| **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)<br>33,600/31,200/28,800/26,400/21,600/19,200/16,800/14,400/12,000/<br>9,600/7,200/4,800/2,400/1,200/300 |
| | **Data Standards** | ITU-T V.90, ITU-T, ITU-T V.34, V.44, V.42, V.42bis21, V.32bis, Bell 212A, and Bell 103 |
| | **Fax Speeds** | 14,400/12,000/9,600/7,200/4,800/2,400/1,200/300 b/s |
| | **Fax Mode Capabilities** | ITU-T T.31 class 1 FAX, V. 17, V.29, V.27ter, and V.21 Channel 2 |
| | **Error Correction and Data Compression** | V.44, 42bis, V.42 and MNP2-5 |
| | **Power Management** | ACPI; PPMI 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 |
| | **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 |

## Technical Specifications - Communications

| | |
|---|---|
| **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<br>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 |

# QuickSpecs

## Technical Specifications - Graphics

| Integrated Graphics Media Accelerator 3000 | | |
|---|---|---|
| | **Graphics Controller** | Integrated GMA 3000 |
| | **Bus Type** | Integrated |
| | **RAMDAC** | Single 400 MHz integrated |
| | **Memory** | UMA with DVMT 4.0 support for frame buffer sizes 8-256 MB |
| | **Controller Clock Speed** | 667 MHz |
| | **Overlay Planes** | One 16-bit video overlay plane |
| | **Maximum Color Depth** | 32 bpp |
| | **Maximum Vertical Refresh Rate** | 85 Hz |
| | **Multi-display Support** | One VGA and one DVI-D, in conjunction with an ADD2 card, clone and extended desktop modes are supported |
| | **Graphics/Video API Support** | DirectX 9.0c, WGF 1.0, DirectX VA 2.0, Shader Model 3.0, OpenGL 1.5 |

**Resolutions Supported[1]**

| 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-R[2] |
| 1920 x 1200 | 85 | 60-R[2] |
| 1920 x 1440 | 85 | N/A |
| 2048 x 1536 | 85 | N/A |

[1] 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.).

[2] -R denotes reduced blanking timings (some digital monitors may not support reduced blanking timings).

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

## Technical Specifications - Graphics

| | | |
|---|---|---|
| **DVI ADD2 Graphics**[1] | **Models** | DY674A DVI ADD2 adapter for Microtower 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<br>HP L1740<br>HP L1755<br>HP L1940<br>HP L1955<br>HP L2035<br>HP L2335 |

**NOTE:** The DVI ADD2 card offers optimal performance with any display that meets applicable VESA standards.

| | |
|---|---|
| **Color Depth** | 32 bpp maximum |
| **Host Interface Connector** | Mechanically compliant with PCIe standard<br>Complies with the Intel ADD2 and Intel Serial Digital Video Output (SDVO) specifications |
| **Dot Clock** | 165 MHz maximum |
| **Display Modes** | Supports display modes with pixel clocks up to 165-MHz bandwidth on the link, as shown in the following table. |

| Resolution | | 60-Hz, reduced blanking | 60-Hz |
|---|---|---|---|
| 640 x 480 | VGA | Yes | Yes |
| 800 x 600 | SVGA | Yes | Yes |
| 1024 x 768 | XGA | Yes | Yes |
| 1280 x 1024 | SXGA | Yes | Yes |
| 1600 x 1200 | UXGA | Yes | Yes |
| 1920 x 1080 | 1080P | Yes | No |
| 1920 x 1200 | WUXGA | Yes | No |

[1]The dc5700 supports Normal (or Non-reversed) layout ADD2 (Advanced Digital Display 2) adapter cards inserted into the SDVO (Serial Digital Video Output) connector on the system board. This connector has the physical appearance of a PCIe x16 connector; however, conventional PCIe cards are not supported in this connector.

# QuickSpecs

## Technical Specifications - Graphics

| **NVIDIA Quadro NVS 280 64MB PCI Dual Head** | | |
|---|---|---|
| | **Form Factor** | Low profile (both ATX and low profile brackets included) |
| | **Graphic Controller** | Integrated Quadro 280 2D 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 bpp maximum |
| | **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 (Service Pack 4 or greater), Windows XP Home, Windows XP Professional (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.

| Analog Resolution | Maximum Refresh Rate |
|---|---|
| 640 x 480 | 85 Hz |
| 800 x 600 | 85 Hz |
| 1024 x 768 | 85 Hz |
| 1280 x 1024 | 85 Hz |
| 1600 x 1200 | 85 Hz |
| 1920 x 1200 | 85 Hz |
| 1920 x 1440 | 75 Hz |
| 2048 x 1536 | 60 Hz |

| Digital Resolution | Maximum Refresh Rate |
|---|---|
| 640 x 480 | 60 Hz |
| 800 x 600 | 60 Hz |
| 1024 x 768 | 60 Hz |
| 1280 x 1024 | 60 Hz |
| 1600 x 1200 | 60 Hz (primary only) |

# QuickSpecs

## Technical Specifications - Graphics

| **NVIDIA Quadro NVS 55 64MB PCI DVI with TV-Out** | | |
|---|---|---|
| | **Form Factor** | Low profile, both ATX and low profile brackets included |
| | **Graphic Controller** | Integrated Quadro NVS 55 Graphics Processor Unit (GPU) |
| | **Bus type** | PCI 2.1, 32-bit, 5V |
| | **Memory** | 64 MB DDR |
| | **Connector** | Single DVI-I connector<br>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 per pixel max |
| | **Overlay planes** | One 16-bit video overlay plane |
| | **Maximum vertical refresh rate** | 85 Hz |
| | **Maximum pixel clock** | Analog output: 350 MHz<br>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<br>DVD-ready motion compensation for MPEG-2<br>Independent hardware color controls for video overlay<br>Hardware colorspace conversion (YUV 4:2:2 and 4:2:0)<br>IDCT motion compensation<br>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 (Service Pack 4 or greater), Windows XP Home, Windows XP Professional<br>HP qualified drivers may be preloaded or available from the HP support Web site: http://www.hp.com/country/us/en/support.html?pageDisplay=drivers |

## Technical Specifications - Graphics

| NVIDIA GeForce 8400 GS (256 MB DH) PCIe x1 Graphics Controller | **Bus type** | PCI Express (x16 lanes) |
|---|---|---|
| | **Maximum vertical refresh rate** | 85 Hz |
| | **Display support** | Integrated 400 MHz RAMDAC |
| | **Display max resolution** | 2048 x 1536 (analog), 2560 x 1600 (digital) |
| | **Input/Output connectors** | DMS59 (DMS-59 port supports Dual VGA or Dual DVII connections) <br> TV-out (4 pin S-video) |
| | **Board display options** | DMS59 + TV <br> DMS59 supports either 2 VGA displays with the included cable or 2 DVII displays with optional <br> HP DMS59 DVI Dual-head Connector Cable kit #DL139A <br><br> TV connector is a 4-pin mini-DIN S-video connector |

| | **Board configuration** | **Specification** | **Description** |
|---|---|---|---|
| | | Graphics Chip | NVIDIA GeForce 8400 GS |
| | | Core clock | 460 MHz |
| | | Memory clock | 200 MHz |
| | | Frame buffer | 256 MB DDR2 |

| | **Languages supported** | 24 languages: English, Arabic, Chinese Simplified, Chinese Traditional, Czechoslovakian, Danish, Dutch, Finnish, French, German, Greek, Hebrew, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, Thai, Turkish |
|---|---|---|
| | **Core power** | 25 W (Max board power) |

**NVIDIA GeForce 8400 GS (256 MB DH) PCIe x1 Graphics Controller display resolutions and refresh rates**

**NOTE:** Other resolutions may be available but are not recommended as they may not have been tested and qualified by HP.

| Analog Resolution | Maximum Refresh Rate |
|---|---|
| 640 x 480 | 85 Hz |
| 800 x 600 | 85 Hz |
| 1024 x 768 | 85 Hz |
| 1280 x 1024 | 85 Hz |
| 1600 x 1200 | 85 Hz |
| 1920 x 1080 | 85 Hz |
| 1920 x 1200 | 85 Hz |
| 1920 x 1440 | 85 Hz |
| 2048 x 1536 | 85 Hz |
| **Digital Resolution** | **Maximum Refresh Rate** |
| 640 x 480 | 85 Hz |
| 800 x 600 | 85 Hz |
| 1024 x 768 | 85 Hz |
| 1280 x 1024 | 85 Hz |
| 1600 x 1200 | 85 Hz |
| 1920 x 1200* | 85 Hz |

* Reduced blanking timings used when connected to a single-link DVI monitor

## 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)<br>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)<br>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) | |

## Technical Specifications - Hard Drives

| | 80-GB | **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) | |

| | | | | |
|---|---|---|---|---|
| **10,000 RPM Serial ATA Hard Drives** | 160 GB | **Capacity** | 160,041,885,696 bytes | |
| | | **Height** | 1 in (2.54 cm) | |
| | | **Width** | Media diameter: 3.0 in (7.62 cm) Physical size: 4 in (10.2 cm) | |
| | | **Interface** | Serial ATA (1.5 Gb/s), Native Command Queuing enabled | |
| | | **Synchronous Transfer Rate** (Maximum) | Up to 1.5 Gb/s | |
| | | **Cache** | 16 Mbytes | |
| | | **Seek Time** (typical reads, includes controller overhead, including settling) | **Single Track** | 0.3 ms |
| | | | **Average** | 4.6 ms |
| | | | **Full-Stroke** | 10.2 ms |
| | | **Rotational Speed** | 10,000 rpm | |
| | | **Logical Blocks** | 312,581,808 | |
| | | **Operating Temperature** | 41° to 131° F (5° to 55° C) | |

## Technical Specifications - Hard Drives

| **80 GB** | **Capacity** | 80,026,361,856 bytes | | |
|---|---|---|---|---|
| | **Height** | 1 in (2.54 cm) | | |
| | **Width** | Media diameter: 3.0 in (7.62 cm)<br>Physical size: 4 in (10.2 cm) | | |
| | **Interface** | Serial ATA (1.5 Gb/s), Native Command Queuing enabled | | |
| | **Synchronous Transfer Rate** (Maximum) | Up to 1.5 Gb/s | | |
| | **Cache** | 16 Mbytes | | |
| | **Seek Time** (typical reads, includes controller overhead, including settling) | **Single Track** | 0.3 ms | |
| | | **Average** | 4.6 ms | |
| | | **Full-Stroke** | 10.2 ms | |
| | **Rotational Speed** | 10,000 rpm | | |
| | **Logical Blocks** | 156,301,488 | | |
| | **Operating Temperature** | 41° to 131° F (5° to 55° C) | | |

## 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 ± 5% |
| | | **Power consumption** | 50-mA maximum (with three LEDs ON) |
| | | **System interface** | USB Type A plug connector |
| | | **ESD** | CE level 4, 15-kV air discharge |
| | | **EMI – RFI** | Conforms to FCC rules for a Class B computing device |
| | | **Microsoft® PC 99 – 2001** | Functionally compliant |
| | Mechanical | **Languages** | 38 available |
| | | **Keycaps** | Low-profile design |
| | | **Switch actuation** | 55-g nominal peak force with tactile feedback |
| | | **Switch life** | 20 million keystrokes (using Hasco modified tester) |
| | | **Switch type** | Contamination-resistant switch membrane |
| | | **Key-leveling mechanisms** | For all double-wide and greater-length keys |
| | | **Cable length** | 6 ft (1.8 m) |
| | | **Microsoft PC 99 – 2001** | Mechanically compliant |
| | | **Acoustics** | 43-dBA maximum sound pressure level |
| | 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, six surfaces |
| | | **Non-operating shock** | 80 g, six surfaces |
| | | **Operating vibration** | 2-g peak acceleration |
| | | **Non-operating vibration** | 4-g peak acceleration |
| | | **Drop** (out of box) | 26 in (66 cm) on carpet, six-drop sequence |
| | | **Drop** (in box) | 42 in (107 cm) on concrete, 16-drop sequence |
| | Approvals | | UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC |
| | Ergonomic compliance | | ANSI HFS 100, ISO 9241-4, and TUVGS |
| | Kit contents | | Keyboard, installation guide, warranty card, safety and comfort guide |

## Technical Specifications - Input/Output Devices

| | | | |
|---|---|---|---|
| **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 ± 5% |
| | | **Power consumption** | 50-mA maximum (with three LEDs ON) |
| | | **System interface** | PS/2 6-pin mini din connector |
| | | **ESD** | CE level 4, 15-kV air discharge |
| | | **EMI – RFI** | Conforms to FCC rules for a Class B computing device |
| | | **Microsoft PC 99 – 2001** | Functionally compliant |
| | **Mechanical** | **Languages** | 38 available |
| | | **Keycaps** | Low-profile design |
| | | **Switch actuation** | 55-g nominal peak force with tactile feedback |
| | | **Switch life** | 20 million keystrokes (using Hasco modified tester) |
| | | **Switch type** | Contamination-resistant switch membrane |
| | | **Key-leveling mechanisms** | For all double-wide and greater-length keys |
| | | **Cable length** | 6 ft (1.8 m) |
| | | **Microsoft PC 99 – 2001** | Mechanically compliant |
| | | **Acoustics** | 43-dBA maximum sound pressure level |
| | **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, six surfaces |
| | | **Non-operating shock** | 80 g, six surfaces |
| | | **Operating vibration** | 2-g peak acceleration |
| | | **Non-operating vibration** | 4-g peak acceleration |
| | | **Drop** (out of box) | 26 in (66 cm) on carpet, six-drop sequence |
| | | **Drop** (in box) | 42 in (107 cm) on concrete, 16-drop sequence |
| | **Approvals** | UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC | |
| | **Ergonomic compliance** | ANSI HFS 100, ISO 9241-4, and TUVGS | |
| | **Kit contents** | Keyboard, keyboard software media, installation guide, warranty card, safety and comfort guide | |
| | | | |
| **HP USB Smartcard Keyboard** | **Physical characteristics** | **Keys** | 104, 105, 106, 107, 109 layout (depending upon country) |
| | | **Form factor** | USB basic Smart Card keyboard |

## Technical Specifications - Input/Output Devices

|  |  |  |
|---|---|---|
|  | **Colors** | Carbonite/Silver |
|  | **Dimensions** (H x W x D) | 18.2 x 6.3 x 1.3 in (46.3 x 16.1 x 3.3 cm) |
|  | **Weight** | 2 lb (0.9 kg) minimum |
| **Electrical** | **Operating voltage** | + 5VDC ± 5% |
|  | **Power consumption** | 100-mA maximum (with four LEDs ON) |
|  | **System interface** | USB Type A plug connector |
|  | **ESD** | CE level 4, 15-kV air discharge |
|  | **EMI – RFI** | Conforms to FCC rules for a Class B computing device |
|  | **Microsoft PC 99 – 2001** | Functionally compliant |
| **Mechanical** | **Languages** | 30+ available |
|  | **Keycaps** | Low-profile design |
|  | **Switch actuation** | 55 g nominal peak force with tactile feedback |
|  | **Switch life** | 20 million keystrokes (using Hasco modified tester) |
|  | **Switch type** | Contamination-resistant membrane |
|  | **Key-leveling mechanisms** | For all double-wide and greater-length keys |
|  | **Cable length** | 6 ft (1.8 m) |
|  | **Microsoft PC 99 - 2001** | Mechanically compliant |
|  | **Acoustics** | 43-dBA maximum sound pressure level |
| **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, 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 |

## Technical Specifications - Input/Output Devices

| | | |
|---|---|---|
| **Power** | USB Port<br>Short circuit detection (protects smart card and reader)<br>Power supply compliant with ISO7816 and EMV (5V, 60 mA)<br>Supports 3-V and 5-V cards | |
| **Power consumption** | 250-mA maximum draw (50 mA for the keyboard with three LEDs ON and 200-mA maximum startup current using a high-current, 60-mA smart card) | |
| **Communication** | **From card** | Programmable from 9,600 baud to 115,200 baud |
| | **From computer** | Up to 38,400 baud |
| **Landing mechanism** | **Contact device** | Friction contact |
| | **Card insertions rating** | Up to 100,000 insertion cycles |
| **Interface modes** | USB communications through USB port<br>SCM protocol<br>Automatic card insertion/removal detection | |
| **Reader performance interface** | USB connection | |
| **Electro-magnetic standards** | **Europe** | 89/336/CEE guideline |
| | **USA** | USAFCC part 15 |

| | | | |
|---|---|---|---|
| **HP PS/2 Scroll Mouse** | **Dimensions** | 1.5 x 2.5 x 4.6 in (3.8 x 6.3 x 11.6 cm) | |
| | **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) |
| | | **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** | **Operating voltage** | 5 VDC ± 10% |
| | | **Power consumption** | 15 mA |
| | | **System consumption** | PS/2 mini-din connector |

## Technical Specifications - Input/Output Devices

| | | | |
|---|---|---|---|
| | | **ESD** | CE level 4, 15 kV air discharge |
| | | **EMI-RFI** | Conforms to FCC rules for a Class B computing device |
| | | **Microsoft PC99 – 2001** | Functionally compliant |
| | **Mechanical** | **Resolution** | 400 ± 20% DPI |
| | | **Tracking speed** | 10 in/s (25.4 cm/s) maximum |
| | | **Acceleration** | 100 in/s/s (2.54 m/s/s) |
| | | **Switch actuation** | 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 |
| | | **Cable length** | 6 ft (1.8 m) |
| | | **Microsoft PC99 – 2001** | Mechanically compliant |
| | **Scroll wheel** | **Width** | 8 mm |
| | | **Diameter** | 0.99 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 |
| | **Regulatory approvals** | **Compliant** | UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC |
| **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 1 m on asphalt tile over concrete, 6-drop sequence |
| | **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 |

## Technical Specifications - Input/Output Devices

|  |  |  |
|---|---|---|
|  | **EMI-RFI** | Conforms to FCC rules for a Class B computing device |
|  | **Microsoft PC99 – 2001** | Functionally compliant |
| **Mechanical** | **Resolution** | 400 ± 20% DPI |
|  | **Tracking speed** | 10 in/s (25.4 cm/s) maximum |
|  | **Acceleration** | 100 in/s/s (2.54 m/s/s) |
|  | **Switch actuation** | 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 |
|  | **Cable length** | 6 ft (1.8 m) |
|  | **Microsoft PC99 – 2001** | Mechanically compliant |
| **Scroll wheel** | **Width** | 8 mm |
|  | **Maximum rotation speed** | 30 mm/s |
|  | **Switch type** | Light force micro-switch |
|  | **Switch life** | 1 million operations |
|  | **Mechanical life** | Minimum 200,000 revolutions |
| **Regulatory approvals** | **Compliant** | UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC |

| **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) |

## Technical Specifications - Optical Storage

| SATA DVD+/-RW (DL/DF) SuperMulti LightScribe Drive | Height | 5.25-inch, half-height, tray-load | |
|---|---|---|---|
| | **Orientation** | Either horizontal or vertical | |
| | **Interface type** | SATA/ATAPI | |
| | **Disc capacity** | 8.5 GB DL or 4.7 GB standard | |
| | **Dimensions** (W x H x D) | 5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm) | |
| | **Weight** (max) | 2.6 lb (1.2 kg) | |
| | **Write speeds** | **DVD-RAM** | Up to 12X |
| | | **DVD+R** | Up to 16X |
| | | **DVD+RW** | Up to 8X |
| | | **DVD+R DL** | Up to 8X |
| | | **DVD-R DL** | Up to 8X |
| | | **DVD-R** | Up to 16X |
| | | **DVD-RW** | Up to 6X |
| | | **CD-R** | Up to 48X |
| | | **CD-RW** | Up to 32X |
| | **Read speeds** | **DVD-RAM** | Up to 12X |
| | | **DVD+RW, DVD-RW, DVD+R DL, DVD-R DL** | Up to 8X |
| | | **DVD-ROM DL** | Up to 8X |
| | | **DVD-ROM, DVD+R, DVD-R** | Up to 16X |
| | | **CD-ROM, CD-R** | Up to 48X |
| | | **CD-RW** | Up to 32X |
| | **Access time** (typical reads, including settling) | **Random** | DVD: < 140 ms (typical), CD: < 125 ms (typical) |
| | | **Full Stroke** | DVD: < 250 ms (seek), CD: < 210 ms (seek) |
| | **Power** | **Source** | SATA DC power receptacle |
| | | **DC Power Requirement** | 5 VDC ± 5%-100 mV ripple p-p |
| | | | 12 VDC ± 5%-200 mV ripple p-p |
| | | **DC Current** | 5 VDC (< 1000 mA typical, 1600 mA maximum) |
| | | | 12 VDC (< 600 mA typical, 1400 mA maximum) |
| | **Environmental 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) |

## Technical Specifications - Optical Storage

| **SATA DVD+/-RW (DL/DF) LightScribe Drive** | **Height** | 5.25-inch, half-height, tray-load | |
|---|---|---|---|
| | **Orientation** | Either horizontal or vertical | |
| | **Interface type** | SATA/ATAPI | |
| | **Disc capacity** | 8.5 GB DL or 4.7 GB standard | |
| | **Dimensions** (W x H x D) | 5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm) | |
| | **Weight** (max) | 2.6 lb (1.2 kg) | |
| | **Write speeds** | **DVD+R** | Up to 16X |
| | | **DVD+RW** | Up to 8X |
| | | **DVD+R DL** | Up to 8X |
| | | **DVD-R DL** | Up to 4X |
| | | **DVD-R** | Up to 16X |
| | | **DVD-RW** | Up to 6X |
| | | **CD-R** | Up to 48X |
| | | **CD-RW** | Up to 32X |
| | **Read speeds** | **DVD-RAM** | Up to 4X |
| | | **DVD+RW, DVD-RW, DVD+R DL, DVD-R DL** | Up to 8X |
| | | **DVD-ROM, DVD+R, DVD-R** | Up to 16X |
| | | **CD-ROM, CD-R** | Up to 48X |
| | | **CD-RW** | Up to 32X |
| | **Access time** (typical reads, including settling) | **Random** | DVD: < 130 ms (typical), CD: < 120 ms (typical) |
| | | **Full Stroke** | DVD: < 240 ms (seek), CD: < 200 ms (seek) |
| | **Power** | **Source** | SATA DC power receptacle |
| | | **DC Power Requirement** | 5 VDC ± 5%-100 mV ripple p-p |
| | | | 12 VDC ± 5%-200 mV ripple p-p |
| | | **DC Current** | 5 VDC (< 1000 mA typical, 1600 mA maximum) |
| | | | 12 VDC (< 600 mA typical, 1400 mA maximum) |
| | **Environmental 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) |

## Technical Specifications - Optical Storage

| **SATA CD-RW/DVD-ROM Combo Drive** | **Height** | 5.25-inch, half-height, tray-load | |
|---|---|---|---|
| | **Orientation** | Either horizontal or vertical | |
| | **Interface type** | SATA/ATAPI | |
| | **Disc capacity** | Single layer: Up to 4.7 GB (6 times capacity of CD-ROM)<br>Double layer: Up to 8.5 GB (12 times capacity of CD-ROM) | |
| | **Dimensions** (W x H x D) | 5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm) | |
| | **Weight** (max) | 2.6 lb (1.2 kg) | |
| | **Write speeds** | **CD-R** | Up to 48X |
| | | **CD-RW** | Up to 32X |
| | **Read speeds** | **DVD+R/-R/+RW/ -RW/+R DL /-R DL** | Up to 8X |
| | | **DVD-ROM** | Up to 16X |
| | | **CD-ROM, CD-R** | Up to 48X |
| | | **CD-RW** | Up to 32X |
| | **Access time** (typical reads, including settling) | **Random** | DVD: < 140 ms (typical), CD: < 125 ms (typical) |
| | | **Full Stroke** | DVD: < 250 ms (typical), CD: < 210 ms (typical) |
| | **Power** | **Source** | SATA DC power receptacle |
| | | **DC Power Requirement** | 5 VDC ± 5%-100 mV ripple p-p |
| | | | 12 VDC ± 5%-200 mV ripple p-p |
| | | **DC Current** | 5 VDC (< 1000 mA typical, < 1600 mA maximum) |
| | | | 12 VDC (< 600 mA typical, < 1400 mA maximum) |
| | **Environmental** (all conditions non-condensing) | **Temperature** | 41° to 122° F (5° to 50° C) |
| | | **Relative Humidity** | 10% to 90% |
| | | **Maximum Wet Bulb Temperature** | 86° F (30° C) |

| **SATA DVD-ROM Drive** | **Height** | 5.25-inch, half-height, tray-load | |
|---|---|---|---|
| | **Orientation** | Either horizontal or vertical | |
| | **Interface type** | SATA/ATAPI | |
| | **Disc capacity** | Single layer: Up to 4.7 GB (6 times capacity of CD-ROM)<br>Double layer: Up to 8.5 GB (12 times capacity of CD-ROM) | |
| | **Dimensions** (W x H x D) | 5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm) | |
| | **Weight** (max) | 2.6 lb (1.2 kg) | |
| | **Read speeds** | **DVD+R/-R/+RW/ -RW/+R DL /-R DL** | Up to 8X |
| | | **DVD-ROM** | Up to 16X |
| | | **DVD-RAM** | Up to 4X |
| | | **CD-ROM, CD-R** | Up to 48X |
| | | **CD-RW** | Up to 32X |

## Technical Specifications - Optical Storage

| Removable Storage – Media Compatibility – DVD-ROM | Media | Read | Write |
|---|---|---|---|
| | CD-ROM | Yes | No |
| | CD-R | Yes | No |
| | CD-RW | Yes | No |
| | DVD-ROM | Yes | No |
| | DVD-ROM DL | Yes | No |
| | DVD-RAM | Yes | No |
| | DVD+R | Yes | No |
| | DVD+R DL | Yes | No |
| | DVD+RW | Yes | No |
| | DVD-R | Yes | No |
| | DVD-RW | Yes | No |
| | DVD-R DL | Yes | No |
| **Access times** (typical reads, including setting) | **Random** | DVD: < 140 ms (typical), CD: < 125 ms (typical) | |
| | **Full Stroke** | DVD: < 250 ms (seek), CD: < 210 ms (seek) | |
| | **Cache Buffer** | 2 MB (minimum) | |
| | **Data Transfer Modes** | ATA PIO mode 4 (16.7 MB/s); ATA Multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA Mode 3 (44.4 MB/s -default) | |
| **Power** | **Source** | SATA DC power receptacle | |
| | **DC Power Requirement** | 5 VDC ± 5%-100 mV ripple p-p<br>12 VDC ± 5%-200 mV ripple p-p | |
| | **DC Current** | 5 VDC – <1000 mA typical, < 1600 mA maximum<br>12 VDC –< 600 mA typical, < 1400 mA maximum | |
| **Environmental** (all conditions non-condensing) | **Temperature** | 41° to 122° F (5° to 50° C) | |
| | **Relative Humidity** | 10% to 90% | |
| | **Maximum Wet Bulb Temperature** | 86° F (30° C) | |

## Technical Specifications - Removable Storage

| | | |
|---|---|---|
| **HP 16-in-1 Media Card Reader** | **USB Interface** | USB 2.0 High-speed device |
| | **Advance protocol support** | Supports hardware ECC (Error Correction Code) function |

- Supports hardware CRC (Cyclic Redundancy Check) function
- Supports MS 4-bit parallel transfer mode
- Supports MS-PRO 4-bit parallel transfer mode
- Supports SD 4-bit parallel transfer mode
- Supports high-speed 50-MHz SD 4-bit card (version 1.1)
- Support high-speed 52-MHz MultiMediaCard 8-bit card

**Supported media type with card adapter**
- MicroSD (T-Flash)
- Memory Stick Micro

**Mechanical**

**Environmental**

**Operational Environmental Extremes**
Test Parameters/Conditions – Power applied, unit operating on system ±5% nominal supply voltage.
10°C 10% R.H. = 24 hours
10°C 90% R.H. = 24 hours
20°C 90% R.H. = 24 hours
30°C 90% R.H. = 24 hours
40°C 90% R.H. = 24 hours
50°C 90% R.H. = 24 hours
50°C 10% R.H. = 24 hours

**Storage Environmental Extremes**
Test Parameters/Conditions
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

**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

## Technical Specifications - Environmental Data

**Eco-Label Certifications and 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:

- ENERGY STAR*
- US Federal Energy Management Program (FEMP)
- Taiwan Green Mark
- China Energy Conservation Program
- IT ECO declaration
- EPEAT Rated – SILVER
- Korea Eco-label
- Japan PC Green label**

\* Select configurations available for ENERGY STAR compliance.
\*\* This product conforms to the examination standards (2003 version) under JEITA's 'PC Green Label System.'

### *Small Form Factor*

**System Configuration**

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

**Energy Consumption**

|  | 115 VAC | 230 VAC | 100 VAC |
|---|---|---|---|
| Normal Operation | 86.3 W | 83.6 W | 85.6 W |
| Sleep (ENERGY STAR low power mode) | 1.91 W | 1.80 W | 1.81 W |
| Off | 1.87 W | 1.80 W | 1.84 W |

| **Heat Dissipation*** | 115 VAC | 230 VAC | 100 VAC |
|---|---|---|---|
| Normal Operation | 294.5 BTU/hr | 285.2 BTU/hr | 292.1 BTU/hr |
| Sleep | 6.5 BTU/hr | 6.4 BTU/hr | 6.2 BTU/hr |
| Off | 6.4 BTU/hr | 6.1 BTU/hr | 6.3 BTU/hr |

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

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

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

| System Fan Off | Sound Power (LWAd, bels) | Sound Pressure (LpAm, decibels) |
|---|---|---|
| Idle | 3.9 | 29 |
| Fixed Disk (random writes) | 4.0 | 30 |
| Optical Drive (sequential reads) | 5.1 | 42 |

## Technical Specifications - Environmental Data

**Longevity and Upgrading**  This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:

- Intel LGA775 processor socket
- 8 USB ports
- 2 empty low profile PCI slots
- 1 empty low profile PCIe x1 slot
- 1 3.5-inch internal drive bay
- 1 3.5-inch external drive bay
- 1 5.25-inch external drive bay
- 4 memory slots
- 1 second Serial port (optional)
- 1 empty SDVO/ADD2 slot

Spare parts are available throughout the warranty period and or for up to 5 years after the end of production.

**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 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.
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the Silver level (see http://www.epeat.net)
- 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 92% recyclable when properly disposed of at end of life.

**Packaging Materials**

| | |
|---|---|
| Corrugated Paper | 1400 g |
| EPE Foam | 240 g |
| LDPE Bag | 10 g |

- The EPE foam packaging material is made from 30 to 60% recycled content.
- The corrugated paper packaging materials contains at least 80% recycled content.

*Microtower*

## Technical Specifications - Environmental Data

**System Configuration**  The configuration used for the Energy Consumption and Declared Noise Emissions data for the Microtower Desktop model is based on a typically configured product

**Energy Consumption**

|  | 115 VAC | 230 VAC | 100 VAC |
|---|---|---|---|
| Normal Operation | 76.4 W | 72.5 W | 75.2 W |
| Sleep (ENERGY STAR low power mode) | 2.70 W | 2.90 W | 2.60 W |
| Off | 2.50 W | 2.30 W | 2.20 W |
| **Heat Dissipation\*** | **115 VAC** | **230 VAC** | **100 VAC** |
| Normal Operation | 260.7 BTU/hr | 247.4 BTU/hr | 256.6 BTU/hr |
| Sleep | 9.4 BTU/hr | 9.9 BTU/hr | 8.9 BTU/hr |
| Off | 8.5 BTU/hr | 7.8 BTU/hr | 7.5 BTU/hr |

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

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

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

|  | Sound Power (LWAd, bels) | Sound Pressure (LpAm, decibels) |
|---|---|---|
| **System Fan Off** | | |
| Idle | 3.9 | 29 |
| Fixed Disk (random writes) | 4.0 | 30 |
| Optical Drive (sequential reads) | 5.1 | 42 |

**Longevity and Upgrading**  This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:

- Intel LGA775 processor socket
- 8 USB ports
- 2 empty full-height PCI slots
- 1 empty full-height PCIe x1 slot
- 2 internal 3.5-inch drive bays
- 1 external 3.5-inch drive bay
- 2 internal 5.25-inch drive bays
- 4 memory slots
- 1 second Serial port (optional)
- 1 empty SDVO/ADD2 slot

Spare parts are available throughout the warranty period and or for up to 5 years after the end of production.

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

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

## Technical Specifications - Environmental Data

- 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.<br>- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).<br>- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.<br>- This product is in compliance with the IEEE 1680 (EPEAT) standard at the Silver level (see http://www.epeat.net)<br>- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.<br>- This product contains 0% recycled materials (by wt.)<br>- This product is 92% recyclable when properly disposed of at end of life. |

| **Packaging Materials** | | |
|---|---|---|
| | Corrugated Paper | 1460 g |
| | EPE Foam | 240 g |
| | LDPE Bag | 10 g |

- The EPE foam packaging material is made from 30 to 60% recycled content.
- The corrugated paper packaging materials contains at least 80% recycled content.

### *Microtower and Small Form Factor*

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

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds

## Technical Specifications - Environmental Data

- Mercuric Oxide Batteries
- Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

**Packaging**

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.

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

**Hewlett-Packard Corporate Environmental Information**

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